

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)

**Affiliated to Bharathidasan University
Nationally Accredited (3rd Cycle) with 'A' grade by NAAC
ISO 9001:2015 Certified
Annamalainagar
Tiruchirapalli-620018**



Minutes of the Eighth Meeting of the Academic Council

**Date : 15.06.2023
Venue : Trust Meeting Hall**

Time: 11.00 a.m.

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)
Affiliated to Bharathidasan University
Nationally Accredited (3rd Cycle) with 'A' grade by NAAC
ISO 9001:2015 Certified
Annamalainagar, Tiruchirapalli-620018

EIGHTH MEETING OF THE ACADEMIC COUNCIL

Date : 15.06.2023
Venue: Trust Meeting Hall

Time: 11.00 A.M.

MINUTES

WELCOME AND INTRODUCTORY REMARKS OF THE CHAIRMAN

The Chairman of the Academic Council Dr. V. Sujatha welcomed the gathering to the VIII Meeting of the Academic Council

CONFIRMATION OF THE MINUTES OF THE LAST MEETING HELD ON 19.11.2022

The Member Secretary Dr. Sinthu Janita Prakash read the minutes of the VII Meeting of the Academic Council comprising of 20 Resolutions- (Resolution 07/22/01 to Resolution 07/22/20) pertaining to the approval of the Programme Structure of Arts & Science programmes in Undergraduate and Postgraduate levels for the Academic year (2022-2023) and onwards, II Semester Syllabus of all undergraduate and postgraduate programmes of (2022-2023) batch, amendment in the curriculum in the previous semesters, evaluation of Part I, Part II & Part IV Courses, introduction of UGC recommended Cyber Security course in the UG & PG levels, conversion of the PG Competitive Examination Course as a Discipline Specific Elective Course and usage of question banks in the external examinations were confirmed.

RESOLUTION NO.08/23/01

To follow the same regulations of (2022 - 2023) with the following amendments for the students admitted in Undergraduate and Postgraduate Programmes during the year (2023 - 2024) and onwards

- a. Eligibility criteria of
 - i. B.Sc Microbiology
 - ii. M.Com
 - iii. MSc Physics
 - iv. MSc Food Service Management and Dietetics
- b. Change in Specialization offered for MSW
- c. Rules for offering NPTEL Courses as an Extra Credit Course

a. Eligibility criteria of

i B.Sc Microbiology

A Pass in 10 +2 with Mathematics, Physics, Chemistry, and Biology or Physics, Chemistry, Botany and Zoology or Biology as one of the Core Subjects.

ii M.Com

A Pass in B.Com / Bank Management / Computer Applications / Financial Management / B.Com (Applied) / B.B.A and other related Programmes equivalent to B.Com

iii. M.Sc Physics

A Pass in B.Sc. Physics with Mathematics as an allied subject

iv M.Sc Food Service Management & Dietetics

A Pass in B.Sc. Nutrition & Dietetics / Home Science / Food Technology / Food Service Management and Dietetics/ B.Voc. Food Processing / B.Voc. Food Processing Technology.

b. Change in Specialisations offered for MSW

- i. Medical and Psychiatric Social Work*
- ii. Family and Child Welfare*
- iii. Human Resource Management (HRM)*
- iv. Community Development*

c. Rules for offering NPTEL Courses as an Extra Credit Course

For the students who are admitted from the Academic Year (2023-2024) (except for the Department of Tamil)

- UG Students must register and clear ONE NPTEL course in any of the semesters starting from Semester II to Semester V.*
- PG Students must register and complete ONE NPTEL course either in II Semester or III Semester.*

Pass Criteria:

The students who got certification from NPTEL will be given the same credit earned from NPTEL

4 Weeks - 1 Credit, 8 Weeks - 2 Credits, 12 Weeks - 3 Credits

Interested students can do more courses and gain a maximum of 10 Credits.

In case, the student fails to meet the pass criteria of NPTEL in the current semester, she may select the same/new NPTEL course in the next semester and complete it successfully.

Resolved to follow the same regulations of (2022 - 2023) with the amendments for the students admitted in Undergraduate and Postgraduate Programmes during the year (2023 - 2024) and onwards

RESOLUTION NO.08/23/02

To approve the introduction of Value-Added Courses for the Academic Year (2023-2024) onwards.

*CCCD Director & Special Invitee **Dr Rajesh Kannan** suggested to change the title of the Value-Added Course Professional Ethics- 23VATA04 offered by the*

department of Tamil and the course title has been changed as Tamilil Sirar Illakiam with due changes in course content.

*Resolved to approve the 33 new Value-Added Courses introduced for the Academic Year (2023-2024) onwards as given in **Annexure A***

RESOLUTION NO.08/23/03

To consider and approve the

- a. Syllabus of Part I Language - Tamil for all Undergraduate programmes, Part III Core and Allied Courses for Semester I of B.A Tamil for (2023-2024) batch and onwards in accordance with TANSCHÉ
- b. Syllabus of Part III Core and Allied Courses, Part IV Generic Elective Course for Semester III of B.A Tamil for (2022-2023) batch and onwards
- c. Syllabus of Core and Discipline Specific Elective Course of Semester I of M.A Tamil for (2023-2024) batch and onwards in accordance with TANSCHÉ
- d. Syllabus of Core, Core Choice, Discipline Specific Elective, Generic Elective Courses of Semester III of M.A Tamil for (2022-2023) batch and onwards

Considered and approved the

- a. *Syllabus of Part I Language - Tamil for all Undergraduate programmes, Part III Core and Allied Courses for Semester I of B.A Tamil for (2023-2024) batch and onwards in accordance with TANSCHÉ*
- b. *Syllabus of Part III Core and Allied Courses, Part IV Generic Elective Course for Semester III of B.A Tamil for (2022-2023) batch and onwards*
- c. *Syllabus of Core and Discipline Specific Elective Course of Semester I of M.A Tamil for (2023-2024) batch and onwards in accordance with TANSCHÉ*
- d. *Syllabus of Core, Core Choice, Discipline Specific Elective, Generic Elective Courses of Semester III of M.A Tamil for (2022-2023) batch and onwards*

*as recommended by the Board of Studies in Tamil and moved by the Chairman **Dr S Ramalakshmi** in the meeting and the same be approved as given in **Annexure B***

RESOLUTION NO.08/23/04

To consider and approve to follow the I semester syllabus of Sanskrit for all Under Graduate Programmes of (2023-2024) batch and onwards in accordance with TANSCHÉ

*It is resolved to follow I semester syllabus of Sanskrit for all Under Graduate Programmes of (2023-2024) batch and onwards in accordance with TANSCHÉ as moved by **Dr R Vijayalakshmi** in the meeting and the same be approved as given in **Annexure C***

RESOLUTION NO.08/23/05

To consider and approve the

- a. Syllabus of Part II - English for all Undergraduate programmes, Part III

Core and Allied Courses for Semester I of B.A English for (2023-2024) batch and onwards in accordance with TANSCHÉ

- b. Syllabus of Part III Core and Allied Courses, Part IV Generic Elective Course for Semester III of B.A English for (2022-2023) batch onwards
- c. Syllabus of Core and Discipline Specific Elective Course of Semester I of M.A English for (2023-2024) batch and onwards in accordance with TANSCHÉ
- d. Syllabus of Core, Core Choice, Discipline Specific Elective, Generic Elective Courses of Semester III of M.A English for (2022-2023) batch and onwards

Considered and approved the

- a. *Syllabus of Part II - English for all Undergraduate programmes, Part III Core and Allied Courses for Semester I of B.A English for (2023-2024) batch and onwards in accordance with TANSCHÉ*
- b. *Syllabus of Part III Core and Allied Courses, Part IV Generic Elective Course for Semester III of B.A English for (2022-2023) batch and onwards*
- c. *Syllabus of Core and Discipline Specific Elective Course of Semester I of M.A English for (2023-2024) batch and onwards in accordance with TANSCHÉ*
- d. *Syllabus of Core, Core Choice, Discipline Specific Elective, Generic Elective Courses of Semester III of M.A English for (2022-2023) batch and onwards*

*as recommended by the Board of Studies in English and moved by the UG Chairman **Dr S Jayashree Agarwal** & PG Chairman **Dr P Urmila** in the meeting and the same be approved as given in **Annexure D***

RESOLUTION NO.08/23/06

To consider and approve the

- a. Syllabus of Part IV - Value Education Course (23UGVE) for all Undergraduate programmes, Part III Core and Allied Courses for Semester I of B.S.W for (2023-2024) batch and onwards in accordance with TANSCHÉ
- b. Syllabus of Part III Core and Allied Courses, Part IV Generic Elective Course for Semester III of B.S.W for (2022-2023) batch and onwards
- c. Syllabus of Core and Discipline Specific Elective Course of Semester I of M.S.W for (2023-2024) batch and onwards in accordance with TANSCHÉ
- d. Syllabus of Core, Core Choice, Discipline Specific Elective, Generic Elective Courses of Semester III of M.S.W for (2022-2023) batch and onwards

Resolved to approve the

- a. *Syllabus of Part IV - Value Education Course (23UGVE) for all Undergraduate programmes, Part III Core and Allied Courses for Semester I of B.S.W for (2023-2024) batch and onwards in accordance with TANSCHÉ*
- b. *Syllabus of Part III Core and Allied Courses, Part IV Generic Elective Course for Semester III of B.S.W for (2022-2023) batch and onwards*
- c. *Syllabus of Core and Discipline Specific Elective Course of Semester I of M.S.W for (2023-2024) batch and onwards in accordance with TANSCHÉ*
- d. *Syllabus of Core, Core Choice, Discipline Specific Elective, Generic Elective*

Courses of Semester III of M.S.W for (2022-2023) batch and onwards

*as recommended by the Board of Studies in Social Work and moved by the Head of the Department **Dr G Mettilda Bhuvaneswari** in the meeting and the same be approved as given in **Annexure E***

RESOLUTION NO.08/23/07

To consider and approve the Syllabus of

- a. Part III Core and Allied Courses for Semester I of BBA for (2023-2024) batch and onwards in accordance with TANSCHÉ
- b. Part III Core and Allied Courses, Part IV Generic Elective Course for Semester III of BBA for (2022-2023) batch and onwards
- c. Part IV Ability Enhancement Compulsory Course III- Innovation and Entrepreneurship in the Second semester for Science students and III Semester for Arts students for (2022-2023) batch and onwards

Resolved to approve the Syllabus of

- a. *Part III Core and Allied Courses for Semester I of BBA for (2023-2024) batch and onwards in accordance with TANSCHÉ*
- b. *Part III Core and Allied Courses, Part IV Generic Elective Course for Semester III of BBA for (2022-2023) batch and onwards*
- c. *Part IV Ability Enhancement Compulsory Course III- Innovation and Entrepreneurship in the Second semester for Science students and III Semester for Arts students for (2022-2023) batch and onwards*

*as recommended by the Board of Studies in Business Administration and moved by the Chairman **Dr J Tamil Selvi** in the meeting and the same be approved as given in **Annexure F***

RESOLUTION NO.08/23/08

To consider and approve the

- a. Part III Core and Allied Courses for Semester I of B.Com for (2023-2024) batch and onwards in accordance with TANSCHÉ
- b. Syllabus of Part III Core and Allied Courses, Part IV Generic Elective Course for Semester III of B.Com for (2022-2023) batch and onwards
- c. Part III Core and Allied Courses for Semester I of B.Com(CA) for (2023-2024) batch and onwards in accordance with TANSCHÉ
- d. Syllabus of Part III Core and Allied Courses, Part IV Generic Elective Course for Semester III of B.Com(CA) for (2022-2023) batch and onwards
- e. Syllabus of Core and Discipline Specific Elective Course of Semester I of M.Com for (2023-2024) batch and onwards in accordance with TANSCHÉ
- f. Syllabus of Core, Core Choice, Discipline Specific Elective, Generic Elective Courses of Semester III of M.Com for (2022-2023) batch and onwards

Considered and approved the

- a. *Part III Core and Allied Courses for Semester I of B.Com for (2023-2024) batch and onwards in accordance with TANSCHÉ*

- b. Syllabus of Part III Core and Allied Courses, Part IV Generic Elective Course for Semester III of B.Com for (2022-2023) batch and onwards*
- c. Part III Core and Allied Courses for Semester I of B.Com (CA) for (2023-2024) batch and onwards in accordance with TANSCHÉ*
- d. Syllabus of Part III Core and Allied Courses, Part IV Generic Elective Course for Semester III of B.Com(CA) for (2022-2023) batch and onwards*
- e. Syllabus of Core and Discipline Specific Elective Course of Semester I of M.Com for (2023-2024) batch and onwards in accordance with TANSCHÉ*
- f. Syllabus of Core, Core Choice, Discipline Specific Elective, Generic Elective Courses of Semester III of M.Com for (2022-2023) batch and onwards*

*as recommended by the Board of Studies in Commerce and moved by the Chairman **Dr N Savithri** in the meeting and the same be approved as given in **Annexure G***

RESOLUTION NO.08/23/09

To consider and approve the

- a. Syllabus of Part III Core and Allied Courses for Semester I of B.Sc Mathematics for (2023-2024) batch and onwards in accordance with TANSCHÉ*
- b. Syllabus of Part III Core and Allied Courses, Part IV Generic Elective Course for Semester III of B.Sc Mathematics for (2022-2023) batch and onwards*
- c. Syllabus of Core and Discipline Specific Elective Courses of Semester I of M. Sc Mathematics for (2023-2024) batch and onwards in accordance with TANSCHÉ*
- d. Syllabus of Core, Core Choice, Discipline Specific Elective, Generic Elective Courses of Semester III of M.Sc. Mathematics for (2022-2023) batch and onwards*

Resolved to approve the

- a. Syllabus of Part III Core and Allied Courses for Semester I of B.Sc Mathematics for (2023-2024) batch and onwards in accordance with TANSCHÉ*
- b. Syllabus of Part III Core and Allied Courses, Part IV Generic Elective Course for Semester III of B.Sc Mathematics for (2022-2023) batch and onwards*
- c. Syllabus of Core and Discipline Specific Elective Courses of Semester I of M. Sc Mathematics for (2023-2024) batch and onwards in accordance with TANSCHÉ*
- d. Syllabus of Core, Core Choice, Discipline Specific Elective, Generic Elective Courses of Semester III of M.Sc. Mathematics for (2022-2023) batch and onwards*

*as recommended by the Board of Studies in Mathematics and moved by the Chairman **Dr S Premalatha** in the meeting and the same be approved as given in **Annexure H***

RESOLUTION NO.08/23/10

To consider and approve the

- a. Syllabus of Part III Core and Allied Courses for Semester I of B.Sc Physics for (2023-2024) batch and onwards in accordance with TANSCHÉ
- b. Syllabus of Part III Core and Allied Courses, Part IV Generic Elective Course for Semester III of B.Sc Physics for (2022-2023) batch and onwards
- c. Syllabus of Core and Discipline Specific Elective Course of Semester I of M. Sc Physics for (2023-2024) batch and onwards in accordance with TANSCHÉ
- d. Syllabus of Core, Core Choice, Discipline Specific Elective, Generic Elective Courses of Semester III of M.Sc. Physics for (2022-2023) batch and onwards

Considered and approved the

- a. *Syllabus of Part III Core and Allied Courses for Semester I of B.Sc Physics for (2023-2024) batch and onwards in accordance with TANSCHÉ*
- b. *Syllabus of Part III Core and Allied Courses, Part IV Generic Elective Course for Semester III of B.Sc Physics for (2022-2023) batch and onwards*
- c. *Syllabus of Core and Discipline Specific Elective Course of Semester I of M. Sc Physics for (2023-2024) batch and onwards in accordance with TANSCHÉ*
- d. *Syllabus of Core, Core Choice, Discipline Specific Elective, Generic Elective Courses of Semester III of M.Sc. Physics for (2022-2023) batch and onwards*

*as moved by the Chairman **Dr G Maheswari** in the meeting and the same be approved as given in **Annexure I***

RESOLUTION NO.08/23/11

To consider and approve the

- a. Syllabus of Part III Core and Allied Courses for Semester I of B.Sc Chemistry for (2023-2024) batch and onwards in accordance with TANSCHÉ
- b. Syllabus of Part III Core and Allied Courses, Part IV Generic Elective Course for Semester III of B.Sc Chemistry for (2022-2023) batch and onwards
- c. Syllabus of Core and Discipline Specific Elective Course of Semester I of M. Sc Chemistry for (2023-2024) batch and onwards in accordance with TANSCHÉ
- d. Syllabus of Core, Core Choice, Discipline Specific Elective, Generic Elective Courses of Semester III of M.Sc. Chemistry for (2022-2023) batch and onwards

*CCCD Director & Special Invitee **Dr Rajesh Kannan** suggested to change the Allied Course-I - 23UCH1AC1B - Botany as Biology and Allied Course-II- 23UCH1AC2BP -Botany (P) as Biology (P) with due changes in course content for the batch (2023-2024) and onwards*

Resolved to approve the

- a. *Syllabus of Part III Core and Allied Courses for Semester I of B.Sc Chemistry for (2023-2024) batch and onwards in accordance with TANSCHÉ*
- b. *Syllabus of Part III Core and Allied Courses, Part IV Generic Elective Course for Semester III of B.Sc Chemistry for (2022-2023) batch and onwards*
- c. *Syllabus of Core and Discipline Specific Elective Course of Semester I of M. Sc Chemistry for (2023-2024) batch and onwards in accordance with TANSCHÉ*
- d. *Syllabus of Core, Core Choice, Discipline Specific Elective, Generic Elective Courses of Semester III of M.Sc. Chemistry for (2022-2023) batch and onwards*

*as recommended by the Board of Studies in Chemistry and moved by the Chairman **Dr P. Pungayee @ Amirtham** in the meeting and the same be approved as given in **Annexure J***

RESOLUTION NO.08/23/12

To consider and approve the

- a. Syllabus of Part III Core and Allied Courses for Semester I of B.Sc Computer Science for (2023-2024) batch and onwards in accordance with TANSCHÉ
- b. Syllabus of Part III Core and Allied Courses, Part IV Generic Elective Course for Semester III of B.Sc Computer Science for (2022-2023) batch and onwards
- c. Syllabus of Part III Core and Allied Courses for Semesters II to Semester VI of B.Sc Computer Science with Cognitive Systems for (2022-2023) batch and onwards
- d. Syllabus of Part III Core and Allied Courses for Semesters IV to VI of B.Sc Computer Science with Cognitive Systems for (2021-2022) batch and onwards
- e. Syllabus of Core and Discipline Specific Elective Course of Semester I of M.Sc Computer Science for (2023-2024) batch and onwards in accordance with TANSCHÉ
- f. Syllabus of Core, Core Choice, Discipline Specific Elective, Generic Elective Courses of Semester III of M.Sc. Computer Science for (2022-2023) batch and onwards

*CCCD Director & Special Invitee **Dr Rajesh Kannan** suggested to teach theory first and then conduct practical for the Generic Elective Course Office Automation (P)- 22UCS3GEC1P since it is offered to other major students*

Resolved to approve the

- a. *Syllabus of Part III Core and Allied Courses for Semester I of B.Sc Computer Science for (2023-2024) batch and onwards in accordance with TANSCHÉ*
- b. *Syllabus of Part III Core and Allied Courses, Part IV Generic Elective Course for Semester III of B.Sc Computer Science for (2022-2023) batch and onwards*
- c. *Syllabus of Part III Core and Allied Courses for Semesters II to Semester VI of B.Sc Computer Science with Cognitive Systems for (2022-2023) batch and onwards*
- d. *Syllabus of Part III Core and Allied Courses for Semesters IV to VI of B.Sc*

Computer Science with Cognitive Systems for (2021-2022) batch and onwards

- e. Syllabus of Core and Discipline Specific Elective Course of Semester I of M.Sc Computer Science for (2023-2024) batch and onwards in accordance with TANSCHÉ*
- f. Syllabus of Core, Core Choice, Discipline Specific Elective, Generic Elective Courses of Semester III of M.Sc. Computer Science for (2022-2023) batch and onwards*

*as recommended by the Board of Studies in Computer Science and moved by the Chairman **Dr Sinthu Janita Prakash** in the meeting and the same be approved as given in **Annexure K***

RESOLUTION NO.08/23/13

To consider and approve the

- a. Syllabus of Part III Core and Allied Courses for Semester I of B.C.A for (2023-2024) batch and onwards in accordance with TANSCHÉ*
- b. Syllabus of Part III Core and Allied Courses, Part IV Generic Elective Course for Semester III of B.C.A for (2022-2023) batch and onwards*

Resolved to approve the

- a. Syllabus of Part III Core and Allied Courses for Semester I of B.C.A for 2023-2024) batch and onwards in accordance with TANSCHÉ*
- b. Syllabus of Part III Core and Allied Courses, Part IV Generic Elective Course for Semester III of B.C.A for (2022-2023) batch and onwards*

*as recommended by the Board of Studies in Computer Applications and moved by the Chairman **Dr Merlin Packiam** in the meeting and the same be approved as given in **Annexure L**.*

RESOLUTION NO.08/23/14

To consider and approve the

- a. Syllabus of Part III Core and Allied Courses for Semester I of B.Sc Information Technology for (2023-2024) batch and onwards in accordance with TANSCHÉ*
- b. Syllabus of Part III Core and Allied Courses, Part IV Generic Elective Course for Semester III of B.Sc Information Technology for (2022-2023) batch and onwards*

Considered and approved the

- a. Syllabus of Part III Core and Allied Courses for Semester I of B.Sc Information Technology for (2023-2024) batch and onwards in accordance with TANSCHÉ*
- b. Syllabus of Part III Core and Allied Courses, Part IV Generic Elective Course for Semester III of B.Sc Information Technology for (2022-2023) batch and onwards*

*as recommended by the Board of Studies in Information Technology and moved by the Chairman **Dr M Parveen** in the meeting and the same be approved as given in **Annexure M***

RESOLUTION NO.08/23/15

To consider and approve the

- a. Syllabus of Part III Core and Allied Courses for Semester I of B.Sc Microbiology for (2023-2024) batch and onwards in accordance with TANSCHÉ
- b. Syllabus of Part III Core and Allied Courses, Part IV Generic Elective Course for Semester III of B.Sc Microbiology for (2022-2023) batch and onwards
- c. Syllabus of Core and Discipline Specific Elective Course of Semester I of M. Sc Microbiology for (2023-2024) batch and onwards in accordance with TANSCHÉ
- d. Syllabus of Core, Core Choice, Discipline Specific Elective, Generic Elective Courses of Semester III of M.Sc. Microbiology for (2022-2023) batch and onwards

Resolved to approve the

- a. Syllabus of Part III Core and Allied Courses for Semester I of B.Sc Microbiology for (2023-2024) batch and onwards in accordance with TANSCHÉ*
- b. Syllabus of Part III Core and Allied Courses, Part IV Generic Elective Course for Semester III of B.Sc Microbiology for (2022-2023) batch and onwards*
- c. Syllabus of Core and Discipline Specific Elective Course of Semester I of M. Sc Microbiology for (2023-2024) batch and onwards in accordance with TANSCHÉ*
- d. Syllabus of Core, Core Choice, Discipline Specific Elective, Generic Elective Courses of Semester III of M.Sc. Microbiology for (2022-2023) batch and onwards*

*as recommended by the Board of Studies in Microbiology and moved by the Chairman **Dr B Thamilmaraivelvi** in the meeting and the same be approved as given in **Annexure N***

RESOLUTION NO.08/23/16

To consider and approve the

- a. Syllabus of Part III Core and Allied Courses for Semester I of B.Sc Biotechnology for (2023-2024) batch and onwards in accordance with TANSCHÉ
- b. Syllabus of Part III Core and Allied Courses, Part IV Generic Elective Course for Semester III of B.Sc Biotechnology for (2022-2023) batch

*University Nominee **Dr. Sivasudha** and CCCD Director & Special Invitee **Dr Rajesh Kannan** suggested to change the Core Course I - 23UBT1CC1 Cell, Molecular and Developmental Biology as Cell and Molecular Biology for (2023-2024) batch and onwards*

Considered and approved the

- a. Syllabus of Part III Core and Allied Courses for Semester I of B.Sc Biotechnology for (2023-2024) batch and onwards in accordance with*

TANSCHÉ

*b. Syllabus of Part III Core and Allied Courses, Part IV Generic Elective Course for Semester III of B.Sc Biotechnology for (2022-2023) batch and onwards as recommended by the Board of Studies in Biotechnology and moved by the Chairman **Dr R Rameswari** in the meeting and the same be approved as given in **Annexure O***

RESOLUTION NO.08/23/17

To consider and approve the

- a. Syllabus of Part III Core and Allied Courses for Semester I of B.Sc Nutrition & Dietetics for (2023-2024) batch and onwards in accordance with TANSCHÉ
- b. Syllabus of Part III Core and Allied Courses, Part IV Generic Elective Course for Semester III of B.Sc Nutrition & Dietetics for (2022-2023) batch and onwards
- c. Syllabus of Core and Discipline Specific Elective Course of Semester I of M. Sc Food Service Management and Dietetics for (2023-2024) batch and onwards in accordance with TANSCHÉ
- d. Syllabus of Core, Core Choice, Discipline Specific Elective, Generic Elective Courses of Semester III of M.Sc. Food Service Management and Dietetics for (2022-2023) batch and onwards

Resolved to approve the

- a. *Syllabus of Part III Core and Allied Courses for Semester I of B.Sc Nutrition & Dietetics for (2023-2024) batch and onwards in accordance with TANSCHÉ*
- b. *Syllabus of Part III Core and Allied Courses, Part IV Generic Elective Course for Semester III of B.Sc Nutrition & Dietetics for (2022-2023) batch and onwards*
- c. *Syllabus of Core and Discipline Specific Elective Course of Semester I of M. Sc Food Service Management and Dietetics for (2023-2024) batch and onwards in accordance with TANSCHÉ*
- d. *Syllabus of Core, Core Choice, Discipline Specific Elective, Generic Elective Courses of Semester III of M.Sc. Food Service Management and Dietetics for (2022-2023) batch and onwards*

*as recommended by the Board of Studies in Food Service Management and Dietetics and moved by the Chairman **Ms B Thanuja** in the meeting and the same be approved as given in **Annexure P***

RESOLUTION NO.08/23/18

Matters relating to the Controller of Examinations

- a. Components for the Internal marks for the theory and practical courses for (2023-2024) batch and onwards
- b. Conduct of End Semester Examinations and the Declaration of Result

Approval was given for

- a. the components for the Internal marks for the theory and practical courses for (2023-2024) batch and onwards
- b. Conduct of End Semester Examinations and the Declaration of Result of November 2022 and April 2023 were confirmed

as given in **Annexure Q**

Any other matter with the permission of the Chair

Academic Expert **Prof. Senthilnathan** suggested to verify the working of all the weblinks given in the curriculum.

Academic Expert **Prof Karunakaran** suggested to

- i) Include the courses taken from NPTEL in to the curriculum
- ii) Inclusion of Ideation & Innovation as Value Added Courses
- iii) Design of the measurement of outcomes
- iv) Measured Outcomes of implementation of LOCF

Chairman of the Academic Council and the Principal **Dr V Sujatha** replied that adding NPTEL into the curriculum will be taken into consideration and Innovation and Entrepreneurship is offered as an Ability Enhancement Compulsory Course to all the Undergraduate students.

Controller of Examinations **Ms V Ramya** responded that Course Outcome Attainment for a particular course is calculated from the Direct Assessment and the attainment status is based on three level rubrics. Programme Outcome Attainment is measured from CO attainment of each course and hence Attainment Level for all POs of the Programme is identified. The outcomes are measured through the following rubrics:

PO Attainment Rubrics

<u>PO Attainment Range</u>	<u>Level</u>
0 - 1	Poor
1.1 - 2	Good
2.1 - 3	Excellent

Attainment level of all the course outcomes and programme outcomes indicates the attainment status of the programme.

Indirect Assessment based on Employer Survey, Alumni Survey and Exit Survey is yet to be started.

Course Outcome/ Programme Outcome measured for 2019-2022 UG Batch and

2019-2021, 2020-2022 PG Batch for all the programmes shows that the levels designed for attainment has been achieved

*Student Representative **Ms Harini** of III BBA, gave the suggestion to offer the Value Added Course- Quantitative Aptitude as an Elective course, since it would be helpful for the students who prepare for competitive exams. She also gave the suggestion to offer Personal Finance as a Value Added Course, which will make the students learn how to handle and expand their monetary resources.*

-sd-

Dr V Sujatha

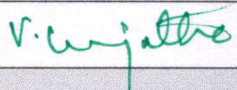


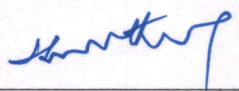
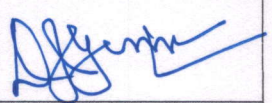

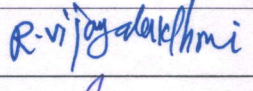
(Chairman of the Academic Council & The Principal)

CAUVERY COLLEGE FOR WOMEN (Autonomous)

Affiliated to Bharathidasan University
Accredited (3rd Cycle) with 'A' grade by NAAC
ISO 9001:2015 Certified
Tiruchirapalli-620018

THE MINUTES OF THE EIGHTH MEETING OF THE ACADEMIC COUNCIL

The eighth meeting of the Academic Council was held on 15th June 2023, Thursday at 11.00 a.m. in the Trust Meeting Hall under the Chairmanship of **Dr. V. Sujatha**, Principal. The following members were present.

S.No	Members	Designation	Signature
	Chairman		
1	Dr. V. Sujatha	Principal, Cauvery College for Women (A)	
	University Nominees		
2	Dr. P. Muruganandam	Professor & Head, Dept. of Physics, Bharathidasan University, Trichy.	
3	Dr. T. Sivasudha	Professor, Dept. of Environmental Biotechnology, Bharathidasan University, Trichy.	
4	Dr. R. Kalidasan	Professor & Head, Dept. of Physical Education & Yoga, Bharathidasan University, Trichy.	Attended Online
	Academic Experts		
5	Dr. S. Senthilnathan	Director (FAC), UGC-HRDC, Department of Educational Technology, Bharathidasan University, Trichy.	
6	Dr. K. Karunakaran	Chief Executive Officer, Hindustan Educational Institutions, Coimbatore.	Attended Online
7	Dr. D. I. George Amalarethinam	Vice Principal, Associate Professor of Computer Science, Jamal Mohamed College (A), Trichy.	
	Industry Expert		
8	Mr. Derrick Alex	AGM Operations, V Dart Technologies. Pvt. Ltd.	
	Special Invitees		
9	Dr V. Rajesh Kannan	Director Council for College & Curriculum Development Bharathidasan University, Trichy	
10	Dr. R. Vijayalakshmi	Hindi (Guest Lecturer)	
11	Dr. R. Subha	IIC Convener	

12	Dr. A Bhuvaneswari	SPoC, NPTEL	<i>A. Bhuvaneswari</i> 15/6/23
Internal Members			
Heads of the Departments			
13	Dr. S. Ramalakshmi	Vice Principal & HoD of Tamil	<i>S. Ramalakshmi</i> 15/6/23
14	Dr. P. Urmila	HoD of English (PG)	<i>P. Urmila</i> 15/6/23
15	Dr. S. Jayashree Agarwal	HoD of English (UG)	<i>S. Jayashree Agarwal</i> 15/6/23
16	Dr. S. Metilda Buvaneswari	HoD of Social Work	<i>S. Metilda Buvaneswari</i> 15/06/2023
17	Dr. J. Tamil Selvi	HoD of BBA	<i>J. Tamil Selvi</i> 15/6/23
18	Dr. N. Savithri	Dean of Arts & HoD of Commerce	<i>N. Savithri</i> 15/6/23
19	Dr. S. Premalatha	HoD of Mathematics	<i>S. Premalatha</i> 15/6/23
20	Dr. G. Maheswari	HoD of Physics	<i>G. Maheswari</i> 15/6/23
21	Dr. P. Pungayee @ Amirtham	HoD of Chemistry	<i>P. Pungayee @ Amirtham</i> 15/6/23
22	Dr. R. Merlin Packiam	HoD of Computer Applications	<i>R. Merlin Packiam</i> 15/6/23
23	Dr. M. Parveen	HoD of Information Technology	<i>M. Parveen</i> 15/6/23
24	Dr. B. Tamilmaraiselvi	HoD of Microbiology	<i>B. Tamilmaraiselvi</i> 15/6/23
25	Dr. R. Rameshwari	HoD of Biotechnology	<i>R. Rameshwari</i> 15/6/23
26	Ms.B. Thanuja	HoD of Food Service Management & Dietetics	<i>Ms.B. Thanuja</i> 15/06/2023
Senior Faculty in the College by Rotation			
27	Dr. S. Shameem	Vice Principal	<i>S. Shameem</i> 15/6/23
28	Dr. G. Kanaga	Dean of Alumni Relations	<i>G. Kanaga</i> 15/6/23
29	Dr. V. Ramya	Controller of Examinations	<i>V. Ramya</i> 15/6/23
30	Dr. N. Sivapriya	Deputy Controller of Examinations	<i>N. Sivapriya</i> 15/6/23
31	Dr. B Baby Shakila	Director of Physical Education	<i>B. Baby Shakila</i> 15/6/23
32	Ms. N. Girubagari	Head in Charge, Computer Science	<i>N. Girubagari</i> 15/6/23
33	Dr. H. Krishnaveni	Course Coordinator, B.Sc Computer Science with Cognitive Systems	<i>H. Krishnaveni</i> 15/6/2023
Student Representatives			
34	Ms. K. Nikitha	II M.Sc FSM & D	<i>K. Nikitha</i> 15/6/23
35	Ms. G. Harini	III BBA	<i>G. Harini</i> 15/6/23
Member Secretary			
36	Dr. V. Sinthu Janita Prakash	Dean of Science, IQAC Coordinator, HoD of Computer Science	<i>V. Sinthu Janita Prakash</i> 15/6/23

VIII Meeting of the Academic Council



cauvery college is presenting

Accreditations

- III Cycle - "A" Grade with CGPA 3.41 out of 4
- Extension of NAAC Accreditation Status up to 31st Dec 2024
- 82nd rank in the Nationwide, 35th rank in the State level and 3rd in the District level amongst top most colleges in India by EW-INDIA Higher Education Rankings 2022-2023
- Institution has also competed with other institutions in ATAL Ranking of institutions on innovation achievements and has been certified under the band "Performer" under Non-Technical Category

Cauvery College for Women (Autonomous), Technopark, Salem

V.Sujatha Principal

cauvery college

Dr.P.Saranya Mathemat...

15 others

11:04 AM | ACADEMIC COUNCIL 15.06.2023

cauvery college is presenting

Grants/Financial Assistance Received from Government

Students applied for the Government Scholarships have received a sum of Rs.33,95,400/- by the various scholarships extended by the Government.

Sl.No	Particulars	Total No	Amount Rs
1	AFSAI Grant Scholarship	108	3,86,674
2	Technical Scholarship Grant	77	4,32,000
3	Swachh Shiksha Scholarship Scheme	239	45,70,000
4	SAIT Single Girl Child Scholarship	19	5,55,000
5	SAIT Double Girl Child Scholarship	3	50,000
6	Redirection Scholarship	21	2,30,000
7	Scholarship Scheme/Practical Plans Scheme/Other	322	
	Total		Rs.33,95,400

Cauvery College for Women (Autonomous), Technopark, Salem

V.Sujatha Principal

cauvery college

Dr.P.Saranya Mathem...

4 others

DR. KARUNAKARAN ...

You

11:12 AM | ACADEMIC COUNCIL 15.06.2023

cauvery college is presenting

Grants/Financial Assistance Received from Government

Students applied for the Government Scholarships have received a sum of Rs.33,95,400/- by the various scholarships extended by the Government.

Sl.No	Particulars	Total No	Amount Rs
1	AFSAI Grant Scholarship	108	3,86,674
2	Technical Scholarship Grant	77	4,32,000
3	Swachh Shiksha Scholarship Scheme	239	45,70,000
4	SAIT Single Girl Child Scholarship	19	5,55,000
5	SAIT Double Girl Child Scholarship	3	50,000
6	Redirection Scholarship	21	2,30,000
7	Scholarship Scheme/Practical Plans Scheme/Other	322	
	Total		Rs.33,95,400

Cauvery College for Women (Autonomous), Technopark, Salem

V.Sujatha Principal

cauvery college

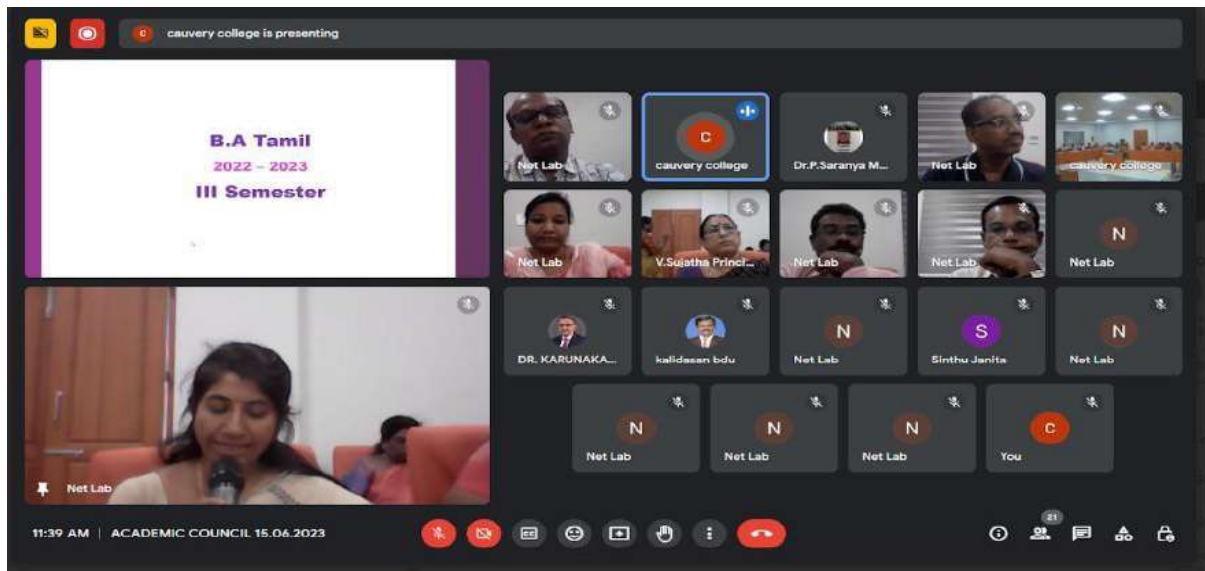
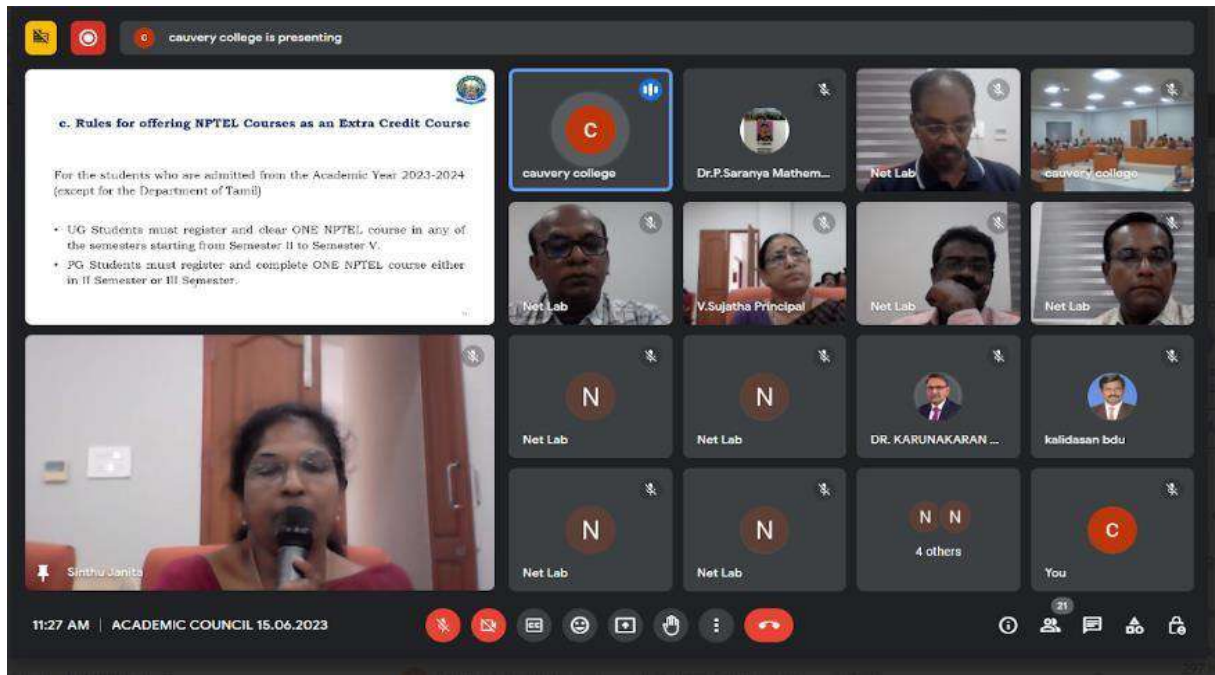
Dr.P.Saranya Mathem...

4 others

DR. KARUNAKARAN ...

You

11:12 AM | ACADEMIC COUNCIL 15.06.2023



cauvery college is presenting

**Presentation of the Minutes
Passed by the
Board of Studies of Sanskrit**

**By
Dr. R. Vijayalakshmi**

Page No: 158

cauvery college

Dr.P.Saranya Mathem...

Net Lab

cauvery college

kalidasaan bho...

Net Lab

Net Lab

V.Sujatha Principal

Net Lab

Net Lab

Net Lab

DR. KARUNAKARAN ...

Net Lab

Sinthu Janita

4 others

You

11:42 AM | ACADEMIC COUNCIL 15.06.2023

cauvery college is presenting

cauvery college

Dr.P.Saranya Mat...

Net Lab

cauvery college

Net Lab

Net Lab

V.Sujatha Principal

Net Lab

Net Lab

9 others

You

11:45 AM | ACADEMIC COUNCIL 15.06.2023

cauvery college is presenting

cauvery college

Dr.P.Saranya Mat...

Net Lab

cauvery college

Net Lab

Net Lab

V.Sujatha Principal

Net Lab

Net Lab

9 others

You

11:46 AM | ACADEMIC COUNCIL 15.06.2023

cauvery college is presenting

B.S.W-SOCIAL WORK

2022 – 2023

III Semester

Net Lab

cauvery college

Dr.P.Saranya Mathem...

Net Lab

cauvery college

Net Lab

Net Lab

12 others

You

11:49 AM | ACADEMIC COUNCIL 15.06.2023

cauvery college is presenting

Business Administration

2022 – 2023

III Semester

Net Lab

cauvery college

Dr.P.Saranya Mathem...

Net Lab

cauvery college

Net Lab

Net Lab

12 others

You

11:53 AM | ACADEMIC COUNCIL 15.06.2023

cauvery college is presenting

Cauvery College for Women (Autonomous)

Nationally Accredited 4 (3rd Cycle) by NAAC
ISO 9001:2015 Certified
Autonomous Degree
Trichirappalli-620018

PG & Research Department of Commerce

Board of Studies Meet – VIII

Date : 03.06.2023

Time: 11.00 a.m

Net Lab

cauvery college

Dr.P.Saranya Mathem...

Net Lab

cauvery college

Net Lab

V.Sujatha Principal

Net Lab

Net Lab

kalidasaan bdu

Net Lab

N

DR. KARUNAKARAN ...

Net Lab


Sinthu Janita

4 others

You

11:57 AM | ACADEMIC COUNCIL 15.06.2023

cauvery college is presenting









Cauvery College for Women (Autonomous)
 Nationally Accredited (3rd Cycle) by NAAC
 ISO 9001:2015 Certified
 Annamalai Nagar
 Tiruchirappalli - 620018

PG & Research Department of Mathematics

Board of Studies Meet- VIII


Date : 07.06.2023
 Time : 10.30 A.M.



12:00 PM | ACADEMIC COUNCIL 15.06.2023

cauvery college is presenting








Cauvery College for Women (Autonomous)
 Nationally Accredited (3rd Cycle) by NAAC
 ISO 9001:2015 Certified
 Annamalai Nagar
 Tiruchirappalli - 620018

PG & Research Department of Physics


Board of Studies Meet- VIII

Date : 07.06.2023
 Time : 2.00 p.m.

12:04 PM | ACADEMIC COUNCIL 15.06.2023

cauvery college is presenting



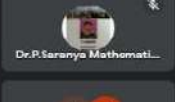



Cauvery College for Women (Autonomous)
 Nationally Accredited (3rd Cycle) by NAAC
 ISO 9001:2015 Certified
 Annamalai Nagar
 Tiruchirappalli - 620018

PG Department of Chemistry

Board of Studies Meet- VIII

Date : 07.06.2023
 Time : 10.30 a.m.

12:07 PM | ACADEMIC COUNCIL 15.06.2023

cauvery college is presenting



Cauvery College for Women (Autonomous)
 Nationally Accredited (3rd Cycle) by NAAC
 ISO 9001:2015 Certified
 Annamalai Nagar, Tiruchirappalli - 620018

PG & Research Department of Computer Science

Special Board of Studies Meet- III

Date : 15.12.2022
 Time : 10.30 a.m.




Siritha Janita



12:11 PM | ACADEMIC COUNCIL 15.06.2023

cauvery college is presenting




Cauvery College for Women (Autonomous)
 Nationally Accredited (3rd Cycle) by NAAC
 ISO 9001:2015 Certified
 Annamalai Nagar, Tiruchirappalli - 620018


Department of Computer Applications

Board of Studies Meeting - VIII

Date : 05.06.2023
 Time : 10:30 AM



Net Lab



12:18 PM | ACADEMIC COUNCIL 15.06.2023

cauvery college is presenting



Cauvery College for Women (Autonomous)
 Nationally Accredited (3rd Cycle) by NAAC
 ISO 9001:2015 Certified
 Annamalai Nagar, Tiruchirappalli - 620018

Department of Information Technology

Board of Studies Meet- VIII

Date : 08.06.2023
 Time : 2.00 p.m.




Net Lab



12:21 PM | ACADEMIC COUNCIL 15.06.2023

cauvery college is presenting




Cauvery College for Women (Autonomous)
 Nationally Accredited (3rd Cycle) by NAAC
 ISO 9001:2015 Certified
 Autonomous Degree
 Tiruchirappalli-620018


PG & Research Department of Microbiology

Board of Studies Meet- VIII

Date : 07.06.2023
 Time : 10.30 a.m.



Be a Woman



Net Lab

You


cauvery college

Dr.P.Saranya Mathemat...

16 others

12:23 PM | ACADEMIC COUNCIL 15.06.2023

cauvery college is presenting





Cauvery College for Women (Autonomous)
 Nationally Accredited (3rd Cycle) by NAAC
 ISO 9001:2015 Certified
 Autonomous Degree
 Tiruchirappalli-620018

Department of Biotechnology

Board of Studies Meet- VIII

Date : 05.06.2023
 Time : 9.30 a.m.





Dr.P.Saranya Mathematics

cauvery college

V.Sujatha Principal

Net Lab

cauvery college

Net Lab

Net Lab

12 others

You

12:26 PM | ACADEMIC COUNCIL 15.06.2023

cauvery college is presenting

**Presentation of the Minutes Passed
 by
 Board of Studies of
 Food Service Management &
 Dietetics
 By
 Ms.B.Thanuja**

Page No: 1312



Dr.P.Saranya Mathematics

cauvery college

V.Sujatha Principal

Net Lab

cauvery college

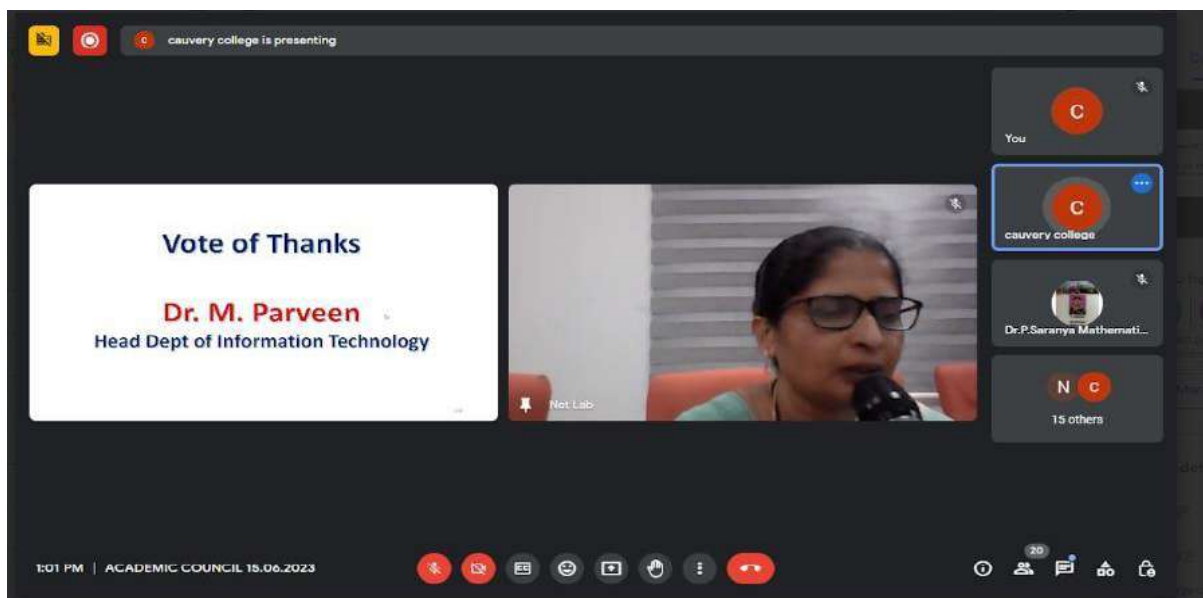
Net Lab

Net Lab

11 others

You

12:34 PM | ACADEMIC COUNCIL 15.06.2023



ANNEXURE A

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)
2023 – 2024 VALUE ADDED COURSES
Newly added Courses

S.NO	COURSE CODE	COURSE TITLE	Offered by
1	23VATA01	Suvadiyiyal	Tamil
2	23VATA02	Pani vaaippukkaana Thervugal	Tamil
3	23VATA03	Sutralaviyal	Tamil
4	23VATA04	Tamilil Sirar Illakkiam	Tamil
5	23VAEN01	Foundation Course for English Literature	English
6	23VAEN02	Creative writing	English
7	23VAEN03	English for competitive Examinations	English
8	23 VASW01	Foundations of family Life Management	Social Work
9	23 VASW02	Introduction to stress Management	Social Work
10	23VABA01	Office Management Skills	BBA
11	23VABA02	Overview of Intellectual Property Rights	BBA
12	23VACO01P	Art of Aari and Hand Embroidery – Advanced Level	Commerce
13	23VACO02P	Tally ERP 9 with GST	Commerce
14	23 VAMA01	Vedic Mathematics – II	Maths
15	23VAMA02	Quantitative Aptitude – II	Maths
16	23VAPH01	Trouble shooting of domestic appliances	Physics
17	23VAPH02	Domestic Electrical system	Physics
18	23VACH01	Entrepreneurial skills in Chemistry	Chemistry
19	23VACH02	Software Application in Chemistry	Chemistry
20	23VACA01P	Web page Development	BCA
21	23VACA02	Testing for web applications	BCA
22	23VACS01	Programming in C	Computer Science
23	23VACS01	Digital Marketing	Computer Science
24	23VAIT01P	MS Access	IT
25	23VAIT02P	Introduction to Power BI	IT
26	23VAMB01	Kitchen Gardening	Microbiology
27	23VAMB02	Herbal Remedies	Microbiology
28	23VABT01P	Neutraceuticals	Biotechnology
29	23VABT02P	Mushroom Cultivation	Biotechnology
30	23VAFS01	Basics in Food Science	FSM & D
31	23VAFS02	Nutrition during Adolescence	FSM & D
32	23VAED01	Terracota Jewellery	EDC
33	23VAED02	App Development	EDC

SIGNATURE OF THE PRINCIPAL

தமிழாய்வுத்துறை		
மதிப்பு கூட்டப்பட்ட படிப்பு	சுவடியியல்	30 மணி நேரம்
பாடக் குறியீடு : 23VATA01	அனைத்துத் துறை மாணவியருக்கும் உரியது	பாடம் அறிமுகப்படுத்தப்பட்ட நாள் – 03.06.2023

நோக்கம்

- ❖ மாணவர்களுக்குத்தமிழன்பழம்பதிப்புமுறையானஏட்டபதிப்புமுறைகளைஅறிமுகம்செய்துசுவடிகளைப்பாதுகாக்கும்முறைகளையும்எடுத்துக்கூறுதல்
- ❖ சுவடிகளின்அமைவிடங்களைகூறுதல்
- ❖ இந்நோக்கங்களைஅடிப்படையாகக்கொண்டுஇத்தாள்வடிவமைக்கப்பட்டுள்ளது.

COURSE OUTCOME

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

C O No .	CO Statement	Cognitive Level
C 01	ஒலைச்சுவடிகளின்வரலாற்றைஅறிந்துகொள்வர்.	K1
C 02	சுவடிகளைச்சேகரித்துப்பாதுகாக்கும்முறைகளையும்கற்றுக்கொள்வர்	K2
C 03	தமிழன்பழம்பதிப்புமுறைகள்குறித்தஅறிவைப்பெறுவர்.	K3

C O4	தமிழின்பழம்பெரும்மரபைப்பாதுகாத்தல்	K4
C O5	தமிழ்பண்பாட்டின்அடையாளமானசுவடிகளைப்பராமரிக்கும்முறைகளைக்கற்றல்.	K4

Mapping of CO with Po and PSO

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	3	3	2	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	2	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

பாடத்திட்டம் – SYLLABUS				
UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	ஓலைச்சுவடி— சொற்பொருள்விளக்கம். சுவடிகளின்அமைப்பு- சுவடிகளின்வகைகள்- எழுத்தாணிவகைகள்-- சுவடிகளின்எழுத்துக்குறியீடுகள்.	06	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	சுவடிகளைச்சேகரிக்கும்முறைகள்- சுவடிகளைப்பாதிக்கும் காரணிகளைக்கண்டறிதல்-- சுவடிகளைப்பாதுகாக்கும்முறைகள்ம ற்றும்கருவிகளைக்கண்டறிதல்.	06	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	சுவடிகளின்மூலம்அறிதல் - சுவடிகளின்காலம்அறிதல் -	06	CO1, CO2, CO3, CO4,	K1, K2, K3, K4

	சுவடிபதிப்பால்ஏற்படும்நன்மைகள் – சுவடிப்பதிப்புமுறைஅறிதல் - சுவடியியல்கலைச்சொற்கள் .		C05	
IV	சுவடிகளைக்கையாளும்முறைகள் - கண்காணிக்கும்முறைகள் - அரசுசார்ந்தநிறுவனங்கள் – சுவடிநூலகங்கள் – சுவடிவைப்புமுறைகள்.	06	C01, C02, C03, C04, C05	K1, K2, K3, K4
V	பழந்தமிழ்நூல்உரையாசிரியர்கள் – இளம்பூரணர் –பரிமேலழகர்- சிவஞானமுனிவர்.	06	C01, C02, C03, C04, C05	K1, K2, K3, K4

பாடநூல்:

அறிவுடைநம்பி .ம.சா., சுவடியியல், கலைச்சொல்விளக்கஅகராதி.,
பதிப்புத்துறை, புதுச்சேரி , 2006.

உத்திராடம். க. ,சுவடியியல், நாம்தமிழர்பதிப்பகம், சென்னை,2018.

பார்வைநூல்கள்

பெருமாள்.பா., சுவடிப்பாதுகாப்புவுரலாறு, மடாலயம், 2012.

பாடத்திட்டவடிவமைப்பாளர்

முனைவர். மு. ஜெயலெட்சுமி

தமிழாய்வுத்துறை		
மதிப்பு கூட்டப்பட்ட படிப்பு	பணி வாய்ப்புக்கான போட்டித் தேர்வுகள்	30 மணி நேரம்
பாடக் குறியீடு : 23VATA02	அனைத்துத் துறை மாணவியருக்கும் உரியது	பாடம் அறிமுகப்படுத்தப்பட்ட நாள் – 03.06.2023

நோக்கம்

1. பணி வாய்ப்புகளைப் பெற்றுத் தரும் போட்டித் தேர்வுகள் குறித்த விழிப்புணர்வையும் ஆர்வத்தையும் ஏற்படுத்துதல்
2. பணி சார்ந்த போட்டித் தேர்வுகளை எழுதுவதற்கான வழிமுறைகள் குறித்த அறிமுகம் வழங்குதல்
3. போட்டித் தேர்வுகளுக்கான முன் தயாரிப்புகள் குறித்த அடிப்படை அறிவை ஏற்படுத்துதல்
4. நடப்பு நிகழ்வுகளைச் சேகரிக்கும் திறனைப் பெறுதல்

COURSE OUTCOMES

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO No.	CO Statement	Knowledge Level
CO1	பணி சார்ந்த போட்டித் தேர்வுகளின் அடிப்படைகளைப் புரிந்துகொள்ளுதல்	K1
CO2	பணி சார்ந்த போட்டித் தேர்வுகளின் பாடத்திட்ட அமைப்பை விளக்கியறிதல்	K2
CO3	பல்வேறு வகையான பணி சார்ந்த போட்டித் தேர்வுகளை வகைப்படுத்தி அறிதல்	K3
CO4	நடப்புச் செய்திகளைச் சேகரிப்பதற்கான வழிகாட்டுதல்களைப் பயன்படுத்துதல்	K4

பாடத்திட்டம்

அலகு 1 : (6 மணி)

போட்டித் தேர்வுகள் - முக்கியத்துவம் - வகைகள் - பணி சார்ந்த போட்டித் தேர்வுகள் - நிலைகள் - நடப்பு நிகழ்வுகளைச் சேகரிப்பதற்கான வழிகாட்டுதல்கள் - மத்திய அரசு பணியாளர் தேர்வு ஆணையம் (SSC) - வரலாறு - செயல்பாடுகள் - தேர்வுகள் - தகுதி - பாடத்திட்டம் - வினாத்தாள் அமைப்பு முறை

அலகு 2 : (6 மணி)

யூனியன் பப்ளிக் சர்வீஸ் கமிஷன் - வரலாறு - செயல்பாடுகள் - தேர்வுகள் - தகுதி - சிவில் சர்வீஸ் தேர்வுகள் - பாடத்திட்டம் - முதல்நிலைத் தேர்வு - முதன்மைத் தேர்வு - நேர்காணல் - விருப்பப் பாடத்தைத் தேர்ந்தெடுப்பதற்கான வழிகாட்டுதல்கள் - வினாத்தாள் அமைப்பு முறை

அலகு 3 : (6 மணி)

ரயில்வே ஆட்சேர்ப்பு வாரியம் - செயல்பாடுகள் - தேர்வுகள் - என்டிபிசி - குரூப் டி - தகுதி - பாடத்திட்டம் - வினாத்தாள் அமைப்பு முறை - ISRO தேர்வு - அஞ்சல் தேர்வுகள் - நீதிமன்றத் தேர்வுமுறை - மின்வாரியத் தேர்வுமுறை - தகுதி - பாடத்திட்டம் - வினாத்தாள் அமைப்பு முறை

அலகு 4 : (6 மணி)

வங்கித் தேர்வுகள் - IBPS தேர்வுகள் - SBI தேர்வுகள் - நபார்டு வங்கித் தேர்வு - ரிசர்வ் வங்கித் தேர்வுகள் - தனியார் வங்கித் தேர்வுகள் - ஆயுள் காப்பீட்டு நிறுவனங்களின் தேர்வுகள் - தகுதி - பாடத்திட்டம் - வினாத்தாள் அமைப்பு முறை

அலகு 5 : (6 மணி)

தமிழ்நாடு அரசுப் பணியாளர் தேர்வாணையத்தின் அமைப்பு -
வரலாறு - செயல்பாடுகள் - தேர்வுகள் - தகுதி - பாடத்திட்டம் -
வினாத்தாள் அமைப்பு முறை

பார்வை நூல்கள் :

வ.எண்	ஆசிரியர்	நூல்	பதிப்பகம்	ஆண்டு
1	Nishant Jain IAS	All about UPSC Civil Services Exam	Prabhat Prakashan Publications, NewDelhi	Jan 2017
2	M.S.Narayan	How to prepare UPSC Examination	Notion Press, Chennai	July 2020
3	டாக்டர் சங்கர சரவணன்	டி.என்.பி.எஸ்.சி. குரூப்-IIA	விகடன் பிரசுரம், சென்னை	ஜனவரி 2015

தமிழாய்வுத்துறை		
மதிப்புகூட்டப்பட்ட படிப்பு	சுற்றுலாவியல்	30 மணிநேரம்
பாடக்குறியீடு : 23VATA03	அனைத்துத்துறை மாணவியருக்கும் உரியது	பாடம் அறிமுகப்படுத்தப்பட்ட நாள்: 03.06.2023

நோக்கம்

- சுற்றுலாவின் முக்கியத்துவத்தை உணர்தல்
- பல்வேறு சுற்றுலாத் தளங்களை அறிதல்
- சுற்றுலாத் துறையில் வேலை வாய்ப்பினைப் பெறுதல்
- தமிழக சிற்பங்கள் தொடர்பான சுற்றுலாத் தளங்களை அறிவித்தலும், அறிதலும்.
- சுற்றுலா தோற்றம், வளர்ச்சி பற்றி அறிதல்

COURSE OUTCOMES

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO No.	CO Statement	Knowledge Level
CO1	சுற்றுலா பற்றிய அறிஞர்களின் கருத்தக்கள், சுற்றுலா வகைகளை அறியச் செய்தல்	K1
CO2	சுற்றுலா வளர்ச்சிக்கான காரணிகளை புரிய வைத்தல்	K2
CO3	சுற்றுலாவின் தேவை மற்றும் திட்டமிடும் முறைகளைப் பொருத்திப் பார்த்தல்	K3
CO4	வெளிநாட்டு உள்நாட்டு சுற்றுலா அதன் நன்மை தீமைகளை மதிப்பீடு செய்தல்	K4

பாடத்திட்டம்

அலகு1 : (6 மணி)

சுற்றுலாவியல் ஓர் அறிமுகம் ,சுற்றுலாவின் வகைகள்

அலகு 2 : (6 மணி)

சுற்றுலா – சமூக கலாச்சார முக்கியம், பொருளியல் முக்கியம், சுற்றுலா நிறுவனங்கள், சுற்றுலா அமைப்பாளர்கள், சுற்றுலா வழிகாட்டிகள்

அலகு3 (6 மணி)

பாரதத்தில் சுற்றுலா, தமிழகத்தில் சுற்றுலா,தமிழ் இலக்கியத்தில் பயணங்கள்

அலகு4 (6 மணி)

இந்திய சுற்றுலாத் தளங்கள்,

அலகு5 (6 மணி)

சுற்றுலா வளர்ச்சிக்கான காரணங்கள், சுற்றுலாவின் பயன்பாடு, சுற்றுலாவின் கேடுகள், பாரதத்தில் சுற்றுலாத் தொழிலை; முன்னேறுவதற்கானவழிகள்

பாடநூல்**பார்வை நூல்கள்:**

தங்கமணி.இரா , (2000) சுற்றுலாவியல், முத்துப் பதிப்பகம், புதுக்கோட்டை

ஈஸ்வரன்.ச ,(2015) சுற்றுலாவியல், பாவை பப்ளிகேஷன்ஸ், சென்னை

கிருஷ்ணசாமி,(2016) சுற்றுலா வளர்ச்சி, மணிவாசகர் பதிப்பகம், சென்னை

கற்பித்தல் முறைகள்

கலந்தாய்வு, வினாடிவினா, திட்டக்கட்டுரை, கரும்பலகை, குழு விவாதம்

பாட உருவாக்கம்

முனைவர் க. அகல்யா, உதவிப் பேராசிரியர் , காவேரி மகளிர் கல்லூரி, திருச்சிராப்பள்ளி

பாடக்குறியீடு : 23VATA04	அனைத்துத்துறை மாணவியருக்கும் உரியது	பாடம் அறிமுகப்படுத்தப்பட்ட நாள்: 03.06.2023
-----------------------------	---	---

LEVEL	தமிழில் சிறார் இலக்கியம்			
-------	--------------------------	--	--	--

நோக்கம்

- தமிழில் உள்ள சிறார் இலக்கியங்களை அறிதல், வகைப்படுத்தல்
- சிறார் இலக்கியப் படைப்பாளர்கள், இலக்கிய வகைகளை அறிதல்
- சிறார் இலக்கியங்களைப் படைத்தல்

COURSE OUTCOMES

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO No.	CO Statement	Cognitive Level
CO1	தமிழில் வெளிவந்துள்ள சிறார் இலக்கியங்களை அறிந்திருப்பர்	K1
CO2	சிறார் இலக்கியப் படைப்பாளர்களை அறிவர்	K2
CO3	தமிழ் இலக்கிய வரலாற்றில் சிறார் இலக்கியத்தின் இன்றியமையாத இடத்தையும் பங்கினையும் உணர்வர்	K3
CO4	சிறார் இலக்கியங்களின் பண்புகள், உத்திகள், தனித்தன்மைகளை மதிப்பிடுவர்	K4
CO5	தமிழில் சிறார் இலக்கியங்களைப் படைக்கும் ஆற்றல் பெற்றிருப்பர்.	K4

Mapping of CO with Po and PSO

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO 8	PO 9	PO 10
CO1	2	3	2	3	3	3	2	3	2	3
CO2	3	3	3	2	3	2	3	2	3	2
CO3	3	3	2	3	2	3	2	3	2	3
CO4	3	3	3	2	3	2	3	2	2	3
CO5	2	3	2	3	3	3	2	3	2	3

பாடத்திட்டம் – SYLLABUS				
UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	சிறார் இலக்கியம்: வரையறை, விளக்கம். தமிழில் சிறார் இலக்கியங்கள்:தோற்றம், வளர்ச்சி, வரலாறு - சிறார் இலக்கிய வகைகள்: கதை, கவிதை, நாடகம், வாழ்க்கை வரலாறு, அறிவியல் சார்ந்த படைப்புகள் - சிறார் உளவியல்: படைப்பும் சுற்பனையும்	06	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	தமிழில் சிறார் இலக்கியப் படைப்பாளர்கள் - கவிமணி தேசிக விநாயகம் பிள்ளை, அழ. வள்ளியப்பா. வாண்டுமாமா, பெ. தாரன்,வை.கோவிந்தன் 'கல்கி' கோபாலகிருஷ்ணன், பாவண்ணன், விழியன், சு.மாட்சாமி, எஸ்.ராமகிருஷ்ணன், ஆயிஷா நடராசன், விஷ்ணுபுரம் சரவணன், உதயசங்கர், பாலபாரதி, பூமா வாசுகி.செல்லகணபதி, கோதண்டன், குழ.கதிரேசன், முதலியோர்	06	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	தமிழில் சிறார் இலக்கியப் படைப்புகள்: பண்புகள், உருவமும் உள்ளடக்கமும், உத்திகள், மொழிநடை.	06	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	<ul style="list-style-type: none"> கவிதை- பூவண்ணன் சிறுகதை -ஆயிஷா நடராசன்.விஞ்ஞான விக்ரிமாதித்தியன் கதைகள் ஆழ்கடல் - குழலும் வாழிடங்களும் - நாராயணி சுப்ரமணியன்	06	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

V	பொன்னியின் தியாகம் பெரியசாமித் தூரன்(நாடகம்) ஆனிலின் அற்புத உலகம்,(ஜாமி கரோல் (ஆசிரியர்),எஸ்.ராமகிருஷ்ணன் (தமிழில்)	06	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
---	--	----	-------------------------------------	-------------------------

புரட நூல்

- பூவண்ணன், குழந்தை இலக்கிய வரலாறு
- பூவண்ணன், சிறுவர் இலக்கிய களஞ்சியம், பூவண்ணன் பதிப்பகம் 16 ஆவது தொகுதி, சாய்பாபா காலனி, கோவை (47- 60)
- பெரியசாமித் தூரன், குழந்தைகள் கலைக்களஞ்சியம் (பத்துத் தொகுதிகள்)
- ஆயிஷா நடராசன், விஞ்ஞான விக்சிரமாதித்தியன் கதைகள்", பாரதி புத்தகாலயம்
- ஜாமி கரோல் (ஆசிரியர்), எஸ்.ராமகிருஷ்ணன் (தமிழில்), ஆனிலின் அற்புத உலகம், தேசாந்திரி பதிப்பகம்
- நாராயணி சுப்ரமணியன், ஆழ்கடல் (குழலும் வாழிடங்களும்), பாரதி புத்தகாலயம்

பெரியசாமித் தூரன், பொன்னியின் தியாகம் ,பாரிதிலையம்,

பிரசுட்வே நாட்டுடைமையாக்கப்பட்ட நூல்கள்

Web Sources

- www.tamilvu.org
- www.tamildigitallibrary.in
- <https://www.tamiluniversity.ac.in/english/library2-/digital-library/>
- <https://www.tamilibrary.org/>
- www.projectmadurai.or
- <http://www.tamilvu.org/ta/library-libcontnt-273141>
- <https://www.tamildigitallibrary.in/>

<http://www.noolaham.org>

கற்பித்தல்முறைகள்

குழுக்கலந்தாய்வு, வினாடிவினா, திட்டக்கட்டுரை, கரும்பலகை, விவாதம்
பரடத்திட்ட வடிவமைப்பாளர்

திருமதி பொ. அபிராமி

Handwritten signature
30/6/23

DEPARTMENT OF ENGLISH		
VALUE ADDED COURSE	FOUNDATION COURSE FOR ENGLISH LITERATURE	HOURS - 30
COURSE CODE – 23VAEN01	OFFERED TO STUDENTS OF ALL THE DEPARTMENTS	DATE OF INTRODUCTION 07.06.2023

OBJECTIVES

- To introduce basics of literature as a tool to understand various literary styles and genres
- To Comprehend the essence and core of English Literature
- To emphasize basic and key concepts of Literature

COURSE OUTCOMES

On the successful completion of the course, the student will be able to

CO NUMBER	CO STATEMENT	COGNITIVE LEVEL
CO1	Define poetry and its forms and structural aspects of poetry	K1
CO2	Classify the various types of prose and identify diverse style of prose writing	K2
CO3	Illustrate the key elements and features of Drama	K2
CO4	Identify the constitutive elements of short fiction and explore short story to get a holistic perspective about this genre	K3
CO5	Analyse fiction and short fiction forms in terms of style, content and purpose	K4

SYLLABUS

UNIT – I

Introduction to Literature

What Is Literature? – Meaning and Definition - Literature for Life Values and Concepts -
Scope (Aesope Fables and Fairy Tales)

UNIT – II

Prose

Definition – Elements (Characters, Themes, Setting, Plot, Perspective and Mood) – Types
(Fiction & Non-Fiction)

Francis Bacon - Of Studies

UNIT – III

Poetry

Definition - Characteristics – Types - Difference Between Prose and Poetry

Rudyard Kipling - If

UNIT – IV

Short Story and Play

Definition – Features - Types

Earnest Hemingway - Hills Like White Elephant

UNIT – V

Novella and Novel

Definition – Difference – Types

R.K.Narayan – The Grandmother’s Tale (or)

Ashwin Sanghi – Chanakya’s Chant

TEXT BOOKS

Burke, Kenneth. The Philosophy of Literary Forms, University of California Press, 1941.

Bacon, Francis. Text-Book Of Prose from Bacon, Forgotten Books, 2007.

Hemmingway, Earnest. The Complete Short Stories of Ernest Hemingway, Abhishek Publications, 2001

R.K. Narayan. Grandmother’s Tale, Indian Thought Publishers,2007

Sanghi,Aswin. Chanakya’s Chant, Harper Collins India, 2022

REFERENCE BOOKS

M.H. Abrams, A Glossary of Literary Terms, wadasworth Publishing Co Inc, 2004.

Steinbeck, John. The pearl, Penguin Books, 2002

Carol, Lewis. Alice’s Adventures in Wonderland, Reissue edition, 1984.

WEB REFERENCES

<https://www.poemtree.com/poems/Walk.htm>

<https://winstonchurchill.org/resources/speeches/1940-the-finest-hour/we-shall-fight-on-the-beaches/>

<https://www.one-act-plays.com/comedies/proposal.html>

<https://www.poetryfoundation.org/poems/46473/if--->

PEDAGOGY

Assignment and seminar

COURSE DESIGNER

Ms. Siva. Vanmathi

SIGNATURE OF THE COURSE DESIGNER

SIGNATURE OF THE HOD

DEPARTMENT OF ENGLISH

VALUE ADDED COURSE	CREATIVE WRITING	HOURS – 30
COURSE CODE – 23VAEN02	OFFERED TO STUDENTS OF ALL THE DEPARTMENTS	DATE OF INTRODUCTION 07.06.2023

OBJECTIVES

- To enable students to express creatively with clarity and thereby to know the purpose of producing various genres of writing short stories, poems, short fiction, prose etc.
- To explore the thoughts and ideas of the young minds creative thinking using vocabulary, language and gain creativity of having a false for writing flawlessly

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO NUMBER	CO STATEMENT	COGNITIVE LEVEL
CO 1	Relate the purpose of communication ideas and thoughts effectively and creatively.	K1
CO 2	Illustrate the style of writing critically in the various genres of literature	K2
CO 3	Building ideas of imagination to higher level of thinking of enriching vocabulary	K3
CO 4	Construct meaningful sentences and create a flow of adding rich meaning to the content	K3
CO 5	Analyse relevant information in enhancing writing skills to gain good prospects as a creative writer.	K4

SYLLABUS

UNIT – I

Art and Craft of Creative Writing

- Introduction to Creative Writing
- World of Imagination of Ideas
- Vocabulary Building
- Idiomatic Phrase

UNIT – II

Poetry and Prose Forms

- Elements of Poetry
- Free Verse / Rhymed Verse
- Read and Write Poems Creatively
- Writing short paragraphs on famous personalities

UNIT – III

Drama and Fiction

- Writing short humours plays
- Writing Short Stories
- Short Fiction writing (Plot, Theme, Character setting)

UNIT – IV

Creativity in Thoughts

- Topic Writing
- Dialogue Writing
- Caption Writing
- Essay Writing

UNIT – V

Writing for Media

- Newspaper Headlines
- Creating an Advertisement
- Writing an article for Print Media
- Script writing for TV / Community Radio

TEXT BOOKS

Anjana Neira Dev, Anuradha Marwah, Swatia Pal - Creative Writing – A Beginners Manual , Pearson India.

William Murphy, Creative Writing – The Revolutionary Plan with Tips on How to Unleash your Creative, Charlie Creative Lab

William Murphy – Novel Writing (2nd Writing), Charlie Creative Lab

REFERENCE BOOKS

B.Prasad, A Background to the Study of English Literature, Laxmi Publication

Usha Raman, Writing for the Media, Oxford Publication

WEB REFERENCE

<https://www.scribd.com/author/557457222/William-Murphy>

PEDAGOGY

Power point presentation, Experience Discussion, Brain storming and Activity.

COURSE DESIGNER

Dr. P.Helan Jona and Dr. J.Jenifer Nancy

**SIGNATURE OF THE COURSE DESIGNER
HOD**

SIGNATURE OF THE

DEPARTMENT OF ENGLISH		
VALUE ADDED COURSE	ENGLISH FOR COMPETITIVE EXAMINATIONS	HOURS - 30
COURSE CODE – 23VAEN03	OFFERED TO STUDENTS OF ALL THE DEPARTMENTS	DATE OF INTRODUCTION 07.06.2023

OBJECTIVES

- To encourage students to appear and prepare for the competitive exams by overcoming their fear about English.
- To enable students to crack the Competitive exams concerning English grammar, vocabulary, comprehension.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO NUMBER	CO STATEMENT	COGNITIVE LEVEL
CO 1	Relate the various genres of English Language and Literature and expose the learners to write and speak good English.	K1
CO 2	Explain the various LSRW skills and master the skill of writing and speaking their opinions, ideas and new points.	K2
CO 3	Build to comprehend the central tenets of literary theories and applying them to critically interpret a poem , pros, etc for higher learning.	K3
CO 4	Analyse the genres to explore the entire range of human experience in different genres according to the contexts.	K4
CO 5	Examine the skill of writing and speaking publicly to be competent and confident to gain more information for better job and career opportunities.	K4

SYLLABUS

UNIT I – VOCABULARY

- Idioms and Phrases
- One word Substitution
- Antonyms and Synonyms
- Words Often Confused

UNIT II – GRAMMAR

- Parts of Speech
- Question Tags
- Articles
- Tenses

UNIT III - WRITING SKILLS

- Sentence Completion
- Dialogue Writing
- Paragraph Writing
- Jumbled Sentence

UNIT IV - READING SKILLS

- Comprehension Passages
- Book Reviews
- Reading Newspapers
- Skimming and Scanning

UNIT V - SPEAKING SKILLS

- Self-Introduction
- Group Discussion
- Personal Interviews
- Public Speaking

TEXT BOOK

Wren And Martin, English for Competitive examinations S Chand Publishers 2020.

WEB REFERENCE

<https://www.toppr.com/guides/english-language/vocabulary/>

<https://byjus.com/english/question-tags-exercises/>

<https://englishforlearner.com/dialogue-writing-writing-skill/>

<https://www.mygreatlearning.com/blog/group-discussion-in-interviews/>

PEDAGOGY

Worksheets, Assignments, Quiz

COURSE DESIGNER

Ms. K. Kanimozhi and Dr. V. Sudhandra Devi

**SIGNATURE OF THE COURSE DESIGNER
HOD**

SIGNATURE OF THE

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)

P.G & RESEARCH DEPARTMENT OF SOCIAL WORK

VALUE ADDED COURSES



2023-2024

	DEPARTMENT OF SOCIAL WORK	
Value Added Course	FOUNDATIONS OF FAMILY LIFE MANAGEMENT	Hours: 30
23VASW01	Offered to the students of other programmes	Date of Introduction 05.06.2023

Objectives

1. To orient the students to the concept of family life.
2. To enable the students to understand the development of family values.
3. To make the students learn decision-making in families and family resources
4. To help the students to learn to manage various family resources.
5. To help them to plan for future family

After the successful completion of the course, the students will be able to

CO Number	CO Statement	KNOWLEDGE LEVEL
CO1	Recall Family Dynamics	K1
CO2	Understand Philosophy, Values, Standards and Goals of Family	K2
CO3	Examine Decision-making in Family	K3
CO4	Discover Kinds of Family Resources	K4
CO5	Plan for the future	K6

Unit I (6 hours)

Family: Family Life in a Changing World; Family Life Cycle: Stages; Concept of Management in the Home

Unit II (6 hours)

Philosophy, Values, Standards and Goals: Development of Family Value Patterns; The concept of Standards; The concept of Goals;

Unit III (6 hours)

Decision Making in Family Living: Kinds of decisions families make; The concept of Family Resources; **Management of Family Resources:** Time Management; Energy Management; Work Simplification;

Unit IV (6 hours)

The process of Family Finance Management: The concept of Income Management; Analysis of Kinds of Income; Guidelines in income management; Borrowing: the family's use of credit

Unit V (6 hours)

The Family's Plans for the Future – Institutions Savings, Investments and the Estate: Institutions for Family Savings; Taxation in Family Plans; Planning the Family Estate; Insurance for the Family

References

1. Agarwal, R.D.(2000). Organization and Management, New Delhi : Mc Graw Hill Company.
2. [Ann Smith Rice](#), [Suzanne M. Tucker](#) . (200).Family Life Management, the University of Michigan: Macmillan
3. Deacon, Ruth E. & Firebaugh, F.M.(1975). Home Management : contexts & Concepts, Boston : Houghton Mifflin Company.
4. Elizabeth B.Goldsmith. (2005). Resource Management for Individuals and Families, Thomson/Wadsworth
5. Goel, S.L.(1987). Modern Management Techniques. New Delhi : Deep Publishers.
6. Goldsmith, Elizabeth, B.(2000). Resource Management for Individuals & Families, Iled., Wadsworth.
7. Gross, I.h. and Crandall, E.w.(1963). Management for Modern Families. Appleton, Centurian Crofts, New York.
8. Hampton, David R.(1986). Management, II ed., New Delhi : Tata McGraw Hill.
9. Koontz. H. an O' Donnel C.(1976). Management - A systems and contingency analysis of mangerial functions. Mcgraw - Hill Kogakusua Ltd., New Delhi.
10. Nadaf , Imam. (2017). Family Life management: Your Family members are the potential energy of your life, India: Notion Press;
11. Narayan, B., ed. (1987). Leadership & Management Effectiveness, New Delhi : Anmol Publishers.
12. Newman, W.H. Warren, E.K. and McGill, A.R.(1998). The Process of Management strategy, Action, Result, Prentice, Hall of India Pvt. Ltd.
13. Nickell and Dorsey J.M.(1983). Management in Family Living, Wiley Eastern Ltd., New Delhi.
14. Rustomji, M.K.(1983). Art of Management, Delhi, Macmillan India Ltd.
15. [Ruth E. Deacon](#), [Francille M. Firebaugh](#) .(2010). Home Management: Context and Concepts the University of Wisconsin – Madison: Houghton Mifflin

16. Steidl and Bratton.(1967). Work in the Home, John Wiley and Sons. New York.

Pedagogy:

Chalk &talk, e -content, PPT, Group Discussions, Videos, Quiz & Assignments

Course Designer: Dr.G.Mettilda Buvaneswari

	DEPARTMENT OF SOCIAL WORK	
Value Added Course	Introduction to Stress Management	Hours: 30
23VASW02	Offered to the students of other programmes	Date of Introduction 05.06.2023

Prerequisites

Learners to be aware of what is stress and also about the impact of stress.

Objectives

- To orient the students on the concept of Stress Management
- To make the students to understand the importance of stress management in day today life.
- To orient the students about different techniques of stress management.

Course Outcomes

After the successful completion of the course, the students will be able to

CO Number	CO Statement	KNOWLEDGE LEVEL
CO1	Outline the concepts of stress, eustress and Distress	K1
CO2	Identify the sources of stress	K1&K2
CO3	Analyse the physical, psychological and social impact of stress	K3
CO4	Classify Stress response	K4
CO5	Apply stress reduction Techniques	K5

Syllabus

Unit I (6 hours)

Introduction to Stress

Meaning and nature of stress: Stress: Meaning, Definition, Eustress, Distress, Types of stress: Acute stress, Episodic Acute stress and chronic stress, signs and Symptoms. Difference between eustress and distress ,Stressors unique to age and gender.

Unit II (6 hours)

Sources of stress

Psychological, Social, Environmental; Academic, Family and Work stress ,Physiological and psychological changes associated with the stress response

Unit III (6 hours)

Impact of stress

Physiological Impact of stress -- Autonomic Nervous System Changes, Quality of sleep, Diet and Health effects. Psychological Impact of stress - Impaired Mental functions, Poor memory. Social Impact of stress - Stressful Life Events, Social support and health

Unit IV (6 hours)

Stress Response and Coping Mechanisms

‘Fight or Flight’ Response, Stress warning signals. Goals of Coping , Different styles of coping with stress.

Unit V (6 hours)

Stress Management Techniques

Autogenic Training , Biofeedback , Relaxation ,Yoga and Meditation,Mindfulness, Relaxation Techniques, Art Therapy, Music Therapy, Play Therapy, Cognitive Restructuring and Time Management.

References

S.No	Authors	Title of the book	Publisher	Year of Publishing
1.	Baron .L & Feist.J	Health Psychology 4th edition,	USA Brooks/Cole	2000
2	Barlow, Rapee, and Perini	10 Steps to Mastering Stress: A Lifestyle Approach	London,Oxford University Press Inc	2014
3	Taylor S.E	Health Psychology 3rd edition	New York. Mc GrawHill	1998
4	Pandit Shambu Nath	Stress Management using Yoga and Meditation	London, Shalimar Books	2012

Pedagogy:

Chalk &talk, e -content, PPT, Group Discussions, Videos, Quiz &

Assignments Course Designer: Dr.O.Aisha Manju

DEPARTMENT OF BUSINESS ADMINISTRATION

VALUE ADDED COURSE

2023 -2024

S.No	Title of the Value Added Course	Course Code	Hours
1	Managing Event Venues	21VABA02	30
2	Office Management Skills	23VABA01	30
3	Overview of Intellectual Property Rights	23VABA02	30

DEPARTMENT OF BUSINESS ADMINISTRATION		
Value Added Course	Office Management Skills	30 Hours
Course Code: 23VABA01	(offered to students of other Programme)	

OBJECTIVES

- To obtain knowledge of working in the office.
- To make the students to understand the various functions of office administrator.
- To know how to maintain the files and designing the office forms.

COURSE OUTCOMES:

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Explain the basic functions of office management.	K1
CO2	Discuss the different steps of office organization and functions of office administrator.	K2
CO3	Applications and Procedure of filing and filing devices.	K3
CO4	Factors to be considered in designing the office forms.	K2

SYLLABUS

Unit- I (5 Hours)

Office Management-Meaning-Elements of Office Management-Functions of Office Management.

Unit –II (6 Hours)

Office Organisation -Definition ,Characteristics and Steps-Functions of an Office Administrator.

Unit –III (6 Hours)

Office record management -Importance – Modern methods of Filing-Modern filing devices.

Unit –IV (7 Hours)

Office communication- Correspondence and report writing-Types of report writing.

Unit –V (6 Hours)

Form letters -Meaning ,Principles and Factors to be considered in designing office Forms.

Text Book:

S. No.	Author(s)	Title of the Book	Publisher	Year of Publication
1.	S.P.ARORA	Office Organisation and Management.	Vikas Publishing House	2009
2.	T.RAMASAMY	Office Management	Gold books	2016

Books for Reference:

S. No.	Author(s)	Title of the Book	Publisher	Year of Publication
1.	Prasanta K. Ghosh	Office Management Principles and Practice.	Sultan Chand & Sons, New Delhi.	2010.
2.	R.S.N.PillaiBagavathi	Office Management	S.Chand	2016

Pedagogy: Lectures, Quiz, Power Point Presentation, Assignments and Seminar

Course Designer: MrsP.Thangamani, Assistant Professor.

DEPARTMENT OF BUSINESS ADMINISTRATION		
Value Added Course	Overview of Intellectual	30 Hours
Course Code: 23VABA02	Property Rights	

OBJECTIVES

- To introduce fundamental aspects of Intellectual Property Rights to students who are going to play a major role in development and management of innovative projects in industries.
- To disseminate knowledge on patents ,copyrights, trademarks, Geographical Indication, design and integrated circuit layout design and its related rights and registration aspects.
- To facilitate the students to explore career options in IPR.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Imbibe the knowledge of IPR through various laws	K1
CO2	Apply the knowledge of patents	K2 & K3
CO3	Understand the process of acquiring a trademark	K3
CO4	Create an awareness about copyrights	K3
CO5	Understand geographical indicators	K3

SYLLABUS

UNIT: I

(6 Hours)

Intellectual Property Rights –Meaning-Definition-Features of a property-Classification of property-National Intellectual property rights policy of India: Vision, Mission, objectives and features.

UNIT: II

(7 Hours)

Patents-Objectives of the Patent law-The procedure for obtaining a patent in India-Rights granted to a patentee.

UNIT: III

(5 Hours)

Trademarks-Functions of a Trademark-Trademark and its types-Good trademark-Registration of a trademark-Rights granted by registration of trademarks.

UNIT: IV

(5 Hours)

Copyright-Objectives –Principles of Copyright law-Works protectable under Copyrights – Registration of Copyrights-Rights of the Authors and Copyright owners.

UNIT: V

(7 Hours)

Geographical indications –Meaning-Kinds of Geographical Indications- Advantages and disadvantages of Geographical indication protection –Registration of Geographical indications.

TEXT BOOKS

Sl. No.	Author(s)	Title of the Book	Publisher	Year of Publication
1.	K.V.Nithyananda	Intellectual Property	Cengage Learning	2019

		Rights: Protection and Management.	India Pvt.Ltd.	
--	--	------------------------------------	----------------	--

REFERENCE BOOKS

Sl. No.	Author(s)	Title of the Book	Publisher	Year of Publication
1.	Ahuja,VK.&Bagavathi	Law relating to Intellectual Property Rights.	Lexis Nexis	2017
2.	Singh,Phundan	Introduction to Intellectual Property Rights.	Daya Publishing House	

Pedagogy: Lectures, Quiz, Power Point Presentation, Assignments and Seminar.

Course Designer: Mrs.P.Thangamani , Assistant Professor.

PG & RESEARCH DEPARTMENT OF COMMERCE		
Value Added Course	Art of Aari and Hand Embroidery – Advanced Level	Total Hours: 30
Course Code: 23VACO01P	(Offered to students of all Programmes)	Date of Introduction: 03.06.2023

Course Objective:

- The course is designed to gain theoretical knowledge and practical experience as an embroiderer.
- Impart skill training in Aari & Hand Embroidery to enable trainees to earn income through the acquired skill.

Course Outcome:

On the successful completion of the course, the students will be able to

CO No.	CO Statement	Knowledge Level
CO1	Define the basic concepts of Aari and Hand Embroidery	K1
CO2	Compare the types of Aari and Hand Embroidery	K2
CO3	Identify tools and materials for Aari and Hand Embroidery	K3
CO4	Classify the usage of Tools and Materials used in Aari	K4
CO5	Explain finishing process of Aari & Hand Embroidery	K5

Art of Aari and Hand Embroidery

(30 Hours)

1. How to fix Aari Iron Stand
2. Making and Designing of blouse
3. How to fix cloth in Aari Frame
4. Chain stitch and its variations
5. Knot stitch and its variations
6. Chamki stitch and its variations

7. Bead stitch and its Variations
8. Sugar Bead Stitch
9. Patch work
10. Mirror work
11. Cut work and its variations
12. Zigzag, Load & Piping Load Stich
13. Zardosi and Off Load Stitch
14. Basic Embroidery Stitches & Designs

Course Designer

Ms. S. Praveena, Assistant Professor – Department of Commerce

VALUE ADDED COURSE

PG & RESEARCH DEPARTMENT OF COMMERCE		
Value Added Course	Tally ERP 9 with GST	Total Hours: 30
Course Code: 23VACO02P	(Offered to students of all Programmes)	Date of Introduction: 03.06.2023

Course objective

- To enable students to learn the basic concepts of accounting packages
- To impart knowledge about goods and service tax.

Course Outcome

At the time of completion of the course, students will be able to

CO No.	CO Statement	Knowledge Level
CO1	Define the basic concept of accounting in tally ERP 9	K1
CO2	Explain the accounting procedures for ledger, voucher and cost creation	K2
CO3	Applying GST	K3
CO4	Analyze stock group, stock category, stock item and stock category summary	K4
CO5	Estimate the budget	K5

Tally ERP 9**(30 Hours)**

1. Creation, alteration and deletion of company
2. Creation, alteration and deletion of ledger
3. Voucher entries in double entry mode.
4. Creation of Stock Groups, Stock Category, Unit of Measure & Stock Items
5. Alteration and deletion of inventory masters
6. Generating Accounting and Inventory Reports
7. Creation, Alteration & Deletion of Cost Centres and Cost Categories
8. Creation, Alteration & Deletion of Bank Reconciliation Statement
9. Creation, Alteration & Deletion of Budgets
10. Creation of Bills Wise Details
11. GST Administration, Registration, Payment
12. GST Accounting or Record Keeping
13. E-filing of returns
14. Creation of GST Ledger in Tally ERP 9
15. Creation of Sales and Purchase Ledger in Tally ERP 9

Reference Book

S.No	Author	Title	Publishers	Year of Publication
1.	Vishnu P. Singh	Tally ERP with GST	Sultan Chand & Sons	2019
2.	V Srinivasa Vallabhan	Computer Application in Business	Sultan Chand & Sons	2019
3.	A. K. Nandhini	Implementing Tally ERP	BPB Publications, Chennai	2019
4.	Tally Education Private Ltd, Bengaluru	Tally ERP 9	BPB Publications, Chennai	2019

Course Designer

Ms. A. Vinodhini, Assistant Professor, Department of Commerce.

VALUE ADDED COURSE

VEDIC MATHEMATICS - II

Value Added Course	Vedic Mathematics - II
Course Code – 23VAMA01	(Offered to Students of all Programmes)

Objectives:

- Foster the love for mathematics by creating a positive attitude through Vedic and Ancient Indian Mathematics
- Help students appreciate ancient Indian Mathematics and its contribution to the world.
- Develop conceptual knowledge of mathematical concepts
- Appreciate the need of conceptual knowledge over procedural processes.

Course Outcomes:

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Find mathematical solution of algebraic expressions.	K3
CO2	Solve system of linear equations faster and with ease	K2
CO3	Appreciate the Mathematical advancements of Ancient India.	K3
CO4	Classify the Square Roots of Imperfect Squares	K3
CO5	Compute the short cut methods of finding Cubing Numbers	K3

Value Added Course

Vedic Mathematics - II

SYLLABUS

UNIT I

Basic Level: Cube Roots of Perfect Cubes – Square Roots of Perfect Squares

UNIT II

Intermediate Level: Dates & Calendars

UNIT III

Intermediate Level: General Equations – Simultaneous Linear Equations

UNIT IV

Advance Level: Square Roots of Imperfect Squares

UNIT V

Advance Level: Cubing Numbers

Text Books:

S. No	Authors	Title of the Book	Publishers/Edition	Year of Publication
1	Dhaval. Bathia	Vedic Mathematics Made Easy	Jaico Publishing House, Mumbai	2006

REFERENCE BOOKS:

S. No	Authors	Title of the Book	Publishers/ Edition	Year of Publication
1.	Bharati KrsnaTirthaji Maharaja	Vedic Mathematics	Motilal Banarsidass Publishers Private Ltd, Delhi	Re-Print 2004
2.	Ronak Bajaj	Vedic Mathematics	Black Rose Publications	2005

Web links :

1. https://youtu.be/w5cD0iJe_g8
2. <https://youtu.be/3B607Jj0YqQ>
3. <https://youtu.be/CJUcTzul-BU>
4. <https://youtu.be/8E6AEUvLHXM>
5. https://www.ms.uky.edu/~sohum/ma330/files/manuscripts/Tirthaji_S.B.K.,_Agarwala_V.S.Vedic_mathematics_or_sixteen_simple_mathematical_formulae_from_the_Vedas-Orient_Book_Distributors_1981.pdf

Pedagogy:

Chalk and Talk, PPT, Group Discussion and Quiz.

VALUE ADDED COURSE
QUANTITATIVE APTITUDE - II

Value Added Course	Quantitative Aptitude - II
Course Code - 23VAMA02	(Offered to Students of all Programmes)

Objectives:

- To provide the knowledge to analyze, interpret and solve the Mathematical problems.
- To develop the thinking capacity.
- To inquire many short tricks to solve problems.

Course Outcomes:

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Explain the problems on Profit & Loss.	K2
CO2	Interpret the problems on Time & Distance.	K2
CO3	Solve the Problems on Trains.	K3
CO4	Classify the concept of Simple Interest.	K3
CO5	Apply the ideas of short tricks to solve the Mathematical Problems.	K3

Quantitative Aptitude - II

SYLLABUS

UNIT I

Profit & Loss

UNIT II

Time & Distance

UNIT III

Problems on Trains

UNIT IV

Simple Interest

UNIT V

Calendar

Text Books:

S.No	Authors	Title of the Book	Publishers/Edition	Year of Publication
1.	R.S.Aggarwal	Quantitative Aptitude For Competitive Examinations(Fully Solved)	S.Chand & Company Pvt.Ltd,	Reprint 2015

Reference Books:

S.No	Authors	Title of the Book	Publishers/Edition	Year of Publication
1.	T.K. Sinha	80+ Practice Sets of Quantitative Aptitude for Bank PO Exams	Arihant Publication (India) limited	2002
2.	S.P Gupta and P.K. Gupta	Quantitative Aptitude	Sultan Chand and Sons, New Delhi	2008

Web links:

1. <https://www.careerride.com/profit-and-loss-aptitude-test.aspx>
2. <https://www.youtube.com/watch?v=N6DRlgX2fOw>
3. <https://www.careerride.com/problems-on-trains-aptitude-test.aspx>
4. <https://www.careerride.com/simple-interest-aptitude-test.aspx>
5. <https://www.youtube.com/watch?v=mLD41elDRTE>

Pedagogy:

Chalk and Talk, PPT, Group Discussion and Quiz

PG & RESEARCH DEPARTMENT OF PHYSICS		
VALUE ADDED COURSE	TROUBLESHOOTING OF DOMESTIC APPLIANCES	30 HOURS
COURSE CODE:23VAPH01	OFFERED TO STUDENTS OF ALL PROGRAMME	DATE OF INTRODUCTION: 01.07.2023

Course Objectives

- To gain awareness about domestic appliance types and suppliers.
- To learn the fundamentals of how different home appliances operate, function, and are utilized.
- Developing the knowledge in maintenance of Domestic appliances.
- To raise awareness about energy conservation.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement On the successful completion of the Course, the students will able to,	Cognitive Level
CO 1	Remember the fundamental principles of electricity, electronics and the operation of electrical equipment.	K1
CO 2	Understand the concepts of Electronic Hardware Components and Soldering /De-Soldering Techniques.	K1
CO 3	Identify the issue of the appliance and its energy efficiency.	K2
CO 4	Understand the Problem and Energy conservation of Appliances.	K2
CO 5	Explain the operation of Domestic Appliances.	K2

Syllabus

UNIT I: INTRODUCTION TO ELECTRICITY

Electric Charge – Voltage -Electric Current - Ohm's Law- Electric Potential-Serial and Parallel, Circuit - Transformer

UNIT II: ELECTRONIC AND ELECTRICAL COMPONENTS

Active and Passive Components- Resistors-Capacitors and Inductors- Semiconducting Devices: Diodes-Transistors - Integrated Circuits -Digital ICs for logic gates.

UNIT III: SOLDERING/ DE- SOLDERING TECHNIQUES

Principles of solder connections-soldering flux- Flux removal after soldering-Safety, health and medical aspects in soldering.

UNIT IV: BASIC FUNCTIONALITY OF ELECTRICAL EQUIPMENT

Working principle /functionality- Main Components of a Tube Light-Fan-Water Heater- Iron box and Refrigeration System- Common occurring faults- Possible causes, testing and repairs.

UNIT V: BASIC FUNCTIONALITY MOTOR APPLIANCES

Working principle and functioning of motor (mixer/juicer/grinder)- Functioning of motor - Common occurring faults - Possible causes, testing and repairs.

Text Books

1. Eric Kleinert, (2013), *Troubleshooting and Repairing Major Appliances*, McGraw-Hill Education.3rd Edition
2. Murugesan R, (2017), *Electricity and Magnetism*, S. Chand & Co. Publishing., Revised Edition.
3. Mehta V. K & Rohit Mehta, (2014), *Principles of Eelectronics*, S. Chand & Co.Publishing., Revised Edition.

Reference Books

1. Walter C Bosshart,(1995), *Printed Circuit Board*, McGraw-Hill .,Revised Edition.

Pedagogy

Chalk and Talk , Power Point Presentations, Seminars, Assignments and Quiz.

Course Designer

Dr.K.KANNAGI

PG & RESEARCH DEPARTMENT OF PHYSICS		
VALUE ADDED COURSE	DOMESTIC ELECTRICAL SYSTEM	30 HOURS
COURSE CODE:23VAPH02	OFFERED TO STUDENTS OF ALL PROGRAMME	DATE OF INTRODUCTION: 01.07.2023

Course Objectives

- To make them understand the electrical wiring.
- To educate identification of wires based on colours and electrical connections
- To train them to maintain the electrical appliances

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Identify basic wiring tools.	K1
CO2	Classify wire colours.	K1
CO3	Understanding of safety precautions while handling electrical system.	K2
CO4	Understand the maintenance of different electrical appliance	K2
CO5	Explain the electrical connections	K2

Syllabus

UNIT I: BASICS OF ELECTRICITY AND TOOLS

Electric current - Voltage - Power - AC Single phase - DC storage -1.5-volt cell, 9 volt cell, 12 volt cell- Tools.

UNIT II: SAFETY PRECAUTIONS

Fuse – Earth – meaning of Symbols – Switch board indicator – Insulator – Method of using an electrical tester – Precaution in handling tools.

UNIT III: COLOURS AND TYPES OF WIRES

Red-Black-Yellow- Blue – Green – insulation taps (Colors) – Single lead wire, Multicore wire – Copper wire – Aluminum wire.

UNIT IV: ELECTRICAL CONNECTIONS

Different types of switches – Sockets – Condenser testing – Starter Testing – Single plug and bulb with switch – Three pin connection – Fuse connection – Switch board indicator connection- Three pin plug Connection with on/off switch – Connection for 2 pin plug and 3 pin plug – Tube lamp connection – Switch board connection – Stair case two-way switch-Bedroom (two-way) light switch- Main box connection.

UNIT V: APPLIANCES MAINTENANCE

Wall clock - Soldering process – power reducing methods - Demo on Electric fan, iron box and Immersion rod [Water Heater] – Basic Electronic components.

Text Books

1. Uappal S.L. (2006), *Electrical wiring Estimating and costing* Khanna Publication. 7th Edition
2. Raina K B. Bhattacharya S.K (2017) *Electrical Design; Estimating and costing* New Age International (p) Limited, New Delhi 2nd Edition
3. Surjit Singh (2016) *Electrical Estimating and costing* Dhanpati Rai and company, New Delhi.

Reference Books

1. Alagappan N. Ekambaram S. (1996) *Electrical Estimating and costing* Tata Mc Graw Hill Publication, New Delhi
2. Arora B.D. (2011) *Electrical wiring, Estimating and costing* R.B. Publication, New Delhi

Pedagogy

Power point presentation and chalk & talk.

Course Designer Dr. T. Noorunnisha

DEPARTMENT OF CHEMISTRY		
VALUE ADDED COURSE	ENTREPRENEURIAL SKILLS IN CHEMISTRY	HOURS - 30
COURSE CODE 23VACH01	OFFERED TO STUDENTS OF ALL THE PROGRAMME	DATE OF INTRODUCTION 07.06.2023

OBJECTIVES

- Homemade product wonder's business and individual person skill nourished
- This course imparts the theoretical and practical knowledge on homemade jam, jellies, soaps, oils and dyeing.
- It exclusively tests the quality of water preferable for different purposes and formulation of various products.

COURSE OUTCOMES

CO	CO Statement On successful completion of this course, the student will be able to	Knowledge Level
CO1	Learn basics of home made eatables, formulation of various cleaning products and their properties.	K1
CO2	Learn the uses of safe, economic homemade eatable and simple products.	K1
CO3	Enhance the applicability of home made products in routine life.	K2, K3 K4

SYLLABUS

Unit – I

6 Hrs

Preparation of Jam, squash and Jelly, cottage cheese.

Unit – II

6 Hrs

Preparation of products like candles, soaps, soap powder and shampoos in small scale.

Unit – III

6 Hrs

Extraction of oils from spices and flowers.

Unit – IV

6 Hrs

Testing of water samples using testing kit.

Unit – V

6 Hrs

Dyeing – cotton fabrics with natural and synthetic dyes

Text Book:

S. No.	Author (s)	Title of the Book	Publisher	Year of Publication
1.	Brendan Fawn	Jam Cookbook	Amazon Digital Services LLC - Kdp	2020
2.	SmainChemat	Edible oilsExtraction, Processing, and Applications	CRC Press	2017
3	Franklin Beech	The Dyeing of Cotton Fabrics	Scott, Greenwood	2010

Reference Book:

S. No.	Author (s)	Title of the Book	Publisher	Year of Publication
1.	Beech, F.	The Dyeing of Cotton Fabrics: A Practical Handbook for the Dyer and Student	. United States: HardPress.	2016

Pedagogy

Hands on training, E-content, Lecture, Power Point Presentation.

Course Designers

Dr. K. Shenbagam, Assistant Professor, Department of Chemistry.

PG DEPARTMENT OF CHEMISTRY		
VALUE ADDED COURSE	APPLICATION SOFTWARE IN CHEMISTRY	HOURS - 30
COURSE CODE 23VACH05	OFFERED TO STUDENTS OF CHEMISTRY PROGRAMME	DATE OF INTRODUCTION 07.06.2023

OBJECTIVES

- To impart analytical, numerical, computational and technical skills on the relevant field of Chemistry for facilitating employability in academia and industries

COURSE OUTCOMES

CO	CO Statement On successful completion of this course, the student will be able to	Knowledge Level
CO1	Learn the basics of analytical and computational skills of Chemistry	K1
CO2	Learn the tools of structural types using software techniques	K1
CO3	Enhance the applicability of chemsketch to students.	K2

SYLLABUS

UNIT I

6 Hrs

Introduction of ChemDraw, chemical name to structure conversion, chemical structure to name conversion

UNIT II

6 Hrs

Structure Types, Drawing Structures, Initial Considerations, Drawing the Framework of a Structure

UNIT III

6 Hrs

Drawing Bonds of Different Types / Changing Bond Types, Drawing the structural framework of compounds

UNIT IV

6 Hrs

Introducing Atom Labels, creating and modifying images of chemical structures, writing and performing chemical equations and diagrams.

UNIT V

6 Hrs

Manipulations with Selected Objects, Move objects, Structure Perspective.

Text Book:

S. No.	Author (s)	Title of the Book	Publisher	Year of Publication
1.	Woods, J.	Chemdraw Professional: Biologist and Chemists Scientific Drawings Tool. (n.p.):	CreateSpace Independent Publishing Platform..	2017

Reference Book:

S. No.	Author (s)	Title of the Book	Publisher	Year of Publication
1.	Loudon.	Chemdraw Chem 3D Windows Package to Organic Chemistry	. United States: Pearson Higher Education & Professional Group.	1999

Pedagogy

Hands on training, E-content, Lecture, Power Point Presentation.

Course Designers

Dr. K. Shenbagam, Assistant Professor, Department of Chemistry.

DEPARTMENT OF COMPUTER APPLICATIONS		
Value Added Course	Web Page Development	30 Hours
Course Code: 23VACA01P	(Offered to students of all Programme)	Date of Introduction: 05.06.2023

OBJECTIVE

- To design and develop the webpage using HTML, CSS and Javascript.

COURSE OUTCOME:

- On successful completion of the course, students will be able to

CO NUMBER	CO STATEMENT	COGNITIVE LEVEL
CO1	Infer how to Deploy Website Using html	K2
CO2	Develop simple HTML and CSS forms.	K3
CO3	Construct interactive websites using HTML, CSS & Javascript	K3

List of Experiments:

- Develop a HTML code with Text and Image effects.
- Design a webpage using Physical Tags.
- Design a webpage using Logical Tags.
- Develop a HTML code for Nested List Creation.
- Design a simple webpage using Frame and Table tags.
- Create a student Application Form having number of form elements (Textboxes, Radio buttons, Checkboxes, TextArea and so on)
- Develop a College Website.
- Develop a JavaScript code to change the Background Colour.
- Design a JavaScript code to POPUP Message using Event.
- Demo for Style tag using heading and paragraph tag.
- Design a webpage using Internal Style.
- Design a webpage using External Style.
- Design a program for CSS- Group Selector.
- Develop your own webpage using HTML, JavaScript and CSS.

Books for Reference:

S.No	Author(s)	Title of the book	Publisher	Year of Publications
1	C. Xavier	“Web Technology and Design”	New Age International (P) Limited	2008

Web References:

1. <https://www.guru99.com/practical-code-examples-using-javascript.html>
2. https://www.web-source.net/javascript_codes.htm
3. <https://blog.hubspot.com/marketing/web-design-html-css-javascript>
4. <https://www.simplilearn.com/tutorials/javascript-tutorial/javascript-examples>

Pedagogy:

PPT, Live Demonstration , Youtube videos

Course Designers:

1. Dr. R. Merlin Packiam, Professor and Head, Department of Computer Applications.
2. Dr. R. Brendha, Associate Professor, Department of Computer Applications.

DEPARTMENT OF COMPUTER APPLICATIONS		
Value Added Course	Testing for Web Applications	30 Hours
Course Code: 23VACA02	(Offered to students of Science Streams)	Date of Introduction: 05.06.2023

OBJECTIVE

- To learn the criteria for test cases.
- To learn the design of test cases
- To understand test management and test automation techniques
- To apply test metrics and measurements.

COURSE OUTCOME:

- On successful completion of the course, students will be able to

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO 1	Understand the phases of software testing development	K1
CO 2	Comprehend knowledge of functional and nonfunctional testing	K2
CO 3	Design the test cases	K3
CO 4	Experiment testing quality factors and common software testing Strategies.	K3
CO 5	Evaluate the enough knowledge in implementation in testing and assuring Software quality maintenance.	K4

SYLLABUS:

UNIT I:

White Box Testing: Introduction – White Box Testing– Static Testing – Structural Testing – Challenges – Black Box Testing: Definition – Needs of Black Box Testing – Types of Black Box Testing – Performance of Black Box Testing – Achieving of Black Box Testing.

UNIT II:

Integration Testing: Overview of Integration Testing – Integration Testing as a Phase of Testing – System and Acceptance Testing – Necessity of System Testing – Functional Vs Non-Functional Testing.

UNIT III:

Performance Testing: Factors governing Performance Testing – Tools for Performance Testing– Regression Testing: – Introduction of Regression Testing – Types of Regression Testing – Best Practices in Regression Testing.

UNIT IV:

Usability and Accessibility Testing: Definition of Usability Testing – Approach – Performance of Usability Testing – Achieving Usability – Quality Factors – Accessibility Testing – Tools.

UNIT V:

Software Test Automation: Overview of Test Automation – Terms used in Automation – Skills Needed for Automation – Test Planning – Test Management – Test Process – Test Reporting – Best Practices.

UNIT VI:

Case Studies: Working with multiple browsers –working with drop down lists – working with radio buttons and groups-working with checkboxes.

TEXT BOOKS

S. No.	Author name	Title of the book	Publisher name	Year of publication
1	Paul C. Jorgensen	Software Testing	CRC Press 4 th Edition	2017

REFERENCE BOOKS

S. No.	Author name	Title of the book	Publisher name	Year of
---------------	--------------------	--------------------------	-----------------------	----------------

				publication
1.	Renu Rajani, Pradeep Oak	Software Methods, Tools and Techniques	Tata McGraw Hill Education	2010
2.	Dr.K.V.K.K.Prasad	Software Testing Tools	Dreamtech Press	2007

WEB REFERENCES

- <https://www.simplilearn.com/tutorials/devops-tutorial/fundamentals-of-software-testing>
- <https://reqtest.com/testing-blog/black-box-testing>
- <https://reqtest.com/testing-blog/different-levels-of-testing>

PEDAGOGY

Power point presentation, Quiz, Assignment, Experience Discussion, Brain storming and Activity.

COURSE DESIGNER

1. Dr.T. Julie Mary, Associate Professor, Department of Computer Applications
2. Ms.A. Ananthavalli, Assistant Professor, Department of Computer Applications

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)

NATIONALLY ACCREDITED WITH “A” GRADE BY NAAC

ISO 9001:2015 Certified

TIRUCHIRAPPALLI

PG & RESEARCH DEPARTMENT OF COMPUTER SCIENCE



Value Added Courses

SYLLABUS

2023-2024 and Onwards

PG & Research Department of Computer Science		
Value Added Course	Programming in C	Hours: 30 Hours
Course Code: 23VACS01	(Offered to the students of ALL programmes)	Date of Introduction: 30.05.2023

Course Objective:

- To understand the basics of C language
- To get knowledge on using different programming constructs in C language
- To develop programming logics and create programs in C

Course Outcomes:

On the successful completion of the course, students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Define the basic concepts of C programming	K1
CO2	Develop simple applications in C using basic constructs	K2
CO3	Build algorithms and data structures swiftly and faster computation using programs	K3
CO4	Apply the knowledge of programming concepts to develop programs	K4
CO5	Solve real time problems using C	K5

Syllabus:

UNIT – I

(6 HOURS)

Types, Operators and Expressions: Variable Names – Data Types and Sizes – Constants – Declarations – Arithmetic Operators – Relational and Logical Operators – Type Conversions – Increment and Decrement Operators – Bitwise Operators – Assignment Operators and Expressions – Conditional Expressions – Precedence and Order of Evaluation.

UNIT – II

(6 HOURS)

Input and Output: Standard Input and Output – Formatted output – Variable-length Argument list – Formatted Input – Scanf. **Control Flow:** Statements and Blocks – If-Else – Else-If – Switch – Loops: While, For and Do-While, Break and Continue, Goto and Labels.

UNIT – III

(6 HOURS)

Functions and Program Structure: Basics of Functions – Functions Returning Non-integers – External Variables – Scope Rules – Header Files – Static Variables – Register Variables – Block Structure – Initialization – Recursion – The C preprocessor.

UNIT – IV**(6 HOURS)**

Pointers and Arrays : Pointers and Arrays – Pointers and Function Arguments – Pointers and Arrays – Address Arithmetic – Character Pointers and Functions – Pointer Arrays; Pointers to Pointers – Multi-dimensional Arrays – Initialization of Pointer Arrays – Pointers vs. Multi-dimensional Arrays – Command-line Arguments – Pointers to Functions.

UNIT – V**(6 HOURS)**

Structures: Basics of Structures – Structures and Functions – Arrays of Structures – Pointers to Structures – Self-referential Structures – Table Lookup – Typedef – Unions – Bit-fields.

Text Books

SL. NO.	AUTHOR	TITLE OF THE BOOK	PUBLISHER / EDITION	YEAR OF PUBLICATION
1.	Brain W.Kernighan& Dennis M.Ritchie	The C Programming Language	2 nd Edition/ Pearson Education India	2015

Reference Books

SL. NO.	AUTHOR	TITLE OF THE BOOK	PUBLISHER / EDITION	YEAR OF PUBLICATION
1.	Yashavant Kanetkar	Let Us C	BPB Publications, New Delhi/ 4 th Edition	2018
2.	Byron Gottfried	Programming with C	Tata McGraw Hill / 4 th Edition	2018

Web References

1. <https://www.javatpoint.com/c-programming-language-tutorial>
2. <https://www.geeksforgeeks.org/c-programming-language/>
3. <https://www.tutorialspoint.com/cprogramming/index.htm>
4. <https://www.w3schools.com/c/>

Pedagogy

Chalk & Talk, Power Point Presentation & Demonstration

Course Designer

Ms.V.Kavitha

PG and Research Department of Computer Science		
Value Added Course	Digital Marketing	Hours: 30 Hours
Course Code : 23VACS01P	(Offered to Students of ALL Programmes)	Date of Introduction: 30.05.2023

Course Objective

- To create an awareness on the need of Digital Marketing
- To make the students understand the bases of Digital Marketing
- To learn how to use the digital marketing to reach the target achievements

Course Outcomes

- On the Successful completion of the course, students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Define, classify and apply the concept of digital marketing and search engine optimization works in the digital era.	K1,K2,K3
CO2	Explain emerging trends in digital marketing and critically assess the use of digital marketing tools.	K2, K5
CO3	Outline and appraise the main elements of the digital marketing strategies and the components of the digital marketing plan.	K2, K5
CO4	Interpret and apply the traditional marketing mix within the context of a changing and extended range of digital strategies and tactics.	K3, K6
CO5	Analyse and build a solid understanding of core business principles in the primary areas of digital marketing, web technology and new media management.	K4, K6

Syllabus

1. Basics of Digital Marketing
 - (i) P-O-E-M Framework
 - (ii) Digital Marketing Plan
2. Display Advertising
 - (i) Types of Display Ads
 - (ii) Buying Models
3. E-Mail Marketing
 - (i) E-Mail News letter
 - (ii) Automating E-Mail Marketing
4. Social Media Marketing
 - (i) Face Book Marketing
 - (ii) Twitter Marketing
 - (iii) Instagram Marketing

5. Search Engine Optimization (SEO)

- (i) On Page Optimization
- (ii) Off-Page Optimization

6. Search Engine Advertising

- (i) Creating first Ad Campaign
- (ii) Enhancing the Ad Campaign

7. Mobile Marketing

- (i) Mobile Advertizing
- (ii) Mobile Marketing Tool Kit

8. Video Marketing

Web References:

1. <https://intellipaat.com/blog/digital-marketing-tutorial/>
2. <https://www.simplilearn.com/tutorials/digital-marketing-tutorial>
3. https://www.tutorialspoint.com/digital_marketing/index.htm
4. <https://www.javatpoint.com/digital-marketing>

Pedagogy:

Power Point Presentation, Live Demonstration

Course Designer:

Ms. G.Sujatha

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)
NATIONALLY ACCREDITED (IHCYCLE) WITH “A” GRADE BY NAAC

VALUE ADDED COURSE SYLLABUS-2023-2024

1. MS - ACCESS

DEPARTMENT OF INFORMATION TECHNOLOGY		
VALUE ADDED COURSE	MS - ACCESS	HOURS - 30
COURSE CODE 23VAIT01P	OFFERED TO SCIENCE AND ARTS STREAMS	DATE OF INTRODUCTION 06.06.2023

COURSE OBJECTIVES

- To Understand Access interface & database terminology
- To Plan, design, create, manipulate and query databases
- To produce user input forms
- To Use Access to generate reports

COURSE OUTCOME

- **On the successful completion of the course, students will be able to**

CO Number	CO Statement	Cognitive level
CO1	Outline the Ms-Access Interface	K1
CO2	Create database, Tables, Queries and Reports	K3
CO3	Apply Relationships between Tables	K3
CO4	Design user input forms	K3
CO5	Generate Reports based on the Queries	K3

Ms-Access

<p>MS – Access1. Overview of Access Interface</p> <ul style="list-style-type: none"> · Opening Access Interface · Access Quick Access Toolbars · Working with Access Ribbons · Access Object Panel · Access File Tab · Access Security Prompt <p>2. Fundamentals of MS-Access Objects</p> <ul style="list-style-type: none"> · Table · Query · Form · Reports · other MS-Access Objects. <p>3. Database</p> <p>Create Blank Database</p> <p>4. Tables</p> <ul style="list-style-type: none"> · Create Table · Table Design View · Data Types · Adding Data <p>5. Query Data</p> <ul style="list-style-type: none"> · Create Select Query · Update Query · Delete Query · Make table Query · Query criteria <p>6. Action Queries</p> <ul style="list-style-type: none"> · Append Query · Parameter Queries · Alternate criteria <p>7. Relating Data</p> <ul style="list-style-type: none"> · Normalization · One-to-One · One-to- Many · Many to Many 	<p>8. Calculated Expression</p> <p>9. Grouping Data</p> <ul style="list-style-type: none"> · Aggregate Query · Concatenation in Access <p>10. Summarizing Data</p> <p>11. Joins</p> <ul style="list-style-type: none"> · Left Outer Join · Right Outer Join · Self Join <p>12. Duplicates Query Wizard</p> <p>13. Unmatched Query Wizard</p> <p>14. Forms</p> <ul style="list-style-type: none"> · Split Form · Modify a Form · Controls · Themes · Navigation Form · COMBO Box · SQL View · Formatting · Controls and Properties · Bound Controls · Unbound controls · Control Type <p>15. Reports</p> <p>Create Reports using report design</p> <p>Formatting Reports</p>
--	--

Reference Books

S. No.	Author name	Title of the book	Publisher name	Year of publication
1	Mike McGrath	Access in easy Steps	Easy Steps Limited	2019
2.	Pindaro E. Demertzoglou	MS Access 2016 SQL Comprehensive	Amazon Digital Services LLC	2018
3	Sarwandi & Cyber Creative	Jago Microsoft Access 2016	Elex Media Kombutinto	2014

Web Links

1. https://www.tutorialspoint.com/ms_access/ms_access_overview.htm
2. <https://www.guru99.com/ms-access-tutorial.html>
3. <https://www.javatpoint.com/microsoft-access>

Pedagogy

Power point Presentation , Practical demonstration

Course Designer

Dr.P.Tamilselvi, Associate Professor, Department of Information Technology

DEPARTMENT OF INFORMATION TECHNOLOGY		
VALUE ADDED COURSE	INTRODUCTION TO POWER BI	COURSE DURATION 30 HOURS
COURSE CODE 23VAIT02P	OFFERED TO STUDENTS OF OTHER PROGRAMME	DATE OF INTRODUCTION 06.06.2023

2. INTRODUCTION TO POWER BI

COURSE OBJECTIVES

- To understand the important concepts in Power BI
- To provide a significant knowledge in working with Power BI

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To understand the basics of Power BI	K1
CO2	To create and explore data sources in Power BI	K2
CO3	To demonstrate the creation and application of Data Visualization	K2
CO4	To apply various DAX functions in Power BI	K2

INTRODUCTION TO POWER BI

Introduction

(6 Hours)

What is BI – Types of BI Tools – What is Power BI – History of Power BI – Components, Architecture and Tools of Power BI – Merits and Demerits – Installation

Power BI – Data Sources and Data Modeling

(6 Hours)

Data Sources in Power BI – Comparison with Other BI Tools - Using Data Modeling and Navigation – Report, Data and Relationships

Power BI – Dashboard and Reports

(6 Hours)

Introduction to Dashboard and Reports – Dashboard Options – Exploring different datasets – Creating and sharing Dashboards – Tiles in Dashboard – Data Gateway – Difference between Dashboard and Reports

Data Visualizations

(6 Hours)

Creating Simple Visualizations – Charts and Tables – Modify Colors in Charts – Styling Reports

DAX Basics in Power BI

(6 Hours)

Introduction – DAX Functions – DAX Calculation Types – Calculated Columns and Measures

REFERENCE BOOKS

SNO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1.	Dan Clark	Beginning Power BI	Apress	2019
2.	Devin Knight and Brian Knight	Microsoft Power BI Quick Start Guide	Packt Publishing Limited	2020

Web References

1. <https://learn.microsoft.com/en-us/training/modules/introduction-power-bi>
2. <https://www.datacamp.com/tutorial/tutorial-power-bi-for-beginners>

Course Designer : Ms. M. Thangam

Pedagogy : System, Power Point Presentation

PG AND RESEARCH DEPARTMENT OF MICROBIOLOGY		
Value Added Course	KITCHEN GARDENING	Total Hours: 30
Course Code: 23VAMB01	Offered to Students to all Programmes	Date of Introduction: 07.06.2023

Preamble:

Utilization of kitchen water and waste Raising fresh vegetables rich in nutrients to supply the family the whole year round.

Course Outcome:

Kitchen gardens enable students to promote environmental and sustainability learning.

CO Number	CO Statement	Knowledge level
CO1	Understand the basics of kitchen gardening.	K2
CO2	Interpret requirements for cultivation	K3
CO3	Explain container selection	K4
CO4	Analyze choice of plants and planting materials	K4
CO5	Discuss natural fertilizers and marketing strategies	K5

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	S	S	M
CO3	S	S	M	S	S
CO4	S	S	S	S	M

CO5	S	M	S	M	S
------------	----------	----------	----------	----------	----------

S- Strong; M-Medium; L-Low

SYLLABUS

UNIT – I (6 Hours)

Kitchen garden and requirements: Definition, Scope and objectives of kitchen gardening, Gardening tools and Size of kitchen garden.

UNIT – II (6 Hours)

Site selection and physical requirements for cultivation: Location for cultivation, Soil types and Preparation of beds, Provision of Light, Humidity, Temperature, Watering and Nutrition.

UNIT – III (6 Hours)

Selection of containers: Types – Earthen pots, Plastic pots, Polythene bags, Basket containers, Planters etc. Selection of plants and planting: Vegetables, Greens, Medicinal Plants, and Flowering plants.

UNIT – IV (6 Hours)

Garden Maintenance: Weeding, Top dressing, Staking, Defoliation, Pruning, Grafting and Transplantation.

UNIT – V (6 Hours)

Organic fertilizers: EM solution, Panchakavya, Pest control and Ark. Sustainable gardening, recycling, business plan, marketing

Text Books

S.No	Authors Name	Title of the book	Publishers Name	Year
1.	Hatai Lakshmi Dhar	Production Technology of Horticultural Crops	Kalyain Publications	2023
2.	Susan Wright	Vegetable Gardening For Beginners	Publishing Forte Audio	2022
3.	E. P. Christopher	Introductory Horticulture	Biotech	2021

4.	T.K.Bose & M.G. Som, A. Chattopadhyay & T.K. Maity and J.Kabir	Vegetable Crops Vol 3	Astral Publishing Authors Across the Globe	2021
5.	Jitendra Singh	Bosic Horticulture	Kalyain Publications	2020

Reference Books

S.No	Authors Name	Title of the Books	Publishers Name	Year
1.	S.N. Gupta	Instant Horticulture (21st Edition)	Jain Brothers	2023
2.	S. Prasad and U. Kumar	Greenhouse Management for Horticultural Crops	Agrobios	2022
3.	N. Kumar	Introduction To Horticulture, 9th Edition	Medtech Science	2021
4.	Biswajit Choudhury	Vegetables, 10 th Edition	National Book Trust	2020
5.	Old Farmer's Almanac	The Old Farmer's Almanac Vegetable Gardener's Handbook	Old Farmers Almanac	2019

Web links:

1. https://agritech.tnau.ac.in/horticulture/horti_Landscaping_kitchengarden.html
2. <https://savvygardening.com/kitchen-garden/>
3. <https://www.finegardening.com/kitchen-gardening>
4. <https://housing.com/news/tips-to-set-up-a-kitchen-garden-at-home/>
5. <http://ecoursesonline.iasri.res.in/mod/page/view.php?id=97848>

Pedagogy

Power Point Presentations, Group Discussion, Quiz and Brain Storming Activity

Course Designer

Dr. N. Jeenathunisa

PG & RESEARCH DEPARTMENT OF MICROBIOLOGY		
VALUE ADDED COURSE	HERBAL REMIDIES	HOURS - 30
COURSE CODE 23VAMB02	OFFERED TO ALL DEPARTMENTS	DATE OF INTRODUCTION 07.06.2023

OBJECTIVES

To make the students to understand about the plants of day today life and traditional medicinal system, it's utilities in treating various types of disorders.

COURSE OUTCOMES

On the successful completion of the course, students will be able to understand the

CO Number	CO Statement	Knowledge Level
CO 1	Traditional Medicinal Plants of Tamilnadu and it's clinical significance	K2
CO 2	Importance and Medicinal properties of Plants, Vegetables and Fruits	K3
CO 3	Herbal medicine for wounds and infections and it's effectiveness in healing properties	K4
CO 4	Herbal Remedies for Gastric problems, Respiratory disorders	K4
CO 5	Management of Burns, Bites and sting management	K5

VALUE ADDED COURSE

HERBAL REMIDIES

HOURS-30

UNIT-I

Traditional knowledge and utility of some medicinal plants in Tamil Nadu – *Solanum trilobatum*, *Cardiospermum halicacabum*, *Vitex negundo*, *Adathoda vasica*, *Azadirachta indica*, *Gloriosa superba*, *Eclipta alba*, *Aristolochia indica*, *Phyllanthus fraternus* and *Boerhaavia diffusa*.

UNIT-II

Plants in day today life – *Occimum sanctum*, *Centella asiatica*, *Solanum trilobatum*, *Cassia auriculata*, *Aloe vera*. Nutritive and medicinal value of some fruits (Guava, Sapota, Orange, Mango, Banana, Lemon, Pomegranate) and vegetables – Greens (Moringa, *Solanum nigrum*) Cabbage.

UNIT-III

Wounds, infections and immunoboosters – Herbal medicine for infection and wound management, Immune supportive herbs for medical emergencies, Herbal medicine: Herbal explanations including use of herbs – honey, water-based poulticing and plastering techniques

UNIT-IV

Herbal medicine for gastric problems, respiratory, anxiety disorders – Herbs for gastric problems – Acid reflux – butter milk, asafoetida, turmeric and fenugreek; Indigestion – Importance of fasting, ginger, pepper, garlic, pomegranate juice, lemon, cardamom; Diarrhoea & Vomiting – Hydration, Rock salt and Sugar, Cumin, Dry ginger, Pepper; Respiratory – Adathoda, Turmeric, Ginger, Garlic, Lemon, Black Pepper, Tulsi, Jaggery and Honey

UNIT-V

Burns, Bites and Sting management –Field first aid and emergency treatment for fire, bites, and stings, Role of herbal medicine - Tulsi, aloe vera, turmeric, honey, coconut oil ghee, sandal wood etc.,

REFERENCE BOOKS

S. No.	Author name	Title of the book	Publisher name	Year of publication
1	Saikat Sen, Raja Chakraborty	Herbal Medicine in India: Indigenous Knowledge, Practice, Innovation and Its Value	Springer Nature	2019
2.	Srinath Rao, Akula Ramakrishna	Indian Medicinal Plants: Uses and Propagation Aspects	CRC Press	2020
3	Preeti Dhar, Durga Nath Dhar	Medicinal Plants of India	World Scientific	2019
4	M.C. Joshi	Hand book of Indian medicinal plants	Scientific Publishers	2019
5	M.S. Premila	Ayurvedic herbs: a clinical guide to the healing plants of traditional Indian medicine.	Psychology Press	2006

Web Links

- <https://www.nature.com/articles/s41598-018-22631-z>
- <https://bsi.gov.in/page/en/medicinal-plant-database>
- http://www.bsienviis.nic.in/database/medicinalplants_3939.aspx
- <https://link.springer.com/referencework/10.1007/978-0-387-70638-2?page=3#toc>

Course Designer

Dr.N.Pushpa

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)
NATIONALLY ACCREDITED (III CYCLE) WITH “A” GRADE BY NAAC
ISO 9001:2015 CERTIFIED
TIRUCHIRAPPALLI – 620 018

DEPARTMENT OF BIOTECHNOLOGY



B.Sc., BIOTECHNOLOGY
VALUE ADDED COURSE SYLLABUS
2023 – 2024 and Onwards

DEPARTMENT OF BIOTECHNOLOGY				
COURSE CODE	COURSE TITLE	CATEGORY	TOTAL HOURS	DATE OF INTRODUCTION
23VABT01P	NEUTRACEUTICALS (OFFERED TO SCIENCE STREAMS)	VALUE ADDED COURSE	30	05.06.2023

Course Objectives

- To understand the basic concepts of Nutraceuticals and functional food, their chemical nature and methods of extraction.
- To understand the role of Nutraceuticals and functional food in health and disease.

Course Outcome and Cognitive Level Mapping

Upon successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO 1	Provide Basic knowledge about nutraceuticals	K1
CO 2	Understand the health benefits of nutraceuticals	K2
CO 3	Apply basic techniques for the production of nutraceuticals	K2
CO 4	Understand the concept of nutraceuticals and dietary supplements along with the classification	K2
CO 5	Give exposure to basic analytical instruments relevant to nutraceutical industries	K3

VALUE ADDED COURSE

NUTRACEUTICALS

1. Introduction to nutraceuticals and Phytocompounds
2. Extraction and quantification of polyphenols.
3. Extraction and quantification of flavonoids.
4. Extraction and quantification of saponins.
5. Extraction and quantification of alkaloids.
6. Extraction of Phytonutraceuticals.
7. Principle and application of Probiotics, Prebiotics and Synbiotics.
8. Isolation probiotic bacteria.
9. Identification of probiotic bacteria.
10. *In-vitro* characterization of probiotics.

Reference Books

1. Wildman, R. E., Wildman, R., Wallace, T. C. (2016). *Handbook of nutraceuticals and functional foods*. CRC press.
2. Goldberg, I. (2012). *Functional foods: designer foods, pharmafoods, nutraceuticals*. Springer Science & Business Media.
3. Lockwood, B., Rapport, L. (2007). *Nutraceuticals*. London: Pharmaceutical Press.
4. Shahidi, F., Weerasinghe, D. K. (Eds.). (2003). *Nutraceutical Beverages: Chemistry, Nutrition, and Health Effects*. American Chemical Society.
5. Maffei, M. (Ed.). (2003). *Dietary supplements of plant origin: a nutrition and health approach*. CRC Press.

Web References

1. https://onlinecourses.swayam2.ac.in/ugc19_hs33/preview
2. https://ugcmoocs.inflibnet.ac.in/index.php/courses/view_ug/290
3. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4336979/>

Pedagogy

Power point presentation, Quiz, Assignment, Experience Discussion, Brain storming and Activity.

Course Designer

Ms. R. NEVETHA

DEPARTMENT OF BIOTECHNOLOGY				
COURSE CODE	COURSE TITLE	CATEGORY	TOTAL HOURS	DATE OF INTRODUCTION
23VABT02P	MUSHROOM CULTIVATION (OFFERED TO ALL STREAMS)	VALUE ADDED COURSE	30	05.06.2023

Course Objectives

- To enable the students to identify edible and poisonous mushrooms
- To provide hands on training for the preparation of bed for mushroom cultivation and spawn production
- To give the students exposure to the experiences of experts and functioning mushroom farms
- To help the students to learn a means of self employment and income generation

Course Outcome and Cognitive Level Mapping

Upon the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO 1	Identify edible types of mushrooms	K1
CO 2	Comprehend knowledge about of cultivation of different types of edible mushrooms and spawn production	K2
CO 3	Analyse the diseases and pests of mushrooms	K3
CO 4	Enhance the skills through Training/ Workshop/ Field visit	K3
CO 5	Evaluate the various problems in mushroom cultivation	K4

VALUE ADDED COURSE

MUSHROOM CULTIVATION

Unit I-Introduction

Introduction: History of mushroom cultivation; biology of mushroom; Types; Nutritional value; Medicinal value; Prospect of mushroom cultivation.

Unit II-Cultivation technology

Cultivation technology: Infrastructure and requirement; Spawn: types of spawn, mushroom bed preparation and factors affecting mushroom bed preparation; Paddy straw mushroom cultivation; Oyster mushroom cultivation; rearing conditions and sanitation.

Unit III-Harvesting

Harvesting: sanitation during harvesting; process of harvesting; Post harvest processing: Storage; long term and short term storage of mushroom; recipes from mushroom.

Unit IV-Pest Management

Disease and pest management: Pest and pathogens of mushroom; control measures; Integrated Pest Management (IPM).

Unit V -Marketing

Marketing of mushroom: market demand; market channels; direct marketing and wholesale marketing.

Reference Books

1. Aggarwal, A., Sharma, Y. P., Jangra, E. (2022). *A textbook on mushroom cultivation: Theory and Practice*. Newrays Publishing House.
2. Joy Sarkar, K.A., Anirban, R. (2020). *Mushroom Cultivation Technology*. Techno World Press.
3. Tripathi, D P. (2017). *Mushroom Cultivation*. Oxford & Ibh Publishing
4. Gogoi, R.Y.R., Borah, T.R. (2019). *Mushroom cultivation technology*. Scientific publishers.
5. Shweta, K., Ukaogo, P.O., Siddhant. (2022). *Recent Advances in Mushroom Cultivation Technology and Its Application*. Bright Sky Publications.

Web References

1. <https://vikaspedia.in/agriculture/farm-based-enterprises/mushroom-production>
2. <https://extension.psu.edu/six-steps-to-mushroom-farming>
3. <https://www.mushroomoffice.com/mushroom-cultivation/>
4. <https://tractorgyan.com/tractor-industry-news-blogs/980/different-types-of-mushroom-cultivation-in-india>

Pedagogy

Power point presentation, Quiz, Assignment, Experience Discussion, Brain storming and Activity.

Course Designer

Dr. R. Uma Maheswari

DEPARTMENT OF FOOD SERVICE MANAGEMENT AND DIETETICS		
VALUE ADDED COURSE	BASICS IN FOOD SCIENCE	HOURS-30
COURSE CODE – 23VAFS01	OFFERED TO STUDENTS OF ALL THE PROGRAMMES	Date of Introduction 06.06.2023

Objectives

- To gain knowledge on food groups, food composition, and their significance
- To understand different methods of cooking
- To ensure the knowledge on changes in food during cooking

Course Outcomes

On the successful completion of the course, students will be able to:

Co Number	CO statement	Knowledge level
CO 1	Identify various food groups	K1
CO 2	Explain the different methods of cooking	K2
CO 3	Characterize the structure of food group components	K2
CO 4	Summarize the nutritional composition of different food groups	K3
CO 5	Illustrate the role of various food groups in cookery	K3

Syllabus

UNIT - I
INTRODUCTION TO FOOD AND COOKING METHODS (6 Hours)

Introduction to food- Basic Five Food Groups, My Plate, Nutritional classification of food – Energy yielding, Body building, Protective and Regulatory foods.

Cooking methods- Objectives, cooking methods- Moist and Dry heat methods of cooking, Microwave cooking and solar cooking - merits and demerits.

UNIT - II
CEREALS, MILLETS, PULSES, NUTS AND OILSEEDS (6 Hours)

Cereals – Rice, Wheat – structure, nutritional composition. gelatinization, dextrinisation, retrogradation , and role in cookery.

Millets – Finger millet, Pear millet -nutritional composition, and role in cookery.

Pulses - Nutritional composition, Processing – soaking, germination, fermentation, and role in cookery.

Nuts– Nutritional composition and role in cookery.

UNIT – III
FRUITS AND VEGETABLES (6 Hours)

Fruits - Classification, nutritional composition, and role in cookery.

Vegetables - Classification, nutritional composition, pigments – water soluble, fat soluble, role in cookery, enzymatic browning- causes, preventive measures.

UNIT – IV
MILK , EGG, MEAT, POULTRY AND FISH (6 Hours)

Milk - Nutritional composition, role in cookery, processing – Pasteurization, Homogenization and Standardization of milk; Milk products – butter, ghee, cheese.

Egg - Structure, nutritional composition, and role in cookery.

Meat - Classification, nutritional composition, selection, storage, and role in cookery.

Poultry - Nutritional composition, selection, storage, and role in cookery.

Fish - Classification, nutritional composition, selection, storage, and role in cookery.

UNIT-V
FATS AND SUGAR (6 Hours)

Fats/Oil- Composition, smoking temperature, role in cookery, rancidity-Types, preventive measures.

Sugars- Stages of sugar cookery, and role in cookery.

Text Books

S.No.	Author name	Year of publication	Title of the book	Publishers name
1.	Srilakshmi B	2020	Food Science	New Age International, New Delhi.
2.	N. ShakuntalaManay and M.Shadakshara swamy	2020	Foods Facts and Principles	New Age International, New Delhi.

Reference Books

S.No.	Author name	Year of publication	Title of the book	Publishers name
1.	Norman N. Potter	2007 (5 th Edition)	Food Science	CBS Publishers & Distributors Pvt Ltd, India
2.	Avantina Sharma	2017 (3 rd Edition)	Text book of Food Science and Technology	CBS Publishers & Distributors Pvt Ltd, India

Web Links

- <https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=NuAs6SreCGryddEfs4kkBA>
- <http://www.ignouhelp.in/ignou-mscdfsm-study-material/>

Pedagogy:

Lecture, Power Point Presentation, E-content, Demonstration, Quiz, Assignment.

Course Designers

- Ms. B.Thanuja
- Ms. N.Ganga Devi

DEPARTMENT OF FOOD SERVICE MANAGEMENT AND DIETETICS		
VALUE ADDED COURSE	NUTRITION DURING ADOLESCENCE	HOURS -30
COURSE CODE 23VAFS02	OFFERED TO STUDENTS OF ALL THE PROGRAMMES	Date of Introduction 06.06.2023

Course Objectives

- To obtain knowledge on importance of nutrition during adolescence
- To comprehend the nutritional needs of adolescence
- To explain nutritional problems of adolescence

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO 1	To understand growth and development during adolescence	K 1
CO 2	To interpret the nutritional requirements of adolescence	K 2
CO 3	To predict the nutritional problems of adolescence	K 3
CO 4	To determine the dietary requirements of adolescence	K 4
CO 5	To evaluate the nutritional programmes related to adolescence	K 5

Syllabus

UNIT I

(6 Hours)

Adolescence

Growth and development, puberty, menarche, sexual characteristics, changes in physical pattern and psychological changes.

UNIT – II

(6 Hours)

Nutrition for adolescence

Importance of nutrition, Recommended Dietary Allowances (RDA), dietary guidelines and menu planning principles to be followed.

UNIT – III

(6 Hours)

Nutritional problems

Overweight and Obesity-Causes, assessment, complications, dietary management.

Underweight – Causes, dietary management.

Anaemia - Types, causes, signs and symptoms, dietary management.

UNIT – IV

(6 Hours)

Eating disorders

Anorexia Nervosa, Bulimia Nervosa and Binge Eating – characteristics, causes, symptoms and treatment.

UNIT – V

(6 Hours)

Nutrition Programmes

National Nutrition Mission (Nutrition Programme for Adolescent Girls), Kishori Shakti Yojana, POSHAN Abhiyaan, National Nutritional Anaemia Prophylaxis Programme (NNAPP)- Objectives, programme components and functions.

Text Books

S. No.	Author name	Year of publication	Title of the book	Publisher name
1.	Judy More	2013	Infant, Child and Adolescent Nutrition	CRC Press
2.	Vaughn Rickert	2015	Adolescent Nutrition Assessment and Management	Hodder Arnold

Reference Books

S. No.	Author name	Year of publication	Title of the book	Publisher name
1.	Kathleen Mahan L., Janice L. Raymond	2017	Krause's Food & the Nutrition Care Process	Elsevier
2.	Yolanda N Evans, Alicia Dixon Docter	2020	Adolescent Nutrition: Assuring the needs of emerging adults	Springer

Weblinks

- <https://vikaspedia.in/health/women-health/adolescent-health-1/management-of-adolescent-health/nutritional-needs-of-adolescents>
- https://scholar.google.co.in/scholar?q=nutrition+in+adolescent+growth+and+development&hl=en&as_sdt=0&as_vis=1&oi=scholart
- [https://www.jandonline.org/article/S0002-8223\(02\)90418-9/fulltext](https://www.jandonline.org/article/S0002-8223(02)90418-9/fulltext)
- <https://vikaspedia.in/health/women-health/reproductive-health-1/menstrual-disorders>

Pedagogy

Lecture, Power Point Presentation, Quiz, Assignment, Discussion.

Course Designers

1. Ms. C. Nivetha
2. Ms. R. Arthy

ENTREPRENEURSHIP DEVELOPMENT CELL		
VALUE ADDED COURSE	TERRACOTA JEWELLERY	Hours- 30
COURSE CODE: 23VAED02	OFFERED TO STUDENTS OF ALL DEPARTMENTS	DATE OF INTRODUCTION 07.06.2023

OBJECTIVES

- To gain knowledge on varieties of hand made jewels
- To appreciate jewellery as an integral part of industrial development and living
- To improve the designing of jewels

Course outcome

On the successful completion of the course, students will be able to

CO	CO statement	Knowledge
CO1	To create awareness on different types of jewels	K2
CO2	To identify the novel design of jewels	K3
CO3	To promote traditional designs of teracota jewels	K3

SYLLABUS

UNIT I Introduction to Clay preparation

(6 hours)

Definition, Origin of clay, Scope of Clay, Measures and methodology to utilize clay, protocols to prepare clay

UNIT II Working with tools**(6 hours)**

Types of tools and equipment- Preparation of tools - Sources of materials- Maintenance, care and storage, health and safety To Make your own jump ring and ear wins

UNIT III Bead & Ear making**(6 hours)**

Fabrication method, Composition of the materials and its wearability, market trends, Art or craft of attaching beads

Unit IV Pendant making & dying**(6 hours)**

Hand shaping technique, Application of jewellery finishing skills, Metal jewellery fabrication processes, Alloy calculation

UNIT V Baking theory Procedure &Painting**(6 hours)**

Clay refining, Clay mixing throwing on the wheel , drying and firing

TEXTBOOKS

S.NO	Author Name	Year of Publication	Title of the book	Publishers Name
1	Thomas Holbein Hendey	2009	Indian Jewellery	BR Publishing
2	Shanthi lal Nagar	2008	Deitied in Terracotta art	BR Publishing

Pedagogy: Lecture, Powerpoint Presentation, Videos, OHP Presentation,

Course Designers

1. Dr.R.Subha, Assistant Professor, Department of Chemistry
2. Mrs. Jayashree suresh, Startup founder, First Craft, Trichy

ENTREPRENEURSHIP DEVELOPMENT CELL		
VALUE ADDED COURSE	APP DEVELOPMENT	Hours- 30
COURSE CODE: 23VAED02	OFFERED TO STUDENTS OF ALL DEPARTMENTS	DATE OF INTRODUCTION 07.06.2023

OBJECTIVES

- To gain knowledge on fundamentals of IOT
- To generate ideas for development of prototypes
- To develop app for the identified innovation

Course outcome

On the successful completion of the course, students will be able to

CO	CO statement	Knowledge
CO1	To create awareness on fundamentals of IOT & AI	K2
CO2	To initiate the prototyping models of novel ideas	K3
CO3	To promote startup culture in the field of IOT	K3

SYLLABUS

UNIT I Introduction to Flutters

(6 hours)

Introduction to Flutter, Setting up the development environment, Creating and running the first Flutter application, Understanding Flutter widgets, Building layouts with widgets

UNIT II Working with widgets**(6 hours)**

Exploring the Flutter widget catalog, - Understanding the widget tree, Creating stateless and stateful widgets, Implementing user input with widgets, Managing widget layout

UNIT III Navigation and Routing**(6 hours)**

Understanding navigation and routing in Flutter, Implementing navigation with routes and named routes. Passing data between screens, Implementing a navigation drawer

Unit IV Flutter Layouts and Design**(6 hours)**

Building responsive layouts in Flutter, Understanding the principles of Material Design

Customizing app themes and styles, Building custom widgets and layouts

UNIT V Advanced Topics**(6 hours)**

Advanced topics in Flutter, such as: Using the Flutter SDK to build for both iOS and Android platforms, Testing and debugging Flutter applications, Implementing push notifications, Integrating Firebase in Flutter

TEXTBOOKS

S.NO	Author Name	Year of Publication	Title of the book	Publishers Name
1	John horton	2019	Android Programming for beginners	Packt Publishers
2	Michel Burton	2018	Android App development	Wiley

Pedagogy: Lecture, Powerpoint Presentation, Videos, OHP Presentation,

Course Designers

1. Dr.R.Subha, Assistant Professor, Department of Chemistry
2. Mr.Mohammed Ithiyas, startup Founder, Robotian robotics

ANNEXURE B



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY - 18
PG & RESEARCH DEPARTMENT OF TAMIL
B.A. TAMIL – PROGRAMME STRUCTURE
LEARNING OUTCOME BASED CURRICULUM FRAMEWORK (CBCS – LOCF)
(For the Candidates admitted from the Academic year 2023-2024 and onwards)
I SEMESTER

Semester	Part	Course	Course Title	Course Code	Inst. Hrs. / week	Credits	Exam			Total
							Hrs.	Marks		
								Int	Ext	
I	I	Language Course-I (LC)	தமிழியல் வள ஆதாரங்கள்	23ULTA1	6	3	3	25	75	100
			Hindi ka Samanya Gyan aur Nibandh	23ULH1						
			Foundation Course Paper – I – French I	23ULF1						
			Poetry Grammar and History of Sanskrit Literature	23ULS1						
	II	English Language Course I (ELC)	General English -I	23UE1	6	3	3	25	75	100
	III	Core Course – I (CC)	இக்கால இலக்கியம்	23UTA1CC1	6	5	3	25	75	100
		Core Course- II (CC)	தமிழக வரலாறும் பண்பாடும்	23UTA1CC2	6	5	3	25	75	100
		First Allied Course- I (AC)	தமிழ் மரபு மருத்துவம்	23UTA1AC1	4	3	3	25	75	100
IV	Ability Enhancement Compulsory Course-I (AECC)	Value Education	23UGVE	2	2	-	100	-	100	
	Total				30	21	-	-	-	600

தமிழை முதன்மைப் பாடமாகக் கொண்ட மாணவர்களுக்கான மாற்றுப் பாடத்திட்டம்

Semester I	Internal Mark : 25	External Mark : 75		
பாடக்குறியீடு	பாடம்	Category	Hrs/Week	Credits
23ULTA1	தமிழியல் வள ஆதாரங்கள்	LC	6	3

நோக்கம்

- தமிழ் பயிலும் மாணவர்கள் தமிழியல் தொடர்பாக உள்ள ஆதார வளங்களை அறிதல்.
- தமிழியல் வள ஆதாரங்கள் கிடைக்கும் இடம், அவற்றைப் பயன் கொள்ளும் முறை முதலியவற்றை மாணவர்கள் அறிந்து பயன்பெற அவர்களை ஆற்றுப்படுத்துதல்.
- அவற்றைப் பயன்படுத்தும் தொழில் நுட்ப அறிவை அடைதல்.
- அத்தகைய ஆதார வளங்களை உருவாக்கும் முனைப்பைப் பெறல்.

COURSE OUTCOMES

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO No.	CO Statement	Knowledge Level
CO1	அறிவியல் தொழில்நுட்ப வளர்ச்சியின்வழி தமிழைக் கற்றல்	K1, K2
CO2	தரவுகள் கிடைக்கும் இடங்களை விரிவாக அறிந்துகொள்ளுதல்	K2
CO3	குறைந்த நேரத்தில் மின்நூலகங்களைப் பயன்படுத்தும் முறையையும் திறனையும் அறிதல்	K3, K4
CO4	வாசிப்புத்திறனை அதிகரித்தலின் மூலமாகப் பகுத்தறியும் திறன் பெறுதல்	K5, K4
CO5	இதன்வழி தமிழுக்குப் புதிய ஆதார வளங்களை உருவாக்கும் திறன் பெறுதல்	K5, K6

பாடத்திட்டம் – SYLLABUS				
UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	கல்வெட்டுகள் – செப்பேடுகள் – சுவடிகள் – நாணயங்கள் – பிற ஆவணங்கள் – நூல்கள் – இதழ்கள், நூலகங்கள், அருங்காட்சியகங்கள், அகழ்வைப்பகங்கள்	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
II	மின்நூல்கள் – மின்நூலகங்கள் – மின்இதழ்கள் – பேசும்புத்தகங்கள் (audio books) – விக்கிப்பீடியா – தமிழ் விக்சனரி – மின் அகராதிகள்	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
III	தமிழ் இணையக் கல்விக்கழகம் – தமிழ் மொழி தொடர்பான இணையத் தளங்கள் – அரசு மற்றும் தனியார். குறுவட்டுகள் – வலைப்பூ – இலக்கியம் சார்ந்த வலைப்பூக்கள் – பொதுவான வலைப்பூக்கள்	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
IV	தமிழ் மென் பொருள்கள் – ஒலிபெயர்ப்பு, மொழிபெயர்ப்பு, சமூக வலைத் தளங்கள்: உள்ளடக்கம் – பயன் கொள்ளும் முறைகள் – தரவிறக்கம் செய்யும்முறை – மின் பெயர்ப்புகள் (pdf to word – word to pdf etc)	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
V	திறன்பேசிச் செயலிகள் – செயல்படும்முறைகள் – தமிழ்மொழியின் பயன்பாடு – விசைப்பலகை – குரல் பதிவில் தட்டச்சு உள்ளீடு, எழுத்து முறை மாற்றி	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
VI	சுயகற்றல் (இப்பகுதி பருவத்தேர்வுக்கு		CO1 CO2	K1 K2

	<p>உரியதல்ல)</p> <p>கணினித்தமிழ் அமைப்புகளும் செயல்பாடுகளும்</p>		<p>CO3 CO4 CO5</p>	<p>K3 K4 K5 K6</p>
--	--	--	----------------------------	--------------------------------

பார்வை நூல்கள்

- சுந்தரம், இல., (2015), கணினித்தமிழ், விகடன் பிரசுரம், சென்னை.
- சுப்பிரமணியன், பூ., (1991), சுவடியியல், உலகத் தமிழாராய்ச்சி நிறுவனம், சென்னை.
- சோமலே, (1988), வளரும் தமிழ், வானதி பதிப்பகம், சென்னை.
- முனைவர் மு. இளங்கோவன், (2009), இணையம் கற்போம், வயல்வெளிப் பதிப்பகம், அரியலூர்.
- முனைவர் துரை மணிகண்டன், (2010), வலைப்பூ, கௌதம் பதிப்பகம், சென்னை.
- முனைவர் துரை மணிகண்டன், (2009), இணையமும் தமிழும், நல்நிலம் பதிப்பகம், சென்னை.

Web Sources

- Tamil Heritage Foundation – www.tamilheritage.org
- Tamil virtual University Library – www.tamilvu.org/ library <http://www.virtualvu.org/library>
- Project Madurai – www.projectumadurai.org.
- Chennai Library – www.chennailibrary.com
- Tamil Universal Digital Library – www.ulib.prg
- Tamil Books on line – books.tamilcube.com
- Catalogue of the Tamil books in the Library of British Congress archive.org
- Tamil novels on line – books.tamilcube.com

கற்பித்தல் முறைகள்

கலந்தாய்வு, வினாடி வினா,திட்டக்கட்டுரை,கரும்பலகை, குழுவிவாதம்,PPT, GOOGLE

MEET,GOOGLE CLASSROOM, MOOC, SWAYAM, NPTEL, Websites etc.

Semester I	Internal Mark : 25	External Mark : 75		
பாடக்குறியீடு	பாடம்	Category	Hrs/Week	Credits
23UTA1CC1	இக்கால இலக்கியம்	CC	6	5

நோக்கம் :

- இலக்கிய வரலாற்றுப் பின்னணியில் இக்காலத் தமிழ் இலக்கியங்களை அறிந்துகொள்ள வாய்ப்பளித்தல்.
- கவிதை, சிறுகதை, புதினம், நாடகம், கட்டுரை ஆகிய படைப்பியல் வகைகளைப் பற்றிய பரந்துப்பட்ட புலமையைப் பெருக்குதல்.
- இக்காலத் தமிழ் இலக்கியங்களின் உள்ளடக்கம், வெளியீட்டு நெறி, படைப்பியல் கொள்கை ஆகியவற்றை அறியச்செய்தல்.
- இலக்கியக் கொள்கைகளின் அடிப்படையில் இக்கால இலக்கியங்களைத் திறனாய்வு செய்யப் பயிற்சி அளித்தல்.
- படைப்புத் துறையிலும் ஊடகத்துறையிலும் கல்விப்புலத்திலும் அயல்நாடுகளிலும் வேலைவாய்ப்பினைப் பெறுவதற்குத் துணை செய்தல்.

COURSE OUTCOMES:

இப்பாடத்திட்டத்தைப் பயில்வதால் மாணவியர் பெறும் திறன்

CO NO	Co Statement	Cognitive Level
CO1	இலக்கியங்கள் வாயிலாகப் பல்வகைப்பட்ட சமூகப் போக்குகளையும் மக்களின் பண்புநலன்களையும் அறிந்துகொள்ளல்.	K1, K2
CO2	பலவகையான இலக்கிய வாசிப்பின் வழி மாணவர்கள் கவிஞர், சிறுகதையாசிரியர், புதினப் படைப்பாளர், நாடக ஆசிரியர், கட்டுரையாளர், நடிகர், இயக்குநர், இசையாளர் உள்ளிட்ட பணிநிலைகளுக்கு உயர்வதற்கான வாய்ப்பினைப் பெறுதல்.	K3
CO3	சமகாலப் படைப்பாளர்களை நேரில் சந்தித்து அவர்களின் படைப்பு அனுபவங்களை அறிந்து மாணவர்கள் தங்களின் ஆளுமை மேம்பாட்டிற்குப் பயன்படுத்திக்கொள்ள இயலுதல்.	K3, K4
CO4	மாணாக்கரின் கற்பனை வளம் பெருகுதல்.	K3
CO5	பன்முகப் படிநிலைகளில் வாழும் மனிதர்களின் உணர்வியலை உளவியல் நோக்கில் அறிந்துகொள்ளல்.	K5

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3	3	3	3	3	2
CO2	3	3	3	3	2	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	2	3	3	2	3	3	3	2	3	3
CO5	3	3	2	3	2	3	3	3	3	2

பாடத்திட்டம்-SYLLABUS				
UNIT	CONTENT	HRS.	COS	COGNITIVE LEVEL
I	<p>பாரதியார் – செந்தமிழ் நாடு, புதுமைப்பெண்</p> <p>பாரதிதாசன் – தமிழின் இனிமை, புத்தகசாலை</p> <p>வாணிதாசன் – கதிரவன் வருகை, பாட்டாளி</p> <p>சுரதா -பெருந்தலைவர் காமராசர்</p> <p>முடியரசன் – ஆறு, மனத்தாய்மை</p> <p>கண்ணதாசன் – காலக்கணிதம், அனுபவமே</p> <p>கடவுள்</p> <p>வைரமுத்து – நவீன தாலாட்டு, நட்சத்திரங்கள்</p> <p>அப்துல் ரகுமான் – ஒப்பில்லாத சமுதாயம்</p> <p>நா.காமராசன் – நான் மரணத்தைப் பற்றிச்</p> <p>சிந்திக்கிறேன்</p> <p>மு.மேத்தா – நிழல்கள்</p> <p>ஈரோடு தமிழன்பன் – வெற்றிமுகம்</p>	15	<p>CO1</p> <p>CO2</p> <p>CO3</p> <p>CO4</p> <p>CO5</p>	<p>K1</p> <p>K2</p> <p>K3</p> <p>K4</p> <p>K5</p>
II	<p>தமிழின் சிறந்த 100 சிறுகதைகள் தொகுப்பு</p> <p>-எஸ்.இராமகிருஷ்ணன் - தேர்வு செய்யப்பட்ட 10 சிறுகதைகள்</p> <p>கடவுளும் கந்தசாமிப்பிள்ளையும் –</p> <p>புதுமைப்பித்தன்</p> <p>நட்சத்திரக் குழந்தைகள் – பி.எஸ்.இராமையா</p> <p>அன்பளிப்பு – கு.அழகிரிசாமி</p> <p>கன்னிமை – கி.ராஜநாராயணன்</p> <p>மருமகள் வாக்கு – கிருஷ்ணன் நம்பி</p>	15	<p>CO1</p> <p>CO2</p> <p>CO3</p> <p>CO4</p> <p>CO5</p>	<p>K1</p> <p>K2</p> <p>K3</p> <p>K4</p> <p>K5</p>

	அந்நியர்கள் - சூடாமணி விகாசம் - சுந்தரராமசாமி நகரம் - சுஜாதா அம்மா ஒரு கொலை செய்தாள் - அம்பை வெயிலோடு போய் - தமிழ்ச்செல்வன்			
III	சாயாவனம் (புதினம்) - சா.கந்தசாமி	20	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
IV	ஒளவை (நாடகம்) - இன்குலாப்	20	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
V	கடலோடி - நரசய்யா	20	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
VI	சுயகற்றல் (இப்பகுதி பருவத்தேர்வுக்கு உரியதல்ல) தமிழில் கவிதைக் கோட்பாடுகள்	-	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5

பாட நூல்கள்

- மெய்யப்பன் ச. (பதிப்பாசிரியர்), (2000), பாரதியார் கவிதைகள், மணிவாசகர் பதிப்பகம், சென்னை.
- பாரதிதாசன், (2000), பாரதிதாசன் கவிதைகள், மணிவாசகர் பதிப்பகம், சென்னை.
- கண்ணதாசன், (2012), கண்ணதாசன் கவிதைகள் (தொகுதி 4), வானதி பதிப்பகம், சென்னை.
- வைரமுத்து, (2000), வைரமுத்து கவிதைகள், சூர்யா லிட்ரேச்சர் பிரைவேட் லிமிடெட், சென்னை.
- புதுமைப்பித்தன், புதுமைப்பித்தன் படைப்புகள், காலச்சுவடு, ஐந்திணை பதிப்பகம், சென்னை - 600005.
- ஜெயகாந்தன், (1997), ஜெயகாந்தன் சிறுகதைகள், நான்காம் மறுஅச்சு, நேஷனல் புக்டிரஸ்ட், இந்தியா, புதுடில்லி - 1100 12.
- சேதுப்பிள்ளை. ரா.பி., (2013), கடற்கரையிலே, கௌரா பதிப்பகம், சென்னை.
- இன்குலாப், (2017), ஒளவை(நாடகம்), அன்னம் - அகரம் பதிப்பகம், சென்னை.
- நரசய்யா, (2020), கடலோடி, நிவேதிதா பதிப்பகம், சென்னை.

பார்வை நூல்கள்

- இராமலிங்கம். மா., (2013), புதிய உரைநடை, மீனாட்சி புத்தக நிலையம், மதுரை.
- பம்மல் சம்பந்தம் முதலியார், நாடகக் கலை உலகத் தமிழாராய்ச்சி நிறுவனம், தரமணி, சென்னை – 600 113.
- கைலாசபதி கலாநிதி, (2018), தமிழ் நாவல் இலக்கியம், காலச்சுவடு பதிப்பகம், சென்னை.
- மருதநாயகம். ப., (2001), மேலை நோக்கில் தமிழ்க் கவிதை, உலகத் தமிழாராய்ச்சி நிறுவனம், தரமணி, சென்னை – 600 113.
- சிவத்தம்பி. கா., சிவகாமி ச., இராம. குருநாதன், (2001), உலகத் தமிழ் இலக்கிய வரலாறு கி.பி 1851 – 2000, உலகத் தமிழாராய்ச்சி நிறுவனம், தரமணி, சென்னை – 600 113.
- வல்லிக்கண்ணன், (2014), புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும், தமிழ் வளர்ச்சி இயக்கம், சென்னை.
- பாலசுப்ரமணியம். இரா., (2005), நாவல் கலையியல், உலகத் தமிழாராய்ச்சி நிறுவனம், தரமணி, சென்னை – 600 113.
- வானமாமலை. நா., (1977), தமிழ் நாவல்கள் ஒரு மதிப்பீடு, நியூ செஞ்சுரி புக் ஹவுஸ், சென்னை.
- தோதாத்ரி. எஸ்., (1980), தமிழ் நாவல் அடிப்படைகள், அகரம், சிவகங்கை.
- சிவத்தம்பி. கா., (1996), தமிழ்ச் சிறுகதையின் தோற்றமும் வளர்ச்சியும், புதுக்களையம், சென்னை.
- பம்மல் சம்பந்த முதலியார், (1996), நாடகமேடை நினைவுகள், உலகத் தமிழாராய்ச்சி நிறுவனம், தரமணி, சென்னை – 600 113.
- மணவாளன் அ.அ., (1995), இருபதாம் நூற்றாண்டின் இலக்கியக் கோட்பாடுகள், உலகத் தமிழாராய்ச்சி நிறுவனம், தரமணி, சென்னை – 600 113.

இணையதள முகவரி:

- Tamil Heritage Foundation -www.tamilheritage.org
- Tamil virtual University Library- www.tamilvu.org/library<http://www.virtualvu.org/library>
- Project Madurai – www.projectmadurai.org
- Chennai Library – www.chennailibrary.com<http://www.chennailibrary.com>.
- Tamil Universal Digital Library -www.ulib.prg<http://www.ulib.prg>.
- Tamil E-Books Downloads – tamilbooksdownloads.blogspot.com
- Tamil Books online – books.tamilcube.com
- Catalogue of the Tamil books in the Library of British Congress archive.org
- Tamil novels online – books.tamilcube.com

கற்பித்தல் முறைகள் :

கலந்தாய்வு, வினாடிவினா,திட்டக்கட்டுரை ,கரும்பலகை, குழுவிவாதம்,PPT, GOOGLE MEET, GOOGLE CLASSROOM, MOOC, SWAYAM, NPTEL, Websites etc.

பாடத்திட்டம் – SYLLABUS				
UNIT	CONTENT	HRS.	COS	COGNITIVE LEVEL
I	வரலாற்றுக் காலத்துக்கு முந்தைய தமிழகம் (கி.மு. 5000 முதல் கி.பி. 1 வரை) - சிந்துவெளி அகழ்வாராய்ச்சி - கற்காலம் - இரும்புக்காலம் - தமிழரின் வரலாற்றுத் தொன்மை - பிறநாட்டாருடன் தமிழரின் தொடர்புகள்.	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
II	சங்ககாலத் தமிழர்கள் (கி.பி.1 முதல் 6 ஆம் நூற்றாண்டு வரை) - பாண்மரபு - வேளிர் வரலாறு - மூவேந்தர்கள் - அக, புறப்பண்பாடு - களப்பிரர்கள் காலம்.	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
III	பல்லவர் காலத்தில் தமிழர் பண்பாடு (கி.பி.6 முதல் 9 ஆம் நூற்றாண்டு வரை) - பல்லவர் ஆட்சி - கலைகளின் வளர்ச்சி - சிற்பம், ஓவியம் - கடற்கரைக் கோயில் - புடைப்புச் சிற்பங்கள் - பக்தி இலக்கியங்கள் உருவாகுதல்.	20	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
IV	சோழர்கள் காலம் - பிற்காலப் பாண்டியர் காலம் நாயக்கர் காலம் (கி.பி. 9 முதல் 18ஆம் நூற்றாண்டு வரை) - சோழர்களின் எழுச்சி - இராசராச சோழன் - ராஜேந்திர சோழன் - அயலநாட்டில் தமிழர் ஆட்சி - தஞ்சைப் பெரிய கோயில் - கட்டடக்கலை வளர்ச்சி - உரையாசிரியர்கள் - காப்பியங்கள் வளர்ச்சி - பாண்டியரின் ஏற்றமும் வீழ்ச்சியும் - நாயக்கர்கள் வருகை - பாளையப்பட்டுகள் - கோயில் கோபுரங்கள் - சிற்பிலக்கிய வளர்ச்சி.	20	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
V	சமூக எழுச்சிக்காலம் (19 - 20 ஆம் நூற்றாண்டு) - அச்சுநூல்கள் பதிப்பு - தமிழ் இலக்கிய மறுமலர்ச்சி - உ.வே.சா, சி.வை.தா. பங்களிப்பு - தென்னிந்திய நல உரிமைச் சங்கத்தின் காலம் - திராவிட இயக்க காலம் - தமிழர்களின் சமூக எழுச்சி.	20	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
VI	சுயகற்றல் (இப்பகுதி பருவத்தேர்வுக்கு உரியதல்ல) வாய்மொழி இலக்கியங்களும் தமிழ்ப் பண்பாடும்	-	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5

பாட நூல்கள் :

- டாக்டர் கே.கே.பிள்ளை., (2002), தமிழக வரலாறு மக்களும் பண்பாடும், உலகத் தமிழாராய்ச்சி நிறுவனம், தரமணி, சென்னை – 113.
- டாக்டர் தட்சிணாமூர்த்தி .அ., (2011), தமிழர் நாகரிகமும் பண்பாடும், யாழ் வெளியீடு, மேற்கு அண்ணாநகர், சென்னை – 40.

பார்வை நூல்கள் :

- முனைவர் கு. சேதுராமன்., (2011), தமிழக சமுதாய பண்பாட்டு கலை வரலாறு, நியூ செஞ்சரி புக் ஹவுஸ், சென்னை - 98.
- பெருமாள் .அ.கா., (2014), தமிழர் கலையும் பண்பாடும், பாவை வெளியீடு, சென்னை - 14.

Web Sources

- Tamil Heritage Foundation -www.tamilheritage.org<<http://www.tamilheritage.org>>
- Tamil virtual University Library- www.tamilvu.org/library<<http://www.virtualvu.org/library>>
- Project Madurai – www.projectmadurai.org
- Chennai Library – www.chennaiLibrary.com<<http://www.chennaiLibrary.com>>.
- Tamil Universal Digital Library -www.ulib.prg<<http://www.ulib.prg>>.
- Tamil E-Books Downloads – [tamilebooksdownloads. blogspot.com](http://tamilebooksdownloads.blogspot.com)
- Tamil Books online – books.tamilcube.com
- Catalogue of the Tamil books in the Library of British Congress archive.org
- Tamil novels online – books.tamilcube.com

கற்பித்தல்முறைகள்

கலந்தாய்வு, வினாடிவினா, திட்டக்கட்டுரை, கரும்பலகை, குழுவிவாதம்,PPT, GOOGLE MEET ,GOOGLE CLASSROOM, MOOC, SWAYAM, NPTEL, Websites etc.

Semester I	Internal Mark : 25	External Mark : 75		
பாடக் குறியீடு	பாடம்	Category	Hrs/Week	Credits
23UTA1AC1	தமிழ் மரபு மருத்துவம்	AC	4	3

நோக்கம்

- நோயில்லாப் பெருவாழ்வை வலியுறுத்தும் சித்த மருத்துவம், உணவே மருந்து என்று சொல்லும் வகையில் நம் பழந்தமிழர் மருத்துவ முறைகளை அறிமுகப்படுத்தும் நோக்கில் இப்பாடம் அமைந்துள்ளது.
- பழந்தமிழர் மருத்துவ முறைகளை அறிந்துகொண்டு தன் வாழ்நாளை ஆரோக்கியமான உடல் உள்ள நிலையில் தானும் வாழ்ந்து, பிறரையும் அதில் ஈடுபடுத்துவர். இது அவர்களின் பணி வாய்ப்பின் படிநிலையில் முக்கியத்துவம் பெறும்.

COURSE OUTCOMES

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO No.	CO Statement	Cognitive Level
CO1	தமிழர்களின் மருத்துவ முறைகளை அறிதல்	K1, K2, K3
CO2	ஐம்பூதங்களோடு நம் உடலை ஒப்புநோக்கி ஆராய்தல்	K1, K4, K5
CO3	கீரை, காய்கறிகளின் பயன் உணர்ந்து உட்கொள்ளுதல்	K1, K4, K5
CO4	பழங்களின் சிறப்பை ஆராய்ந்து தேவைக்கேற்ப பயன்படுத்தும் தெளிவு பெறுதல்	K1, K4, K5
CO5	நாம் அன்றாடம் வாழ்வில் பயன்படுத்தும் பழமொழிகளுக்கான காரணங்களை உணர்தல், உருவாக்குதல்	K1, K4, K5, K6

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	3	3	3	3	3	3	2	2	3
CO2	3	2	3	2	3	3	3	2	3	3
CO3	2	3	3	2	3	3	2	3	2	2

CO4	2	3	2	3	3	3	2	3	2	2
CO5	2	3	3	3	3	3	2	3	2	3

பாடத்திட்டம் – SYLLABUS				
UNIT	CONTENT	HRS.	COS	COGNITIVE LEVEL
I	மதிப்பு மிக்க உணவும் மருந்தும் - இயற்கை மருத்துவ முன்னோடிகள் - பல்வேறு மருத்துவ முறைகள்	12	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
II	ஐம்பூத மருத்துவம் - உடலுறுப்புகளின் பாதிப்பும் நோயும்	12	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
III	இயற்கை மருத்துவம் தவிர்க்கச் சொல்லும் உணவுப்பொருட்கள் - கீரைகளும் பயன்களும் - காய்கறிகளும் பயன்களும்	12	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
IV	பழங்களும் பயன்களும் - தானியங்களின் பயன்கள் - மலர்களின் பலன்கள்	12	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
V	நோய்களும் மூலிகைகளின் பயன்களும் - சமைத்த உணவும் சமைக்காத உணவும் - சில ஆரோக்கிய உணவுகள் - இயற்கை மருத்துவப் பழமொழிகள்	12	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
VI	சுயகற்றல் பருவத்தேர்வுக்கு உரியதல்ல சங்க இலக்கியங்களில் மருத்துவக் கருத்துக்கள்	-	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6

பாட நூல்

- சிவகாமி ஆ., முனைவர், (2013), இயற்கை நெறியே இனிய மருந்து, நியூ செஞ்சரி புக் ஹவுஸ், சென்னை.

பார்வை நூல்கள்

- ஜனகமாரி டி.எஸ்., (1965), தமிழ் மருந்துகள், நியூ செஞ்சரி புக் ஹவுஸ், சென்னை,

- சோமசுந்தரம் எஸ்., (1997), மருத்துவத் தாவரஇயல், இளங்கோவன் பதிப்பகம், பாளையங்கோட்டை - 527002.
- நாராயணசாமி வி., (1995), சித்த வைத்தியமும் வாழ்க்கை முறையும், கோயம்புத்தூர் -641044.
- பசுமலை அரசு மு., (1998), செந்தமிழும் சித்த மருத்துவமும், கிரிஜா பதிப்பகம், பெங்களூரு - 560033.
- வெங்கடேசன் சு., (1983), சித்த மருத்துவ வழிகாட்டி முதற்பாகம் நோயியல், ஸ்ரீ சாதி, பதிப்பகம், வேலூர், 632001.
- விசுவநாதம் கி.ஆ.பெ., (1953), தமிழ் மருந்துகள், பாரி நிலையம், சென்னை - 106.

Web Sources

- Tamil Heritage Foundation – www.tamilheritage.org <http://www.tamilheritage.org>
- Tamil virtual University Library –www.tamilvu.org/
- library<http://www.virtualvu.org/library>
- Project Madurai – www.projectumadurai.org.
- Chennai Library – www.chennailibrary.com <http://www.chennailibrary.com>
- Tamil Universal Digital Library – www.ulib.prg <http://www.ulib.prg>.
- Tamil Books on line – books.tamilcube.com
- Catalogue of the Tamil books in the Library of British Congress archive.org
- Tamil novels on line – books.tamilcube.com

கற்பித்தல் முறைகள்

கலந்தாய்வு, வினாடி வினா, திட்டக்கட்டுரை, கரும்பலகை, குழுவிவாதம், PPT, GOOGLE MEET, GOOGLE CLASSROOM, MOOC, SWAYAM, NPTEL, Websites etc.



Cauvery College for Women (Autonomous)
PG & Research Department of Tamil
LEARNING OUTCOME BASED CURRICULAM FRAME WORK (CBCS -LOCF)
(For the Candidates admitted from the Academic year 2022-2023 and onwards)
B.A. TAMIL - III SEMESTER

Semester	Part	Course	Course Title	Course Code	Inst. Hrs. / week	Credits	Exam			Total
							Hrs.	Marks		
								Int	Ext	
III	I	Language Course-III (LC)	காப்பியமும் நாடகமும்	22ULT3	5	3	3	25	75	100
			Hindi Literature & Grammar-III	22ULH3						
			Intermediate French – I	22ULF3						
			Prose, Textual Grammar and vakyarachana	22ULS3						
	II	English Language Course-III(ELC)	Learning Grammar Through Literature- I	22UE3	6	3	3	25	75	100
	III	Core Course– V(CC)	யாப்பருங்கலக்காரிகை	22UTA3CC5	6	6	3	25	75	100
		Core Course - VI(CC)	சிற்றிலக்கியம்	22UTA3CC6	5	5	3	25	75	100
		Second Allied Course-I (AC)	தமிழக வரலாறும் பண்பாடும்	22UTA3AC3	4	3	3	25	75	100
	IV	Ability Enhancement Compulsory Course-III (AECC)	Innovation and Entrepreneurship	22UGIE	2	1	-	100	-	100
		Generic Elective Course- I (GEC)	அறிவியல் தமிழ்	22UTA3GEC1	2	2	3	25	75	100
			Basic Tamil - I	22ULC3BT1						
			Special Tamil - I	22ULC3ST1						
		Total				30	23	-	-	-

மூன்றாம் பருவம்
காப்பியமும் நாடகமும்

பாடக்குறியீடு	பாடம்	Category	L	T	P	Credit
22ULT3	காப்பியமும் நாடகமும்	I	71	4	-	3

நோக்கம்

1. தமிழ்க் காப்பியங்களின் செழுமைகளையும் அறக்கருத்துக்களையும் அறிந்து கொள்ளுதல்
2. சமய நல்லிணக்க உணர்வை வளர்த்தல்
3. நாடக இலக்கியத்திறன் அறிதல்

COURSE OUTCOME

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO No.	CO Statement	Cognitive Level
CO1	காப்பிய இலக்கியங்கள் உணர்த்தும் சமூகச் சூழலைக் கண்டறிதல்	K1
CO2	காப்பிய இலக்கியங்களின் மொழிப் பயன்பாட்டினை விளக்கியறிதல்	K2
CO3	காப்பிய இலக்கியங்கள் உணர்த்தும் வாழ்வியல் விழுமியங்களைக் கற்றுப் பயன்படுத்துதல்	K3
CO4	போட்டித் தேர்வுகளுக்கேற்ப இலக்கியம் மற்றும் இலக்கணக் கூறுகளைப் பகுத்தாராய்தல்	K4
CO5	நாடகம் வழி சமூகப் பண்பாட்டினை அறிவதுடன் படைப்பாக்க உத்தியினை ஆராய்ந்தறிதல்	K4

Mapping of CO with PO and PSO

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	2	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	2	3	3	3

CO4	2	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

பாடத்திட்டம் – SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	1. சிலப்பதிகாரம் : இந்திர விழவூரெடுத்த காதை 2. மணிமேகலை : பீடிகை கண்டு பிறப்புணர்ந்த காதை 3. சீவக சிந்தாமணி : நாமகள் இலம்பகம்-நாட்டு வளம் 4. இலக்கிய வரலாறு - காப்பியங்கள் தோற்றமும் வளர்ச்சியும் (ஐம்பெருங்காப்பியங்கள்)	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	1. பெரியபுராணம் : கோச்செங்கட் சோழ நாயனார் புராணம் 2. கம்பராமாயணம் : கையடைப்படலம் (24 பாடல்கள்) 3. திருவிளையாடற்புராணம் : தருமிக்குப் பொற்கிழி அளித்த படலம் - வெவ்விய வேலான் வீசும் என்று தொடங்கும் பாடல் முதல் 29 பாடல்கள் (2511 – 2539) 4. இலக்கிய வரலாறு : பெரியபுராணம், கம்பராமாயணம், திருவிளையாடற் புராணம்.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	1. சீறாப்புராணம் : விருந்தாட்டுப் படலம் 2. இயேசு காவியம் : வர இருந்தவர் வருகிறார் 3. பாஞ்சாலி சபதம் : திரௌபதி கண்ணனுக்குச் செய்யும் பிரார்த்தனை முதல் இறுதி வரை (88 – 104) 4. இலக்கிய வரலாறு : சீறாப்புராணம், இயேசு காவியம், பாஞ்சாலி சபதம்.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	நாடகம் : 1. ரௌத்திரம் பழகு – மு. இராமசாமி 2. இலக்கிய வரலாறு : நாடகத்தின் தோற்றமும் வளர்ச்சியும்	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

V	1. வாக்கிய வகைகள் 2. மரபுத் தொடர்கள் 3. கவிதை படைத்தல்	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
VI	மனப்பாடப் பகுதி (சுய கற்றல்) இப்பகுதி இறுதி பருவத்தேர்விற்கு உரியதல்ல 1. சிலப்பதிகாரம் – கானல் வரி (திங்கள் மாலை எனத் தொடங்கும் அடி முதல் வாழி காவேரி என்ற அடிவரை 24 வரிகள்) 2. கம்பராமாயணம் – அ) தண்டலை மயில்கள்.. (36, நாட்டுப்படலம்) ஆ) பஞ்ச ஒளிர்.. (248, சூர்ப்பனகைப்படலம்) இ) விடுநனி கடிது.. (60, கங்கைப்படலம்) ஈ) வெய்யோன் ஒளிதன்.. (1926, கங்கைப்படலம்)	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

பாட நூல் :

வ.எண்	ஆசிரியர்	நூல்	பதிப்பகம்	ஆண்டு
1	தமிழாய்வுத்தறை, காவேரி மகளிர் கல்லூரி (தன்னாட்சி)	தமிழ் இலக்கிய வரலாறு	தமிழ்ப் பதிப்பகம், திருச்சிராப்பள்ளி - 18	2019

கற்பித்தல் முறைகள்

கலந்தாய்வு, வினாடி வினா, திட்டக்கட்டுரை, கரும்பலகை, குழுவிவாதம்

பாடத்திட்டம் – SYLLABUS				
UNIT	CONTENT	HRS.	COS	COGNITIVE LEVEL
I	உறுப்பியல் – எழுத்து, அசை, சீர், தளை, அடி, தொடை	20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	செய்யுளியல் – பாவுக்குரிய அடியும் ஓசையும் - வெண்பா, ஆசிரியப்பா	20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	செய்யுளியல் – கலிப்பா, வஞ்சிப்பா, மருட்பா	20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	ஒழிபியல்	20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	பயிற்சி : வெண்பாவின் வகைகள் (5) எழுதப் பயிற்சி அளித்தல்	10	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
VI	சுய கற்றல் (இப்பகுதி பருவத் தேர்வுக்கு உரியதல்ல)	-	CO1, CO2,	K1, K2,

	யாப்பருங்கலக்காரிகை நூலின் கட்டமைப்பு		CO3, CO4, CO5	K3, K4
--	---------------------------------------	--	---------------------	-----------

பாட நூல் :

- வேங்கடசாமி நாட்டார் (உ.ஆ.), (2010), யாப்பருங்கலக்காரிகை, சாரதா பதிப்பகம், சென்னை.

பார்வை நூல்கள் :

- தமிழண்ணல், (2004), யாப்பருங்கலக்காரிகை, மீனாட்சி புத்தக நிலையம், மதுரை.
- கந்தசாமி, சோ.ந., (1989), தமிழ் யாப்பியலின் தோற்றமும் வளர்ச்சியும் I,II, தமிழ்ப் பல்கலைக்கழகம், தஞ்சாவூர்.

Web Resources :

- <https://www.tamilvu.org/ta/library-l0300-html-l0300ind-117993>
- <https://www.tamildigitallibrary.in/>
- https://www.projectmadurai.org/pm_etexts/utf8/pmuni0055.html

கற்பித்தல் முறைகள் :

கலந்தாய்வு, வினாடி வினா, திட்டக் கட்டுரை, கரும்பலகை, குழு விவாதம்

பாடத்திட்டம் – SYLLABUS				
UNIT	CONTENT	HRS.	COS	COGNITIV ELEVEL
I	<p>சிற்றிலக்கியம் – தமிழ் இலக்கிய வகைமைகளில்</p> <p>சிற்றிலக்கிய வகை – சிற்றிலக்கியத்திற்கான பொது</p> <p>இலக்கண வரையறை – சிற்றிலக்கியங்களின் காலம் –</p> <p>பழந்தமிழ் இலக்கண, இலக்கிய நூல்களில் சிற்றிலக்கியக்</p> <p>கூறுகள் – சிற்றிலக்கிய சிறப்புகளும் தனித்தன்மைகளும்</p>	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	<p>பிள்ளைத்தமிழ் - திருச்செந்தூர்ப் பிள்ளைத்தமிழ், (முதல் ஐந்து பருவங்களில் முதல் 3 பாடல்கள்)</p> <p>கோவை - தஞ்சைவாணன் கோவை –</p> <p>பாங்கி மதியுடன்பாடு</p>	15	CO1, CO2, CO3, CO4, CO5,	K1, K2, K3, K4
III	<p>தூது - அழகர் கிள்ளை விடு தூது (முழுவதும்)</p>	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	<p>மாலை - நால்வர் நான்மணிமாலை (முழுவதும்) உலா -</p> <p>குலோத்துங்க சோழன் உலா (தில்லையில் செய்த</p> <p>திருப்பணிகள் 21 – கண்ணிகள்)</p>	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	<p>அந்தாதி - அபிராமி அந்தாதி (100 பாடல்கள்)</p>	15	CO1, CO2, CO3, CO4,	K1, K2, K3, K4,

			CO5	K5
VI	(சுய கற்றல்) இப்பகுதி பருவத்தேர்விற்கு உரியதல்ல சிறுநிலக்கியம் தோற்றம், வளர்ச்சி	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

பாட நூல்கள்

- கதிர் முருகு டாக்டர், (2011), திருச்செந்தூர்ப் பிள்ளைத்தமிழ், சாரதா பதிப்பகம், சென்னை -14.
- கதிர் முருகு டாக்டர், (2011), அழகர் கிள்ளை விடு தூது, சாரதா பதிப்பகம், சென்னை -14.
- இராமமூர்த்தி முத்து., (2011), நால்வர் நான்மணிமாலை, சாரதா பதிப்பகம், சென்னை -14.
- கதிர் முருகு டாக்டர், (2011), குலோத்துங்க சோழ உலா, சாரதா பதிப்பகம், சென்னை -14.
- ஜகந்நாதன் கி.வா., (1993), அபிராமி அந்தாதி, அமுத நிலையம், சென்னை.

பார்வை நூல்கள்

- வரதராசனார் மு., (2014), தமிழ் இலக்கிய வரலாறு, ஜனகா பதிப்பகம், சென்னை.
- செயராமன் ந.வீ., (1967), சிறுநிலக்கியச் செல்வம், மணிவாசகர் பதிப்பகம், சிதம்பரம்.
- சண்முகப்பிள்ளை மு., (1971), சிறுநிலக்கிய வளர்ச்சி, மணிவாசகர் பதிப்பகம், சிதம்பரம்.

இணையதள முகவரி

- <https://www.tamilvu.org/courses/degree/p103/p1033/html/p103311.htm>
- <https://www.tamilvu.org/library/I5B10/html/I5B10con.htm>
- <https://www.tamilvu.org/library/I5600/html/I5600ind.htm>
- <https://www.tamilvu.org/ta/courses-degree-c012-c0123-html-c0123212-15010>

- <https://www.tamilvu.org/courses/hg200/hg204/html/hg204taa.htm>
- <https://www.chennailibrary.com/saiva/naalvarnaanmanimaalai.html>
- <https://www.pothunalam.com/%E0%AE%86%E0%AE%A9%E0%AF%8D%E0%AE%AE%E0%AE%BF%E0%AE%95%E0%AE%AE%E0%AF%8D/abirami-anthathi-lyrics-in-tamil/>

கற்பித்தல் முறைகள்

குழுக் கலந்தாய்வு, வினாடி வினா, திட்டக்கட்டுரை, கரும்பலகை, குழுவிவாதம்,
PPT.

Semester III	Internal Marks : 25	External Mark 75		
பாடக்குறியீடு	பாடம்	Category	Hrs/Week	Credits
22UTA3AC3	தமிழக வரலாறும் பண்பாடும்	AC	4	3

நோக்கம்

- தமிழர்களின் அரசியல் சமூகப் பொருளாதார வரலாறுகளை அறியச் செய்தல்.
- காலத்திற்கேற்ப மாறிவரும் தமிழர்களின் நாகரிகத்தையும் பண்பாட்டையும் உணரச்செய்தல்.
- பழமை உணர்ந்து புதுமை படைக்க வழிகாட்டுதல்.

COURSE OUTCOME

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO No.	CO Statement	Cognitive Level
CO1	தமிழர்களின் வீரம், பண்பாடு, நாகரிகம் ஆகியவற்றின் வழி சமூகச் சூழலைக் கண்டறிதல்.	K1
CO2	தமிழக வரலாறு மற்றும் பண்பாடு குறித்த கொள்கைகளை உருவாக்கும் திறன் பெறுதல்.	K2
CO3	தமிழக வரலாறு மற்றும் பண்பாடு வெளிப்படுத்தும் வாழ்வியல் விழுமியங்களைப் பயன்படுத்துதல்.	K3
CO4	வரலாறு மற்றும் பண்பாட்டைக் கற்றலின் வழி தனிமனித ஆளுமையை மேம்படுத்துதல்.	K4
CO5	தமிழர்களின் வாழ்வியல் விழுமியங்களைப் பகுத்தாராய்தல்.	K5

Mapping with CO, PO & PSO :

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	2	3	2	3	3	3
CO2	2	2	2	2	3	3	3	3	3	3
CO3	2	2	2	2	2	3	3	3	3	2
CO4	3	2	3	2	3	2	2	2	3	3
CO5	3	2	3	2	3	2	2	2	2	3

பாடத்திட்டம் – SYLLABUS

UNIT	CONTENT	HRS.	COS	COGNITIVE LEVEL
I	நில இயற்கூறுகள் - வரலாற்றுச் சான்றுகள் - தொல்பழங்காலம் - தமிழக மக்களினம் - தமிழகத்துத் தொல் பழங்கால வரலாறு - பண்டையத் தமிழகத்துக்கும் சிந்துவெளி நாகரிகத்திற்குமிருந்த தொடர்பு - தமிழ்மொழியும் சங்க காலமும் - சங்க இலக்கியம் - சங்க காலத்து வாழ்க்கை.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	தமிழகம் கி.பி.200 முதல் 600 வரை - சங்கம் மருவிய காலம் - பல்லவர் காலம் - கி.பி. 600 முதல் 900 வரை தமிழகம் - அரசியல், சமூகம், பொருளாதார நிலை - கல்வியும் இலக்கியமும்.	12	CO1, CO2, CO3, CO4, CO5,	K1, K2, K3, K4
III	சோழர் காலம் - ஆட்சி முறை - சமூகப் பண்பாட்டு நிலை - பிற்காலப் பாண்டியர் எழுச்சி தமிழகத்தில் அயலார் ஆதிக்கத்தின் தொடக்கம்.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	ஐரோப்பியர் காலம் - தென்னிந்திய விடுதலைப்புரட்சி - ஆங்கிலக் கம்பெனியார் உருவாக்கிய நிதி நிர்வாக முறை.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	19 ஆம் நூற்றாண்டில் தமிழகம் - இருபதாம் நூற்றாண்டில் தமிழகம் - தமிழ் பாரம்பரியம் - சென்னை மாநிலத்தின் தனித் தன்மை - சமூகப்பிரச்சனைகள் -	12	CO1, CO2, CO3, CO4,	K1, K2, K3, K4

	ஆங்கிலேயர் ஆட்சியில் தமிழகம்.		CO5	
VI	(சுய கற்றல்) இப்பகுதி பருவத்தேர்விற்கு உரியதல்ல இருபதாம் நூற்றாண்டில் சமுதாய மாற்றமும் இலக்கியப் போக்கும்.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

பாட நூல்

- செல்வம்.வே.தி, (2009) தமிழக வரலாறும் பண்பாடும் ,மணிவாசகர் பதிப்பகம், சிங்கர் தெரு, பாரிமுனை, சென்னை

பார்வை நூல்கள்

- முனைவர் ந. அறிவுராஜ் ,முனைவர் அ.குமார், (2010) தமிழக வரலாறும் பண்பாடும். பாவை பப்ளிகேஷன்ஸ்.சென்னை
- .டாக்டர் மா. இராசமாணிக்கனார், (2016) தமிழக வரலாறும் பண்பாடும், சாரதா பதிப்பகம், சென்னை.

கற்பித்தல் முறைகள்

கலந்தாய்வு, வினாடி வினா, திட்டக்கட்டுரை, கரும்பலகை, குழுவிவாதம், PPT.

Semester I	Internal Mark: 25	External Mark: 75		
பாடக்குறியீடு	பாடம்	CATEGORY	Hrs/Week	CREDITS
22UTA3GEC1	அறிவியல் தமிழ்	GEC	2	2

நோக்கம்

- தமிழில் உள்ள அறிவியல் கருத்துகளை அறிமுகம் செய்தல்.
- பழங்காலம் முதல் இக்காலம் வரையுள்ள அறிவியல் வளர்ச்சியை எடுத்துரைத்தல்.
- அறிவியல் குறித்த சிந்தனை மீதான ஈர்ப்பைத் தூண்டுதல்.

COURSE OUTCOMES

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO No.	CO Statement	Cognitive Level
CO1	தமிழ்ச் சமூகத்தின் அறிவியல் அறிவினைக் கண்டறிதல்.	K1
CO2	அறிவியல் மொழி குறித்த கொள்கைகளை உருவாக்கும் திறன் பெறுதல்.	K2
CO3	அறிவியல் கல்வியை வாழ்வில் பயன்படுத்தக் கற்றல்	K3
CO4	அறிவியல் தமிழ் கற்பதன் வழி தனிமனித ஆளுமையை மேம்படுத்துதல்.	K4
CO5	பணி வாய்ப்புகளுக்கு ஏற்ப அறிவியல் தமிழ் கூறுகளைப் பகுத்தாராய்தல்.	K4

Mapping of CO with Po and PSO

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	2	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	2	3	3	3

CO4	2	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

பாடத்திட்டம் - SYLLABUS				
UNIT	CONTENT	HRS	COs	COGNITIVE LEVEL
I	அறிவியல் தமிழாக்கம் பழந்தமிழ் நூல்களில் தொழில் சார்ந்த சொற்கள்- பூமி சாஸ்திரம் - 19ம் நூற்றாண்டு திருப்பு முனை- பூமி சாஸ்திரம் கெமிஸ்தமும் - கலைச் சொற்கள் - நூல்கள்.	06	CO1, CO2, CO3, CO4,	K1, K2, K3, K4
II	தமிழ் வழி அறிவியல் கல்வி கல்வி - அறிவியல் கல்வி - அதற்கான கருவிகள்- இமெயில் சிறப்பு அம்சங்கள் - தொடர்பியல் கலைச் சொல்லகராதி - பிறமொழி ஒப்பீடு- தமிழ் மொழி வரலாற்றில் அறிவியல் தமிழின் பங்கு.	06	CO1, CO2, CO3, CO4,	K1, K2, K3, K4
III	அறிவியல் இலக்கிய தமிழாக்கம் கருத்து பரிமாற்றத்தில் மொழி பெயர்ப்பு- அறிவியல் மொழி - இலக்கிய மொழி- மொழி பெயர்ப்பு - தலைப்பெழுத்துச் சொல் - குறுக்கங்கள் - தொடர்களும் வாக்கியங்களும் - (கலைச் சொல்லாக்கத்தில் சமுதாய உணர்வு - உறக்கமும் துயரும்)	06	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	பாரதியும் அறிவியல் தமிழும் அறிவியல் கல்வியும் - பயிற்று மொழியும் - தமிழில் முடியும் - பாடத்திட்டமும் கற்பிக்கும் முறையும் - பாரதி தரும் வரைவிலக்கணம் - கலைச் சொல்	06	CO1, CO2, CO3, CO4,	K1, K2, K3, K4
V	அறிவியல் இயக்கங்களின் பங்களிப்பு தமிழ் வழி அறிவியல் - பரப்புதலில் அறிவியல் இயக்கங்கள் - தமிழ்நாடு அறிவியல் இயக்கம் - சுதேசி அறிவியல் இயக்கம் - மக்கள் அறிவியல் இயக்கம் -அணைத்திற்கும் அறிவியல் தமிழ் கழகம் - தமிழக அறிவியல் பேரவை- வளர் தமிழ் மன்றம்.	06	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

VI	சுய கற்றல் - இப்பகுதி பருவத்தேர்விற்கு உரியதல்ல தமிழரின் மரபுசார் அறிவியல் தொழில்நுட்பம்	-	CO1, CO2, CO3, CO4	K1, K2, K3, K4
----	---	---	-----------------------------	-------------------------

பாட நூல்

- டாக்டர் இராம. சுந்தரம் (2009), தமிழ் வளர்க்கும் அறிவியல், நியூ செஞ்சரி புக் ஹவுஸ், சென்னை.

பார்வை நூல்

- வா.செ.குழந்தைசாமி (2001), அறிவியல் தமிழ், பாரதி பதிப்பகம், சென்னை.

Web Resources

- http://www.tamilvu.org/library/kulothungan/pdf/Ariviyal_Thamizh.pdf
- <https://ta.wikipedia.org/wiki/%E0%AE%85%E0%AE%B1%E0%AE%BF%E0%AE%B5%E0%AE%BF%E0%AE%AF%E0%AE%B2%E0%AF%8D>

கற்பித்தல் முறைகள்

குழுக் கலந்தாய்வு, வினாடி வினா, திட்டக்கட்டுரை, கரும்பலகை, விவாதம்

Semester III	Internal Marks : 25	External Mark 75		
பாடக்குறியீடு	பாடம்	Category	Hrs/Week	Credits
22ULC3BT1	அடிப்படைத் தமிழ் – I (BASIC TAMIL – I)	GEC	2	2

நோக்கம் :

- தமிழ் மொழியின் அடிப்படைகளை அறிந்து கொள்ளுதல்.
- தமிழில் பேச, எழுத, படிக்கக் கற்றுக் கொள்ளுதல்.

COURSE OUTCOMES

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்.

CO No.	CO Statement	Cognitive Level
CO1	தமிழ் எழுத்துக்களின் வகை மற்றும் வடிவங்களைக் கண்டறிதல்	K1
CO2	சொற்களை உருவாக்கும் திறன் பெறுதல்	K2
CO3	வாக்கியத்தில் அமைந்திருக்கும் சொற்களை இனங்காணல்	K3
CO4	பத்தியைப் படித்து, பொருள் உணர்ந்து பகுத்தறிதல்	K4
CO5	தமிழில் பிழையின்றி வாசிக்கவும் எழுதவும் திறன் பெறுதல்	K2

Mapping of CO with Po and PSO

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	2	3	1	3	3	3
CO2	2	3	2	1	3	3	3	3	3	3
CO3	2	2	1	2	1	3	3	3	3	1
CO4	1	3	3	2	3	2	1	2	3	3
CO5	2	2	3	2	3	2	2	2	2	3

பாடத்திட்டம் – SYLLABUS

UNIT	CONTENT	HRS	COs	COGNITIVE LEVEL
I	எழுத்துக்கள் அறிமுகம் - வகைப்பாடு - எண்ணிக்கை - உயிர் எழுத்துக்கள் - மெய் எழுத்துக்கள் - உயிர்மெய் எழுத்துக்கள் - ஆய்த எழுத்து.	6	CO1, CO2, CO3,	K1, K2, K3,
II	குறில், நெடில் - மூவினம் (வல்லினம், மெல்லினம், இடையினம்) - எழுத்துக்களை வேறுபடுத்தி அறிதல்.	6	CO1, CO2, CO3,	K1, K2, K3,
III	சொற்கள் அறிதல் - ஓரெழுத்துச் சொற்கள் - ஈரெழுத்து மற்றும் மூவெழுத்துச் சொற்களை உருவாக்குதல் - விடுபட்ட எழுத்துக்களைக் கண்டறிதல்.	6	CO1, CO2, CO3,	K1, K2, K3,
IV	சொற்களை அகரவரிசைப் படுத்துதல் - வாக்கியம் அமைத்தல் - தொடர் உறுப்புகளை கண்டறிதல் (எழுவாய், பயனிலை, செயப்படுபொருள்).	6	CO1, CO2, CO3, CO4,	K1, K2, K3, K4,
V	பத்தியைப் படித்து சரியான விடையைத் தேர்ந்தெடுத்து எழுதுதல்.	6	CO1, CO2, CO3,	K1, K2, K3,
VI	(சுய கற்றல்) இப்பகுதி பருவத்தேர்விற்கு உரியதல்ல பாரதியின் அறிவியல் பார்வை - முதல் கட்டுரை - பிழையின் வளம்	-	CO1, CO2, CO3,	K1, K2, K3,

பார்வை நூல்

- வா.செ.குழந்தைசாமி (2021), பாரதியின் அறிவியல் பார்வை, பாவை பதிப்பகம், சென்னை
- 14

கற்பித்தல் முறைகள்

எழுத்துப் பயிற்சி, கலந்தாய்வு, கரும்பலகை, குழுவிவாதம்

Web Resources

- <https://in.pinterest.com/pin/634515034997518843/>

<https://www.learntamil.com/part1/intro/thamil-alphabet/>

Semester III	Internal Marks : 25	External Mark 75		
பாடக்குறியீடு	பாடம்	Category	Hrs/Week	Credits
22ULC3ST1	SPECIAL TAMIL – I சிறப்புத்தமிழ் - I	GEC	2	2

நோக்கம்

- இலக்கியங்கள் வாயிலாக மொழித்திறன் பற்றி அறிந்து கொள்ளுதல்.
- படைப்பாற்றலை வளர்த்துக் கொள்ள வேண்டியதன் அவசியத்தை உணர்த்துதல்.
- ஊடகங்களில் பணிவாய்ப்பினைப் பெற பயிற்சியளித்தல்.

COURSE OUTCOME

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO No.	CO Statement	Cognitive Level
CO1	இக்கால இலக்கியங்களின் வழியாக சமூச்சிந்தனைகளை அறிந்து அதனை தற்கால வாழ்வியல் சூழலோடு பொருத்திப் பகுத்தறிதல்.	K4
CO2	கவிதை, சிறுகதை எழுதும் திறன் பெறுதல்.	K2
CO3	இலக்கியங்களைப் பயில்வதன் மூலம் வாழ்விற்குத் தேவையான விழுமியங்களைக் கண்டறிதல்.	K1
CO4	படைப்பாற்றலை வளர்த்துக் கொண்டு போட்டித்தேர்வுகளுக்குத் தேவையானத் திறன் பெறுதல்	K2
CO5	ஊடகங்களுக்கு படைப்புகளை அனுப்பி பணி வாய்ப்பினைப் பெறும் நுணுக்கங்களை அறிதல்.	K3

Mapping with CO, PO & PSO :

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	2	3	1	3	3	3
CO2	2	3	2	1	3	3	3	3	3	3
CO3	2	2	1	2	1	3	3	3	3	1
CO4	1	3	3	2	3	2	1	2	3	3
CO5	2	2	3	2	3	2	2	2	2	3

பாடத்திட்டம் – SYLLABUS				
UNIT	CONTENT	HRS	COs	COGNITIVE LEVEL
I	மரபுக்கவிதை 1.பாரதியார் – அறிவே தெய்வம் 2. பாரதிதாசன் – தமிழின் இனிமை	6	CO1, CO2, CO3, CO4,	K1, K2, K3, K4
II	புதுக்கவிதை 1. மு.மேத்தா – மனிதனைத் தேடி 2. அப்துல் ரகுமான் – கண்ணீரின் இரகசியம்	6	CO1, CO2, CO3, CO4,	K1, K2, K3, K4
III	சிறுகதை 1. சு. தமிழ்ச்செல்வி – யதர்த்தம் 2. ப.க. தொழ்ப்பித்தகனம் – காயம்	6	CO1, CO2, CO3,	K1, K2, K3,
IV	இலக்கிய வரலாறு கவிதை, சிறுகதை	6	CO1, CO2, CO3,	K1, K2, K3,
V	புதுக்கவிதை எழுத பயிற்சியளித்தல்.	6	CO1, CO2, CO3, CO4,	K1, K2, K3, K4
VI	(சுய கற்றல்) இப்பகுதி பருவத்தேர்விற்கு உரியதல்ல மனப்பாடப் பகுதி கண்ணதாசன் - அனுபவம்	-	CO1, CO2, CO3, CO4,	K1, K2, K3, K4

பார்வை நூல்கள்

- பாரதியார், (2019), பாரதியார் கவிதைகள், திருமகள் நிலையம், சென்னை.
- பாரதிதாசன், (2008), பாரதிதாசன் கவிதைகள் , கவிதா ப்ளிகேஷன்ஸ், சென்னை.

- சுரதா, (1965), தேன்மழை, சுடர் பதிப்பகம், சென்னை - 87.
- மு.மேத்தா, (1998), மனிதனைத் தேடி, கவிதா ப்ளிகேஷன்ஸ், சென்னை.
- அறிவுமதி, (2005), நட்புக்காலம், கவிதா ப்ளிகேஷன்ஸ், சென்னை.
- மு.வரதராசனார், (2014), தமிழ் இலக்கிய வரலாறு, ஜனகா பதிப்பகம், சென்னை.
- முனைவர் தங்க. செந்தில்குமார், (2016), கைவண்ணம், அய்யா நிலையம், தஞ்சாவூர் – 613 006

இணையதள முகவரி

- <https://ta.wikipedia.org/wiki/%E0%AE%9A%E0%AF%81%E0%AE%AA%E0%AF%8D%E0%AE%AA%E0%AE%BF%E0%AE%B0%E0%AE%AE>

கற்பித்தல் முறைகள்

கலந்தாய்வு, வினாடி வினா, திட்டக்கட்டுரை, கரும்பலகை, குழுவிவாதம்



காவேரி மகளிர் கல்லூரி (தன்னாட்சி), திருச்சி - 18
CBCS பாடத்திட்டம்
(2021 - 2022 ஆம் கல்வியாண்டு முதல் சேர்க்கை பெறும் மாணவியருக்கு)
தமிழாய்வுத்துறை - இளங்கலைத் தமிழிலக்கியம்

Sem	Part	Course	Title	Course Code	Ins. Hrs / Week	Credit	Exam Hours	Marks		Total
								Internal	External	
V	III	Core Course – IX (CC)	புறப்பொருள் வெண்பாமாலை	19UTA5CC9	5	5	3	25	75	100
		Core Course – X (CC)	அற இலக்கியம்	19UTA5CC10	5	5	3	25	75	100
		Core Course – XI (CC)	மொழி வரலாறு	19UTA5CC11	5	5	3	25	75	100
		Core Course – XII (CC)	நாட்டுப்புறவியல்	19UTA5CC12	5	5	3	25	75	100
		Major Based Elective – I	I. அ) படைப்பிலக்கியம் (or) I. ஆ) கல்வெட்டியல்	19UTA5MBE1A 19UTA5MBE1B	4	3	3	25	75	100
	IV	Skill Based Elective – II	II. அ) பயன்முறைத் தமிழ் II (or) II. ஆ) செப்தி சேகரித்தலும், செப்பனிடுதலும்	19UTA5SBE2A 19UTA5SBE2B	2	2	3	25	75	100
		Skill Based Elective – III	III. அ) பேச்சுக்கலை (or) III. ஆ) மக்கள் தொடர்பியல்	19UTA5SBE3A 19UTA5SBE3B	2	2	3	25	75	100
		UGC Jeevan Kaushal Life Skills	Professional Skills	19UGPS	2	2	3	25	75	100
	TOTAL				30	29				800
VI	III	Core Course – XIII (CC)	தண்டியலங்காரம்	19UTA6CC13	6	5	3	25	75	100
		Core Course – XIV (CC)	சங்க இலக்கியம்	21UTA6CC14	6	5	3	25	75	100
		Major Based Elective - II	II. அ)நாடகவியல்(or) II. அ) கோயில் கலைகள்	19UTA6MBE2A 19UTA6MBE2B	5	4	3	25	75	100
		Major Based Elective -III	III. அ)சுற்றுலாவியல்(or) III. ஆ) வாழ்க்கை வரலாற்று இலக்கியம் (உ.வே.சா)	19UTA6MBE3A 19UTA6MBE3B	6	4	3	25	75	100
		Project	Project Work	21UTA6PW	6	5	-	-	100	100
	V	Gender Studies	Gender Studies	19UGGS	1	1	3	25	75	100
		Extension Activity	Extension Activity	19UGEA	-	1	-	-	-	-
	TOTAL				30	25				600

பாடக் குறியீடு	பாடம்	Category	L	T	P	Credit
19UTA5CC9	புறப்பொருள் வெண்பாமாலை	III	71	4	-	5

நோக்கம்

1. தமிழரின் புறப்பொருள் இலக்கணம் கற்பித்தல்
2. தமிழரது போர்நெறிகளைப் பயிற்றுவித்தல்
3. தொல்காப்பியப் புறத்திணைகளில் நிகழ்ந்த மாற்றங்களை அறிவுறுத்தல்

COURSE OUTCOMES

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO No.	CO Statement	Knowledge Level
CO1	தமிழரின் புறவாழ்வு நெறிகளைக் கண்டறிதல்	K1
CO2	புறநூல்களில் உள்ள புறத்திணைக் கூறுகளை விளக்குதல்	K2
CO3	புறத்திணைப் படலங்களைப் பகுத்தாய்தல்	K3
CO4	தமிழ்ப் புறமரபினை ஆராய்ந்தறிதல்	K4

MAPPING WITH PROGRAMME OUTCOMES

COs	PO1	PO2	PO3	PO4
CO1	S	S	M	S
CO2	S	S	M	S
CO3	S	S	M	S
CO4	S	S	M	S

S – Strong ; M – Medium; L - Low

பாடத்திட்டம்

அலகு 1 : (15மணி)

வெட்சிப் படலம், கரந்தைப் படலம்

அலகு 2 : (15மணி)

வஞ்சிப் படலம், காஞ்சிப் படலம், நொச்சிப் படலம்

அலகு 3 : (15மணி)

உழிஞைப் படலம், தும்பைப் படலம்

அலகு 4 : (15மணி)

வாகைப்படலம்

அலகு 5 : (15மணி)

பாடாண் படலம்

பாட நூல்

வ.எ.	ஆசிரியர்	நூல்	பதிப்பகம்	ஆண்டு
1	பொ.வே. சோமசுந்தரனார் (உ.ஆ.)	புறப்பொருள் வெண்பாமாலை	கழக வெளியீடு, சென்னை - 18	1975

பார்வை நூல்கள்

வ.எ.	ஆசிரியர்	நூல்	பதிப்பகம்	ஆண்டு
1	சோ.ந. கந்தசாமி	புறத்திணை வாழ்வியல்	தமிழ்ப்பல்கலைக்கழகம், சென்னை - 5	1994

கற்பித்தல் முறைகள்

கலந்தாய்வு, வினாடி வினா, திட்டக்கட்டுரை, கரும்பலகை, குழு விவாதம்

பாடக் குறியீடு	பாடம்	Category	L	T	P	Credit
19UTA5CC10	அற இலக்கியம்	III	71	4	-	5

நோக்கம்

1. தமிழ் அறஇலக்கியங்களைக் கற்பித்தல்
2. அற இலக்கியங்களின் தனித்தன்மையை அறிவுறுத்தல்
3. சமூக அரசியல் பொருளாதாரப் பின்னணியை உணர்த்துதல்
4. மனித வாழ்க்கை எவ்வாறு இருக்க வேண்டும் என்பதை உணர்த்துதல்

COURSE OUTCOMES

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO No.	CO Statement	Knowledge Level
CO1	தமிழரின் அற உணர்வினைக் கண்டறிதல்	K1
CO2	தமிழரின் வாழ்வியலை எடுத்துக்காட்டுகளுடன் விளக்குதல்	K2
CO3	ஒவ்வொரு காலகட்ட அறச் சிந்தனைகளையும் கணித்தல்	K3
CO4	அற இலக்கியங்கள் தோன்றிய சமூக, அரசியல், பொருளாதாரச் சூழலை ஆராய்ந்தறிதல்	K4
CO5	அற இலக்கியங்களின் அமைப்பினை ஒப்பிட்டறிதல்	K4

MAPPING WITH PROGRAMME OUTCOMES

COs	PO1	PO2	PO3	PO4
CO1	S	M	S	S
CO2	S	M	S	S
CO3	S	M	S	S
CO4	S	S	S	S
CO5	S	S	S	S

S – Strong ; M – Medium; L - Low

பாடத்திட்டம்

அலகு 1 : (15 மணி)

திருக்குறள் - அறத்துப்பால் - இல்லறவியல் முழுவதும் (20 அதிகாரங்கள்)

அலகு 2 : (15 மணி)

நாலடியார் - செல்வம் நிலையாமை, இளமை நிலையாமை,மேன்மக்கள், அறன் வலியுறுத்தல் (40 பாடல்கள்)

அலகு 3 : (15 மணி)

நான்மணிக்கடிகை – 91முதல் 104 வரை உள்ள பாடல்கள்

‘வன்கண்பெருக்கின்’ எனத் தொடங்கும் பாடல் முதல் 14 பாடல்கள்

திரிகடுகம் - முதல் 20 பாடல்கள்

அலகு4 : (15 மணி)

பழமொழி நானூறு - முதல் 20 பாடல்கள்

ஆசாரக்கோவை - முதல் 20 பாடல்கள்

அலகு 5 : (15 மணி)

முதுரை முழுவதும்

பாட நூல்

வ.எ.	ஆசிரியர்	நூல்	பதிப்பகம்	ஆண்டு
1	எஸ்.கௌமாரீஸ்வரி(ப.ஆ.)	புதினெண்கீழ்க்கணக்கு நூல்கள் மூலமும் உரையும்	சாரதா பதிப்பகம், சென்னை	2009

பார்வை நூல்கள்

வ.எ.	ஆசிரியர்	நூல்	பதிப்பகம்	ஆண்டு
1	ந.மு.வேங்கடசாமி நாட்டார்	ஒளவையார் அருளிய முதுரை	கழக வெளியீடு, சென்னை	1987
2	கதிர் முருகு (ப. ஆ.)	பிற்கால நீதி இலக்கிய வரலாறு	நாம் தமிழர் பதிப்பகம், சென்னை	2010
3	பரிமேலழகர் (உ.ஆ.)	திருக்குறள்	சாரதா பதிப்பகம், சென்னை - 14	

கற்பித்தல் முறைகள்

கலந்தாய்வு, வினாடி வினா, திட்டக்கட்டுரை, கரும்பலகை, குழு விவாதம்

பாடக் குறியீடு	பாடம்	Category	L	T	P	Credit
19UTA5CC11	மொழி வரலாறு	III	71	4	-	5

நோக்கம்

1. மொழியின் பண்பாட்டையும், அதன் சிறப்பினையும் மாணவர்களுக்கு அறியச் செய்தல்.
2. மொழியின் அடிப்படையினை அறியச் செய்தல்

COURSE OUTCOMES

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO No.	CO Statement	Knowledge Level
CO1	பேச்சுமொழி, எழுத்து மொழியின் இலக்கணத்தை வரையறுத்தறிதல்	K1
CO2	மொழியின் வளர்ச்சி நிலைகளை எடுத்துச்சொல்லுதல்	K2
CO3	மொழியினங்களை வகைப்படுத்துதல்	K3
CO4	திராவிட மொழியினக் கூறுகளை ஆராய்ந்தறிதல்	K4

MAPPING WITH PROGRAMME OUTCOMES

Cos	PO1	PO2	PO3	PO4
CO1	S	M	S	S
CO2	S	M	S	S
CO3	S	S	S	S
CO4	S	M	S	S

S – Strong ; M – Mediam; L - Low

பாடத்திட்டம்

அலகு 1 : (20 மணி)

அரியகலை – பேச்சு மொழியும் எழுத்து மொழியும் - உணர்ச்சி, அறிவு, செயல், மொழியின் பண்பாடு - போலச் செய்தல் - ஒப்புமை ஆக்கம் - வழக்கம், இலக்கணம் - ஒரு பொருட் கிளவி

அலகு 2 : (15 மணி)

கடன் வாங்கல் - மருஉ - ஒலித்திரிபு - இலக்கிய மொழியின் செல்வாக்கு – கிளைமொழி - பொதுமொழி – சிறப்புமொழி - குறுமொழி, -குழந்தை மொழி

அலகு 3 : (20 மணி)

மொழியின் தோற்றம் - பண்பட்ட நிலை ஆராய்ச்சி முயற்சிகள் - மூளை வளர்ச்சி - குகையும் அரண்மனையும் - அடிச்சொற்கள் - சைகை மொழி – நாகரிகம் வளராதவர் மொழி - குரல் ஒலி - போலி மொழி – பண்மொழி - தொழில் ஒலி - இன்பப் பாட்டு

அலகு 4 : (10 மணி)

மொழி நிலைகள் - மொழியினங்கள் - ஆரிய மொழியினம்

அலகு 5 : (10 மணி)

திராவிட மொழியினம் - தமிழ் எழுத்து - எண்கள்

பாட நூல்

வ.எ.	ஆசிரியர்	நூல்	பதிப்பகம்	ஆண்டு
1	மு. வரதராசன்	மொழி வரலாறு	கழக வெளியீடு, சென்னை – 1	1954

பார்வை நூல்கள்

வ.எ.	ஆசிரியர்	நூல்	பதிப்பகம்	ஆண்டு
1	டாக்டர் ரா. சீனிவாசன்	மொழியியல்	முல்லை நிலையம், சென்னை – 17	2009
2	தெ.பொ.மீ	தமிழ் வரலாறு	ஸிக்மா பிரிண்ட்ஸ், சென்னை - 14	2005

கற்பித்தல் முறைகள்

கலந்தாய்வு, வினாடி வினா, திட்டக்கட்டுரை, கரும்பலகை, குழு விவாதம்

பாடக் குறியீடு	பாடம்	Category	L	T	P	Credit
19UTA5CC12	நாட்டுப்புறவியல்	III	56	4	-	3

நோக்கம்

1. நாட்டுப்புற மக்களின் வாழ்க்கை முறைகள் , பண்பாட்டினை உணர்த்துதல்
2. தமிழரின் நாட்டுப்புறப் பாரம்பரியத்தை அறிமுகப்படுத்துதல்
3. இலக்கியத்தின் சிறப்பையும் , பயன்களையும் பெறுதல்
4. நாட்டுப்புறக் கலைகள் மற்றும் மருத்துவம் அறிதல்

COURSE OUTCOMES

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO No.	CO Statement	Knowledge Level
CO1	நாட்டுப்புற மக்களின் வாழ்வியலை ஆராய்ந்தறிதல்	K4
CO2	நாட்டுப்புற இலக்கியங்களின் அமைப்பு குறித்த வரலாற்றினைக் கண்டறிதல்	K1
CO3	நாட்டுப்புற மக்களின் பிறப்பு முதல் இறப்பு வரையிலான சடங்குகளை வகைப்படுத்துதல்	K3
CO4	நாட்டுப்புறக் கலைகளை விளக்குதல்	K2
CO5	நாட்டுப்புறவியல் ஆய்வுகள் குறித்து திறனாய்ந்து புத்திலக்கியம் படைக்கும் திறன் பெறுதல்	K4

MAPPING WITH PROGRAMME OUTCOMES

Cos	PO1	PO2	PO3	PO4
CO1	S	L	L	S
CO2	L	S	S	S
CO3	S	L	S	S
CO4	S	L	S	S
CO5	S	S	S	S

S – Strong ; M – Medium; L - Low

பாடத்திட்டம்

அலகு 1 : (15 மணி)

நாட்டுப்புறவியல் - சொல் விளக்கங்கள் - நாட்டுப்புறவியல் அறிஞர்கள் - நாட்டுப்புறவியல் வரலாறு - இந்திய நாட்டுப்புறவியல் வரலாறு - தமிழக நாட்டுப்புறவியல் வரலாறு - நாட்டுப்புறவியல் வளர்ச்சியும் , திறனாய்வும்

அலகு 2 : (15 மணி)

பழந்தமிழிலக்கியங்களில் நாட்டுப்புற வழக்காறுகளின் செல்வாக்கு - சங்க இலக்கியங்கள் - பக்தி இலக்கியங்கள் - நீதி இலக்கியங்கள் - சமூக முக்கியத்துவம் - இலக்கியச் சிறப்புகள்

அலகு 3 : (10 மணி)

நாட்டுப்புற இலக்கிய வகைகள் - கதைகள் - பாடல்கள் - விடுகதைகள் - பழமொழிகள் - புதிர்கள் - நாட்டுப்புறக் கலைகள் - நாட்டுப்புற மருத்துவம் - அறிவியல்

அலகு 4 : (10 மணி)

நாட்டுப்புறநம்பிக்கைகள்-பிறப்புமுதல்இறப்புவரையிலானசடங்குகள்-பழக்கவழக்கங்கள் - நேர்த்திக் கடன்கள் - கூத்துக்கள் - விளையாட்டுக்கள்

அலகு 5 : (10 மணி)

நாட்டுப்புறத் தெய்வங்கள் - வழிபாடு - பண்டிகைகள் - விழாக்கள் - நாட்டுப்புறவியல் ஆய்வுகள் - சேகரிப்புப் பணிகள் - வளர்ச்சி நிலை - கோட்பாடுகள்

பாட நூல்

வ.எ.	ஆசிரியர்	நூல்	பதிப்பகம்	ஆண்டு
1	டாக்டர் சு. சக்திவேல்	நாட்டுப்புற இயல் ஆய்வு	மாணிக்கவாசகர் பதிப்பகம், சென்னை	2006

பார்வை நூல்கள்

வ.எ.	ஆசிரியர்	நூல்	பதிப்பகம்	ஆண்டு
1	ஆறு. இராமநாதன்	நாட்டுப்புறக் கதைக்களஞ்சியம்	மாணிக்கவாசகர் பதிப்பகம், சிதம்பரம்	1987
2	ஏ.என்.பெருமாள்	நாட்டுப்புறக்கலைகள்	உலகத் தமிழாராய்ச்சி நிறுவனம் வெளியீடு,	1987
3	அரு. மருததுரை	நாட்டுப்புற வாழ்வியல்	அருணாவெளியீடு, முசிறி	1995
4	ஆறு. அழகப்பன்	நாட்டுப்புறவியல் ஆய்வு முறைகள்	தமிழ்ப்பல்கலைக்கழகம்	1991
5	சு. சண்முகசுந்தரம்	நாட்டுப்புற இலக்கியத்தின் செல்வாக்கு	இலக்கிய மாணவர் வெளியீடு, சென்னை	1976

கற்பித்தல் முறைகள்

கலந்தாய்வு, வினாடி வினா, திட்டக்கட்டுரை, கரும்பலகை, குழு விவாதம்

பாடக் குறியீடு	பாடம்	Category	L	T	P	Credit
19UTA5MBE1A	படைப்பிலக்கியம்	III	71	4	-	5

நோக்கம்

1. படைப்பாற்றலை ஊக்குவித்தல்.
2. கவிதை, நாடகம், உரைநடை, சிறுகதை ஆகியவற்றின் தனித்தன்மைகளைக் கற்றுத்தருதல்.
3. படைப்பிலக்கியத்தின் பல்வேறு கூறுகளைக் கற்பித்தல்

COURSE OUTCOMES

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO No.	CO Statement	Knowledge Level
CO1	சொற்கள் மற்றும் வாக்கியங்களின் வகைகளைக் கண்டறிதல்	K1
CO2	சிறுகதை, நாடகம் போன்ற படைப்புகளை உருவாக்கும் முறையை விவரித்தல்	K2
CO3	நிகழ்ச்சிநிரல் தயாரித்து, தொகுத்து வழங்கும் திறனை உருவாக்குதல்	K3
CO4	வானொலி, தொலைக்காட்சி நிகழ்ச்சிகளுக்கான நேர்முக வர்ணனைகளை வகைப்படுத்துதல்	K3
CO5	நூல் மதிப்பீடு செய்து ஆய்வறிக்கை தயாரிக்கும் முறையை ஆராய்ந்தறிதல்	K4

MAPPING WITH PROGRAMME OUTCOMES

Cos	PO1	PO2	PO3	PO4
CO1	M	S	S	S
CO2	M	S	S	S
CO3	L	S	S	S
CO4	L	S	S	S
CO5	L	S	S	S

S – Strong ; M – Medium; L - Low

பாடத்திட்டம்

அலகு 1 : (15 மணி)

வாக்கியவகைகளும்-அமைப்புமுறைகளும்,உரைநடை-கவிதை-மரபுக்கவிதை
- புதுக்கவிதை எழுதப் பயிற்றுவித்தல்

அலகு 2 : (15 மணி)

சிறுகதை இலக்கணம் - சிறுகதை எழுத பயிற்சியளித்தல் - நாடகம் எழுதக்
கற்றுத் தருதல் - பயிற்சி அளித்தல் -ஒரங்க நாடகம்

அலகு 3 : (15 மணி)

நிகழ்ச்சி நிரல் தயார் செய்தல் - நிகழ்ச்சித் தொகுப்பாளர் - திறன் மேம்படுத்துதல்

அலகு 4 : (15 மணி)

நேர்முக வர்ணனை எழுதுதல் - கோயில் திருவிழா , கலை இலக்கிய விழா,
பண்பாட்டு நோக்கு விழா, விளையாட்டு ஆகியன பற்றிய நேர்முக வர்ணனை, வானொலி
தொலைக்காட்சிகளுக்கு ஏற்பக் கற்றுத் தருதல்

அலகு 5 : (15 மணி)

நூல் மதிப்பீடு செய்தல் - ஆய்வு அறிக்கை வெளியிடுதல்

பார்வை நூல்கள்

வ.எ.	ஆசிரியர்	நூல்	பதிப்பகம்	ஆண்டு
1	மு. வரதராசன்	இலக்கியத் திறன்	பாரி நிலையம், சென்னை	2015
2	மா. இராமலிங்கம்	புதிய உரைநடை	தமிழ் புத்தகாலயம், சென்னை	1978
3	கி.வா. ஜகன்நாதன்	கவி பாடலாம்	அமுத நிலைய பதிப்பகம்	2012
4	இ. சுந்தரமூர்த்தி	நடையியல் சிந்தனை	நியூ செஞ்சுரி புக் ஹவுஸ்	1994

கற்பித்தல் முறைகள்

கலந்தாய்வு, வினாடி வினா, திட்டக்கட்டுரை, கரும்பலகை, குழு விவாதம்

பாடக் குறியீடு	பாடம்	Category	L	T	P	Credit
19UTA5MBE1B	கல்வெட்டியல்	III	71	4	-	5

நோக்கம்

- 1.கல்வெட்டுகள் வழி பழந்தமிழர் வரலாற்றையும் பண்பாட்டையும் கற்பித்தல்
- 2.தமிழ் மொழியின் தொன்மையை சான்றுகளுடன் பயிற்றுவித்தல்

COURSE OUTCOMES

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO No.	CO Statement	Knowledge Level
CO1	தமிழ்மொழியின் தொன்மையை கண்டறிதல்	K1
CO2	தமிழர்வரலாற்றை விளக்குதல்	K2
CO3	கல்வெட்டுகளின் வழி தமிழரின் பெருமையை கணித்தல்	K3
CO4	கல்வெட்டுகள் வழி தமிழ்பண்பாட்டின் செழுமையை ஆராய்ந்தறிதல்	K4

MAPPING WITH PROGRAMME OUTCOMES

Cos	PO1	PO2	PO3	PO4
CO1	S	M	S	S
CO2	S	M	S	S
CO3	M	M	S	S
CO4	S	M	S	S

S – Strong ; M – Medium; L - Low

பாடத்திட்டம்

அலகு – 1 (15மணி)

பண்டைக் குறியீடுகளும் எழுத்துகளும் - பூலாக்குறிச்சி கல்வெட்டு எழுத்துக்கள்-
தமிழ்நாட்டு எழுத்து முறைகளின் வளர்ச்சி - தமிழ்க் கல்வெட்டுக் கண்டுபிடிப்புகள்.

அலகு –2 (15மணி)

கல்வெட்டுகளும் இலக்கியமும் - தமிழ்க் கல்வெட்டுகளும் வரலாறும் - செப்பேடுகள் -

பதிப்பித்தலில் அணுகுமுறை - மெய்க்கீர்த்தி - ஓலையும் கல்வெட்டும்.

அலகு -3 (15மணி)

சோழர் காலத்திய ஆவணப் பதிவு முறைகள் - சில அரிய சொற்கள் - ஆள்

பெயர்கள் காட்டும் சமுதாயம் - மாராயமும் மாராயனும் - வைத்திய குலம்.

அலகு -4 (15மணி)

கல்வெட்டில் இந்து - முஸ்லீம் சமய ஒருமைப்பாடு - சேலம் மாவட்டக் கல்வெட்டுகள்

- விடுகாதழகிய பெருமாள் - எழுத்துப் பொறிப்புப்பெற்ற தீர்த்தங்கரர் திருமேனி -

அழுந்தாரும் அழுந்தியூரும்.

அலகு - 5 (15மணி)

தொண்டியில் ஒரு புதிய கல்வெட்டு - வரலாற்று நோக்கில் நாகப்பட்டினம் - தஞ்சை

மாரட்டியர் கல்வெட்டுகளும் செப்பேடுகளும் - ஓலை ஆவணங்களும் முத்திரை

ஓலைகளும்.

பார்வை நூல்கள்

வ.எ.	ஆசிரியர்	நூல்	பதிப்பகம்	ஆண்டு
1	முனைவர் எ.சுப்பராயலு முனைவர் செ. இராசு (ப.ஆ)	தமிழ்க் கல்வெட்டியலும் வரலாறும்	தமிழ்ப் பல்கலைக்கழகம் வெளியீடு, தஞ்சாவூர்.	
2	நடன காசிநாதன்	கல்வெட்டு ஓர் அறிமுகம்		
3	க.நெடுஞ்செழியன்	மெய்க்கீர்த்திகள்	மனிதப் பதிப்பகம்	

கற்பித்தல் முறைகள்

கலந்தாய்வு, வினாடி வினா, திட்டக்கட்டுரை, கரும்பலகை, குழு விவாதம்

பாடக் குறியீடு	பாடம்	Category	L	T	P	Credit
19UTA5SBE2A	பயன்முறைத்தமிழ் - II	IV	28	2	-	2

நோக்கம்

1. பொதுக்கட்டுரை, கடிதம், விமர்சனம் எழுதக் கற்றுத் தருதல்
2. அணிந்துரை, நிகழ்ச்சிநிரல் எழுதப் பயிற்றுவித்தல்
3. அழைப்பிதழ், செய்தித்தாள் அறிக்கை வடிவமைக்கக் கற்றுத் தருதல்

COURSE OUTCOMES

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO No.	CO Statement	Knowledge Level
CO1	மொழி, உரைநடையில் உள்ள பிழைகளைக் கண்டறிதல்	K1
CO2	இலக்கணம், பத்திகள், கட்டுரை ஆகியனவற்றைப் பிழையின்றி எழுத விளக்குதல்	K2
CO3	நூல், திரைப்பட விமர்சனம், அணிந்துரை எழுதத் தயார்செய்தல்	K3
CO4	கடிதம் - உறவுமுறைக் கடிதம் மற்றும் அலுவலகக்கடிதம் எழுதப் பயிற்றுவித்தல்	K4

MAPPING WITH PROGRAMME OUTCOMES

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	S	S	S
CO3	S	S	S	S
CO4	S	S	S	S

S – Strong ; M – Medium; L - Low

பாடத்திட்டம்

அலகு 1 : (6 மணி)

மொழி நடை – உரைநடையில் கவனிக்க வேண்டுவன – பத்தியிலிருந்து வினா விடை எழுதுதல்

அலகு 2 : (6 மணி)

கட்டுரை எழுதுதல் - பத்தி எழுதுதல் - இலக்கணப் பிழையின்றி எழுதுதல்

அலகு 3 : (6 மணி)

நூல், திரைப்படம் - விமர்சனம் எழுதுதல் - அணிந்துரை எழுதுதல்

அலகு 4 : (6 மணி)

உறவுமுறைக் கடிதம் - அலுவலகக் கடிதம் - நேர்காணல் எழுதுதல்

அலகு 5 : (6 மணி)

அழைப்பிதழ் - நிகழ்ச்சிநிரல் எழுதுதல் - நிகழ்ச்சி வருணனை – செய்தித்தாள் அறிக்கை தயாரித்தல்

பார்வை நூல்கள்

வ.எ.	ஆசிரியர்	நூல்	பதிப்பகம்	ஆண்டு
1	அ.கி. பரந்தாமனார்	நல்ல தமிழ் எழுது வேண்டுமா	பாரி ஆப்செட் பிரிண்டர்ஸ், சென்னை	1991
2	மா. இராமலிங்கம்	புதிய உரைநடை	தமிழ்ப் புத்தகாலயம், திருவல்லிக்கேணி	1981
3	எம்.ஏ.நு.மான்	அடிப்படைத் தமிழ் இலக்கணம்	கருப்பூர் சாலை, புத்தாநத்தம், திருச்சி	2007

கற்பித்தல் முறைகள்

கலந்தாய்வு, வினாடி வினா, திட்டக்கட்டுரை, கரும்பலகை, குழு விவாதம்

பாடக் குறியீடு	பாடம்	Category	L	T	P	Credit
19UTA5SBE2AB	செய்திசேகரித்தலும்செப்பனிடுதலும்	IV	28	2	-	2

நோக்கம்

1. செய்தி சேகரித்தலின் தேவையை உணர்த்துதல்.
2. செய்தி சேகரித்தலின் பயன்களை பயிற்றுவித்தல்.

COURSE OUTCOMES

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO No.	CO Statement	Knowledge Level
CO1	தகவல் ஊடகங்கள் முக்கியத்துவத்தினைக் கண்டறிதல்	K1
CO2	தகவல் தொடர்பு ஊடகங்களில் செய்தியாளர்களின் பங்களிப்பு குறித்து விவரித்தல்	K2
CO3	தகவல் தொடர்பு ஊடகங்களில் செய்தி சேகரித்தலின் வகைகளை ஆராய்ந்து அறிதல்	K3
CO4	சமூக வளர்ச்சிக்குத் தகவல் தொடர்பு சாதனங்களின் பங்களிப்பினை இணைத்தறிதல்	K4

MAPPING WITH PROGRAMME OUTCOMES

Cos	PO1	PO2	PO3	PO4
CO1	S	M	S	S
CO2	S	M	S	S
CO3	M	M	S	S
CO4	S	M	S	S

S – Strong ; M – Medium; L - Low

பாடத்திட்டம்

அலகு -1 செய்தி சேகரித்தலின் கொள்கைகளும் கோட்பாடுகளும் (6மணி)

செய்தி சேகரித்தல் கோட்பாடுகள், செயல்பாடுகள், பொறுப்புகள் - செய்தி

எழுதுதல் - தரவுகள்- தரவின் வகைகள் - செய்தி உள்ளடக்கம் - திருத்தி எழுதுதலின்
நுட்பங்கள், செய்தி நிறுவனங்கள் உரிமை பெறல்.

அலகு -2 செய்தி சேகரித்தலின் உத்திகள் (6மணி)

செய்திசேகரித்தலின் உத்திகள் - செய்தியாளரின் தகுதிகள் - செய்திக் கூறுகள் - ஆதாரங்கள் -
வகைகள் - சிக்கல்கள் - சேகரிப்பு - பின்பற்றுதல்.

அலகு -3 செய்தி சேகரித்தலின் வகைகள் (6மணி)

குற்றம் - நீதிமன்றம் - சுகாதாரம் - சிவில் நிர்வாகம் - சமூகம் - பண்பாடு - அரசியல் -
கல்வி

அலகு -4 செய்தி செப்பனிடுதல் (6மணி)

செய்தி செப்பனிடுதல் இயல்பும் தேவையும் - கோட்பாடுகள் - தலையங்க மேசை -
தலையங்க மேசை செயல்பாடுகள் - பத்திரிக்கை நகல் தயாரித்தலின் செயல்முறைகள் -
தொகுத்தல் குறியீடுகள் - செய்தி திருத்துதலில் குறியீடுகளும் இன்றிமையாமையும்.

அலகு -5 ஆசிரியரின் தகுதிகள், செயல்பாடுகள் (6மணி)

துணையாசிரியர் மற்றும் தலைமை துணையாசிரியரின் தகுதிகள் - செயல்பாடுகள்
- நகலெடுத்தல் - தெரிவுசெய்தல்.

பார்வை நூல்கள்

வ.எ.	ஆசிரியர்	நூல்	பதிப்பகம்	ஆண்டு
1	மா. பா. குருசாமி	இதழியல் கலை	குரு - தேமொழி பதிப்பகம்,திருச்செந்தூர்	1988
2	முனைவர் கி. இராசா	மக்கள் தகவல் தொடர்பியல்	பாவணார் ஏடகம், சென்னை	2003

கற்பித்தல் முறைகள்

கலந்தாய்வு, வினாடி வினா, திட்டக்கட்டுரை, கரும்பலகை, குழு விவாதம்

பாடக் குறியீடு	பாடம்	Category	L	T	P	Credit
19UTA5SBE3A	பேச்சுக்கலை	IV	28	2	-	2

நோக்கம்

- மாணவர்களின் பேச்சாற்றை ஊக்குவித்தல், பேசும் வழிமுறைகளை கற்பித்தல், பேச்சாளர்களை உருவாக்குதல்

COURSE OUTCOMES

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO No.	CO Statement	Knowledge Level
CO1	தமிழரின் நாகரிக வளர்ச்சிக்கேற்ற மேடைப் பேச்சினை அறிதல்	K1
CO2	தமிழ்மொழியின் அமைப்பிற்கேற்ப உரையாற்றும் முறையைத் தயார் செய்தல்	K2
CO3	அவைக்கு தகுந்தவாறு மேடைப்பேச்சின் உத்திகளை இணைத்தல்	K3
CO4	ஊடகங்களுக்கு ஏற்றாற்போல் பேசும் கலையினை வடிவமைத்தல்	K4

MAPPING WITH PROGRAMME OUTCOMES

Cos	PO1	PO2	PO3	PO4
CO1	S	L	S	L
CO2	S	L	S	L
CO3	L	M	S	L
CO4	L	S	S	L

S – Strong ; M – Medium; L - Low

பாடத்திட்டம்

அலகு 1 : (6 மணி)

மேடைப்பேச்சு – அறிமுகம் - மேடைப்பேச்சு வரலாறும் வகைகளும் - மேடைத் தோற்றம் - மேடைப் பேச்சின் நடை

அலகு 2 : (6 மணி)

வானொலி, தொலைக்காட்சி, உரைகள் - அலுவலக மற்றும் தொழிலாளர்கள் பேசும்முறை – பட்டிமன்றம் - வழக்காடு மன்ற உரைகள் - வரவேற்புரை – தலைமையுரை – வாழ்த்துரை – நன்றியுரை

அலகு 3 : (6 மணி)

பேச்சைத்தொடங்கும்முறை–அவையினரின் ஆர்வத்தைத்தூண்டும்முறை–கவிதையுடன் தொடங்குதல் - கதைகள் கூறல் - நகைச்சுவை இணைத்தல் - சுவையாக முடித்தல்

அலகு 4 : (6 மணி)

பேசும் தலைப்பிற்கேற்ற குறிப்புகள் எடுத்தல் - சொற்பொழிவின் பண்புகள் - தெளிவு – எளிமை – புரியும்வகையில் மேற்கோள்களைச் சொல்லுதல்

அலகு 5 : (6 மணி)

பேசும் அவையின் குறித்து அறிந்து கொள்ளுதல் - சூழல் உணர்ந்து பேசுதல் - சரியான நேரத்தில் ஆரம்பித்து உரிய நேரத்தில் முடித்தல்

பாட நூல்

வ.எ.	ஆசிரியர்	நூல்	பதிப்பகம்	ஆண்டு
1	முனைவர் ம. திருமலை	பேச்சுக்கலை	மீனாட்சி புத்தக நிலையம், மதுரை	2009

பார்வை நூல்கள்

வ.எ.	ஆசிரியர்	நூல்	பதிப்பகம்	ஆண்டு
1	அறந்தை நாராயணன்	“மேடையில் பேசலாம் வாருங்கள்”	நியூ செஞ்சுரி புக் ஹவுஸ், சென்னை	2011
2	குமரி ஆனந்தன்	“நீங்களும் பேச்சாளராகலாம்”	பூம்புகார் பிரசுரம், மதுரை	2010
3	கு. ஞானசம்பந்தன்	“பேசும் கலை”	நியூ செஞ்சுரி புக் ஹவுஸ், சென்னை	2004

கற்பித்தல் முறைகள்

கலந்தாய்வு, வினாடி வினா, திட்டக்கட்டுரை, கரும்பலகை, குழு விவாதம்

பாடக் குறியீடு	பாடம்	Category	L	T	P	Credit
19UTA5SBE3B	மக்கள் தொடர்பியல்	IV	28	2	-	2

நோக்கம்

1. தகவல் தொடர்பின் வளர்ச்சி நிலைகளை அறியச் செய்தல்
2. ஊடகத்தின் முக்கியத்துவத்தை உணர்த்துதல்
3. ஊடக வேலை வாய்ப்புகளைப் பெற மாணவர்களை தயார்படுத்துதல்

COURSE OUTCOMES

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO No.	CO Statement	Knowledge Level
CO1	தகவல் தொடர்பின் முக்கியத்துவத்தினைக் கண்டறிதல்	K1
CO2	தகவல் பரிமாற்றத்திற்கு பயன்படும் தகவல் தொடர்பு சாதனங்களின் வரலாறு குறித்து விவரித்தல்	K2
CO3	தகவல் தொடர்பு சாதனங்களின் அமைப்பு மற்றும் அவை செயல்படும் விதத்தினை ஆராய்ந்தறிதல்	K3
CO4	சமூக வளர்ச்சிக்குத் தகவல் தொடர்பு சாதனங்களின் பங்களிப்பினை இணைத்தறிதல்	K4

MAPPING WITH PROGRAMME OUTCOMES

Cos	PO1	PO2	PO3	PO4
CO1	S	M	S	S
CO2	S	M	S	S
CO3	M	M	S	S
CO4	S	M	S	S

S – Strong ; M – Medium; L - Low

பாடத்திட்டம்

அலகு –1 (6மணி)

மக்கள்தொடர்பு- இயல்பு- நோக்கம்- வரையறைகள், வாய்ப்புகள் - வரலாறும்.

வளர்ச்சியும்- நிர்வாகவியல் கொள்கைகள் மற்றும் செயல்பாடுகள்.

அலகு –2 (6மணி)

மக்கள் தொடர்பியல் கொள்கைகள் - மக்கள் தொடர்பு

அலுவலர்களின் கடமைகள். மக்கள் தொடர்புக்கு தேவையான முக்கியக் கூறுகள்

நிறுவனம் மற்றும் வணிகத்தில் மக்கள் தொடர்பு—மக்கள் தொடர்புக்

கருவிகள், மக்கள் தொடர்புத் துறையின் செயல்பாடுகள்

அலகு –3 (6மணி)

மக்கள்தொடர்புப் பணியாளரின் பணிகள், மருத்துவமும் மக்கள் தொடர்பும்,

மக்கள்தொடர்பும், தொழிலாளர் நல்லுறவும் - வாடிக்கையாளர் உறவு-

அரசுடனான உறவு- சமுதாய உறவு .

அலகு –4 (6மணி)

மக்கள் தொடர்பும் ஊடகமும்,--பேச்சு,-- அச்சிடுதல்,-- வாய்மொழித் தொடர்பு,

அச்சிட்ட மற்றும் வரைபடத் தொடர்பு-, பின்னூட்டு.

அலகு –5 (6மணி)

மக்கள் தொடர்புக் கொள்கை-- வரைமுறை,-- திட்டமிடுதல்,-- தொடர்பு கொள்ளும்

வழிமுறை-, தீர்வுகளை மதிப்பிடுதல்--நிறுவன இதழ்கள்.

பார்வை நூல்கள்

வ.எ.	ஆசிரியர்	நூல்	பதிப்பகம்	ஆண்டு
1	மா. பா. குருசாமி	இதழியல் கலை	குரு – தேமொழி பதிப்பகம்,திருச்செந்தூர்	1988
2	முனைவர் கி. இராசா	மக்கள் தகவல் தொடர்பியல்	பாவணார் ஏடகம், சென்னை	2003
3	அ.ஆலிஸ்	மக்கள் தகவல் தொடர்புக்கலை	மதுமதி வெளியீடு, திருச்சி	1995

கற்பித்தல் முறைகள்

கலந்தாய்வு, வினாடி வினா, திட்டக்கட்டுரை, கரும்பலகை, குழு விவாதம்

பாடக் குறியீடு	பாடம்	Category	L	T	P	Credit
19UTA 6CC13	தண்டியலங்காரம்	III	86	4	-	5

நோக்கம்

1. தமிழிலக்கிய அணிகளைக் கற்பித்தல்
2. அணிகளின் வகைகளையும், இலக்கணத்தையும் பயிற்றுவித்தல்
3. அணி இலக்கணப் பரிணாம வளர்ச்சியைக் கற்றுத்தருதல்

COURSE OUTCOMES

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO No.	CO Statement	Knowledge Level
CO1	அணிகளின் அமைப்பினைக் கண்டறிதல்	K1
CO2	தமிழிலக்கியங்களில் உள்ள அணிகளை விளக்குதல்	K2
CO3	அணி வகைகளைப் பகுத்தாய்தல்	K3
CO4	தமிழ் அணி மரபினை ஆராய்ந்தறிதல்	K4

பாடத்திட்டம்

அலகு 1 : (20 மணி)

தன்மை, உவமை, உருவகம்

அலகு 2 : (20 மணி)

தீவகம், வேற்றுப்பொருள் வைப்பணி, ஒட்டணி, தற்குறிப்பு

அலகு 3 : (20 மணி)

ஏது, நுட்பம், இலேசம், நிரல்நிரையணி, சுவையணி

அலகு 4 : (15 மணி)

தன்மேம்பாட்டுரை, பரியாயம், சிலேடை, அவநுதி

அலகு 5 : (15 மணி)

ஒப்புமை, மாறுபடு புகழ்நிலை, புகழாப்புகழ்ச்சி, வாழ்த்து, பாவிகம்

பாட நூல்

வ.எ.	ஆசிரியர்	நூல்	பதிப்பகம்	ஆண்டு
1	கொ. இராமலிங்கத்தம்பிரான் (உ.ஆ.)	தண்டியலங்காரம்	கழக வெளியீடு, சென்னை	1938

பார்வை நூல்கள்

வ.எ.	ஆசிரியர்	நூல்	பதிப்பகம்	ஆண்டு
1	இரா. அறவேந்தன்	தமிழ் அணி இலக்கண மரபும், இலக்கண மறுவாசிப்பும்	சபா நாயகம் பப்ளிகேஷன்ஸ், சிதம்பரம்	2004

கற்பித்தல் முறைகள்

கலந்தாய்வு, வினாடி வினா, திட்டக்கட்டுரை, கரும்பலகை, குழு விவாதம்

பாடக் குறியீடு	பாடம்	Category	L	T	P	Credit
21UTA6CC14	சங்க இலக்கியம்	III	86	4	-	5

நோக்கம் :

1. தமிழர்களின் அக புற வாழ்வியலை அறிதல்.
2. வரலாற்றுச் செய்திகள், தமிழரது பண்பாடு, இயற்கை போற்றிய திறம் ஆகியவற்றை உணர வைத்தல்.
3. பழந்தமிழரின் செம்மாந்த அறம், மறம், கொடைப் பண்புகளை எடுத்துரைத்தல்

COURSE OUTCOMES

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO No.	CO Statement	Knowledge Level
CO1	சங்கத் தமிழரது வாழ்வியல் முறைகளைக் கண்டறிதல்	K1
CO2	சங்க இலக்கியப் பகுப்பு முறையை உணர்தல்	K2
CO3	திணை, துறைக் கோட்பாடுகளை இணைத்தறிதல்	K3
CO4	சங்க கால மக்களுக்கிடையிலான உறவு, நட்பு, பாகுபாட்டினை ஆராய்ந்தறிதல்	K4

பாடத்திட்டம் :

அலகு 1 : (20 மணி)

நற்றிணை : 101 முதல் 105 பாடல்கள் வரை

குறுந்தொகை : 26 முதல் 35 பாடல்கள் வரை

ஐங்குறுநூறு : அன்னாய் வாழிப்பத்து

அலகு 2 : (15 மணி)

கலித்தொகை : குறிஞ்சிக்கலி – முதல் 5 பாடல்கள்

அகநானூறு : களிற்றியானைநிறை 1 - 10 பாடல்கள்

பரிபாடல் : திருமால் - பாடல் எண் - 2

அலகு 3 : (20 மணி)

புறுநானூறு : 101 - 120, பாடல்கள் வரை மொத்தம் 20 பாடல்கள்

பதிற்றுப்பத்து : இரண்டாம்பத்து - முதல் 5 பாடல்கள்

அலகு 4 : (15 மணி)

முல்லைப்பாட்டு

அலகு 5 : (20 மணி)

பொருநராற்றுப்படை

பார்வை நூல்கள் :

வ.எ.	ஆசிரியர்	நூல்	பதிப்பகம்	ஆண்டு
1	ஒளவை சு. துரைசாமி பிள்ளை (உரை)	நற்றிணை	கழக வெளியீடு	2008
2	ஒளவை சு. துரைசாமி பிள்ளை (உரை)	புறநானூறு	கழக வெளியீடு	2008
3	ஒளவை சு. துரைசாமி பிள்ளை (உரை)	பதிற்றுப்பத்து	கழக வெளியீடு	2008
4	ஒளவை சு. துரைசாமி பிள்ளை (உரை)	குறுந்தொகை	கழக வெளியீடு	2007
5	ந.மு. வேங்கடசாமி நாட்டார் (உரை)	அகநானூறு	கழக வெளியீடு	2008
6	ஒளவை துரைசாமி பிள்ளை (உ.ஆ.)	ஐங்குறுநூறு	கழக வெளியீடு	2008
7	நச்சினார்க்கினியர் (உ.ஆ.)	கலித்தொகை	கழக வெளியீடு, சென்னை	1943
8	பொ.வே.சோமசுந்தரனார் (உரை)	பரிபாடல்	கழக வெளியீடு	2008
9	பொ.வே.சோமசுந்தரனார்(உ.ஆ.)	பத்துப்பாட்டு பகுதி 1, 2	கழக வெளியீடு	2008

கற்பித்தல் முறைகள் :

கலந்தாய்வு, வினாடி வினா, திட்டக்கட்டுரை, கரும்பலகை, குழு விவாதம்

பாடக் குறியீடு	பாடம்	Category	L	T	P	Credit
19UTA6MBE2A	நாடகவியல்	III	71	4	-	4

நோக்கம்

1. நாடகத்தின் தோற்றம், சிறப்பினை உணர்த்துதல்
2. நாடகவியலில் ஏற்பட்ட மாற்றங்களை அறியச் செய்தல்

COURSE OUTCOMES

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO No.	CO Statement	Knowledge Level
CO1	நாடகங்களின் தோற்றம் குறித்துக் கண்டறிதல்	K1
CO2	காலந்தோறும் நாடகங்களின் வடிவ மாற்றங்களை விவரித்தல்	K2
CO3	பழங்கால நாடகங்களைத் தற்கால நாடகங்களோடு ஒப்பிட்டறிதல்	K3
CO4	நாடக இலக்கிய வகைகளையும் பொருண்மைகளையும் பகுத்தாய்தல்	K4

பாடத்திட்டம்

அலகு 1 : (15 மணி)

நாடகத்தின் தோற்றம் - தொல்காப்பியத்தால் அறியலாகும் நாடகம் பற்றிய செய்திகள் - சங்க இலக்கியத்தில் நாடகம் - இசைக்கருவிகள்

அலகு 2 : (15 மணி)

சிலப்பதிகாரத்தில் நாடகம் - அடியார்க்கு நல்லாரின் உரையால் அறியப்படும் கூத்து, நாட்டியம், மேடை அமைப்பு – நாடக நூல்கள்

அலகு 3 : (15 மணி)

பல்லவர், பாண்டியர், சோழர், ஐரோப்பியர் காலத்தில் நாடகங்கள் - மன்னர்கள் காலத்தில் நாடகம் பெற்ற சிறப்புகள்

அலகு 4 : (15 மணி)

பள்ளு, குறவஞ்சி, நொண்டி, கீர்த்தனை, ஓரங்க நாடகம், மொழிபெயர்ப்பு நாடகங்கள்

அலகு 5 : (15 மணி)

மேடை நாடக இலக்கிய வகைகள் - வானொலி, தொலைக்காட்சி நாடகங்கள்
- நாடக ஆசிரியர்கள் - நாடகக் குழுக்கள்

பாட நூல்

வ.எ.	ஆசிரியர்	நூல்	பதிப்பகம்	ஆண்டு
1	முனைவர் கா. லட்சுமி	நாடகத் தமிழ்	நியூ செஞ்சுரி புக் ஹவுஸ், சென்னை	2016

பார்வை நூல்கள்

வ.எ.	ஆசிரியர்	நூல்	பதிப்பகம்	ஆண்டு
1	முனைவர் மு. இராமசுவாமி, முனைவர் கு. முருகேசன்	இருபதாம்நூற்றாண்டு தமிழ் நாடகங்கள்	உலகத்தமிழாராய்ச்சி நிறுவனம், சென்னை	1999
2	முனைவர் கு. பகவதி	தமிழ் நாடகம் நேற்றும், இன்றும்	உலகத்தமிழாராய்ச்சி நிறுவனம், சென்னை	2000

கற்பித்தல் முறைகள்

கலந்தாய்வு, வினாடி வினா, திட்டக்கட்டுரை, கரும்பலகை, குழு விவாதம்

பாடக் குறியீடு	பாடம்	category	L	T	P	credit
19UTA6MBE2B	கோயில் கலைகள்	III	71	4	-	4

நோக்கம்

- 1 கோயில் கலைகளின் வரலாற்றை அறிமுகம் செய்தல்
2. கோயில் அமைப்பினை அறியச் செய்தல்
3. கட்டட அமைப்பினை விளக்குதல்

COURSE OUT COMES

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO.No.	CO statement	Knowledge level
CO1	கோயில்களின் துவக்கக் கால வரலாற்றைக் கண்டறிதல்	K1
CO2	கோயில்களின் அமைப்பினை விளக்குதல்	K2
CO3	கோயில்களின் வகைகளைப் பகுத்தாய்தல்	K3
CO4	அரசர்களின் கோயில் கலைப் பங்களிப்பை ஆராய்தல்	K4

பாடத் திட்டம்

அலகு -1 (15 மணி)

சங்கக்காலக் கலை – கட்டடக் கலை – ஓவியக் கலை – சிற்பக் கலை - இசைக் கலை – நாடகக் கலை

அலகு -2 (15 மணி)தமிழ்நாட்டுக் கோயில்கள் - தோற்றம் - பெயர்கள் - வகைகள் - மனைநூல்கள் - சிற்ப நூல்கள் - ஆகமங்கள் - கோயில்களில் இசைக் கூத்துகள் - கோயில்கள் இலக்கணம்

அலகு -3 (15 மணி)

தமிழ் நாட்டுக் கோயில்கள் வரலாறு – பல்லவர் காலம் - பாண்டியர் காலம் - சோழர் காலம்

அலகு – 4 (15 மணி)

தமிழ்நாட்டுக் கோபுரங்கள் -தமிழ்நாட்டுச் சிற்பங்கள் - வகைகள் -செப்புத் திருமேனிகள் - வரலாறு – வகைகள்

அலகு – 5 (15 மணி)

தமிழ் நாட்டு ஓவியங்கள் - பல்லவர் காலம் - பாண்டியர் காலம் - சேரர் காலம் - சோழர் காலம் - விஜயநகர மன்னர் காலம் - நாயக்கர் காலம் - பிற்காலம்

பாட நூல்

வ.எ.	ஆசிரியர்	நூல்	பதிப்பகம்	ஆண்டு
1	முனைவர்.இரா.நாகசாமி மா.சந்திரமூர்த்தி	தமிழகக் கோயிற்கலைகள்	தமிழ்நாடு அரசு தொல்லியல் துறை வெளியீடு,,சென்னை	2014

பார்வை நூல்கள்

வ.எண்	ஆசிரியர்	நூல்	பதிப்பகம்	ஆண்டு
1.	ஆர்.வெங்கட்ராமன்	இந்தியக் கோயில் கட்டடக் கலை வரலாறு	என்.எஸ். புப்ளிகேஷன்,மதுரை	1985
3.	இராச மாணிக்கம்	தமிழகக் குடைவரைக் கோயில்கள்	சைவசித்தாந்தம் நூற்பதிப்புக் கழகம், சென்னை	1984

கற்பித்தல் முறைகள்

கலந்தாய்வு , வினாடிவினா , திட்டக் கட்டுரை, கரும்பலகை, குழு விவாதம்

பாடக் குறியீடு	பாடம்	Category	L	T	P	Credit
19UTA6MBE3A	சுற்றுலாவியல்	III	86	4	-	4

நோக்கம்

1. வரலாற்றுச் சின்னங்களையும் அதன் பின்புலத்தையும் அறிதல்.
2. தமிழகத்தின் கலை, இலக்கிய பண்பாட்டையும் நாகரிகத்தையும் அறிதல் மற்றும் அறிவித்தல்.
3. பல்வேறு இடங்களின் சிறப்பையும் பயணங்களால் ஏற்படும் அனுபவத்தையும் கொண்டு ஆளுமைத் திறனை வளர்த்தல்.

COURSE OUTCOMES

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO No.	CO Statement	Knowledge Level
CO1	தமிழக வரலாற்றுச் சின்னங்களையும் அதன் பின்புலத்தையும் கண்டறிதல்	K1
CO2	தமிழகத்தின் கலை, இலக்கிய பண்பாட்டையும் நாகரிகத்தையும் விவரித்தல்	K2
CO3	பயணங்களினால் ஏற்படும் அனுபவத்தைக் கொண்டு புத்திலக்கியம் படைக்கும் திறனை மேம்படுத்துதல்	K3
CO4	நவீன காலத்தில் சுற்றுலா வளர்ச்சிக்கான சமூக பொருளாதார வழிகளை ஆராய்தல்	K4

பாடத்திட்டம்

அலகு 1 : (20 மணி)

சுற்றுலா விளக்கம் - சுற்றுலா நோக்கம் - சுற்றுலா வகைகள் - சுற்றுலா பயணப் பணி நிறுவனம்.

அலகு 2 : (20 மணி)

காலந்தோறும் சுற்றுலா வளர்ச்சி – நவீன காலத்தில் சுற்றுலாவின் முக்கியத்துவம் - சுற்றுலாவின் சமூகப் பொருளாதார விளைவுகள்.

அலகு 3 : (10 மணி)

சுற்றுலாவிடுதிகள்-உணவகங்கள்-போக்குவரத்துவசதிகள்-சுற்றுலாவழிகாட்டிகள் - தகுதிகள்.

அலகு 4 : (20 மணி)

சுற்றுலாவின் பயன்கள் - சுற்றுலாவின் வழி அறியலாகும் கலை, பண்பாடு, சமயம், வரலாற்றுச் சின்னங்கள்.

அலகு 5 : (20 மணி)

தமிழகத்தில் சுற்றுலா வளர்ச்சிக்கான வாய்ப்புகள் - நினைவுச் சின்னங்களை பாதுகாத்தல் - தொழில் நோக்கில் வளர்த்தல்.

பாட நூல்

வ.எ.	ஆசிரியர்	நூல்	பதிப்பகம்	ஆண்டு
1	மா.இராசசேகர தங்கமணி	சுற்றுலாவியல் ஓர் அறிமுகம்	பாரி நிலையம், சென்னை	2012

பார்வை நூல்கள்

வ.எ.	ஆசிரியர்	நூல்	பதிப்பகம்	ஆண்டு
1	ச. ஈஸ்வரன்	சுற்றுலாவியல்	பாவை பதிப்பகம், சென்னை	2006
2	வெ. கிருஷ்ணசாமி	சுற்றுலா வளர்ச்சி	மணிவாசகர் பதிப்பகம், சென்னை	1997
3	ச. ஈஸ்வரன்	சுற்றுலாவியல் ஓர் அறிமுகம்	சாரதா பதிப்பகம், சென்னை	2010

கற்பித்தல் முறைகள்

கலந்தாய்வு, வினாடி வினா, திட்டக்கட்டுரை, கரும்பலகை, குழு விவாதம்

பாடக் குறியீடு	பாடம்	category	L	T	P	credit
19UTA6MBE3B	வாழ்க்கை வரலாற்று இலக்கியம் (உ.வே.சா)	III	86	4	-	4

நோக்கம்

1. வாழ்க்கை வரலாற்று நூல்கள் குறித்து அறிந்து கொள்ளுதல்
2. உ.வே.சாவின் வாழ்க்கை வரலாற்றைத் தெரிந்து கொள்ளுதல்

COURSE OUT COMES

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO.No.	CO statement	Knowledge level
CO1	வாழ்க்கை வரலாற்று இலக்கியங்கள் பற்றி அறிதல்	K1
CO2	உ.வே.சா.வின் இளமைப் பருவம் மற்றும் கல்வி கற்றமையைப் பற்றி தெரிந்து கொள்ளுதல்	K2
CO3	தமிழ் நூல்களைப் பதிப்பிக்க உ.வே.சா. பட்ட இன்னல்களை விளக்கி அதன் மேன்மையை உணர்தல்	K3

பாடத் திட்டம்

அலகு -1 (20 மணி)

வாழ்க்கை வரலாற்று இலக்கியம் விளக்கம் --- வாழ்க்கை வரலாறு – தன் வரலாறு - இளமைப்பருவம் - ஊர் - முன்னோர்கள் - பிறப்பு- இளமைக் கல்வி – தமிழும்சங்கீதமும் - குன்னம் சிதம்பரம்பிள்ளை திருமணம் - காரிகைப் பாடம் - செங்கணம் வாழ்க்கை.

அலகு -2 (20 மணி)

மாயூர வாழ்க்கை – மாயூரப் பிரயாணம் - மகாவித்துவான் உடன் முதல்நாள்தமிழே துணை- புலமையும் வறுமையும் - பட்டீஸ்வரத்தில் பாடம் - திருவாவடுதுறைக் காட்சிகள் - திருப்பெருந்துறைப் புராணம்.

அலகு 3 (10 மணி)

இயற்றிய பாடல்கள் - திருவிளையாடல் பிரசங்கம் - தேசிகர் - திரிசிரபுரம் - கோவிந்தபிள்ளை
- சிறப்புப் பாடல்கள் - பெற்ற சன்மானம்

அலகு -4 (20 மணி)

பதிப்பு வாழ்க்கை - பதிப்பித்த முதல் நூல் - பாடும் பணி - கல்லூரி வாழ்க்கை -
இரண்டாவது வெளியீடு - சிந்தாமணிப் பதிப்பு

அலகு -5 (20 மணி)

திருநெல்வேலி பிரயாணம் - பத்துப்பாட்டுப் பிரதிகள் - பத்துப்பாட்டு பதிப்பு -
சிலப்பதிகாரஆராய்ச்சி - புறநானூறு - மணிமேகலை பதிப்புகள்

பாடநூல்

வ.எண்	ஆசிரியர்	நூல்	பதிப்பகம்	ஆண்டு
1.	உ.வே.சா.	என் சரித்திரம்	படித்துறை புத்தக அறக்கட்டளை ஜோலார்பேட்டை, திருப்பத்தூர்	2020

கற்பித்தல் முறைகள்

கலந்தாய்வு , வினாடி வினா, திட்டக்கட்டுரை, கரும்பலகை, குழு விவாதம்



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY - 18
PG & RESEARCH DEPARTMENT OF TAMIL
M.A. TAMIL – PROGRAMME STRUCTURE
LEARNING OUTCOME BASED CURRICULUM FRAMEWORK (CBCS – LOCF)
(For the Candidates admitted from the Academic year 2023-2024 and onwards)
I SEMESTER

Semester	Course	Course Title	Course Code	Inst. Hrs. / week	Credits	Exam			Total
						Hrs.	Marks		
							Int.	Ext.	
I	Core Course– I (CC)	இக்கால இலக்கியம்	23PTA1CC1	6	5	3	25	75	100
	Core Course –II (CC)	அற இலக்கியம்	23PTA1CC2	6	5	3	25	75	100
	Core Course - III (CC)	பக்தி இலக்கியம்	23PTA1CC3	6	5	3	25	75	100
	Core Course - IV (CC)	தொல்காப்பியம் பொருளதிகாரம் - 1	23PTA1CC4	6	5	3	25	75	100
	Discipline Specific Elective Course-I (DSE)	A. நாட்டார் வழக்காற்றியல்	23PTA1DSE1A	6	3	3	25	75	100
		B. தமிழில் சிறுபத்திரிக்கைகள்	23PTA1DSE1B						
		C. நோக்கு நூல்கள்	23PTA1DSE1C						
	Total				30	23	-	-	-

15 Days INTERNSHIP during Semester Holidays

Semester I	Internal Mark : 25	External Mark : 75		
பாடக்குறியீடு	பாடம்	Category	Hrs/Week	Credits
23PTA1CC1	இக்கால இலக்கியம்	CC	6	5

நோக்கம் :

- இக்கால இலக்கியத்தில் ஆழமான புலமை பெறுதல்.
- இக்காலத் தமிழ்க்கவிதை (மரபுக்கவிதை, புதுக்கவிதை, புனைகதை (சிறுகதை, புதினம்) ஆகியவற்றை ஆர்வத்துடன் தேடிவாசித்தல்.
- இக்காலத் தமிழ்க்கவிதை, புனைகதை ஆகியவற்றின் போக்குகளையும் பின்புலங்களையும் உணர்தல்.
- இக்கால தமிழ்மரபுக்கவிதை, புதுக்கவிதை, சிறுகதை, புதினம் ஆகியவகைகளில் இலக்கியநயம் பெற, சமூகவியல் நோக்கில் அணுக, மதிப்பிடப் பயிற்சி பெறல்.

Course Outcomes:

இப்பாடத்திட்டத்தைப் பயில்வதால் மாணவியர் பெறும்பதின்

CO. NO	Co Statement	Cognitive Level
CO1	இக்கால இலக்கிய வரலாற்றை நன்கு அறிதல்	K1, K2
CO2	இக்கால இலக்கியத்தில் மரபுக்கவிதை, புதுக்கவிதை, சிறுகதை, புனைகதை ஆகிய களங்களில் சிறந்த படைப்புகளைக் கற்று இலக்கியத் திளைப்பும் சமூக உணர்வும் பெறுதல்.	K4
CO3	கவிதை, புனைகதை ஆகியவற்றின் வடிவம், பொருள், இலக்கிய அழகுகள் முதலியவற்றைப் பகுத்துணர்ந்து மதிப்பிடும் பயிற்சியைப் பெறுதல்.	K4, K5
CO4	இக்கால இலக்கியங்களின் போக்குகளையும் தனித்தன்மைகளையும் உருவாக்கக் கூறுகளையும் விரிவாகவும் ஆழமாகவும் நுட்பமாகவும் அறிதல்	K3, K6
CO5	உரைநடை இலக்கியங்களைப் பகுத்தாராய்ந்து மதிப்பிடல்.	K5

Mapping of CO with Po and PSO

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	3	3	3	2	2	2	2	3
CO2	3	3	2	2	2	3	2	3	2	2
CO3	3	2	3	3	2	2	2	3	3	3
CO4	3	3	3	2	2	2	3	2	2	3
CO5	3	3	2	2	2	3	3	2	2	3

பாடத்திட்டம்- SYLLABUS				
UNIT	CONTENT	HOURS	COS	Cognitive Level
I	<ul style="list-style-type: none"> பாரதியார் - கனவு (சுயசரிதை) முழுமையும் பாரதிதாசன் - புரட்சிக்கவி , வீரத்தாய் 	20	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
II	<ul style="list-style-type: none"> ந.பிச்சமூர்த்தி - (ந.பிச்சமூர்த்தி கவிதைகள்: காதல்) பிரமிள் - (பிரமிள் தேர்ந்தெடுத்த கவிதைகள்: எல்லை, காவியம்) ஞானக்கூத்தன் - (அன்று வேறு கிழமை : கீழவெண்மணி) நா. காமராசன் - (காகிதப்பூக்கள், விலைமகளிர்) அப்துல்ரகுமான் - (நேயர் விருப்பம்: மண்) மீரா - (குக்கூ 1,3 14, 15 16, 18) இன்குலாப் - (ஒவ்வொரு புல்லையும், பெயர் சொல்லி அழைப்பேன் : ஒவ்வொரு புல்லையும், மிச்சமிருக்கும் ஓரிரு தனிர்கள்) ஈரோடு தமிழன்பன் - (மாற்று மனிதம் : 	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6

	<p>அம்மாவும் மல்லிகையும்)</p> <ul style="list-style-type: none"> • சிற்பி - (கண்ணாடிச் சிறகள்ள ஒரு பறவை : மின் துளிகள்_5) • மு.மேத்தா - (கண்ணீர்ப் பூக்கள் : மரங்கள்), • வைரமுத்து - (இந்தப் பூக்கள் விற்பனைக்கல்ல : ஐந்து பெரிது ஆறு சிறிது). 			
III	<p>சிறுகதைகள்</p> <ol style="list-style-type: none"> 1.புதுமைப்பித்தன் - செல்லம்மாள் 2.கு.ப.ராஜகோபாலன் - கனகாம்பரம் 3.கு. அழகிரிசாமி - ராஜா வந்திருக்கிறார் 4. கி.ராஜநாராயணன் - கதவு 5.ஜெயகாந்தன் - முன்னிலவும் பின்பனியும் 6.சுந்தரராமசாமி - பிரசாதம் 7.அசோகமித்திரன் - புலிக்கலைஞன் 8.பிரபஞ்சன் - அப்பாவின் வேஷ்டி 9 சோ. தர்மன் - சோகவனம் 10. அம்பை - வீழ்தல் <p>புதினம்</p> <p>இமையம் - செல்லாத பணம்</p>	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
IV	<ul style="list-style-type: none"> • கடிதங்கள் - தம்பிக்கு - மு.வரதராசன் • நாடகம் - சந்திரஹரி - பம்மல்சம்பந்தனார் 	20	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
V	<ul style="list-style-type: none"> • அண்ணாவின் சொற்பொழிவுகள்- நூல் நிலையங்கள், நாடகத்தில் மறுமலர்ச்சி, என்னைக் கவர்ந்த புத்தகங்கள், வீட்டிற்கோர் புத்தக சாலை, மேடைப் பேச்சு • அக்னிச்சிறகுகள் - அப்துல்கலாம். ஏ.பி.ஜெ. 	20	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6

VI	சுயகற்றல் (இப்பகுதிப் பருவத்தேர்வுக்கு உரியதல்ல) தமிழில் உரைநடை இலக்கியத்தின் தோற்றமும் வளர்ச்சியும்	-	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
----	---	---	---------------------------------	----------------------------------

பாட நூல்கள் :

- விசுவநாதன். சீனி,(ப.ஆ) (2012) காலவரிசையில் பாரதி பாடல்கள் , சென்னை.
- வேங்கடாசலபதி ஆ.இரா (ப.ஆ) , (2016), திருத்தப்பட்ட இரண்டாம் பதிப்பு,பாரதியின் சுய சரிதைகள்- கனவு ,சின்னச்சங்கரன் கதை , காலச்சுவடு பதிப்பகம், நாகர்கோவில்.
- தமிழ் ஒளி, (2001) , கண்ணப்பன் கிளிகள், மூன்றாம் பதிப்பு, புகழ் புத்தகாலயம், சென்னை.
- ஞான கூத்தன். ராஜகோபாலன் (ப.ஆ)., முதற் பதிப்பு (2000) ந. பிச்சமூர்த்தி கவிதைகள், அழகிய சிங்கர் மதி நிலையம், சென்னை.
- சுகுமாரன்,(தொ.ஆ) முதற்பதிப்பு (2016) பிரமிள் தேர்ந்தெடுத்த கவிதைகள், காலச்சுவடு பதிப்பகம், நாகர்கோவில்.
- நா. காமராசன், ஆறாம் பதிப்பு (1986), கறுப்பு மலர்கள், பாரதி பதிப்பகம் ,சென்னை .
- ஞானக் கூத்தன், (2012) ,அன்று வேறு கிழமை, காலச்சுவடு பதிப்பகம் நாகர்கோவில்.
- மனுஷ்ய புத்திரன், (2016) முதற் பதிப்பு, ஊழியின் தினங்கள், உயிர்மை பதிப்பகம் சென்னை.
- மு மேத்தா, (1980) ஏழாம் பதிப்பு, கண்ணீர் பூக்கள், விஜயா பதிப்பகம், கோயம்புத்தூர்.
- மீரா, (2002) குக்கூ, அகரம் பதிப்பகம், தஞ்சாவூர்
- அப்துல் ரகுமான் (2017)மூன்றாம் பதிப்பு , கவிக்கோ கவிதைகள், நேஷனல் பப்ளிஷர்ஸ், சென்னை .
- ஈரோடு தமிழன்பன், (2015) முதற்பதிப்பு, திசை கடக்கும் சிறகுகள், பூம்புகார் பதிப்பகம். சென்னை

- ஈரோடு தமிழன்பன், (2017) முதற்பதிப்பு, மாற்று மனிதம், பூம்புகார் பதிப்பகம், சென்னை
- இன்குலாப் (2017) முதல் பதிப்பு, ஒவ்வொரு புல்லையும் பெயர் சொல்லி அழைப்பேன் (முழுக் கவிதைகள் திரட்டு) அன்னம் பதிப்பகம் ,தஞ்சாவூர் .
- சிற்பி, (2016) முதற்பதிப்பு, கண்ணாடிச் சிறகுள்ள ஒரு பறவை ,கவிதா பப்ளிகேஷன்ஸ், சென்னை .
- வைரமுத்து, (2015) 25 ஆம் பதிப்பு, இந்தப்க்கள் விற்பனைக்கல்ல, சூர்யா லிட்ரேச்சர் (பி) லிட், சென்னை.
- மனுஷ்ய புத்திரன், (2010) முதற் பதிப்பு, இதற்கு முன்பும் இதற்குப் பிறகும், உயிர்மை பதிப்பகம். சென்னை .
- மனுஷ்ய புத்திரன், (2016) முதற்பதிப்பு, ஊழியின் தினங்கள், உயிர்மை பதிப்பகம் சென்னை.
- சுகிர்தராணி, (2012) முதற் பதிப்பு, காமத்திப்பூ, காலச்சுவடு பப்ளிகேஷன்ஸ் நாகர்கோவில் .
- ராஜ மார்த்தாண்டன், (2003),புதுக்கவிதை வரலாறு, யுனைடெட் ரைடர்ஸ், சென்னை.
- ராமகிருஷ்ணன் எஸ். , (2013) முதற் பதிப்பு , 100 சிறந்த சிறுகதைகள் தொகுப்பு, டிஸ்கவரி புக் பேலஸ் (பி)லிட் ,சென்னை.
- ஆ.இரா.வேங்கடாசலபதி(ப.ஆ), (2000) புதுமைப்பித்தன் கதைகள். முழுத்தொகுப்பு, காலச்சுவடு பதிப்பகம் .
- பெருமாள் முருகன் (பஆ), (2013) டிசம்பர், முதற் பதிப்பு, கு.ப. ரா. சிறுகதைகள் (முழுத் தொகுப்பு) காலச்சுவடு பதிப்பகம் ,நாகர்கோவில் .
- அம்பை , (2022) ஒன்பதாம் பதிப்பு,சிவப்பு கழுத்துடன் ஒரு பச்சை பறவை, காலச்சுவடு பதிப்பகம், நாகர்கோவில்.
- இமையம் , (2018) முதற்பதிப்பு, செல்லாத பணம், க்ரியா பதிப்பகம், சென்னை .
- வரதராசன். மு. டாக்டர்,(1954) மூன்றாம் பதிப்பு, தம்பிக்கு கடிதம், பாரி நிலையம், சென்னை.

- பம்மல் சம்பந்தனார் , (1923) சந்திர ஹரி ,பியர் லெஸ் அச்சகம், பாரி நிலையம். சென்னை
- அறிஞர் அண்ணா, (1995) அண்ணாவின் சொற்பொழிவுகள், பாரதி பதிப்பகம், சென்னை
- அப்துல் கலாம். ஏ.பி.ஜெ. (1999) முதற் பதிப்பு, அக்னி சிறகுகள், கண்ணதாசன் பதிப்பகம். சென்னை.

பார்வை நூல்கள் :

- பஞ்சாங்கம் க., (2021) முதற்பதிப்பு, மகாகவி பாரதியாரின் தடை செய்யப்பட்ட கனவு, அன்னம், தஞ்சாவூர் .
- வல்லிக்கண்ணன், (2008) புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும், முதற்பதிப்பு, பாரி நிலையம் ,சென்னை .
- வேங்கடாசலபதி ஆ.இரா., (2002), நாவலும் வாசிப்பும் ஒரு வரலாற்றுப் பார்வை, காலச்சுவடு பதிப்பகம், நாகர்கோவில் .
- திருமலை ம., (தொ.ஆ) (1995), முதற்பதிப்பு , தமிழ் சிறுகதை நேற்றும் இன்றும், ஐந்திணைப் பதிப்பகம், சென்னை .
- விவேகானந்தன் மு., (2019), இக்கால இலக்கிய ஆளுமைகள், மணிவாசகர் பதிப்பகம், சென்னை -16.
- காமராசு இரா., இக்கால இலக்கியம், நியூ செஞ்சுரி புக் ஹவுஸ் (பி)லிட், சென்னை -18.
- பழனி கோ., (2012), (ப.ஆ),பம்மல் சம்பந்த முதலியார் நாடகப் பனுவல்கள், நியூ செஞ்சுரி புக் ஹவுஸ் (பி) லிமிடெட் , சென்னை.
- கார்த்திகேசு சிவத்தம்பி, தமிழில் சிறுகதையின் தோற்றமும் வளர்ச்சியும் (1967) முதற்பதிப்பு , தமிழ்ப் புத்தகாலயம், சென்னை.
- சீனிவாச ராகவன் அ., (1970) ஆகஸ்ட், முதற் பதிப்பு, ஒரு நூற்றாண்டுத் தமிழ்க் கவிதை, மெர்குரி புத்தகக் கம்பெனி, கோயம்புத்தூர்.
- கைலாசபதி க., (2018) மறு பதிப்பு, தமிழ் நாவல் இலக்கியம், காலச்சுவடு பதிப்பகம், நாகர்கோவில்.

இணையதள முகவரி:

- Tamil Heritage Foundation – www.tamilheritage.org <http://www.tamilheritage.org>
- Tamil virtual University Library – [www.tamilvu.org/ library](http://www.tamilvu.org/library) <http://www.virtualvu.org/library>
- Project Madurai – www.projectmadurai.org
- Chennai Library – www.chennailibrary.com <http://www.chennailibrary.com>>.
- Tamil Universal Digital Library – www.ulib.prg <http://www.ulib.prg>.
- Tamil E-Books Downloads – tamilebooksdownloads.blogspot.com
- Tamil Books online – books.tamilcube.com
- Catalogue of the Tamil books in the Library of British Congress archive.org
- Tamil novels online – books.tamilcube.com

கற்பித்தல் முறைகள் :

கலந்தாய்வு, வினாடி வினா, திட்டக்கட்டுரை, கரும்பலகை, குழுவிவாதம், PPT, GOOGLE MEET, GOOGLE CLASSRO

Semester I	Internal Mark : 25	External Mark : 75		
பாடக்குறியீடு	பாடம்	Category	Hrs/Week	Credits
23PTA1CC2	அற இலக்கியம்	CC	6	5

நோக்கம் :

- தமிழின் அற இலக்கிய வரலாற்றை அறிதல்
- பதினெண்கீழ்க்கணக்கில் இடம்பெற்றுள்ள அற இலக்கியங்களை ஆழ்ந்து கற்றல்
- திருக்குறள், நாலடியார் ஆகியவற்றில் சிறப்புப் பயிற்சி பெறுதல்
- பதினெண்கீழ்க்கணக்கில் இடம்பெற்றுள்ள பிற அற இலக்கியங்களைப் பயிலல்.
- அற இலக்கியங்கள் முன்வைக்கும் அறக் கருத்துகள், அற இலக்கியங்களின் இலக்கிய மதிப்புகள், இலக்கிய அழகுகள், யாப்பு வடிவம், அற இலக்கியப் புலவர்களின் தனித்திறன் முதலியவற்றில் சிறந்த புலமை பெறுதல்.

Course Outcomes:

இப்பாடத்திட்டத்தைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO. NO	Co Statement	Cognitive Level
CO1	தமிழின் அற இலக்கிய வரலாற்றின் கூறுகளைப் பகுத்தாராய்ந்து பரந்த நிலையிலான புலமை பெறுதல்.	K1, K4
CO2	திருக்குறள், நாலடியார் ஆகியவற்றின் அறக்கருத்துக்களை ஆராயும் திறனில் சிறப்புப்பயிற்சி பெறுதல்.	K5
CO3	பதினெண்கீழ்க்கணக்கின் பிற அற இலக்கியங்கள் முன்வைக்கும் அறக் கருத்துகளைப் பகுத்தாராய்ந்து உணர்தல்.	K1, K4
CO4	பதினெண்கீழ்க்கணக்கின் அற இலக்கியங்களில் ஆழமான புலமை பெறுதல்; அறக்கருத்துகளைக் கால உணர்வோடும் சமூக உணர்வோடும் அணுகும் நோக்கு பெறுதல்.	K2
CO5	அறஇலக்கியங்களின் வடிவம், கருத்துக்கள், கவிதைநலன்கள் முதலியவற்றில் சிறப்பறிவைப் பெற்றுப் பா உருவாக்கக் கூறுகளை அறிதல்.	K3, K6

Mapping of CO with Po and PSO

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	3	3	3	2	2	2	2	3
CO2	3	3	2	2	2	3	2	3	2	2
CO3	3	2	3	3	2	2	2	3	3	3
CO4	3	3	3	2	2	2	3	2	2	3
CO5	3	3	2	2	2	3	3	2	2	3

பாடத்திட்டம்- SYLLABUS				
UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	<p>திருக்குறள் 1 – பொருட்பால் (25அதிகாரங்கள்)</p> <ol style="list-style-type: none"> 1. கல்வி (40ஆவதுஅதிகாரம்) 2. கேள்வி (42ஆவதுஅதிகாரம்) 3. அறிவுடைமை (43ஆவதுஅதிகாரம்) 4. பெரியாரைத்துணைக்கோடல் (45ஆவதுஅதிகாரம்) 5. சிற்றினஞ்சேராமை (46ஆவதுஅதிகாரம்) 6. தெரிந்துசெயல்வகை (47ஆவது அதிகாரம்) 7. வலியறிதல் (48ஆவதுஅதிகாரம்) 8. காலமறிதல் (49ஆவதுஅதிகாரம்) 9. இடனறிதல் (50ஆவது அதிகாரம்) 10. தெரிந்துதெளிதல்(51ஆவது அதிகாரம்) 11. தெரிந்துவினையாடல் (52ஆவதுஅதிகாரம்) 12. சுற்றந்தழல் (53ஆவதுஅதிகாரம்) 13. கண்ணோட்டம் (58ஆவதுஅதிகாரம்) 14. ஊக்கமுடைமை (60ஆவதுஅதிகாரம்) 15. மடியின்மை (61ஆவதுஅதிகாரம்) 16. ஆள்வினையுடைமை (62ஆவதுஅதிகாரம்) 17. இடுக்கண்அழியாமை (63ஆவது அதிகாரம்) 18. சொல்வன்மை (65ஆவதுஅதிகாரம்) 19. வினைத்தூய்மை (66ஆவது அதிகாரம்) 	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6

	20. வினைத்திட்டம் (67ஆவது அதிகாரம்) 21. வினைசெயல்வகை (68ஆவது அதிகாரம்) 22. குறிப்பறிதல் (71ஆவது அதிகாரம்) 23. அவையறிதல் (72ஆவது அதிகாரம்) 24. நாடு (74ஆவது அதிகாரம்) 25. பொருள்செயல்வகை (76ஆவது அதிகாரம்)			
II	திருக்குறள் 2 – பொருட்பால் (25அதிகாரங்கள்) 1. நட்பு (79ஆவது அதிகாரம்) 2. நட்பாராய்தல் (80ஆவது அதிகாரம்) 3. பழைமை (81ஆவது அதிகாரம்) 4. தீநட்பு (82ஆவது அதிகாரம்) 5. கூடாநட்பு (83ஆவது அதிகாரம்) 6. பேதைமை (84ஆவது அதிகாரம்) 7. புல்லறிவாண்மை (85ஆவது அதிகாரம்) 8. இகல் (86ஆவது அதிகாரம்) 9. பகைமாட்சி (87ஆவது அதிகாரம்) 10. பகைத்திறம்தெரிதல் (88ஆவது அதிகாரம்) 11. பெரியாரைப்பிழையாமை (90ஆவது அதிகாரம்) 12. கள்ளுண்ணாமை (93ஆவது அதிகாரம்) 13. சூது (94ஆவது அதிகாரம்) 14. மருந்து (95ஆவது அதிகாரம்) 15. மானம் (97ஆவது அதிகாரம்) 16. பெருமை (98ஆவது அதிகாரம்) 17. சான்றாண்மை (99ஆவது அதிகாரம்) 18. பண்புடைமை (100ஆவது அதிகாரம்) 19. நன்றியில்செல்வம் (101ஆவது அதிகாரம்) 20. நாணுடைமை (102ஆவது அதிகாரம்) 21. குடிசெயல்வகை (103ஆவது அதிகாரம்) 22. உழவு (104ஆவது அதிகாரம்) 23. நல்குரவு (105ஆவது அதிகாரம்) 24. இரவு (106ஆவது அதிகாரம்) 25. இரவச்சம் (107ஆவது அதிகாரம்)	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
III	நாலடியார் 1- பொருட்பால் – அரசியல் - முதல் 10 அதிகாரங்கள்	18	CO1 CO2 CO3	K1 K2 K3

			CO4 CO5	K4 K5 K6
IV	நாலடியார் 2 - பொருட்பால் - அரசியல் - அடுத்த 10 அதிகாரங்கள்	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
V	<p>பழமொழி நானூறு 10 பாடல்கள்</p> <ol style="list-style-type: none"> பா.எண்: 8 (எந்நெறியானும்....) பா.எண்: 52 (பாரதத்துள்ளும்...) பா.எண்: 55 (ஆற்றவும்கற்றார்...) பா.எண்: 60 (ஆற்றும்இளமைக்கண்...) பா.எண்: 68 (எனைப்பலவேயாயினும்...) பா.எண்: 149 (நெறியால்உணராது...) பா.எண்: 159 (அறம்செய்பவற்கும்...) பா.எண்: 212 (உலப்புஇல்...) பா.எண்: 271 (அறிவினால்...) பா.எண்: 361 (முல்லைக்குத்தேரும்...) <p>நான்மணிக்கடிகை 10 பாடல்கள்</p> <ol style="list-style-type: none"> பா.எண்: 23 (மலைப்பினும்வாணரம்...) பா.எண்: 28 (குழித்துழிநிற்பது...) பா.எண்: 32 (திருவின்திறலுடையதில்லை...) பா.எண்: 45 (ஏதிலாரென்பார்...) பா.எண்: 53 (எள்ளற்பொருளதிகழ்தல்...) பா.எண்: 57 (என்றுமுளவாகு...) பா.எண்: 62 (ஈத்துண்பானென்பான்...) பா.எண்: 64 (இளமைப்பருவத்து...) பா.எண்: 69 (பதிநன்றுபல்லார்...) பா.எண்: 97 (மாசுபடினுமனிதன்...) <p>திரிகடுகம் 5 பாடல்கள்</p> <ol style="list-style-type: none"> பா.எண்: 15 (பொய்வழங்கிவாழும்...) பா.எண்: 23 (தானம்கொடுக்கும்....) பா.எண்: 68 (இல்லார்க்குஉன்றுஈயும்...) 	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6

	<p>4. பா.எண்: 75 (வள்ளன்மைபூண்டான்கண்....)</p> <p>5. பா.எண்: 82 (சான்றாருள்சான்றான்....)</p> <p>சிறுபஞ்சமூலம் 5 பாடல்கள்</p> <p>1. பா.எண்: 2 (கற்புடையபெண்அமிர்து...)</p> <p>2. பா.எண்: 20 (பூவாதுகாய்க்கும்...)</p> <p>3. பா.எண்: 26 (அறம்நட்டான்...)</p> <p>4. பா.எண்: 88 (நீரறம்நன்று ...)</p> <p>5. பா.எண்: 96 (குளம்தொட்டுக்காவுபதித்து...)</p> <p>ஆசாரக்கோவை 5 பாடல்கள்</p> <p>1. பா.எண்: 2 (பிறப்புநெடுவாழ்க்கை...)</p> <p>2. பா.எண்: 16 (அரசன்உபாத்தியாயன்...)</p> <p>3. பா.எண்: 76 (விரைந்துரையார்...)</p> <p>4. பா.எண்: 88 (உதவிப்பயன்உரையார்...)</p> <p>5. பா.எண்: 96 (நந்தெறும்புதூக்கணம்...)</p> <p>ஏலாதி 5 பாடல்கள்</p> <p>1. பா.எண்: 4 (இடர்தீர்த்தல்....)</p> <p>2. பா.எண்: 21 (இளமைகழியும்...)</p> <p>3. பா.எண்: 33 (பொய்யுரையான்...)</p> <p>4. பா.எண்: 39 (சாவதுஎளிது...)</p> <p>5. பா.எண்: 46 (களியான்கள்ளுண்ணான்...)</p> <p>இன்னாநாற்பது 5 பாடல்கள்</p> <p>1. பா.எண்: 7 (ஆற்றல்இலாதான்...)</p> <p>2. பா.எண்: 10 (பொருள்உணர்வார்...)</p> <p>3. பா.எண்: 18 (உரனுடையான்உள்ளம்...)</p> <p>4. பா.எண்: 36 (பொருளிலான்வேளாண்மை...)</p> <p>5. பா.எண்: 38 (பிறன்மனையாள்...)</p> <p>இனியவைநாற்பது 5 பாடல்கள்</p> <p>1. பா.எண்: 3 (ஏவதுமாறா...)</p> <p>2. பா.எண்: 5 (கொல்லாமைமுன்னினிது...)</p> <p>3. பா.எண்: 9 (தங்கண்அமர்புடையார்.....)</p> <p>4. பா.எண்: 16 (கற்றார்முன்கல்வி...)</p> <p>5. பா.எண்: 30 (நன்றிப்பயன்தூக்கி...)</p> <p>முதுமொழிக்காஞ்சி</p> <p>1. சிறந்தபத்து</p>			
VI	<p>சுயகற்றல் (இப்பகுதி பருவத்தேர்வுக்கு உரியதல்ல)</p> <p>தமிழில் அற இலக்கியத் தோற்றமும் வளர்ச்சியும்</p>		CO1 CO2	K1 K2

			CO3 CO4 CO5	K3 K4 K5 K6
--	--	--	-------------------	----------------------

பாட நூல்கள் :

- பரிமேலழகர்(உ.ஆ)., (1994), (நான்காம்பதிப்பு), திருக்குறள், பழனியப்பா பிரதர்ஸ், சென்னை.
- ஜகந்நாதன்.கி.வா., (ப.ஆ)., (2004), (இரண்டாம்பதிப்பு), திருக்குறள் ஆராய்ச்சிப்
- பதிப்பு, ராமகிருஷ்ண மிஷன் வித்யாலயம், கோயம்புத்தூர்.
- முத்துரத்தினமுதலியார் S.,ஸ்ரீ கந்தசாமிபிள்ளை M.R ஸ்ரீ வித்துவான் (ப.ஆ) நாலடியார்உரைவளம், (1953), (முதற்பதிப்பு), மூலமும் மூன்று பழைய உரைகளும் அடங்கியது, சரசுவதி மகால் நூலகம், சென்னை.
- இளங்குமரனார். இரா., (2019), (முதற்பதிப்பு), நாலடியார் தெளிவுரை, வெளியீடு:
- நான்காம் தமிழ்ச்சங்கம், மதுரை.
- ராஜம். எஸ்., (1959), (முதற்பதிப்பு), பதினெண்கீழ்க்கணக்கு (முதல்தொகுதி,
- இரண்டாம்பதொகுதி), சென்னை.
- தண்டபாணிதேசிகர். ச., (தொ.ஆ), (1951), திருக்குறள் உரைவளம் – பொருட்பால், ஞானசம்பந்தம் பிரஸ், தருமபுரம்.

பார்வை நூல்கள் :

- வரதராசன்.மு., (1948), (முதற்பதிப்பு), திருவள்ளுவர் அல்லது வாழ்க்கை விளக்கம், விற்பனை உரிமை: பாரி நிலையம், சென்னை.
- திருநாவுக்கரசு.க.த., (1971), (முதற்பதிப்பு), (1977), (மறுபதிப்பு), திருக்குறள் நீதி இலக்கியம், சென்னைப் பல்கலைக்கழகம், சென்னை.
- அறவாணன்.க.ப., (2008), முதற்பதிப்பு, (2011), இரண்டாம்பதிப்பு, அற இலக்கியக் களஞ்சியம், தமிழக்கோட்டம், சென்னை.

- முருகரத்தனம். தி., (1973), (முதற்பதிப்பு), குறள் கண்ட பொருள் வாழ்வு., மதுரைப் பல்கலைக்கழகம், மதுரை.
- முருகரத்தனம், தி., (1974)., (முதற்பதிப்பு)., குறள் கூறும் இறைமாட்சி., மதுரைப்பல்கலைக்கழகம், மதுரை.
- காமாட்சி சீனிவாசன்., (1975)., (முதற்பதிப்பு)., குறள் கூறும் சமுதாயம்., மதுரைப்பல்கலைக்கழகம், மதுரை.
- சுந்தரமூர்த்தி. இ., (தொ.ஆ)., இராசேந்திரன். ம., (பொ.ப.ஆ)., (2000)., (முதற்பதிப்பு), குறளமுதம், தமிழ் வளர்ச்சி இயக்ககம்., சென்னை.

இணையதளமுகவரி:

- Tamil Heritage Foundation- www.tamilheritage.org
- Tamil virtual University Library- [www.tamilvu.org/library](http://www.virtualvu.org/library)
- Project Madurai – www.projectmadurai.org.
- Chennai Library – www.chennalibrary.com.
- Tamil Universal Digital Library – www.ulib.prg.
- Tamil E-Books Downlods – tamilebooksdownloads.blogspot.com
- Tamil Books on line – books.tamilcube.com
- Catalogue of the Tamil books in the Library of British Congress archive.org
- Tamil novels on line – books.tamilcube.com

கற்பித்தல்முறைகள் :

கலந்தாய்வு, வினாடிவினா,திட்டக்கட்டுரை ,கரும்பலகை, குழுவிவாதம்,PPT,

GOOGLE MEET, GOOGLE CLASSROOM .

Semester I	Internal Mark: 25	External Mark: 75		
பாடக்குறியீடு	பாடம்	Category	Hrs/Week	Credits
23PTA1CC3	பக்தி இலக்கியம்	CC	6	5

நோக்கம்

- தமிழின் பக்தி இலக்கிய வரலாற்றையும் வளத்தையும் அறிதல்.
- சைவ இலக்கியங்களின் நோக்கையும் போக்கையும் இலக்கிய அழகுகளையும் அறிய முதன்மையான சைவ இலக்கியப் பனுவற்பகுதிகளைக் கற்றல்.
- வைணவ இலக்கியங்களின் நோக்கையும் போக்கையும் இலக்கிய அழகுகளையும் அறிய முதன்மையான வைணவ இலக்கியப் பனுவற்பகுதிகளைக் கற்றல்.
- பிற்கால பக்தி இலக்கியப் போக்கினை உணரும் வகையில் அருணகிரிநாதர், தாயுமானவர், இராமலிங்கர் ஆகிய முப்பேரும் ஆளுமைகளின் பனுவற்பகுதிகளைப் பயிலல்.
- இசுலாமிய, கிறித்துவப் பக்தி இலக்கியப் போக்கை உணரும் வகையில் தெரிவு செய்த பகுதிகளைப் பயிலல்.
- சமயப் பொதுநோக்கு நிலையைக் கொண்ட பனுவற்பகுதிகளையும் பயிலல்.

COURSE OUTCOMES

இப்பாடத்தினைப்பயில்வதால்மாணவியர்பெறும்திிறன்கள்

CO No.	CO Statement	Cognitive Level
CO1	தமிழின் பக்தி இலக்கியப் புலத்தில் தேர்ந்த புலமை பெறுவர்.	K1, K2
CO2	சைவ, வைணவ இலக்கியங்களின் இலக்கிய அழகுகளையும் கருத்துநலன்களையும் யாப்புச் சிறப்பையும் தனித்தன்மைகளையும் உணர்தல்.	K3, K4
CO3	சைவ, வைணவ இலக்கியங்களின் யாப்புச் சிறப்பையும் தனித்தன்மைகளையும் உணர்ந்து பா உருவாக்கக் கூறுகளை அறிதல்.	K3, K6
CO4	பிற்காலப் பக்தி இலக்கிய வளர்ச்சி நிலைகளை அறிதல். அருணகிரிநாதர், தாயுமானவர், இராமலிங்கர் ஆகியோரின் தனித்தபக்தி இலக்கியப் பங்களிப்புகளை மதிப்பிட்டு உணர்தல்.	K5
CO5	சைவ வைணவ பக்தி இலக்கிய மரபை அடியொற்றிய இசுலாமிய, கிறித்துவப்பக்தி இலக்கியப் பாடல் போக்கைப் பகுத்தாராய்ந்து	K4

	உணர்தல்- சைவ, வைணவம், இசுலாமியம், கிறித்துவம் ஆகிய தனித்தனிச் சமய போக்கு நிலைக்கு இணையாகச் சமரச நிலையில் மலர்ந்த பாடற் போக்குகளையும் உணர்தல்.	
--	---	--

Mapping of CO with Po and PSO

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	3	3	3	2	2	2	2	3
CO2	3	3	2	2	2	3	2	3	2	2
CO3	3	2	3	3	2	2	2	3	3	3
CO4	3	3	3	2	2	2	3	2	2	3
CO5	3	3	2	2	2	3	3	2	2	3

பாடத்திட்டம் - SYLLABUS				
UNIT	CONTENT	HRS.	COs	COGNITIVE LEVEL
I	காரைக்காலம்மையார், திருநாவுக்கரசர், திருஞானசம்பந்தர் காரைக்காலம்மையார் – பதினொராந் திருமுறை – திருவிரட்டை மணிமாலை முழுமையும் – (20 பாடல்கள்) திருநாவுக்கரசர் – திருஅங்கமாலை – தலையே நீவணங்காய் என்று தொடங்கும் பதிகம் திருஞானசம்பந்தர் – முதல் திருமுறை – திருவையாற்றுப் பதிகம் – “புலனைந்தும் பொறி கலங்கி நெறி மயங்கி” பாடல் முதல் “அன்னமலி பொழில் புடைகுழ ஐயாற்றெம்” பாடல் வரை திருஞானசம்பந்தர் – முதல் திருமுறை – திருச்சிராப்பள்ளி திருப்பதிகம் “நன்றுடையானை”	18	CO1, CO2, CO3, CO4, CO5	K1 K2 K3 K4 K5 K6
II	சுந்தரர், மாணிக்க வாசகர் சுந்தரர் – ஏழாம் திருமுறை (திருவெண்ணெய் நல்லூர்ப் பதிகம், திருக்கோளிலிப் பதிகம்) மாணிக்கவாசகர் – திருவம்மானை (20 பாடல்கள்)	18	CO1, CO2, CO3, CO4, CO5	K1 K2 K3 K4 K5 K6

	திருக்கோத்தும்பி (20 பாடல்கள்)			
III	<p>பெரியாழ்வார், நம்மாழ்வார், ஆண்டாள், குலசேகராழ்வார்</p> <p>பெரியாழ்வார் – 3ஆம் திருமொழி – முதற்பத்து – மாணிக்கங்கட்டி முதல் 10 பாடல்கள் (44 – 53)</p> <p>நம்மாழ்வார் – 3 ஆம் திருமொழி – விற்பெரு விழவும் முதல் 10 பாடல்கள் (1068 -1077)</p> <p>ஆண்டாள் – நாச்சியார் திருமொழி – 20 பாடல்கள் – தையொரு திங்களும் முதல் 20 பாடல்கள்</p> <p>குலசேகராழ்வார் – 6ஆம் திருமொழி – பெருமாள் திருமொழி – ஏர்மலர்ப் பூங்குழல் – முதல் 10 பாடல்கள் (698 – 707)</p>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	<p>அருணகிரிநாதர், தாயுமானவர், இராமலிங்க அடிகள்</p> <p>அருணகிரிநாதர் – திருப்புகழ் (5 பாடல்கள்)</p> <p>1.கைத்தல நிறைகனி 2. முத்தைத் தரு 3. கலகலென னச்சில 4. கழைமுத்து மாலை 5. பத்தியால் யானுனைப் கந்தரலங்காரம் (5 பாடல்கள்)</p> <p>1. தேன் என்று பாகு என்ற 2. தண்டா யுதமும் 3. சேல்பட்டழிந்தது 4. விழிக்குத் துணைதிரு 5. மண்கமழுந்தி</p> <p>தாயுமானவர் – ஆனந்தக் களிப்பு (30 பாடல்கள்)</p> <p>இராமலிங்க அடிகள் – பிள்ளைப்பெரு விண்ணப்பம்</p>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	<p>குணங்குடி மஸ்தான் சாகிபு, வேதநாயக சாத்திரியார், வேதநாயகர்</p> <p>குணங்குடி மஸ்தான் சாகிபு பாடல்கள் – ஆனந்தக்களிப்பு– 1 (244-253) கொடிகட்டிக் கொண்டெழு, என்னிலை தன்னை அறிந்தே)</p> <p>வேதநாயக சாத்திரியார் பாடல்கள் – 5 (பாடல் தொடக்கம் : யார் அவர் ஆரோ? யார் இவர் ஆரோ? – எண்: 1539, பாடல் தொடக்கம்: வானம் பூமியோ பராபரன் – எண்: 1548, பாடல் தொடக்கம்: கும்பிடுகிறேன் நான் கும்பிடுகிறேன் – எண்:1759,</p>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

	<p>பாடல் தொடக்கம்: நெஞ்சே நீ கலங்காதே – எண்:1774, பாடல் தொடக்கம்:இயேசு நாயகா! சாமி மனம் – எண்: 1831)</p> <p>கண்ணதாசன் – இயேசு காவியம் - மலைப்பொழிவு வேதநாயகர் – சர்வ சமய சமரசக் கீர்த்தனைகள் (1.ஐயனேஉன் அழகைக் காண (43) 2. ஏனின்னம் தாமதமையா (47), 3. அபயம் நீ யருளுவாய் (74), 4. உன்னையெனக்குக்காட்டையா(84), 5. மனமேநீ ஈசனாமத்தை (140)</p>			
VI	<p>சுயகற்றல் (இப்பகுதி பருவத்தேர்வுக்கு உரியதல்ல)</p> <p>தமிழில் பக்தி இலக்கியத்தின் தோற்றமும் வளர்ச்சியும்</p>	-	<p>CO1, CO2, CO3, CO4, CO5</p>	<p>K1 K2 K3 K4 K5 K6</p>

பாட நூல்கள் :

- கயப்பாக்கம் சதாசிவம் ரெட்டியார், (1973), திருஞானசம்பந்த சுவாமிகள் அருளிச் செய்த தேவாரப் பதிகங்கள் திருமுறை(1,2,3), தென்னிந்திய சைவசித்தாந்த நூற்பதிப்புக் கழகம், சென்னை
- ஸ்ரீலக்ஷ்மி கயிலை சுப்பிரமணியதேசிக ஞானசம்பந்தர் பரமாசாரியசுவாமிகள் ,(1963) , திருநாவுக்கரசர் அருளிச் செய்த தேவாரத் திருப்பதிகங்கள் ஆறாந் திருமுறை , தருமையாதீனம்
- கி.வா.ஜகந்நாதன் (குறிப்புரை), டி.எம். குமரகுருபரன் பிள்ளை, (1958) , சுந்தரமூர்த்தி சுவாமிகள் அருளிச் செய்த தேவாரம் ஏழாம் திருமுறை , திருப்பனந்தாள் ஸ்ரீ காசி மடம்
- கா. சுப்பிரமணியப் பிள்ளை, (2007), மாணிக்கவாசக சுவாமிகள் அருளிச் செய்த திருவாசகம், பாரி நிலையம், சென்னை
- நீ. கந்தசாமிப் பிள்ளை, (1964) , திருவாசகம், அண்ணாமலைப்பல்கலைக்கழகம், அண்ணாமலை நகர்.
- எஸ். ராஜம், (1956) , திருவாசகம், சென்னை.
- காசி திருமடம் , (2012) , பதினோராந்திருமுறை, திருப்பனந்தாள்

- எம். நாராயண வேலுப்பிள்ளை, பதிப்பாசிரியர்: வி.எஸ்வி. இராகவதாஸ் (2000), நாலாயிர திவ்வியப் பிரபந்தம், முல்லை நிலையம், சென்னை.
- அருணகிரி நாதர், (1935), திருப்புகழ் சைவ சித்தாந்த மகா சமாஜம், சென்னை.
- ஸ்ரீ தாயுமானசுவாமி பாடல்கள் (1989), ஸ்ரீ ராமகிருஷ்ண தபோவனம், திருப்பராய்த்துறை.
- பதிப்பாசிரியர் : ஊரன் அடிகள், (1988), திருவருட்பா ஆறாம் திருமுறை, சமரச சன்மார்க்க ஆராய்ச்சி நிலையம், வடலூர்
- யோ. ஞானசந்திர ஜான்சன், (2021), கிறித்துவத் தமிழ்க் கீர்த்தனைகள், ஆசியவியல் நிறுவனம், சென்னை.
- மாயூரம் ச. வேதநாயகம் பிள்ளை (1936), சர்வ சமய சமரசக் கீர்த்தனைகள், பி. இரத்தினநாயகர் ஸன்ஸ், சென்னை.
- வேதநாயம்பிள்ளை, (2003), சர்வ சமய சமரசக் கீர்த்தனைகள், முல்லை நிலையம், சென்னை.

பார்வை நூல்கள்

- க. வெள்ளை வாரணன், (1994), பன்னிரு திருமுறை வரலாறு, அண்ணாமலைப்பல்கலைக்கழகம்.
- T.V. Gopal iyer,(1991), தேவாரம் ஆய்வுத்துணை, Institut Francais, Pandicherry.
- சி. பாலசுப்ரமணியம், (2007), திருப்பாவை விளக்கம், பாரி நிலையம், சென்னை.
- வி. பழனியப்பன், (2002), காரைக்காலம்மையார் பாடல்கள், சிந்து பதிப்பகம், சிதம்பரம்.
- வேதநாயம் சாஸ்திரியார், யோ. ஞான சந்திர ஜான்சன், (2020), இந்திய இலக்கியச் சிற்பிகள், சாகித்திய அகாதமி வெளியீடு, புதுதில்லி.
- எஸ். ராமகிருஷ்ணன், (2017), இலக்கற்ற பயணி, தேசாந்திரி பதிப்பகம், சென்னை.
- ஏ.என்.பெருமாள், (1982), தமிழ் நாடகத்தின் தோற்றமும் வளர்ச்சியும், கணியகம், சென்னை.

WEB SOURCES

- Tamil Heritage Foundation – www.tamilheritage.org
- Tamil Virtual University – www.tamilvu.org
- Project Madurai – www.projectmadurai.org.
- Chennai Library – www.chennailibrary.com
- Tamil Universal Digital Library – www.ulib.prg
- Tamil E.Books downloads – tamilebooksdownloads.blogspot.com.
- Tamil Books on line – books.tamilcube.com
- Catalogue of the Tamil books in the Library of British Congress archive.org
- Tamil novels on line – books.tamilcube.com

கற்பித்தல்முறைகள்

குழுக்கலந்தாய்வு, வினாடிவினா, திட்டக்கட்டுரை,கரும்பலகை, விவாதம்.PPT, GOOGLE MEET, GOOGLE CLASS ROOM, MOOC, SWAYAM, NPTEL, Website etc.

Semester I	Internal Mark : 25	External Mark : 75		
பாடக்குறியீடு	பாடம்	Category	Hrs/Week	Credits
23PTA1CC4	தொல்காப்பியம் பொருளதிகாரம் - I	CC	6	5

நோக்கம்

- தமிழ்மொழியின் மரபினை அறிந்து கொள்ளல்.பா புனையும் ஆற்றல் பெறுதல்.
- அணி நலம் அமைக்கும் திறன் பெற்றுக்கொள்ள அணியின் பகுப்பு முறை அறிதல்.
- பிற மொழிகளில் எழுத்துக்கும் சொல்லுக்கும் மட்டுமே இலக்கணங்கள் அமையப் பெற்றிருக்க தமிழில் வாழ்வியலுக்கும் இலக்கணத்தை வகுத்துள்ளமையை அறியச்செய்தல்.
- அகப்புற இலக்கணங்களை இலக்கியச் சான்றுகளுடன் கற்றல்.
- களவியல் – கற்பியல் – பொருளியல் இலக்கணங்களை இலக்கியச் சான்றுகளோடு வாழ்வியலுடன் ஒப்பிட்டுக் கற்றல்.

COURSE OUTCOME

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO No.	CO Statement	Cognitive Level
CO1	அகம் புறம் என்னும் இலக்கண மரபுகளைப் பகுத்தாராய்தல்.	K4
CO2	பழந்தமிழரின் வரையறுக்கப்பட்ட வாழ்வியல் முறையை ஆராய்ந்து அறிந்துகொள்ளுதல்.	K2, K5
CO3	அறம், மறம் என்ற இரண்டிற்கும் இல்லற வாழ்வு இன்றியமையாததாக அமைதலை அறிந்துகொள்ளுதல்.	K4
CO4	வாழ்வியல் விழுமியங்களைக் கற்று மரபைப் போற்றுவதன் வாயிலாகப் பண்பட்ட சமூகத்தை உருவாக்குதல்.	K3, K6
CO5	சமூகத்தில் குடும்பம் என்ற அமைப்பு முறையில் உள்ள தவிர்க்க இயலாத கூறுகளை அடையாளம் கண்டு மதிப்பிடல்.	K1 K5

Mapping of CO with Po and PSO

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	3	2	3	2	2	2	2	3	3

CO2	3	2	3	2	3	3	2	3	3	2
CO3	3	2	3	2	2	2	2	2	3	2
CO4	3	3	3	2	2	2	3	2	3	2
CO5	3	3	2	3	2	3	3	2	3	2

பாடத்திட்டம்- SYLLABUS				
UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	அகத்திணையியல்	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
II	புறத்திணையியல்	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
III	களவியல்	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
IV	கற்பியல்	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
V	பொருளியல்	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
VI	சுயகற்றல் (இப்பகுதி பருவத்தேர்வுக்கு உரியதல்ல)	-	CO1 CO2 CO3	K1 K2 K3

தொல்காப்பியப் கட்டமைப்பு	பொருளதிகாரக்		CO4 CO5	K4 K5 K6
-----------------------------	--------------	--	------------	----------------

பாடநூல்

- , நச்சினார்க்கினியர் உரை, (2017), தொல்காப்பியம் பொருளதிகாரம் திருநெல்வேலி தென்னிந்திய சைவ சித்தாந்த நுற்பதிப்புக் கழகம், திருநெல்வேலி
- இளம்பூரணர் உரை, (1953), பொருளதிகாரம், சைவ சித்தாந்த நுற்பதிப்புக் கழகம், சென்னை
- பாவலர் பாலசுந்தரம் சா., (2018), தொல்காப்பியம் – பொருளதிகாரம் 3 தொதிகள், தாமரை வெளியிட்டகம் தஞ்சாவூர்.

பார்வைநூல்கள் :

- முனைவர் சுப்பிரமணியன்.சாவே., இளவரசு சோம., (2012), தொல்காப்பியம் – விளக்கவுரை, மணிவாசகர் பதிப்பகம்
- வெள்ளைவாரணனார் க., (1983), முதற்பதிப்பு தொல்காப்பியம் – பொருளதிகாரம் மாணவர் பதிப்பகம், தியாகராய நகர் சென்னை
- பொருளதிகார உரை, (1998), உலகத் தமிழ் ஆராய்ச்சி நிறுவனம்சென்னை
- மாணிக்கம் வ.சுப., (1962) தமிழ்க் காதல், பாரிநிலையம், சென்னை - 01
- அகத்ததிணைக் கோட்பாடுகள் – தமிழ் ஆராய்ச்சி நிறுவனம், சென்னை
- வெள்ளை வாரணனார் க., (2012), தொல்காப்பியம் செய்யுளியல் உரை வளம் – பதிப்புத்துறை, மதுரை காமராசர் பல்கலைக்கழகம்
- ஜின்யாரன்ஸ் செ., பகவதி கு., (பதிப்பாசிரியார்) தொல்காப்பிய இலக்கையக்கோட்பாடுகள் (கருத்தரங்கக் கட்டுரைகள்), (2017), உலகத்திலாராய்ச்சி நிறுவனம், சென்னை.
- அகத்தியலிங்கம் சு., (1999), தொல்காப்பியக் கவிதையில் மணிவாசகர் பதிப்பகம், சென்னை.
- இராகவையங்கார் மு., (1987), தொல்காப்பியம் பொருளதிகார ஆராய்ச்சி, தமிழ்ச்சங்க வித்தியாலயம் மதுரை,
- சுப்பிரமணிய பிள்ளை கா., (2020), பழந்தமிழர் நாகரிகம் அல்லது கருத்து கழக வெளியீடு, சென்னை
- புலவர் கோவிந்தன் கா.,(2003) முதற் பதிப்பு பண்டைத் தமிழர் போர் நெறி, கௌரா பதிப்பகம், சென்னை. மு.ப.
- அறவாணன் க.ப., (2002), அற்றை நாட் காதலும் வீரமும், பூம்புகார் பதிப்பகம், சென்னை,
- புலவர் குழந்தை., (2012), தொல்காப்பியர் காலத் தமிழர், பூம்புகார் பதிப்பகம், சென்னை

- சோமசுந்தர பாரதியார் சு., (1942), தொல்காப்பியம் – பொருட்படலம்
புறத்திணையியல்

Web Resources

- Tamil Heritage Foundation – www.tamilheritage.org<thhp://www.tamilheritage.org>
- Tamil virtual University Library – www.tamilvu.org/ library <http://www.virtualvu.org/library>
- Project Madurai – www.projectmadura.org.
- Chennai Library –www.chennailibrary.com<http://www.chennailibrary.com>
- Tamil Universal Digital Library –www.ulib.prg.<<http://www.ulib.prg>>
- Tamil E-Books Downloads – tamilebooksdownloads.blogspot.com
- Tamil Books on line – books. Tamil cube.com
- Catalogue of the Tamil books in the Library of British Congress archive.org
- Tamil novels on line –books. Tamilcube. Com.

Semester I	Internal Mark : 25	External Mark : 75		
பாடக்குறியீடு	பாடம்	Category	Hrs/Week	Credits
23PTA1DSE1A	நாட்டார் வழக்காற்றியல்	DSE	6	3

நோக்கம் :

- நாட்டார் வழக்காற்றியல் புலத்தை ஒரு சமூக அறிவியல் புலமாக அறிமுகம் செய்தல்.
- இப்புலம் தமிழியல் புலத்திற்கு நல்கியுள்ள பங்களிப்பை அறியச் செய்தல் மற்றும் இப்புலத்தின் இன்றைய தேவையை அறிதல்.
- வாய்மொழி இலக்கியங்கள் குறித்த பரந்த அறிமுகத்தைப் பெறுதல்.
- இதன் வழி மண்ணின் மரபுகளைப் புரிந்து கொள்ளல்.

COURSE OUTCOMES

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO. NO	Co Statement	Knowledge Level
CO1	நாட்டார் வழக்காற்றியல் புலத்தை நன்கறிந்துகொள்ளுதல்.	K1, K3
CO2	வாய்மொழி இலக்கியங்கள், நிகழ்த்து கலைகள் குறித்த தெளிவான அறிவைப் பெறுதல்.	K2, K4, K5
CO3	நாட்டார் வழக்காற்றியல் துறையில் ஆய்வுகளை நிகழ்த்தும் அறிவினைப் பெறுதல்.	K2, K4, K5
CO4	மண் சார்ந்த பண்பாட்டு மரபுகளைப் புரிந்துகொண்டு அவற்றை மதிப்பவராக உருப்பெறுதல்.	K2, K3, K4
CO5	நாட்டார் வழக்காற்றியல் துறைசார் தரவுகளைச் சேகரிக்கக் கள ஆய்வு நிகழ்த்தும் ஆற்றலைப் பெறுதல்.	K4, K5, K6

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	2	2	3	3	2	3	3

CO2	3	3	3	3	2	3	3	2	3	3
CO3	2	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	2	3	3	3	3	3
CO5	2	2	2	3	3	3	3	3	2	3

பாடத்திட்டம் – SYLLABUS				
UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	<p>புல அறிமுகம்</p> <p>நாட்டார் வழக்காற்றியல் கலைச்சொற்கள் – கலைச்சொல் சிக்கல்கள் – நாட்டார் வழக்காற்றியல் / நாட்டுப்புறவியல் சொற்கள் குறித்த விவாதங்கள் – நாட்டார் யார்? – வழக்காறு என்றால் என்ன? – நாட்டார் வழக்காற்றியல் வரையறைகள் – எல்லையும் பரப்பும் – நாட்டார் வழக்காற்றியல் புலத்தின் படிநிலைகள்: சேகரித்தல், வகைப்படுத்தல், ஆய்வு – வாய்மொழி வழக்காறுகளின் இயல்புகள் – நாட்டார் வழக்காற்றியல் துறை இலக்கியம், மானிடவியல், மொழியியல், வாரலாறு முதலான பல் புலத்தொடர்பு – தமிழியலுக்கு நாட்டார் வழக்காற்றியலின் பங்களிப்பு – நாட்டார் வழக்காற்றியலின் இன்றைய தேவை.</p>	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
II	<p>கள ஆய்வு</p> <p>தமிழில் கள ஆய்வு – ஆய்வுக் களமும் தரவுகளும் – களப்பணி அடிப்படைகள் – களப்பணியாளர் –</p>	18	CO1 CO2 CO3	K1 K2

	<p>களப்பணிக்குத் தகுதியாதல் – களப்பணி முறைகள் – ஆய்வுக் கருவிகளும் உத்திமுறைகளும் – தரவுகளின் வடிவங்கள் – பால் பாகுப்பாட்டுச் சிக்கல்கள் – ஒழுக்கம் தொடர்பான சிக்கல்கள் – அடையாளம் – அது குறித்த சிக்கல்கள் – பனுவலாக்கம் – ஆவணகமும் ஆவணப்படுத்தலும்.</p>		<p>CO4 CO5</p>	<p>K3 K4 K5</p>
III	<p>வாய்மொழி இலக்கியங்கள் – 1</p> <p>தமிழிலக்கியங்களில் வாய்மொழி இலக்கியங்களின் தாக்கம் –</p> <p>பழமொழிகள் – விளக்கம், வரையறை – தமிழ்ப் பழமொழிகள் சேகரிப்பும் பதிப்பும் – பழமொழியின் இயல்புகள் – இழைவுக் கூறுகள் – பழமொழி விடுகதை மாற்றம் – பழமொழிகளும் கதைகளும் – பழமொழிகளின் செயல்பாடுகள்.</p> <p>விடுகதைகள் – விளக்கம் – கலைச்சொற்கள் – வரையறை – சேகரிப்பும் பதிப்பும் – விடுகதை வகைகள் – விடுகதை அமர்வு – விடுகதைகளின் செயற்பாடுகள்.</p> <p>நாட்டார் கதைகள் – விளக்கம் – வரையறை – வகைகள் – சேகரிப்பும் பதிப்பும் – கருவி வழக்காறுகள் (Metafolklore) – கதைக்கூறு (Motif) – கதை வகை (Tale Ttype) – கதை வகை அடைவும் பயனும் – கதைகளின் செயற்பாடுகள்.</p>	18	<p>CO1 CO2 CO3 CO4 CO5</p>	<p>K1 K2 K3 K4 K5</p>
IV	<p>வாய்மொழி இலக்கியங்கள் – 2</p> <p>நாட்டார் பாடல்கள் விளக்கம் – வரையறை – பாடல் வகைகள் – சேகரிப்பும் பதிப்பும் – பாடும் உத்திகள் – தமிழிலக்கியத்தில் நாட்டார் பாடல்களின் செல்வாக்கு அல்லது தாக்கம் – நாட்டார் பாடல்களின் செயல்பாடு – அயலகத்</p>	18	<p>CO1 CO2 CO3 CO4 CO5</p>	<p>K1 K2 K3 K4 K5</p>

	<p>தமிழர்களின் நாட்டார் பாடல்கள்.</p> <p>கதைப் பாடல்கள் விளக்கம் வரையறை – கதைப்பாடல் இயல்புகள் – கதைப்பாடல் வகைகள் – சேகரிப்பம் பதிப்பும் – வழங்கப்படும் சூழல்கள் – கதைப்பாடல்களின் பயன்கள் – முத்துப்பட்டன் கதை – தமிழ் வாய்மொழி இலக்கிய ஆய்வுகள்: பருந்துப் பார்வை.</p>			
V	<p>நிகழ்த்து கலைகள்</p> <p>நாட்டார் நிகழ்த்து கலைகள் - விளக்கம் – வரையறை – வகைகள் – நிகழ்த்தப்படும் சூழல் – நிகழ்த்துநர் – ஒப்பனை – இசைக் கருவிகள் – கரகாட்டம் – கொக்கலிக்கட்டை ஆட்டம் – குறவன் குறத்தி ஆட்டம் – தெருக் கூத்து – உடுக்கடி பாடல் – வில்லுப்பாட்டு – அயலகத் தமிழர் நிகழ்த்து கலைகள்.</p>	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
VI	<p>சுயகற்றல் (இப்பகுதி பருவத் தேர்வுக்கு உரியதல்ல)</p> <p>வழக்கில் உள்ள பழமொழிகள், விடுகதைகள்</p> <p>சேகரித்தல், நாட்டுப்புறக் கதைகள் சொல்லுதல்</p>	-	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5

பாட நூல்கள் :

- தே.லுர்து., (2000)., நாட்டார் வழக்காற்றியல்: சில அடிப்படைகள்., நாட்டார் வழக்காற்றியல் ஆய்வு மையம்., பாளையங்கோட்டை.

- இராமநாதன் ஆறு., (2007)., தமிழர் கலை இலக்கிய மரபுகள் (நாட்டுப்புறவியல் ஆய்வுகள்)., மெய்யப்பன் பதிப்பகம்., சிதம்பரம்.
- இராமநாதன் ஆறு., (2011)., தமிழில் புதிர்களும் காதலர் விடுகதைகளும்., மணிவாசகர் பதிப்பகம்., சென்னை.
- வானமாமலை.நா., (தொகுப்பாசிரியர்)., முதற்பதிப்பு(1964)., முகவுரை., தமிழர் நாட்டுப் பாடல்கள்.,என்.சி.பி.எச்., சென்னை.
- வானமாமலை.நா., (1971)., நான்காம் பதிப்பு (2006)., முத்துப்பட்டன் கதை., மதுரை காமராசர் பல்கலைக்கழகம்., மதுரை.
- பக்தவச்சலரெட்டி, இராமநாதன் ஆறு (பதிப்பாசிரியர்கள்), (2003), நாட்டுப்புறவியல் கள ஆய்வு நெறிமுறைகள், தென்னிந்திய மொழிகளின் நாட்டுப்புறவியல் கழகம், திருவனந்தபுரம், மணிவாசகர் பதிப்பகம், சென்னை.
- இராமநாதன் ஆறு (பதிப்பாசிரியர்), (2004), நாட்டுப்புறக் கதைக்களஞ்சியம் தொகுதி 1, மெய்யப்பன் பதிப்பகம்., சிதம்பரம்.
- சிவசுப்பிரமணியன்.ஆ, (2019), வாய்மொழிக்கதைகள்.,என்.சி.பி.எச்., சென்னை.
- இராமநாதன் ஆறு (பதிப்பாசிரியர்) (2021), நாட்டுப்புறக் பாடல்களஞ்சியம் தொகுதி 1, மெய்யப்பன் தமிழாய்வகம்., சிதம்பரம்.
- இராமநாதன் ஆறு, (2010), நாட்டுப்புறக் கலைகள் – நிகழ்த்துகலைகள், மெய்யப்பன் தமிழாய்வகம்., சிதம்பரம்.

பார்வை நூல்கள் :

- பாலசுந்தரம் இளையதம்பி, சுவாமி விபுலாநந்தர், (2019), தமிழர் நாட்டுப்புறவியல் கலைக்களஞ்சியம், மணிமேகலை பிரசுரம், சென்னை.
- பெருமாள் அ.கா, (1985), நாட்டாரியல் ஆய்வு வழிகாட்டி, ரோகிணி பிரிண்டர்ஸ், நாகர்கோயில்.
- தே.லுார்து, (2007), தமிழ்ப் புழமொழிகள்., அமைப்பு, பொருண்மை, செயல்பாடு, யுனைடெட் ரைட்டர்ஸ், சென்னை.
- முத்துமீரான்.எஸ், (2005), இலங்கை கிராமத்து முஸ்லிம்களின் பழமொழிகள், நேஷனல் பப்ளிஷர்ஸ், சென்னை.
- ஸ்டீபன்.ஞா, (2009), தமிழ் சமூகத்தில் வாய்மொழிக் கதைகள், பாவை பப்ளிகேஷன்ஸ், சென்னை.
- பெருமாள் அ.கா, (2006), சுண்ணாம்பு கேட்ட இசக்கி, யுனைடெட் ரைட்டர்ஸ், சென்னை.
- சண்முகசுந்தரம்.சு, (1978), தமிழக நாட்டுப்புறப் பாடல்கள், பூம்புகார் பிரசுரம், சென்னை.
- தண்டாயுதம்.இரா, (1998), மலேசிய நாட்டுப்புறப் பாடல்கள், தமிழ்ப் புத்தகலாயம், சென்னை.
- Arunachalam.M, (1976), Ballad Poetry, Gandhi Vidyalayam, Thiruchitrambalam.

- இராமசந்திரன்.நா., (2015)., துடியான சாமிகள் – வில்லுப்பாட்டும் சமூகச் சிக்கல்களும், என்.சி.பி.எச்., சென்னை.

Web Sources

- Tamil Heritage Foundation - www.tamilheritage.org <<http://www.tamilheritage.org>>
- Tamil virtual University Library- www.tamilvu.org/library<http://www.virtualvu.org/library>
- Project Madurai – www.projectmadurai.org
- Chennai Library – www.chennailibrary.com <<http://www.chennailibrary.com>>.
- Tamil Universal Digital Library - www.ulib.prg <<http://www.ulib.prg>>.
- Tamil E-Books Downloads – tamilebooksdownloads.blogspot.com
- Tamil Books on line – books.tamilcube.com
- Catalogue of the Tamil books in the Library of British Congress archive.org
- Tamil novels on line – books.tamilcube.com

கற்பித்தல் முறைகள்

கலந்தாய்வு, வினாடி வினா,திட்டக்கட்டுரை ,கரும்பலகை, குழுவிவாதம்,PPT,

GOOGLE MEET,GOOGLE CLASSROOM .MOOC, SWAYAM, NPTEL, Websites etc.

Semester I	Internal Mark : 25	External Mark : 75		
பாடக்குறியீடு	பாடம்	Category	Hrs/Week	Credits
23PTA1DSE1B	தமிழில் சிறுபத்திரிக்கைகள்	DSE	6	3

நோக்கம் :

- சிறுபத்திரிக்கைகளின் முக்கியத்துவத்தை விளக்குதல்.
- தமிழில் தோன்றிய சிறுபத்திரிக்கைகளின் தோற்றம் மற்றும் வரலாற்றை எடுத்துரைத்தல்.
- தமிழில் தோன்றிய சிறுபத்திரிக்கைகள் மக்களிடையே உருவாக்கிய விழிப்புணர்வை அறியச் செய்தல்.
- சிறுபத்திரிக்கைகள் காலந்தோறும் ஆற்றிய பணிகளை விளக்குதல்.
- சிறுபத்திரிக்கைகளின் ஆய்வுப்பணியை உணர்த்துதல்.

COURSE OUTCOMES:

இப்பாடத்திட்டத்தைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO. NO	Co Statement	Cognitive Level
CO1	சிறுபத்திரிக்கைகளின் முக்கியத்துவத்தை அறிவர்.	K4, K1
CO2	தமிழில் தோன்றிய சிறுபத்திரிக்கைகளின் தோற்றம் மற்றும் வரலாற்றை தெரிந்து கொள்வர்.	K5,K6
CO3	தமிழில் தோன்றிய சிறுபத்திரிக்கைகள் மக்களிடையே உருவாக்கிய விழிப்புணர்வை அறிவர்.	K3, K4 ,K2
CO4	சிறுபத்திரிக்கைகள் காலந்தோறும் ஆற்றிய பணிகளை உணர்வர்.	K3,K1
CO5	சிறுபத்திரிக்கைகளின் ஆய்வுப்பணியை தெரிந்து கொள்வர் .	K2, K5

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	2	3	2	3	2	3	2	2	3
CO2	2	3	3	3	3	2	3	2	2	3
CO3	3	3	3	2	2	2	3	3	2	3
CO4	3	3	3	2	2	3	3	3	2	3
CO5	2	2	2	3	3	3	3	3	2	3

பாடத்திட்டம் - SYLLABUS				
UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	சிறுபத்திரிக்கை (சிறுநிதழ்கள்) – விளக்கம் – பெரும் பத்திரிக்கைகளுக்கும் சிறு பத்திரிக்கைகளுக்கும் உள்ள வேறுபாடுகள் – சிறுபத்திரிக்கைகளின் வகைகள் – அரசியல் இயக்கச் சார்பின – இலக்கிய இயக்கச் சார்பின - கலை,இலக்கிய கார்பின – சமூக இயக்கச் சார்பின - அரசியல் இயக்கச் சார்பான சிறுநிதழ்கள்.	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
II	1930 களில் உருவான மணிக்கொடி முதலான சிறுநிதழ்கள் – 1940 களில் வெளிப்பட்ட கிராம ஊழியன், தேனீ, சுதந்திரசங்கு போன்றவைகளின் பங்களிப்பு – 1950 களில் உருவான எழுத்து இதழும் அதன் பங்களிப்பும்.	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
III	1970 களில் வெளிவந்த வானம்பாடி இயக்கமும் வானம்பாடி இதழும் – புதிய தலைமுறை,இலக்கியம்,வெளிட்டம் பரிமாணம், படிகள்	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5

				K6
IV	1980 களில் வெளிவந்த சிற்றிதழ்கள் – காலச்சுவடு ,நிகழ்,விருட்சம், மீட்சி, கல்குதிரை,பறை, போன்ற இதழ்களும் அவற்றின் இலக்கிய விமர்சன நோக்கங்கள் - மொழிபெயர்ப்பு முயற்சிகள் – நாடகவெளி நாடகத்திற்கென வெளிவந்த சிற்றிதழ்	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
V	சுபமங்களா போன்ற அணிசாரா இதழ்கள் – சிறுபத்திரிக்கை உருவாக்க முன்னோடிகள் - ரகுநாதன், சி.சு,செல்லப்பா, வல்லிக்கண்ணன், சுந்தரராமசாமி,ரவிக்குமார்,கோமல் சுவாமிநாதன், ரங்கராஜன், தி.மணி, ஞானக்கூத்தன் போன்றோரின் பங்களிப்புகள்	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
VI	சுயகற்றல் (இப்பகுதி பருவத்தேர்வுக்கு உரியதல்ல) தற்போது வெளிவரும் சிறுபத்திரிக்கைகளைத் தயாரித்தல்		-	K1 K2 K3 K4 K5 K6

பார்வை நூல்கள் :

- வல்லிக்கண்ணன், (2004), தமிழில் சிறுபத்திரிக்கைகள், ஐந்திணைப் பதிப்பகம்
- ஞானி(2022),சிற்றிதழ் வளர்த்த தமிழ் , மார்க்சிய அழகியல், காவ்யா , பெங்களூர்
- இ.சுந்தரமமூர்த்தி,மா.ரா.அரசு,(2004), இந்திய விடுதலைக்கு முந்தைய தமிழ் இதழ்கள்,(தொகுதிகள் 1,2,3,4,), உலகத்தமிழாராய்ச்சி நிறுவனம், சென்னை.
- இலக்கிய இதழ்கள், உலகத்தமிழாராய்ச்சி நிறுவனம், சென்னை.
- அ.மா.சாமி,(1987), தமிழ் இதழ்கள் – தோற்றம் வளர்ச்சி, நவமணி பதிப்பகம், சென்னை.

- வீ.அரசு, (2006), சிறுபத்திரிக்கை அரசியல், பரிசல் பதிப்பகம், சென்னை.

இணையதள முகவரி

- Tamil Heritage Foundation – <http://www.tamilheritage.org>
- Tamil virtual University Library – www.tamilvu.org/library
<http://www.virtualvu.org/library>
- Project Madurai – www.projectmadurai.org
- Chennai Library – <http://www.chennailibrary.com>.
- Tamil Universal Digital Library – www.ulib.prg <http://www.ulib.prg>.
- Tamil E-Books Downloads – www.tamilebooksdownloads.blogspot.com
- Tamil Books online – www.books.tamilcube.com
- Catalogue of the Tamil books in the Library of British Congress archive.org

கற்பித்தல் முறைகள் :

கலந்தாய்வு, வினாடி வினா, திட்டக்கட்டுரை, கரும்பலகை, குழுவிவாதம்,

PPT, GOOGLE MEET, GOOGLE CLASSROOM , MOOC, SWAYAM, NPTEL, Websites, etc.

Semester I	Internal Mark : 25	External Mark : 75		
பாடக்குறியீடு	பாடம்	Category	Hrs/Week	Credits
23PTA1DSE1C	நோக்கு நூல்கள்	DSE	6	3

நோக்கம் :

- காலத்தால் முற்பட்ட இலக்கண இலக்கிய நூல்களின் பொருளைத் தெளிவாக அறிய முடியும்.
- நடைமுறையில் உள்ள இலக்கணக் கூறுகளை அறிய இயலும்.
- சில கலைச் சொற்கள், பிற உரையாசிரியர் கூற்றில் உள்ள நிறை, குறைகள் ஆகியவற்றை தெரிந்து கொள்ள முடியும்.
- உரைகள் வழியாகப் பிற்கால நூல் வளர்ச்சி ஏற்பட்டதை அறிய முடியும்.
- உரை நுட்பங்கள் மூலம் தமிழ் மொழியின் ஆழத்தை அறிய இயலும்.

COURSE OUTCOMES

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO. NO	Co Statement	Knowledge Level
CO1	தமிழ் பயிலும் மாணவர்கள் தமது பாடநூல்களுக்கு அப்பால் தமது தமிழ் அறிவை விரிவுப்படுத்திக் கொள்வர்.	K2, K3
CO2	தமிழ் ஆதாரங்கள் கிடைக்கும் இடம், அவற்றை பயன்கொள்ளும் முறை முதலியவற்றை மாணவர்கள் அறிவர்.	K4, K5
CO3	இலக்கண இலக்கியப் பொருளைத் தெளிவாக அறிவர்.	K2, K3
CO4	கலைக் களஞ்சியங்களைப் பற்றிய முழுமையானத் தெளிவைப் பெறுவர்.	K2
CO5	ஆய்வு நோக்கில் தரவுகளைத் தொகுக்கவும் வகுக்கவும் அறிந்து கொள்வர்.	K2, K4

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3	3	3	2	3	3
CO2	2	3	3	3	3	3	3	2	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	2	3	3	3	3	3	3	3	3	3
CO5	2	2	3	3	3	3	3	3	2	3

பாடத்திட்டம் – SYLLABUS				
UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	பிற வகை நூல்களும் நோக்கு நூல்களும் – நோக்கு நூல்களின் பண்பும் பயனும் – நோக்கு நூல் வகைகள் – அகராதி – கலைக்களஞ்சியம் – நூலடைவு – பிறவகைகள்	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
II	அகராதிகள் – வகைப்பாடு – மின்அகராதிகள் – தமிழில் குறிக்கத்தக்க அச்ச அகராதிகள் – இணைய அகராதிகள்	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
III	கலைக்களஞ்சியங்கள் – அகராதியும் கலைக்களஞ்சியங்களும் ஒற்றுமை வேற்றுமைகள் – கலைக்களஞ்சிய வகைகள் – தமிழில் இன்றியமையாத கலைக்களஞ்சியங்கள்	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5

IV	நூல் அடைவுகள் – நூல் அடைவு வகைகள் – தமிழ் நூல் விவர அட்டவணை – தமிழில் நூல் அடைவுகள்	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
V	பிறவகை நோக்கு நூல்கள் – யார்? எவர்? - ஆண்டு நூல்கள் – உலகப் படங்கள் – நடைக் கையேடுகள் – வழக்குக் கையேடுகள்	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
VI	சுயகற்றல் (இப்பகுதி பருவத் தேர்வுக்கு உரியதல்ல) கலைச்சொற்கள், பிறமொழிச் சொற்கள் பற்றி அறிதல்	-	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5

Cauvery College for Women (Autonomous), Trichy-1

PG & Research Department of Tamil

LEARNING OUTCOME BASED CURRICULAM FRAME WORK (CBCS -LOCF)

(For the Candidates admitted from the Academic year 2022-2023 onwards)

M.A TAMIL – III SEMESTER

Semester I	Course	Course Title	Course Code	Inst. Hrs. / week	Credits	Exam			Total
						Hrs.	Marks		
							Int	Ext	
III	Core Course– VIII)	தொல்காப்பியம் – பொருளதிகாரம் முன் ஐந்து இயல்கள் (நச்சினார்க்கினியர் உரை)	22PTA3CC8	6	5	3	25	75	100
	Core Course – IX (CC)	அற இலக்கியம்	22PTA3CC9	6	5	3	25	75	100
	Core Course- X (CC)	சங்க இலக்கியம் எட்டுத்தொகை	22PTA3CC10	5	5	3	25	75	100
	Core Choice Course– II (CCC)	A இலக்கண உரையாசிரியர்கள்	22PTA3CCC2A	5	4	3	25	75	100
		B திராவிட மொழிகளின் ஒப்பிலக்கணம்	22PTA3CCC2B						
		C.தமிழ் இலக்கியக் கொள்கைகள்	22PTA3CCC2C						
	Discipline Specific Elective Course-III (DSE)	A. போட்டித்தேர்வுத் தமிழ்	22PTA3DSE3A	5	3	2	-	100	100
		B.அகராதியியல்	22PTA3DSE3B	5	3	3	25	75	
		C.மொழியியல்	22PTA3DSE3C						
	Generic Elective Course -I (GEC)	படைப்பிலக்கியம்	22PTA3GEC1	3	2	3	25	75	100
Total				30	24	-	-	-	600

CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

பாடத்திட்டம் - SYLLABUS										
UNIT	CONTENT					HOURS	COs	COGNITIVE LEVEL		
I	அகத்திணையியல்					20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6		
II	புறத்திணையியல்					20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6		
III	களவியல்					20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6		
IV	கற்பியல்					20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,		

				K6
V	பொருளியல்	10	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	(சுய கற்றல்) இப்பகுதி பருவத்தேர்விற்கு உரியதல்ல அகத்திணை, புறத்திணை – கோட்பாடு	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

பாட நூல் :

- நச்சினார்க்கினியர் (உ.ஆ.), 1965) தொல்காப்பியம் – பொருளதிகாரம், கழக வெளியீடு, சென்னை,

பார்வை நூல்கள் :

- ந. சுப்புரெட்டியார், (1974),தொல்காப்பியம் காட்டும் வாழ்க்கை, பழனியப்பா பிரதர்ஸ், சென்னை – 14,
- சோ. ந. கந்தசாமி, டிசு. (1994) புறத்திணை வாழ்வியல், தமிழ்ப்பல்கலைக்கழகம், தஞ்சாவூர் – 5,

கற்பித்தல் முறைகள்

கலந்தாய்வு, வினாடி வினா, திட்டக்கட்டுரை, கரும்பலகை, குழுவிவாதம்

Web Resources

<https://www.tamilvu.org/ta/library-l0900-html-l0900kan-118186>

Semester III	Internal Mark: 25	External Mark: 75		
COURSE CODE	COURSE TITLE	CATEGORY	Hrs/Week	CREDITS
22PTA3CC9	அற இலக்கியம்	CC	6	5

நோக்கம் :

1. நீதி இலக்கியம் தோன்றியதற்கான காரணங்களைக் கண்டறிதல்
2. தமிழ் அற இலக்கியங்களில் கூறப்பட்டுள்ள அறக்கருத்துக்களைத் தெரிந்து கொள்ளுதல். அறக்கருத்துகளை வாழ்வின் உயர்வுக்குப் பயன்படுத்த வழி வகுத்தல்

COURSE OUTCOMES

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO No.	CO Statement	Cognitive Level
CO1	சமூகச் சிந்தனைகள் மற்றும் மேம்பட்ட மொழித் திறனைப் பெறுதல்	K3
CO2	நீதி இலக்கியம் கூறும் அறக்கருத்துகளைக் கற்றுணர்ந்து அறக்கோட்பாடுகளை மதிப்பிடல்	K4
CO3	நீதி இலக்கியங்களை அறிவியல் பூர்வமாக ஆராய்ந்தறிதல்	K3
CO4	நீதி இலக்கியங்களைக் கற்றுணர்ந்து ஆளுமைத் திறன் பெறுதல்	K4
CO5	பணித்தேர்வுகளை எதிர்கொள்ளும் வகையில் அற இலக்கியங்களைக் கற்றல்	K4

Mapping of CO with Po and PSO

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

பாடத்திட்டம் - SYLLABUS				
UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	<p>திருக்குறள் – அறத்துப்பால்</p> <p>1.வாழ்க்கைத் துணைநலம் 2.மக்கட்பேறு</p> <p>3.புகழ் 4.தவம் . 5.ஊழ்</p> <p>பொருட்பால்</p> <p>1.குற்றங்கடிகதல் 2.மடிஇன்மை 3.தூது</p> <p>4.சான்றாண்மை 5.உழவு</p> <p>இன்பத்துப்பால்</p> <p>1.நலம் புனைந்துரைத்தல் 2.கனவு நிலை</p> <p>உரைத்தல் 3.பொழுது கண்டு இரங்கல்</p> <p>4.நெஞ்சொடு கிளத்தல் 5.புலவி நுணுக்கம்</p> <p>நாலடியார்</p> <p>அறத்துப்பால்</p> <p>1.இளமை நிலையாமை 2.ஈகை</p> <p>பொருட்பால்</p>	20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4 K5 K6

	1.கல்வி 2.அறிவுடைமை 3.அவையறிதல்			
II	நான்மணிக்கடிகை – (1-50) பாடல்கள் பழமொழி நானூறு – (1-20) பாடல்கள்	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4 K5 K6
III	இன்னா நாற்பது – (முழுவதும்) இனியவை நாற்பது – (முழுவதும்)	20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4 K5 K6
IV	திரிகடுகம் – (6-25) பாடல்கள் சிறுபஞ்சமூலம் – (1-25) பாடல்கள் ஏலாதி – (1-25) பாடல்கள்	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4 K5 K6
V	மூதுரை – (முழுவதும்) – 30 வெண்பா உலகநீதி – (முழுவதும்) – 13 விருத்தப்பா	20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4 K5 K6

VI	(சுய கற்றல்) இப்பகுதி பருவத்தேர்விற்கு உரியதல்ல ஒளவை - பாரதி - பாரதிதாசன் - ஆத்திசூடி ஒப்பீடு	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4 K5
----	--	---	-------------------------------------	-------------------------------

பாட நூல் :

- புலவர் குழந்தை (உ.ஆ), (2021), (மூன்றாம் பதிப்பு), திருக்குறள், பூம்புகர் பதிப்பகம், சென்னை – 600 013
- தி.சு,பாலசுந்தரம் பிள்ளை (உ.ஆ), (2007), (புதிய பதிப்பு), நாலடியார், திருநெல்வேலி தென்னிந்திய சைவ சித்தாந்த நூற்பதிப்புக் கழகம், சென்னை
- ஞா. மாணிக்கவாசகன் (உ.ஆ), (2021), (ஐந்தாம் பதிப்பு), நான்மணிக்கடிகை, உமா பதிப்பகம், மண்ணடி, சென்னை – 600 001
- ம.இராசமாணிக்கம் பிள்ளை (உ.ஆ), (2007), (புதிய பதிப்பு), பழமொழி நானூறு, திருநெல்வேலி தென்னிந்திய சைவ சித்தாந்த நூற்பதிப்புக் கழகம், சென்னை
- துரை.தண்டபாணி (உ.ஆ), (2022), (ஐந்தாம் பதிப்பு), இன்னா நாற்பது, உமா பதிப்பகம், மண்ணடி, சென்னை – 600 001
- துரை.தண்டபாணி (உ.ஆ), (2022), (ஐந்தாம் பதிப்பு), இனியவை நாற்பது, உமா பதிப்பகம், மண்ணடி, சென்னை – 600 001
- ஞா. மாணிக்கவாசகன் (உ.ஆ), (2019), (மூன்றாம் பதிப்பு), திரிகடுகம், உமா பதிப்பகம், மண்ணடி, சென்னை – 600 001
- ஞா. மாணிக்கவாசகன் (உ.ஆ), (2021), (ஐந்தாம் பதிப்பு), சிறுபஞ்சமூலம், உமா பதிப்பகம், மண்ணடி, சென்னை – 600 001
- ஞா. மாணிக்கவாசகன் (உ.ஆ), (2022), (மூன்றாம் பதிப்பு), ஏலாதி, உமா பதிப்பகம், மண்ணடி, சென்னை – 600 001
- பண்டித நாவலர் ந.மு,வேங்கடசாமி நாட்டாரவர்கள் (உ.ஆ), (!997), மூதுரை. திருநெல்வேலி தென்னிந்திய சைவசித்தாந்த நூறு, பதிப்புக் கழகம், சென்னை

- பண்டித நாவலர் ந.மு,வேங்கடசாமி நாட்டாரவர்கள் (உ.ஆ), (!997), உலகநீதி. திருநெல்வேலி தென்னிந்திய சைவசித்தாந்த நூறு, பதிப்புக் கழகம், சென்னை

பர்வை நூல்கள்:

- ஆ.வேலுப்பிள்ளை (உ.ஆ), (2004), (மறுபதிப்பு), தமிழ் இலக்கியத்தில் காலமும் கருத்தும், குமரன் புத்தக இல்லம், சென்னை
- மு.பொன்னுசாமி, (2004), தமிழ் நீதி இலக்கிய வரலாறு, இந்து பதிப்பகம், கோயமுத்தூர்

கற்பித்தல் முறைகள்

கலந்தாய்வு, வினாடி வினா, திட்டக்கட்டுரை, கரும்பலகை, குழு விவாதம்

Web Resources

<https://youtu.be/FhhSViUOlw0>

Semester III	Internal Mark: 25	External Mark: 75		
COURSE CODE	COURSE TITLE	CATEGORY	Hrs/Week	CREDITS
22PTA3CC10	சங்க இலக்கியம்- எட்டுத்தொகை	CC	5	5

நோக்கம்

- தமிழ் மொழியின் தொன்மையை சங்க இலக்கியங்கள் வழி மாணவர்களை உணரச் செய்தல்
- .அக்காலச் சமூக நிலை, பண்பாடு, நாகரிகம் குறித்த அறிவினைப் பெறச் செய்தல்.
- சங்க இலக்கியங்களின் அமைப்பு முறை, உள்ளடக்கம் பற்றி அறியச் செய்தல்

COURSE OUTCOMES

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO No.	CO Statement	Cognitive Level
CO1	சங்க இலக்கியங்களின் வழி அக்கால மொழிச் சூழலையும் சமூகச் சூழலையும் கண்டறிதல்	K3
CO2	சங்க இலக்கியங்களின் சிறப்புகளைக் கண்டறிந்து அகப்புறக் கோட்பாடுகளை விளக்கி அறிதல்	K4
CO3	பழந்தமிழர் வரலாறு பண்பாடு ஆகியவற்றை அறிவியல் நோக்குடன் மதிப்பிடல்	K5
CO4	சங்க இலக்கியங்கள் உணர்த்தும் வாழ்வியல் விழுமியங்களை இன்றைய சூழலோடு ஒப்பிட்டு நோக்குதல்	K6
CO5	போட்டித் தேர்வுகளுக்கு ஏற்ப சங்க இலக்கிய நூல்களைக் கற்றறிதல்	K6

Mapping with CO, PO & PSO :

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

பாடத்திட்டம் - SYLLABUS				
UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	<p>நற்றிணை : 201 முதல் 205 பாடல்கள் வரை</p> <p>குறுந்தொகை : ஒளவையார் பாடல்கள் (15)</p>	15	CO1, CO2, CO3, CO4, CO5	K1 K2 K3, K4, K5, K6
II	<p>ஐங்குறுநூறு : கிள்ளைப் பத்து ,</p> <p>வரவு உரைத்த பத்து</p> <p>கலித்தொகை :</p> <p>பாலைக் கலி – (12,13)</p> <p>குறிஞ்சிக் கலி - (49, 50)</p> <p>மருதக் கலி- (85, 86)</p> <p>முல்லைக் கலி - (103, 107)</p> <p>நெய்தற் கலி - (118, 119)</p>	15	CO1, CO2, CO3, CO4, CO5	K1 K2 K3, K4, K5, K6

III	அகநானூறு -மணிமிடை பவளம் 121-130 பரிபாடல்- திருமால் 4, செவ்வேள் 21	15	CO1, CO2, CO3, CO4, CO5	K1 K2 K3, K4, K5, K6
IV	புறநானூறு- கபிலர், பரணர் பாடல்கள்(30)	15	CO1, CO2, CO3, CO4, CO5	K1 K2 K3, K4, K5, K6
V	பதிற்றுப்பத்து : 5- ஆம் பத்து	15	CO1, CO2, CO3, CO4, CO5	K1 K2 K3, K4, K5, K6
VI	(சுய கற்றல்) இப்பகுதி பருவத்தேர்விற்கு உரியதல்ல அக இலக்கியங்கள், புற இலக்கியங்கள் – ஒப்பீடு	-		

பார்வை நூல்கள்

- 1.ஒளவை சு. துரைசாமிப் பிள்ளை(உ.ஆ.), 2008,நற்றிணை, கழக வெளியீடு, சென்னை
- 2.ஒளவை சு. துரைசாமிப் பிள்ளை(உ.ஆ.), 2007,குறுந்தொகை,கழக வெளியீடு,சென்னை
- 3.ஒளவை சு. துரைசாமிப் பிள்ளை(உ.ஆ.), 2008, ஐங்குறுநூறு,கழக வெளியீடு,சென்னை

4.நச்சினார்க்கினியர், (உ.ஆ.)1943,கலித்தொகை,

கழக வெளியீடு,சென்னை

5.ந மு வேங்கடசாமி நாட்டார், (உ.ஆ.), 2008,அகநானூறு

கழக வெளியீடு,சென்னை

6.பொ.வே.சோமசுந்தரனார்!(உ.ஆ.) 2008,பரிபாடல்,

கழக வெளியீடு,சென்னை

7.ஒளவை சு. துரைசாமிப் பிள்ளை(உ.ஆ.), 2008,புறநானூறு, கழக வெளியீடு,சென்னை

8.ஒளவை சு. துரைசாமிப் பிள்ளை(உ.ஆ.), 2008,பதிற்றுப்பத்து,கழக வெளியீடு,சென்னை

கற்பித்தல் முறைகள்

கலந்தாய்வு, வினாடி வினா, திட்டக்கட்டுரை, கரும்பலகை, குழுவிவாதம்

Web Resources

<https://tamilebooks.org/ebooks/%E0%AE%A8%E0%AE%B1%E0%AF%8D%E0%AE%B1%E0%AE%BF%E0%AE%A3%E0%AF%88-ebook/>

<https://www.google.com/search?q=kurunthogai+pdf&oq=KURUNTHO&aqs=chrome.3.69i57j35i39j46i39j0i67i650j0i512i6.8718j0j7&sourceid=chrome&ie=UTF-8>

<https://www.tamilvu.org/library/nationalized/scholars/pdf/others/tcl/ainkurunuru.pdf>

<https://www.chennaiilibrary.com/ettuthogai/kalithogai.html>

<https://www.tamilvu.org/library/nationalized/pdf/59-puliyurkesigan/010.purananuru.pdf>

Semester III	Internal Mark: 25	External Mark: 75		
COURSE CODE	COURSE TITLE	CATEGORY	Hrs/Week	CREDITS
22PTA3CCC2A	இலக்கண உரையாசிரியர்கள்	CCC	5	4

நோக்கம்

1. தமிழ்மொழியின் செழுமைக்கு அடிப்படையாய் அமைந்த இலக்கண உரைகளின் தன்மையை எடுத்துரைத்தல்.
2. தமிழ் ஆராய்ச்சியின் வளர்ச்சிக்கு உறுதுணையாக அமைந்த உரைகளின் தன்மையைக் கண்டறிதல்
3. இலக்கணத்தில் உரைநடையின் பங்களிப்பை எடுத்துரைத்தல்.
4. மொழியின் நிலைத்த தன்மைக்கு அடிப்படையாய் அமையும் இலக்கண உரைகளை ஆராய்தல்
5. உரைகளின் வழி வெளிப்படும் உரையாசிரியர்களின் உரைவேறுபாட்டை அறிதல்

COURSE OUTCOME

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO No.	CO Statement	Knowledge Level
CO1	இலக்கண உரைகளின் சிறப்புகளைக் கண்டறிதல்	KI
CO2	இலக்கண உரைகளின் வேற்றுமையினைக் கண்டறிதல்	K1
CO3	உரைகளின் தன்மையினைப் பகுத்தாய்தல்	K3
CO4	உரையாசிரியர்களின் உத்திமுறைகளை அறிவுறுத்தல்	K4
CO5	இலக்கண உரைகளின் வரலாற்றை அறியச்செய்தல்	K4

Mapping with CO, PO & PSO :

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
--	-----	-----	-----	-----	-----	------	------	------	------	------

CO1	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	2	2	3	3	3	2	3	3	3	3
CO4	3	3	2	3		3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

பாடத்திட்டம் - SYLLABUS				
UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	இலக்கண உரையாசிரியர்கள் - இறையனார் அகப்பொருளுரை - தொல்காப்பிய உரையாசிரியர்கள் - இளம்பூரணர் -சேனாவரையர் -பேராசிரியர் -தெய்வச்சிலையார் -கல்லாடர்	15	CO1, CO2, CO3, CO4, CO5	K1 K2 K3, K4, K5, K6
II	நச்சினர்க்கினியரின் சிறப்பியல்புகள் -தொல்காப்பிய உரை -பல்கலைப்புலமை -நன்னூல் உரையாசிரியர்கள் – நன்னூல் உரைகள் -மயிலைநாதர்— சங்கரநமச்சிவாயர் -ஆண்டிப்புலவர்	15	CO1, CO2, CO3, CO4, CO5	K1 K2 K3, K4, K5, K6
III	கூழாங்கைத்தம்பிரான் – இராமாநுசக் கவிராயர் -விசாகப்பெருமாள் ஐயர் – ஆறுமுகநாவலர்—சடகோப ராமாநுசாச்சாரியார் -பெருந்தேவனார் -சுப்பிரமணிய தீட்சிதர் -காரிரத்தினக் கவிராயர்.	15	CO1, CO2, CO3, CO4, CO5	K1 K2 K3, K4, K5, K6
IV	யாப்பருங்கல விருத்தியுரை – யாப்பருங்கலக்காரிகை உரை	15	CO1, CO2, CO3,	K1 K2 K3,

	-தண்டியலங்கார உரை – நம்பியகப்பொருள் விளக்கவுரை -தமிழ்நெறி விளக்கவுரை -நேமிநாத உரை – சாமிநாத தேசிகர் -அணிநூல் உரைகள்		CO4, CO5	K4, K5, K6
V	இலக்கண விளக்கச் சூறாவளி -சிவஞான முனிவரின் வரலாறும் சிறப்பும் -மறுப்புரை நூல்கள்-சிவஞான போதகச் சிறுநூல் - சிவஞான போதகப் பேருரை.	15	CO1, CO2, CO3, CO4, CO5	K1 K2 K3, K4, K5, K6
VI	(சுய கற்றல்) இப்பகுதி பருவத்தேர்விற்கு உரியதல்ல ஐந்திலக்கண நூல்களும் உரைகளும் – அணிநூல் உரைகள்.	-	CO1, CO2, CO3, CO4, CO5	K1 K2 K3, K4, K5, K6

பாட நூல்

- அரவிந்தன் .மு.வை.(1995) உரையாசிரியர்கள். முதற்பதிப்பு. மணி வாசகர்
பதிப்பகம். சிதம்பரம்.

பார்வை நூல்கள் :

- நடராசன்.தி.சு. .(2013) ‘ உரைகளும் , உரையாசிரியர்களும்’, நியூசெஞ்சுரி புக்
ஹவுஸ்.சென்னை.
- மோகன் .இரா., சொக்கலிங்கம்.ந.(2003) ‘ உரைமரபுகள்” மணிவாசகர்
பதிப்பகம் , சென்னை.

கற்பித்தல் முறைகள்

கலந்தாய்வு, வினாடி வினா, திட்டக்கட்டுரை, கரும்பலகை, குழுவிவாதம்

Web Resources

<https://www.tamilvu.org/ta/library-I0900-html-I0900kan-118186>

Semester III	Internal Marks : 25	External Mark 75		
பாடக்குறியீடு	பாடம்	Category	Hrs/Week	Credits
22PTA3CCC2B	திராவிட மொழிகளின் ஒப்பிலக்கணம்	CCC	5	4

நோக்கம்

1. மொழிக்குடும்பங்கள் பற்றிக் கற்பித்தல்
2. மொழிகளுக்கு இடையிலான உறவுகளை எடுத்துரைத்தல்
3. திராவிட மொழிகள் ஒரே குடும்பத்தைச் சேர்ந்தவை என்பதைக் கற்பித்தல்

COURSE OUTCOME

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO No.	CO Statement	Cognitive Level
CO1	திராவிட மொழி இலக்கணக் கூறுகளின் ஒற்றுமைகளைத் திறனாய்தல்	K3
CO2	மொழிக் குடும்பங்களைப் பகுத்தாராய்தல்	K4
CO3	திராவிட மொழிகளுக்கு இடையிலான உறவுகளை ஆராய்ந்து அறிதல்	K5
CO4	திராவிட மொழி இலக்கணங்களை மதிப்பிடல்	K5
CO5	திராவிட மொழிக் கோட்பாட்டை உருவாக்குதல்	K6

Mapping with CO, PO & PSO :

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	2	3	2	3	3	3
CO2	2	3	2	2	3	3	3	3	3	3
CO3	2	2	2	2	2	3	3	3	3	2
CO4	2	3	3	2	3	2	2	2	3	3
CO5	2	2	3	2	3	2	2	2	2	3
பாடத்திட்டம்										
UNIT	CONTENT						HOURS	COS	COGNITIVE LEVEL	
I	மொழியும் மொழியியலும் – ஒப்பியல்ஆய்வுமுறை - மொழிக் குடும்பங்கள் - திராவிட மொழிக் குடும்பம் - டாக்டர் கால்டுவெல் - திராவிட மொழிக் குடும்ப ஒப்பிலக்கணம் ஆய்வு - தென் திராவிட மொழிகள் வடதிராவிட மொழிகள் - நடு திராவிட மொழிகள்						15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4	
II	ஒலியும் பிறப்பும்- உயிரொலிகளின் இயையும் திரிபும் - ஒலி மாற்றங்கள் - மெய்யொலிகளின் இயையும் திரிபும் - மெய்யொலி மாற்றங்கள்						15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4	
III	பெயர்ச் சொற்கள் - திணை, பால், எண் - உணர்த்தும் முறை - வேற்றுமைகள் - மூவிடப்பெயர்கள் - எண்ணுப்பெயர்கள்						15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4	

IV	வினைச் சொற்கள் அமைப்பும் சிறப்பும் - வினை வகைகள் - காலம் காட்டும் முறைகள்	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4
V	எச்சங்களும் முற்றுகளும் - திராவிட மொழிகளின் தொடரமைப்பு	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
VI	(சுய கற்றல்) இப்பகுதி பருவத்தேர்விற்கு உரியது அல்ல தென் திராவிட மொழிகளும் வடதிராவிட மொழிகளும்	-	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4

பாட நூல்கள்

- கோவிந்தன்.கா, ரத்தினம்.க, (தமிழாக்கம்) , (2004) டாக்டர் கால்டுவெல்லின் திராவிட மொழிகளின் ஒப்பிலக்கணம், பாரி நிலையம் சென்னை .

பார்வை நூல்கள்

- ஜான் சாமுவேல், (2008) திராவிட மொழிகளின் ஒப்பாய்வு , பாரி நிலையம், சென்னை.
- வரதராசன், (2011) மொழியியல், பாரி நிலையம், சென்னை.

இணையதள முகவரி

<http://www.tamilvu.org/courses/degree/a051/a0511/html/a05114l2.htm>

கற்பித்தல் முறைகள் கலந்தாய்வு, வினாடி வினா, திட்டக்கட்டுரை, கரும்பலகை, குழுவிவாதம்

Semester III	Internal marks: 25	External Marks : 75		
COURSE CODE	COURSE TITLE	Category	Hrs /Week	Credits
22PTA3CCC2C	தமிழ் இலக்கியக் கொள்கைகள்	CCC	5	4

நோக்கம்

- இலக்கிய நுட்பங்களைப் புரிந்து கொள்வர்
- இலக்கியக் கொள்கையின் அடிப்படையில் இலக்கியத்தின் ஆழ, அகல பரிணாமங்களை அறிந்துகொள்வர்
- இலக்கியங்களைத் திறனாய்வுக் கண்ணோட்டத்துடன் அணுகுவர்

COURSE OUTCOMES

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO.NO	CO STATEMENT	KNOWLEDGE LEVEL
CO1	இலக்கியக் கொள்கைகளைத் தமிழ் இலக்கியங்களில் பயன்படுத்தக் கற்றல்	K3
CO 2	பணி வாய்ப்புகளுக்கு ஏற்ப தமிழ் இலக்கியக் கொள்கைக்கான அடிப்படைக் கூறுகளைப் பகுத்தாராய்தல்	K4
CO3	தமிழ் இலக்கியங்கள் வெளிப்படுத்தும் சமூகச் சிந்தனை மற்றும் மொழித்திறனை ஆராய்ந்தறிதல்	K5
CO4	இலக்கியக் கொள்கைகள் வழி இலக்கியங்களின் தரத்தினை மதிப்பிட்டு ஆளுமைத் திறனில் மேம்படல்	K5
CO5	தமிழ் இலக்கியங்களுக்கு உரிய கோட்பாடுகளை உருவாக்கும் திறனைப் பெறுதல்	K6

Mapping of CO With PO and PSO

[illegible]

பாடத்திட்டம்				
UNIT	CONTENT	HRS.	COS	COGNITIVE LEVEL
I	இலக்கியம் - சில விளக்கங்கள், இலக்கியத் திறனாய்வு - விளக்கமும் வகைகளும், இலக்கியக் கொள்கை - விளக்கம், வகைகள்	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
II	தமிழ் இலக்கியக் கொள்கை - தொல்காப்பியரின் இலக்கியக் கொள்கை - இலக்கியத்தில் கற்பனை - உள்ளுறை - இறைச்சி	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
III	இலக்கியத்தின் அடிப்படைக் கூறுகளும் பயன்களும் - காப்பியங்கள் - நீதி நூல்கள்: கொள்கைகள் - பக்தி இலக்கியக் கொள்கைகள்	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
IV	நாடகம்: வகைகளும் கொள்கைகளும் - உரைநடைப் பாகுபாடுகள் - நாவல் : இலக்கியக் கூறுகள் - வகைகள்- கொள்கைகள்	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
V	சிறுகதை: கொள்கைகள் - கவிதையும் மரபுக் கவிதையும் - புதுக்கவிதை: உத்திகள், கொள்கைகள்	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
VI	சுய கற்றல் -) இப்பகுதி பருவத்தேர்விற்கு உரியது அல்ல இலக்கிய இசங்கள்	-	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6

பாடநூல்

- சுப்பையா .அரங்க., (2012), இலக்கியத் திறனாய்வு இசங்கள் கொள்கைகள் , பாவை பப்ளிகேஷன்ஸ், ராயப்பேட்டை, சென்னை-600 014.

பார்வை நூல்கள்

- ஈஸ்வரன், ச., (2014), இலக்கியக் கொள்கைகள், கௌரா பதிப்பகம், சென்னை.
- ஞானமூர்த்தி, தா ஏ., (2002), இலக்கியத் திறனாய்வியல், தமிழ் இன்பம், கோவை.
- தமிழண்ணல், (2004), தொல்காப்பியரின் இலக்கியக் கொள்கைகள், பாகம் 1, மீனாட்சி புத்தக நிலையம், மதுரை.
- பெரிய கருப்பன் .இராம, (1975), சங்க இலக்கிய ஒப்பீடு இலக்கியக் கொள்கைகள், மீனாட்சி புத்தக நிலையம், மதுரை.

WEB RESOURCES

<https://www.tamilvu.org/ta/library-l1210-html-l1210ind-122233>

<https://www.projectmadurai.org/pmworks.html>

கற்பித்தல் முறைகள்

கலந்தாய்வு,

வினாடிவினா, திட்டக் கட்டுரை, குழுவிவாதம், கரும்பலகை

Semester III	Internal marks:	External Marks : 100		
COURSE CODE	COURSE TITLE	Category	Hrs /Week	Credits
22PTA3DSE3A	போட்டித் தேர்வுத் தமிழ்	DSE	5	3

நோக்கம்

- போட்டித் தேர்வு எழுதும் மாணவர்கள் தமிழ் இலக்கிய வரலாறு வழி இலக்கியங்களை அறிந்து கொள்வர்
- தமிழ் மொழியின் தொன்மையினையும் சிறப்பினையும் தெரிந்து கொள்வர்
- சங்க கால இலக்கியம் முதல் இக்கால இலக்கியங்கள் வரை தமிழ் மொழி அடைந்துள்ள வளர்ச்சியை அறிவர்

COURSE OUTCOMES

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO.NO	CO STATEMENT	KNOWLEADGE LEVEL
CO1	இலக்கியங்கள் மற்றும் இலக்கணங்கள் வெளிப்படுத்தும் விழுமியங்கள் அறிந்து வாழ்விற்கு பயன்படுத்தக் கற்றல்	K3
CO2	இலக்கியங்கள் மற்றும் இலக்கணங்கள் வெளிப்படுத்தும் சமூகச் சிந்தனைகள் மற்றும் மொழித்திறன் குறித்து பகுத்து ஆராய்தல்	K4
CO3	இலக்கியங்கள் மற்றும் இலக்கணங்கள் கற்றல் வழி ஆளுமைத்திறன் மேம்படல்	K4
CO4	பணித் தேவைகள் மற்றும் போட்டித் தேர்வுகளுக்கு ஏற்ற இலக்கியம் மற்றும் இலக்கணக் கூறுகளை ஆராய்ந்தறிதல்	K5
CO5	தொன்மையான இலக்கியம் மற்றும் இலக்கண உருவாக்கம் பற்றிய அறிவு பெற்றுக் கோட்பாடுகளை உருவாக்கும் திறன் பெறுதல்	K6

Mapping of CO With PO and PSO

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

பாடத்திட்டம்				
UNIT	CONTENT	HRS.	COS	COGNITIVE LEVEL
I	உயர்தனிச் செம்மொழி - முச்சங்கங்கள் - சங்க காலத்து இலக்கண நூல்கள் - தொல்காப்பியம் - எட்டுத்தொகை நூல்கள் - பத்துப்பாட்டு - சங்க இலக்கிய மேன்மைகள்	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
II	பதினெண் கீழ்க்கணக்கு நூல்கள் - பிற அற நூல்கள் - ஐம்பெருங்காப்பியங்கள் - ஐஞ்சிறு காப்பியங்கள் - முத்தொள்ளாயிரம் - பெருங்கதை - கம்பராமாயணம் - பிற இராமாயண நூல்கள் - தொன்ம இலக்கியங்கள் - பாரத இலக்கியங்கள்	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
III	பௌத்தமும் தமிழும் - சமணமும் தமிழும் - சைவமும் தமிழும் - வைணவமும் தமிழும் - கிறிஸ்தவமும் தமிழும் - பிற்காலத் தமிழ்க் காப்பியங்கள் - சிற்றிலக்கியங்கள்	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
IV	இலக்கண நூல்கள் - நிகண்டுகள் - அகராதிகள் - சித்தர் இலக்கியங்கள் - பதிப்பாசிரியர்கள் - உரையாசிரியர்கள் இயற்றமிழ் நூல்கள் - இசைத்தமிழ் நூல்கள் - நாடகத் தமிழ் நூல்கள் - இருபதாம்	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6

	நூற்றாண்டு மரபுக் கவிதைகள் - சிறுகதை நூல்கள் - புதின நூல்கள் - புதுக்கவிதை நூல்கள் - ஹைக்கூ, சென்றியூ - குக்கூ நூல்கள்			
V	தொல்லியல் துறைகள் - நாட்டுப்புற இயல் - பயண இலக்கியங்கள் - வாழ்க்கை வரலாற்று இலக்கியங்கள் - கடித இலக்கியங்கள் - ஒப்பிலக்கியம் - ஒப்பிலக்கண மொழியியல் - திறனாய்வியல் - மொழிபெயர்ப்பியல் -அறிவியல் தமிழ் - பெண்ணியம் - தலித்தியம் -ஊடகவியல்	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
VI	(சுய கற்றல்) சாகித்திய அகாதெமி நூல்கள் - ஞானபீட பரிசு நூல்கள் - ராசராசன் பரிசு நூல்கள் - சரஸ்வதி சம்மான் விருது நூல்கள் - தமிழக நாட்டுடைமையாக்கிய நூல்கள் விவரம் - மொழிபெயர்ப்புக்கான சாகித்திய அகாதெமி விருது நூல்கள் - இந்திய மொழிகளின் முதல் நூல்கள்	-	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6

பாடநூல்

- பாக்கியமேரி, (2008) , (முதல்பதிப்பு) வகைமை நோக்கில் தமிழ் இலக்கிய வரலாறு, நியூ செஞ்சுரி புக் ஹவுஸ், சிட்கோ இண்டஸ்டிரியல் எஸ்டேட், அம்பத்தூர், சென்னை – 600 098

பார்வை நூல்கள்

- தமிழண்ணல், (2008), புதிய நோக்கில் தமிழ் இலக்கிய வரலாறு, மீனாட்சி புத்தக நிலையம், மதுரை.
- விமலானந்தன். மது.ச, (1987), தமிழ் இலக்கிய வரலாற்றுக் களஞ்சியம், ஐந்திணை பதிப்பகம், சென்னை.
- தேவிரா , (2020), தமிழ் இலக்கிய தகவல் களஞ்சியம், ஸ்ரீ நந்தினி பதிப்பகம், சென்னை.

WEB RESOURCE : <https://www.tamilvu.org/ta/library-l1210-html-l1210ind-122233>

<https://www.projectmadurai.org/pmworks.html>

கற்பித்தல் முறைகள் :

கலந்தாய்வு, வினாடிவினா, திட்டக் கட்டுரை, குழுவிவாதம், கரும்பலகை

Semester III	Internal Mark : 25	External Mark : 75		
பாடக்குறியீடு	பாடம்	Category	Hrs/Week	Credits
22PTA3DSE3B	அகராதியியல்	DSE	5	3

நோக்கம் :

- அகராதியியலின் இன்றியமையாமையை உணரச்செய்தல்
- அகராதியியல் குறித்த மொழி அறிவினைப் பெறல்
- பல்வேறு அகராதி நூல்களைப் பகுத்தறியும் திறன் பெறச்செய்தல்

Coures Outcomes

இப்பாடத்திட்டத்தைப் பயில்வதால் மாணவியர் பெறும் திறன்

CO. NO	Co Statment	Cognitive Level
CO1	அகராதியியலை அறிவதன் வழி மொழிப்பயன்பாட்டில் உள்ள சவால்களை எதிர்கொள்வதற்கான கல்வியறிவினைப் பெறல்	K3
CO2	அகராதியியலைக் கற்பதன் மூலம் பல்வேறு இலக்கண இலக்கிய நூல்களின் பொருளைக் கண்டறியும் திறன் பெறுதல்	K6
CO3	பல்துறைசார் சொற்களின் பொருளினைப் பகுத்துணர்வதுடன் ஆராய்ச்சித்திறன் பெறுதல்	K4
CO4	புதிய கலைச் சொற்களைப் படைக்கும் திறனை வளர்த்துக் கொள்ளுதல்	K3
CO5	போட்டித் தேர்வுகளுக்கு ஏற்ப அகராதியியல் குறித்த அறிவுத்திறனைப் பெறுதல்	K6

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	2	3	2	3	3	3
CO2	3	3	3	2	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	2	2	2	2	3	2	3	3	3
CO5	3	3	3	2	3	3	3	3	3	3

பாடத்திட்டம் - SYLLABUS				
UNIT	CONTENT	HRS	COS	COGNITIVE LEVEL
I	அகராதியியலும் அகராதிச் சொற்பொருளியலும் – அகராதியியலும் மொழியியலும் – அகராதியும் இலக்கணமும் – அகராதி வரலாறு	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
II	சொற்பொருள் உறவும் சொல் வகைப்பாடும் – பொருட் கோட்பாடுகள் – மொழிஒருங்கும் சொற்பயன்பாடும் – சொற்பொருட்கூறுகள் – பொருளுறவும், சொல்வகைப்பாடும்	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
III	நிகண்டு தோற்றம் – வளர்ச்சி – வரலாறு – அமைப்பு – நிகண்டு திவாகரம் – பிங்கலந்தை – சூடாமணி – அகராதி நிகண்டு – உரிச்சொல் நிகண்டு – பிற நிகண்டுகள்	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
IV	அகராதி உருவாக்கம் – திட்டமிடுதலும் தரவுமூலச்சேகரிப்பும் – அகராதி உருவாக்கப்படிநிலைகள் – அகராதித்திட்டம் – சொல் தெரிவு – பதிவுத்தெரிவு –	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6

	எழுத்துப் பெயர்வு – ஒலிப்புநெறி – இலக்கணக்குறிப்பு – மேற்கோள் தொடர் – சொல்வரிசைமுறை -பொருண்மை நிரல்			
V	அகராதி வகைகள் – மொழிஅகராதிகள் – ஒருமொழி அகராதி – இருமொழி அகராதி – பன்மொழி அகராதி – காலமுறை அகராதி – வரலாற்று அகராதி - ஒப்பியல் அகராதி	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
VI	சுயகற்றல் (இப்பகுதி பருவத்தேர்வுக்கு உரியதல்ல) காலந்தோரும் அகராதிகள்	15	- CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6

பாட நூல் :

- பெ.மாதையன், (1986) (முதற் பதிப்பு) அகராதியியல் ,தமிழ்ப் பல்கலைக்கழகம், தஞ்சாவூர்.

பார்வை நூல்கள் :

- வ.ஜெயமோகன் (1985) (முதற் பதிப்பு) தமிழ் அகராதியியல் வளர்ச்சி வரலாறு, ஐந்தினைப் பதிப்பகம் , சென்னை.
- மா.சற்குணம் (2001) தமிழில் நிகண்டுகள் , செந்தமிழ்க் கல்லூரி , மயிலம்.

இணையதள முகவரி:

- www.tamildigitallibrary.in

கற்பித்தல் முறைகள் :

கலந்தாய்வு, வினாடி வினா,திட்டக்கட்டுரை ,கரும்பலகை, குழுவிவாதம்,PPT, GOOGLE MEET,GOOGLE CLASSROOM

Semester IV	Internal Marks : 25	External Mark 75		
பாடக்குறியீடு	பாடம்	Category	Hrs/Week	Credits
22PTA3DSE3C	மொழியியல்	DSE	5	3

நோக்கம்

1. மொழியின் தன்மைகளை அறியச் செய்தல்
2. மொழியின் கோட்பாடுகளைப் பகுத்தாய்தல்

COURSE OUTCOME

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO No.	CO Statement	Cognitive Level
CO1	மொழியின் அமைப்பைத் திறனாய்தல்	K3
CO2	மொழியின் தன்மைகளைக் கண்டறிந்து வகைப்படுத்துதல்	K4
CO3	ஒலிகள் பிறக்கும் முறையை ஆராய்ந்தறிதல்	K5,
CO4	மொழியின் கோட்பாடுகளை ஆராய்ந்து மதிப்பிடல்	K5,
CO5	மொழியின் அமைப்பைப் பகுத்துணரும் திறனை உருவாக்குதல்	K6

Mapping with CO, PO & PSO :

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	2	3	2	3	3	3
CO2	2	3	2	2	3	3	3	3	3	3
CO3	2	2	2	2	2	3	3	3	3	2
CO4	2	3	3	2	3	2	2	2	3	3
CO5	2	2	3	2	3	2	2	2	2	3

பாடத்திட்டம் - SYLLABUS				
UNIT	CONTENT	HRS	COS	COGNITIVE LEVEL
I	மொழியும் மொழியியலும்- மொழியியல் விளக்கம் - மொழியும் சமுதாயமும் - மொழியும் இலக்கியமும்- மொழியும் அறிவுத்துறைகளும்	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5 K6
II	ஒலியியல்- ஒலியியல் வகைகள் - ஒலியுறுப்புகள் ஒலித்தல் முறைகள் - ஒலியனியல்- ஒலியன் கோட்பாடுகள் - ஒலியன்களின் வருகையிடங்கள் - ஒலியன் சேர்க்கைகள் - ஒலியன் அசைகள்	15	CO1, CO2, CO3, CO4, CO5,	K1, K2, K3, K4 K5 K6
III	உருபனியல் - உருபன் கோட்பாடு - உருபனியல் விளக்கம் - உருபன் வகைகள் - உருபொலியனியல் - உருபொலியனியல் மாற்றம் - விதிகள் - இலக்கணப் பிரிவுகளும் - இலக்கணக் கூறுகளும் - சொற்கள் சொல்லமைப்புகள்- சொல்வகைகள் - சொல்லும் பொருளும் – சொற்பயன்பாடு.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4 K5 K6
IV	தொடரியல் - பல்நிலை அண்மையுறுப்பு - தொடரிலக்கணம் - வாக்கிய வகைகள் - மாற்றிலக்கணம் - அதன் அமைப்பு – மாற்றிலக்கணத்தில் பொருண்மையின் பங்கு	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4 K5 K6
V	பொருண்மையியல்- பொருள் வகைகள் - பொருள் உறவுகள் - சொற்பொருளும் பிற செய்திகளும்	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5 K6

VI	(சுய கற்றல்) இப்பகுதி தேர்வுக்குரியது அல்ல மொழியைக் கற்றலின் அவசியமும் பயன்பாடும்	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4 K5 K6
----	---	---	-------------------------------------	-------------------------------------

பாட நூல்கள்

- முனைவர் கி. கருணாகரன் , முனைவர் வ. ஜெயா (2011), மொழியியல், மணிவாசகர் நிலையம், சென்னை.

பார்வை நூல்கள்

- பேராசிரியர் ரா.சீனிவாசன் மொழியியல் முல்லைநிலையம் சென்னை

கற்பித்தல் முறைகள்

கலந்தாய்வு, வினாடி வினா, திட்டக்கட்டுரை, கரும்பலகை, குழுவிவாதம்

Semester III	Internal Marks : 25	External Mark 75		
பாடக்குறியீடு	பாடம்	Category	Hrs/Week	Credits
22PTA3GEC1	படைப்பிலக்கியம்	GEC	3	2

நோக்கம்

- படைப்பாற்றலை ஊக்குவித்தல்
- கவிதை, நாடகம் , உரைநடை , சிறுகதை ஆகியவற்றின் தனித்தன்மைகளைக் கற்றுத்தருதல்
- படைப்பிலக்கியத்தின் பல்வேறு கூறுகளைக் கற்பித்தல்

COURSE OUTCOME

இப்பாடத்தினைப் பயில்வதால் மாணவியர் பெறும் திறன்கள்

CO No.	CO Statement	Cognitive Level
CO1	படைப்பிலக்கிய வகைகளைக் கண்டறிந்து சமூகச் சூழலையும் ஆய்ந்து தற்கால வாழ்வியலுடன் பகுத்தறிதல் .	K1
CO2	கவிதை, சிறுகதை , நாடகம் , போன்ற படைப்புகளை உருவாக்கும் முறையை விவரித்து மொழிப்பயன்பாட்டை மதிப்பீடு செய்தல்.	K2
CO3	நிகழ்ச்சி நிரல் தயாரித்து , தொகுத்து வழங்கும் திறனை உருவாக்குதல் . வாழ்வியல் கோட்பாடுகளை ஆய்ந்தறிந்து அதன் விழுமியங்களை விளக்கியறிதல்.	K3
CO4	புதிய இலக்கியங்களைப் படைக்கும் திறனை வளர்த்துக் கொள்ளல்	K4
CO5	போட்டித்தேர்வுகளுக்கேற்ப படைப்பிலக்கியம் குறித்த அறிவுத்திறனைப் பெறுதல்.	K5

Mapping with CO, PO & PSO :

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	2	3	2	3	3	3
CO2	2	3	2	2	3	3	3	3	3	3
CO3	2	2	2	2	2	3	3	3	3	2
CO4	2	3	3	2	3	2	2	2	3	3
CO5	2	2	3	2	3	2	2	2	2	3

பாடத்திட்டம் - SYLLABUS				
UNIT	CONTENT	HRS	COS	COGNITIVE LEVEL
I	கவிதை - அறிதல் - அமைப்பு - பொருண்மை- மரபுக்கவிதை - வடிவங்கள் - புதுக்கவிதை - எழுதப் பயிற்றுவித்தல்	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5 K6
II	சிறுகதை - இலக்கணம் - அமைப்பு - பொருண்மை - சிறுகதை எழுதப் பயிற்றுவித்தல்	9	CO1, CO2, CO3, CO4, CO5,	K1, K2, K3, K4 K5 K6
III	நாடகம் - இலக்கணம் - வகைகள் - ஓரங்க நாடகம் - எழுதப் பயிற்றுவித்தல்	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4 K5 K6
IV	கட்டுரை - கட்டுரை வகைகள் - திறனாய்வுக் கட்டுரை - நூல் மதிப்பீடு - இதழ்களில் கட்டுரை	9	CO1, CO2,	K1, K2,

	எழுதப் பயிற்றுவித்தல்		CO3, CO4, CO5	K3, K4 K5 K6
V	நிகழ்ச்சித் தொகுப்பு - ஊடகங்களுக்கான நேர்முக வர்ணனை - செய்தித்தாள்களுக்கு அறிக்கை அளிக்கப் பயிற்றுவித்தல்	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5 K6
VI	(சுய கற்றல்) இப்பகுதி பருவத்தேர்விற்கு உரியது அல்ல எழுதும் கலை - ஜெயமோகன்	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

பார்வை நூல்கள்

- மு. வரதராசன், (2015) இலக்கியத்திறன், பாரி நிலையம், சென்னை.
- மா. இராமலிங்கம், (1978) புதிய உரைநடை, தமிழ் புத்தகாலயம், சென்னை .
- ஜகன்நாதன், (2010), கவிபாடலாம், அமுத நிலையம், சென்னை.
- இ.சுந்தரமூர்த்தி(1994), நடையியல் சிந்தனை, நியூ செஞ்சுரி புக் ஹவுஸ், சென்னை.
- மாணிக்கனார் ஜெயமோகன், (2009) எழுதும் கலை, தமிழினி பதிப்பகம், சென்னை.
- கற்பித்தல் முறைகள்

கலந்தாய்வு, வினாடி வினா, திட்டக்கட்டுரை, கரும்பலகை, குழுவிவாதம்

ANNEXURE C

**BA, B.COM, BBA, B.SC & B.CA,
FRENCH
FOR I-II SEMESTERS**

SYLLABUS

**FROM THE ACADEMIC YEAR
2023 - 2024**

**TAMILNADU STATE COUNCIL FOR HIGHER
EDUCATION, CHENNAI - 600 005**

Programme:	I & II UG – First Language - French
Programme Code:	
Duration:	2 years
Programme Outcomes:	<p>After successful completion of the course, learners will be able to:</p> <ol style="list-style-type: none"> 1. Create simple sentences using the different grammatical tenses 2. Read and communicate effectively in French 3. Utilize the appropriate vocabulary such as connecting words and expressions to communicate effectively 4. Translate simple sentences
Programme Specific Outcomes:	<ol style="list-style-type: none"> 1. Write simple sentences in French 2. Apply different grammatical rules to their reading and writing assignments 3. Identify the different past tenses 4. Read, understand, write and speak in simple French 5. Translate simple sentences related to the given themes

List of Courses:

Semester	Course Code	Title of the Course	Core/Elective/ Soft Skill	Credits
I	23ULF1	Foundation Course: Paper I – French - I	C	3
II	23ULF2	Foundation Course: Paper II – French - II	C	3

UG – SEMESTER – I

Foundation Course: Paper I – French - I

Course Outcomes	1. Recall and remember the usage of grammatical tenses in constructing sentences in a dialogue. 2. Apply the learnt grammar rules in practice exercises to improve their understanding 3. Explain the nuances in the usage of various grammatical tenses and their aspects 4. Demonstrate knowledge of various expressions used to express opinions, emotions, cause, effect, purpose, and hypothesis in French 5. Communicate in French and summarize a given text	
Course	Core	
Title of the Course:	Foundation Course: Paper I – French – I	
Credits:	3	
Pre-requisites, if any:	---	
Course Objectives	Identify the basic French sentence structure	K1
	Define and describe the various grammatical tenses and use them to communicate in French	K2
	Examine the various documents presented and discuss and reply to the questions asked on it	K2 and K3
	Analyze and interpret expressions used to convey the cause, the effect, the purpose, and the opposition in French	K4
	Evaluate the grammatical nature present in passages	K5
Units		
I	Salut ! Enchanté	
II	J'adore	
III	Tu veux bien ?	
IV	On se voit quand ?	
V	Bonne idée	

Reading List (Print and Online)	Régine Mérieux & Yves Loiseau, <i>Latitudes</i> -1- (A1 /A2), méthode de français, Didier, 2017 (units 1-6 only)
--	--

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	S	M	M	L	S	M	L	S	S	M	S	M
CO 2	S	M	M	L	M	M	L	S	S	S	S	M
CO 3	M	S	S	M	M	M	L	M	M	M	S	M
CO 4	S	M	M	L	S	M	L	S	S	M	S	M
CO 5	S	M	M	L	M	M	L	S	S	S	S	M

S-Strong M-Medium L-Low

UG – SEMESTER – II

Foundation Course: Paper II – French - II

Course Outcomes	<ol style="list-style-type: none"> 1. Understand and apply the grammatical concepts in drafting sentences and paragraphs 2. Apply the rules and regulations to effectively employ past tense 3. Practice exercises and identify errors 4. Explain and summarize a French document such as posters, bulletins, infographics, etc. 5. Demonstrate knowledge of various expressions used to convey opinion, emotions, cause, effect, purpose, and hypothesis in French 6. Build upon acquired writing and communication skills to develop them 	
Course	Core	
Title of the Course:	Foundation Course: Paper II – French - II	
Credits:	3	
Pre-requisites, if any:	-	
Course Objectives	Revise and recall the French sentence structure	K1
	Enumerate the various grammatical tenses and use them to communicate better in French	K2
	Summarize and develop ideas from the documents after discussing it in detail	K2 and K3
	Analyze and interpret verbal expressions of cause, effect, purpose, and opposition in French	K4
	Evaluate and comprehend text passages	K5
Units		
I	C'est où ?	
II	N'oubliez pas	
III	Belle vue sur la mer	
IV	Quel beau voyage	
V	Oh joli Et après	

Reading List (Print and Online)	Régine Mérieux & Yves Loiseau, <i>Latitudes</i> -1- (A1 /A2), méthode de français, Didier, 2017(units 7-12 only)
--	--

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	S	S	M	L	M	M	L	S	M	M	M	M
CO 2	S	M	M	L	M	M	L	S	M	S	M	M
CO 3	M	S	S	M	S	M	M	M	S	M	S	S
CO 4	S	S	M	L	S	M	L	S	S	M	S	S
CO 5	S	S	S	L	M	M	L	S	S	M	S	S

S-Strong M-Medium L-Low

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS) TRICHY-18

ANNAMALAI NAGAR,TRICHY-18

**NATIONALLY ACCREDITED (III CYCLE) WITH
“A” GRADE BY NAAC**

ISO 9001:2015 Certified

TIRUCHIRAPPALLI



UG Part – 1 Sanskrit

Syllabus

2023-2024 and Onwards

CAUVERY COLLEGE FOR WOMEN(Autonomous)

ANNAMALAI NAGAR, TRICHY-6210 018

B.A./B.Sc./B.Com./B.B.A./B.C.A.(3YEARS)

PART-I Sanskrit

(Applicable to the candidates to be admitted from the academic year 2023-2024 onwards)

Seme Ster	Part	Subject Code	Course Title	Inst. Hou rs	Cre dit	Exam Hours	Inter Nal	Exter nal	Total
I	I	23ULS1	Poetry, Grammar and History of Sanskrit Literature	6	3	3	25	75	100
II		23ULS2	Prose, Grammar and History of Sanskrit Literature	5	3	3	25	75	100
III		23ULS3	Drama, Grammar and History of Sanskrit Literature	5	3	3	25	75	100
IV		23ULS4	Alankara, Didactic and Modern Literatures and Translation	6	3	3	25	75	100

FIRST YEAR - SEMESTER I

Sanskrit Paper I

(Poetry, Grammar and History of Sanskrit Literature)

Subject Code	Category	L	T	P	S	Credits	Inst. Hours	Marks		
								Internal	External	Total
	Core	Y	Y	-	-	3	6	25	75	100
Learning Objectives										
LO1	To help the students learn the alphabets of Sanskrit.									
LO2	To understand the Sanskrit grammar and sabdas.									
LO3	To have an idea of the epics.									
LO4	To closely understand the literary works in Sanskrit with special reference to Pancamahakavyas.									
LO5	To understand the Raghuvasa Mahakava and Kalidasa.									
UNIT	Details									
I	<p>Introduction to Sanskrit (Alphabets, Two letter words and three letter words) Grammar:</p> <p><i>akārāntaḥpumliṅgaḥśabda-s</i> - 1. बाल (<i>Bāla</i>) and 2. देव (<i>Deva</i>) <i>ākārāntaḥstrīliṅgaḥśabda-s</i> - 1. बाला (<i>Bālā</i>) and 2. लता (<i>Latā</i>) <i>akārāntaḥnapuṃsakaliṅgaḥśabda-s</i> - 1. फल (<i>Phala</i>) and 2. वन (<i>Vana</i>)</p>									
II	<p>Introduction to <i>Rāmāyana</i>, <i>Kālidāsa</i> and his poetic works Text: <i>Raghuvamśa</i> (Canto I) Verses 1-15</p>									
III	<p>Introduction to the works of <i>Bhāravi</i> - Text: <i>Raghuvamśa</i> (canto I) Verses 16-30</p>									
IV	<p>Introduction to the works of <i>ŚrīHarṣa</i> - Text: <i>Raghuvamśa</i> (Canto I) Verses 31-45</p>									
V	<p>Grammar: Conjugations -<i>Laṭlakāra-s</i> – (Present tense) (i) गच्छति (<i>Gacchati</i>) (ii) तिष्ठति (<i>Tiṣṭhati</i>) (iii) पठति (<i>Paṭhati</i>)</p>									

	<p>(iv) नृत्यति (<i>Nṛtyati</i>) (v) कुप्यति (<i>Kupyati</i>) (vi) कथयति (<i>Kathayati</i>)</p> <p>(vii) गणयति (<i>Gaṇayati</i>) (viii) अस्ति (<i>Asti</i>)</p> <p>(ix) करोति (<i>Karoti</i>) (x) शृणोति (<i>Śṛṇoti</i>)</p> <p>Indeclinables (<i>Avyayaani</i>) - अपि (<i>api</i>), कदा (<i>kadā</i>), च (<i>ca</i>), अद्य (<i>adya</i>), विना (<i>vinā</i>), सह (<i>saha</i>), तत्र (<i>tatra</i>), किम् (<i>kim</i>), यदि (<i>yadi</i>) - तर्हि (<i>tarhi</i>), यथा (<i>yathā</i>) - तथा (<i>tathā</i>)</p> <p>Prefixes (<i>Upasargas</i>) - आङ् (<i>āñ</i>), वि (<i>vi</i>), परि (<i>pari</i>), अनु (<i>anu</i>), अधि (<i>adhi</i>), उत् (<i>ut</i>), प्रति (<i>prati</i>), उप (<i>upa</i>), प्र (<i>pra</i>) निर् (<i>nir</i>)</p>
--	---

Course Outcomes

Course Outcomes	On completion of this course, students will;	
CO1	Remember the usage of grammatical tenses in constructing sentences in dialogue.	PO1
CO2	Apply the rules of usage in practice exercises and identify errors	PO1, PO2
CO3	Explain the nuances in the usage of various grammatical tenses and aspects	PO4, PO6
CO4	Demonstrate knowledge of various expressions of opinion, emotions, cause, effect, purpose, and hypothesis in French	PO4, PO5, PO6
CO5	Communicate in French and summarize the given text	PO3, PO8

Text Books (Latest Editions)

1.	Kalasala Samskrita Sukha Bodhini I (for under graduate foundation course) Published by University of Madras, Chennai-5
----	---

References Books and Web Resources

1.	https://archive.org/details/raghuvamsha_with_sanjivini_edited_by_mr_kale
2.	https://archive.org/details/AShortHistoryOfsanskritLiterature

Question Paper Pattern
Section A – Answer any 10 out of 12 Questions. 10x2=20 Marks
Section B – Answer any 5 out of 7 Questions. 5x5=25 Marks
Section C – Answer any 3 out of 5 Questions. 3x10=30 Marks

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	3	2	3	2
CO2	2	3	3	3	2	3	3	2	2	2
CO3	3	3	3	2	3	3	3	2	3	2
CO4	3	3	3	3	3	3	3	2	2	2
CO5	3	2	3	3	3	3	3	2	2	3

3 – Strong, 2 – Medium , 1 - Low

Mapping with Programme Specific Outcomes:

CO /PO	PSO 1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage of Course Contribution to Pos	3.0	3.0	3.0	3.0	3.0

CAUVERY COLLEGE FOR WOMEN(Autonomous)

ANNAMALAI NAGAR, TRICHY-6210 018

B.A./B.Sc./B.Com/B.B.A./B.C.A.(3YEARS)

PART-I HINDI

(Applicable to the candidates to be admitted from the academic year 2023-2024 onwards)

Semester	Part	Subject Code	Course Title	Inst. Hours	Credit	Exam Hours	Internal	External	Total
I	1	23ULH1	Hindi ka Samanya Gyan aur Nebandh	6	3	3	25	75	100
II		23ULH2	Katha Samithya aur Vyakaran	5	3	3	25	75	100
III		23ULH3	Patra Lekhan	5	3	3	25	75	100
IV		23ULH4	Hindi Bhasha aur Computer	6	3	3	25	75	100

R. Vijayarajini

1. 

2. 

3. A. S. 

4. A. S. 



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)

OTHER LANGUAGES- HINDI, SANSKRIT, FRENCH

UG Part-1 (Hindi)

Semester	Part	Subject Code	Course Title	Inst. Hrs	Credit	Exam hours	Internal	External	Total
1	I	23ULH1	Hindi Ka Samanya Gyan aur Nibandh	6	3	3	25	75	100

R. vijaya lakshmi

UG Part-1 (Sanskrit)

Semester	Part	Subject Code	Course Title	Inst. Hrs	Credit	Exam hours	Internal	External	Total
1	I	23ULS1	Poetry, Grammar and History of Sanskrit Literature	6	3	3	25	75	100

V. Roop

UG Part-1 (French)

Semester	Part	Subject Code	Course Title	Inst. Hrs	Credit	Exam hours	Internal	External	Total
1	I	23ULF1	Foundation Course: Paper I- French I	6	3	3	25	75	100

M. J. T

Dr. Anitha
20/6/23

N. Santhi
20/6/23

VISION:

To develop a positive outlook towards Hindi Language among the students and create the Language Proficiency and Communication Skill of the students in Hindi Language.

MISSION :

To Provide the basic and general information about Hindi Language and inculcate interest among students in the study of Hindi Literature, along with academic excellence.

Programme Learning Outcomes

PLO 1. Will get general knowledge of Hindi.

PLO 2. Will get an introduction to Hindi literature.

PLO 3. Knowledge of letter writing in Hindi will be acquired.

PLO 4. Teaching of subjects like grammar, translation, computer etc. by linking them with Hindi, to promote practical ability can also develop the necessary knowledge for the market.

PLO 5. Hindi speaking skills will be developed.

Course Objectives:

To make the students to understand the Translation practice various forms of the Stories and different aspects of the social issues through Hindi Stories.

Course Outcomes and Cognitive Level Mapping

On successful completion of the course, the student will acquire the listed skills.

CO NUMBER	CO STATEMENT	COGNITIVE LEVEL
CO-1	Remember the Hindi Grammar	K1, K2
CO-2	Sentence formation in Hindi	K3
CO-3	Acquisition of Hindi Vocabulary	K2
CO-4	Reading of stories and other passages	K4
CO-5	Modules to increase language ability through general essays & Grammar based on competitive exams	K5, K6
K1- Remember; K2- Understand; K3- Apply; K4- Analyze; K5- Evaluate; K6- Create		

.Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	4	4	3	3	3	2	3
CO2	2	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	2	2	3	2
CO4	2	3	2	3	3	2	2	3	3	4
CO5	2	3	3	3	2	3	3	3	5	6

Cauvery College For Women (Autonomous)-Trichy

UG – Part 1

2023-2024 and onwards

Semester I – Hindi ka Samanya Gyan, Vyakaran aur Nibandh

Course Code- 23ULH1	U.G. Arts and Science	General Hindi – 1	L	T	P	C
			6			3
Core/Elective/Supportive						
Pre-Requisite	As per the guidelines of the Universities or its affiliated colleges.					
Course Objectives						
The Main Objectives of this course are:						
1. Training in Hindi pronunciation along with basic knowledge of Hindi 2. syntax 3. Reading the passage						
Expected Course Outcomes						
Course Learning Outcomes						
CO1	Introduction to Hindi sounds		K1; K2			
CO2	Sentence formation in hindi		K3			
CO3	Acquisition of Hindi Vocabulary		K2			
CO4	Reading of stories and other passages		K4			
CO5	Modules to increase language ability through general essays based on competitive exams		K5; K6			
K1- Remember; K2- Understand; K3- Apply; K4- Analyze; K5- Evaluate; K6- Create						

Unit I (18 Hrs.)

Buniyadi Hindi

- Swar
- Vyanjan
- Barah Khadi
- Shabd aur
- Vakya Rachna

Unit II (18 Hrs.)

Hindi Shabdavali

- Rishto ke Naam
- Gharelu padartho ke Naam –
- Vessels, Furniture, Vegetables, Fruits, Grains, Provisions,

Unit III (18 Hrs.)

Vyakaran

- Sadharan Vakya aur Sangya
- Sarvanam
- Visheshan
- Kriya aadi shabdo ka prayog

Unit IV (18 Hrs.)

Bacho ki Kahaniya

- Aadhath Choot Gayee
- Balsagar kya Banega
- Aiyse mila Nyaay

Chote Gadyansh ka Pathan

- Patra-Patrikao mein prakashit Gadyansho ka Pathan- E Pathrika

Unit V (18Hrs.)

Nibandh

- Sant Tiruvalluvar
- E.V.R Thandai Periyar
- Naari Sashaktikaran
- Paryavaran Sanrakshan
- Vibhinna pratiyogi parikshao ke bare mein jaankari dena

Pratiyogi priksa par adharit nibandho dwara bhasha ki kshamta badhane vale prashikshan kary.

SL. No.	Books Name	Author	Publication	Year
1	Prathamik paatya pustak	-----	DakshinBharat Hindi Prachaar Sabha	2022
2	Shabari bolchaal Hindi	-----	Shabari book	2020
3	Baalsaagar kyaa banegaa	Preetha Vyaas	Magadhaa publications, Ghaaziabaad	2017
4	Praveshika Grammar		Dakshin Bharat Hindi Prachaar Sabha	2023

Reference Books

- Hindi ke Avyay Vakyansh – Chaturbhuj Sahay
- Subodh Hindi Vyakaran – Phoolchand Jain
- Sankshipt Hindi Vyakaran – Kamta Prasad
- Vyavaharik Hindi – Nagappa
- Abhinav Hindi Vyakaran – Nagappa
- Saral Hindi Vyakaran – Shyamchandra Kapur
- Vyakaran Pradeep – Ramdev
- Laghu Bal Kathaye – Ramashankar
- Manoranjak Kahaniya – Premchand
- CONCISE GRAMMAR OF THE HINDI LANGUAGE - H.C Scholberg
- Hindi Grammar – Edwin Greaves

Related Online Contents (MOOCs, SWAYAM, NPTEL, YouTube, Websites, etc.)

1. fr#oYyqoj%

[https://bharatdiscovery.org/india/%E0%A4%A4%E0%A4%BF%E0%A4%B0%E0%A5%81%E0%A4%B5%E0%A4%B2%E0%A5%8D%E0%A4%B2%E0%A5%81%E0%A4%B5%E0%A4%B0#:~:text=%E0%A4%A4%E0%A4%BF%E0%A4%B0%E0%A5%81%E0%A4%B5%E0%A4%B2%E0%A5%8D%E0%A4%B2%E0%A5%81%E0%A4%B5%E0%A4%B0%20\(%E0%A4%85%E0%A4%82%E0%A4%97%E0%A5%8D%E0%A4%B0%E0%A5%87%E0%A4%9C%E0%A4%BC%E0%A5%80%3A%20Thiruvalluvar\)%20%E0%A4%A6%E0%A4%95%E0%A5%8D%E0%A4%B7%E0%A4%BF%E0%A4%A3,%E0%A4%AA%E0%A4%BF%E0%A4%A4%E0%A4%BE%20%E0%A4%AE%E0%A5%87%E0%A4%82%20%E0%A4%B5%E0%A4%BF%E0%A4%B6%E0%A5%8D%E0%A4%B5%E0%A4%BE%E0%A4%B8%20%E0%A4%B0%E0%A4%96%E0%A4%A4%E0%A5%87%20%E0%A4%A5%E0%A5%87%E0%A5%A4](https://bharatdiscovery.org/india/%E0%A4%A4%E0%A4%BF%E0%A4%B0%E0%A5%81%E0%A4%B5%E0%A4%B2%E0%A5%8D%E0%A4%B2%E0%A5%81%E0%A4%B5%E0%A4%B0#:~:text=%E0%A4%A4%E0%A4%BF%E0%A4%B0%E0%A5%81%E0%A4%B5%E0%A4%B2%E0%A5%8D%E0%A4%B2%E0%A5%81%E0%A4%B5%E0%A4%B0%20(%E0%A4%85%E0%A4%82%E0%A4%97%E0%A5%8D%E0%A4%B0%E0%A5%87%E0%A4%9C%E0%A4%BC%E0%A5%80%3A%20Thiruvalluvar)%20%E0%A4%A6%E0%A4%95%E0%A5%8D%E0%A4%B7%E0%A4%BF%E0%A4%A3,%E0%A4%AA%E0%A4%BF%E0%A4%A4%E0%A4%BE%20%E0%A4%AE%E0%A5%87%E0%A4%82%20%E0%A4%B5%E0%A4%BF%E0%A4%B6%E0%A5%8D%E0%A4%B5%E0%A4%BE%E0%A4%B8%20%E0%A4%B0%E0%A4%96%E0%A4%A4%E0%A5%87%20%E0%A4%A5%E0%A5%87%E0%A5%A4)

2. bZ-os-jkelkeh

[https://hi.wikipedia.org/wiki/%E0%A4%AA%E0%A5%87%E0%A4%B0%E0%A4%BF%E0%A4%AF%E0%A4%BE%E0%A4%B0#:~:text=%E0%A4%87%E0%A4%B0%E0%A5%8B%E0%A4%A1%20%E0%A4%B5%E0%A5%87%E0%A4%82%E0%A4%95%E0%A4%9F%20%E0%A4%A8%E0%A4%BE%E0%A4%AF%E0%A4%95%E0%A4%B0%20%E0%A4%B0%E0%A4%BF%E0%A4%AF%E0%A4%BE%E0%A4%B8%E0%A4%BE%E0%A4%AF%E0%A5%80%20\(17,%E0%A4%B5%E0%A4%BE%E0%A4%B2%E0%A5%87%20%E0%A4%B9%E0%A4%BF%E0%A4%A8%E0%A5%8D%E0%A4%A6%E0%A5%81%E0%A4%A4%E0%A5%8D%E0%A4%B5%20%E0%A4%95%E0%A4%BE%20%E0%A4%B5%E0%A4%BF%E0%A4%B0%E0%A5%8B%E0%A4%A7%20%E0%A4%A5%E0%A4%BE%E0%A5%A4](https://hi.wikipedia.org/wiki/%E0%A4%AA%E0%A5%87%E0%A4%B0%E0%A4%BF%E0%A4%AF%E0%A4%BE%E0%A4%B0#:~:text=%E0%A4%87%E0%A4%B0%E0%A5%8B%E0%A4%A1%20%E0%A4%B5%E0%A5%87%E0%A4%82%E0%A4%95%E0%A4%9F%20%E0%A4%A8%E0%A4%BE%E0%A4%AF%E0%A4%95%E0%A4%B0%20%E0%A4%B0%E0%A4%BF%E0%A4%AF%E0%A4%BE%E0%A4%B8%E0%A4%BE%E0%A4%AF%E0%A5%80%20(17,%E0%A4%B5%E0%A4%BE%E0%A4%B2%E0%A5%87%20%E0%A4%B9%E0%A4%BF%E0%A4%A8%E0%A5%8D%E0%A4%A6%E0%A5%81%E0%A4%A4%E0%A5%8D%E0%A4%B5%20%E0%A4%95%E0%A4%BE%20%E0%A4%B5%E0%A4%BF%E0%A4%B0%E0%A5%8B%E0%A4%A7%20%E0%A4%A5%E0%A4%BE%E0%A5%A4)

3. ukjh l"klDrdj.k%

https://www.hindikiduniya.com/essay/women-empowerment-essay-in-hindi#:~:text=%F0%A4%AF%E0%A4%B9%E0%A4%BF%E0%A4%B2%E0%A4%BF%20%E0%A4%B8%E0%A4%B6%E0%A4%95%E0%A5%8D%E0%A4%A4%E0%A4%BF%E0%A4%95%E0%A4%B0%E0%A4%A3%20%E0%A4%95%E0%A5%8D%E0%A4%AF%E0%A4%BF%20%E0%A4%B9%E0%A5%88%20%3F&text=%F0%A4%AF%E0%A4%B9%E0%A4%BF%E0%A4%B2%E0%A4%BF%20%E0%A4%B8%E0%A4%B6%E0%A4%95%E0%A5%8D%E0%A4%A4%E0%A4%BF%E0%A4%95%E0%A4%B0%E0%A4%A3%20%E0%A4%95%E0%A5%8B%20%E0%A4%AC%E0%A5%87%E0%A4%B9%E0%A4%A6%20%E0%A4%86%E0%A4%B8%E0%A4%BE%E0%A4%A8%E0%A4%B8%E0%A4%95%E0%A5%8D%E0%A4%B7%E0%A4%AF%20%E0%A4%AC%E0%A4%A8%E0%A4%BE%E0%A4%A8%E0%A4%BF%20%E0%A4%AE%E0%A4%B9%E0%A4%BF%E0%A4%B2%E0%A4%BF%20%E0%A4%B8%E0%A4%B6%E0%A4%95%E0%A5%8D%E0%A4%A4%E0%A4%BF%E0%A4%95%E0%A4%B0%E0%A4%A3%20%E0%A4%B9%E0%A5%88%E0%A5%A4

4. $i:kZoj.k\ laj\ k.k^o$

a. <https://hi.wikipedia.org/wiki/%E0%A4%AA%E0%A4%B0%E0%A5%8D%E0%A4%AF%E0%A4%BF%E0%A4%B5%E0%A4%B0%E0%A4%A3%E0%A4%B8%E0%A4%88%E0%A4%B0%E0%A4%95%E0%A5%8D%E0%A4%B7%E0%A4%A3#:~:tex=E0%A4%AA%E0%A4%B0%E0%A4%BE%E0%A4%B5%E0%A4%B0%E0%A4%A3%E0%A4%AF%E0%A4%BF%E0%A4%B8%E0%A4%82%E0%A4%B0%E0%A4%95%E0%A5%8D%E0%A4%B7%E0%A4%A3%E0%A4%95%E0%A4%BE%E0%A4%B8%E0%A4%AF%E0%A4%B8%E0%A5%8D%E0%A4%B0%E0%A4%BE%E0%A4%A4%20%E0%A4%BF%E0%A4%AF%E0%A5%8B%E0%A4%82,%E0%A4%AA%E0%A5%8D%E0%A4%B5%E0%A5%80%20%E0%A4%AF%E0%A5%87%E0%A4%B2%E0%A4%BI%E0%A4%A4%20%E0%A4%95%E0%A4%BF%E0%A4%AF%E0%A4%BE%E0%A5>

b. <http://gadyakoshi.org/gk/%E0%A4%86%E0%A4%88%E0%A4%AF%E0%A5%87%E0%A4%AA%E0%A4%B0%E0%A5%8D%E0%A4%AF%E0%A4%BF%E0%A4%B5%E0%A4%B0%E0%A4%A3%E0%A4%AC%E0%A4%9A%E0%A4%BI%E0%A4%8F%E0%A4%81/%E0%A4%85%E0%A4%8D%E0%A4%A4%E0%A4%B0%E0%A4%BE%E0%A4%B5%E0%A4%AF%E0%A4%BC%E0%A5>

b. <http://gadyakovskiy.org.uk>

a. A5%87%F0%A4%A3%F0%A4%B0%F0%A5%8D%F0%A4%AF%E
A4%BF%F0%A4%B5%F0%A4%B0%F0%A4%A3%F0%A4%AC%E
A4%A8%F0%A5%8D%F0%A4%A4%F0%A4%B0%F0%A4%BE%F0%
A4%95%F0%A4%B0%F0%A4%B5%F0%A4%A1%F0%A4%BC%F0%A5

[Handwritten signature]

Mel

2. Ascleranthus

Parasitology

A. Self

Finally it was resolved as under

"Resolved that to consider and approve the Internal and External Evaluation System to be noted"

The meeting ended with a vote of thanks to the chair.

R. Vijayalakshmi
Chairman
(Board of Studies)

University Nominee :

Dr. S. Kareemullah,
Associate Professor,
Department of Hindi & Head,
Jamal Mohamed College(Autonomous),
Trichy - 620 020

[Signature]

Subject Experts:

1. Dr. P. Saraswathi,
Assistant Professor
Department of Hindi,
Madras University,
Chennai -600 005

P. Saraswathi

2. Dr. Saframmal
Assistant Professor & Head,
Department of Hindi,
American College,
Madurai -2

A. Saframmal

Industrial Expert:

Mrs. N. AravindaNayaki,
The Secretary (i/c),
Dhakshin Bharat Hindi Prachar Sabha(T),
Tennur, Trichy-620 017

N. AravindaNayaki

Student Alumina:

Mrs. Reddy Madhuvanti Bhasker,
No.2, IIIrdCross, Mookambigai Nagar,
Reddiarpalayam,
Pondicherry-605 010

[Signature]

ANNEXURE D

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)

NATIONALLY ACCREDITED WITH “A” GRADE BY NAAC

ISO 9001: 2015 CERTIFIED

TIRUCHIRAPALLI

PG DEPARTMENT OF ENGLISH



B.A ENGLISH

SYLLABUS

2023- 2024 AND ONWARDS



CAUVERY COLLEGE FOR WOMEN, AUTONOMOUS, TRICHY - 18.
PG DEPARTMENT OF ENGLISH
BA ENGLISH - Programme Structure
LEARNING OUTCOMES BASED CURRICULUM FRAMEWORK (CBCS – LOCF)
(For the Candidates admitted from the Academic Year 2023 - 2024 onwards)

I SEMESTER

Semester	Part	Course	Title	Subject Code	Inst. Hrs./ Week	Credits	Exam			Total
							Hours	Marks		
								Int	Ext	
I	I	Language Course - I (LC) - Tamil*/Other Languages*	பழிமஃத தம ழி -1	23ULT1	6	3	3	25	75	100
			Hindi ka Samanya Gyan aur Nibandh	23ULH1						
			Poetry, Grammar and History of Sanskrit Literature	23ULS1						
			Foundation Course: Paper – I - French -I	23ULF1						
	II	English Language Course - I (ELC)	General English – I	23UE1	6	3	3	25	75	100
	III	Core Course - I (CC)	Introduction to Literature	23UEN1CC1	6	5	3	25	75	100
		Core Course - II (CC)	Indian Writing in English	23UEN1CC2	6	5	3	25	75	100
		First Allied Course - I (AC)	Social History of England	23UEN1AC1	4	3	3	25	75	100
	IV	Ability Enhancement Compulsory Course - I (AECC)	Value Education	23UGVE	2	2	-	100	-	100
	Total					30	21			600

SIGNATURE		
NAME & DESIGNATION	Dr. S. Jayashree Agarwal UG - HOD	Dr. N. Savithri Dean

Semester I	Internal Marks: 25	External Marks:75		
COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
23UE1	GENERAL ENGLISH -I	ENGLISH LANGUAGE COURSE –I	6	3

COURSE OBJECTIVES

- Enable learners to acquire the linguistic competence necessarily required in various life situations.
- Help them understand the written text and able to use skimming, scanning skills
- Assist them in creative thinking abilities
- Enable them become better readers and writers
- Assist them in developing correct reading habits, silently, extensively and intensively

COURSE OUTCOME AND COGNITIVE LEVEL MAPPING

On the successful completion of this course, the students will be able to

CO NUMBER	CO STATEMENT	COGNITIVE LEVEL
CO1	Relate and integrate the use of the four language skills i.e. Reading, Listening, Speaking and Writing	K1
CO2	Illustrate and interpret the total content and underlying meaning in the context.	K2
CO3	Develop the habit of reading for pleasure and for information	K3
CO4	Analyse the material other than the prescribed text	K4
CO5	Classify and examine the linguistic competence that enables them, in the future, to present the culture and civilization of their nation.	K4

MAPPING OF CO WITH PO AND PSO

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	2	3	3	3	2	3	3
CO2	3	3	3	2	3	3	3	2	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	2	3	3
CO5	3	3	2	3	3	3	3	2	2	3

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” indicates there is No Correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Poetry 1.1 “A Patch of Land” - Subramania Bharati 1.2 “The Sparrow” - Paul Laurence Dunbar 1.3 “A Nation’s Strength” – Ralph Waldo Emerson 1.4 “Love Cycle” - Chinua Achebe 1.5 AOE LAB - Level I- Units -1, 2 & 3	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	Prose 2.1 “JRD” - Harish Bhat 2.2 “Us and Them” - David Sedaris (From Dress Your Family in Corduroy and Denim) 2.3 “Uncle Podger Hangs a Picture” - Jerome K Jerome 2.4 AOE LAB - Level I- Units- 4, 5 & 6	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	Short Story 3.1 <i>The Faltering Pendulum</i> - Bhabani Bhattacharya 3.2 <i>How I Taught my Grandmother to Read</i> – Sudha Murthy 3.3 <i>The Gold Frame</i> - R.K. Laxman 3.4 AOE LAB - Level I- Unit- 7- Level II- Units- 1 & 2	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	Language Competency 4.1 Vocabulary: Synonyms, Antonyms, Word Formation 4.2 Appropriate use of Articles and Parts of Speech 4.3 Error Correction 4.4 AOE LAB - Level II- Units- 3 & 4	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	English for Workplace 5.1 Self - Introduction, Greetings 5.2 Introducing Others 5.3 Listening for General and Specific Information 5.4 Listening to and Giving Instructions / Directions 5.5 AOE LAB - Level II- Units- 5, 6 & 7	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

VI	Self-study for Enrichment (Not Included for End Semester Examination) 6.1 <i>Adventures of Tom Sawyer</i> -Mark Twain <i>Treasure Island</i> - Robert Louis Stevenson 6.2 Usage of Direct and Indirect Speech, Active and Passive Voice 6.3 Listening to Comprehension Passage 6.4 Express your feelings if you have become the Prime Minister of a country/ how will you feel if you are the last person to left on earth.	-	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4
-----------	---	---	-----------------------------	-------------------

***AOE LAB Syllabus will not be Included for Question Paper Settings**
*** Its for Internal Assessment Only**

TEXT BOOKS

Bhattacharya, Bhabani. *Steel Hawk and Other Stories*. New Delhi: Sahitya Akademi, 1967.
David, James and Thomas Christian. *English Today*. IELSC Publications, 2000
Viron Murthy, Sudha, *How I Taught my Grandmother to Read and Other Stories*. Penguin Books, India, 2004.

BOOKS FOR REFERENCE

Kumar, T. Vijay, Bhavani, K. Durga Bhavani, Murphy, YL Srinivas. Raymond. *English in use - A Textbook for College Students*.
Swan, Michael. *Practical English Usage*. 4th Edition.
Shepherd Margaret, Penny Carter, (Illustrator). *The Art of Civilized Conversation: A Guide to Expressing Yourself with Style and Grace*, Sharon Hogan, 2005.

WEB REFERENCES

A Patch of Land by Subramania Bharati translated by Usha Rajagoplan:

https://books.google.co.in/books?id=iSHvOmXuvLMC&printsec=frontcover&dq=subramania+bharati+poems&hl=en&newbks=1&newbks_redir=0&source=gb_mobile_search&sa=X&redir_esc=y#v=onepage&q=subramania%20bharati%20poems&f=false

The Sparrow by Paul Laurence Dunbar: <https://poets.org/poem/sparrow-0>

A Nation's Strength by Emerson: <https://poets.org/poem/nations-strength>

Love cycle by Chinua Achebe : <https://www.best-poems.net/chinua-achebe/love-cycle.html>

JRD by Harish Bhat <https://www.tata.com/newsroom/heritage/coffee-tea-jrd-tata-stories>

Us and Them by David Sedaris From Dress Your Family in Corduroy and Denim:

<https://legacy.npr.org/programs/morning/features/2004/jun/sedaris/usandthem.html>

Uncle Podger Hangs a Picture: <http://rosyhunt.blogspot.com/2013/01/uncle-podger-hangs-picture.html>

The Gold Frame: <https://fybaenglish.blogspot.com/2018/12/the-gold-frame-r-k-laxman.html>

PEDAGOGY - Assignment, Quiz, And Seminar

COURSE DESIGNER - Dr. R. Shanthi

SIGNATURE OF THE COURSE DESIGNER

SIGNATURE OF THE HOD

Semester I	Internal Marks: 25	External Marks:75		
COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
23UEN1CC1	INTRODUCTION TO LITERATURE	CORE COURSE - I	6	5

COURSE OBJECTIVES

- To introduce the different forms of literature
- To provide learners with the background knowledge of literature
- To enable learners to understand the different genres of writing
- To examine the various themes and methodologies present in literature
- To create the ability of critically examining a text

COURSE OUTCOME AND COGNITIVE LEVEL MAPPING

On the successful completion of this course, the students will be able to

CO NUMBER	CO STATEMENT	COGNITIVE LEVEL
CO1	Recall and relate the basic elements of poetry, including meter, rhyme, and theme.	K1
CO2	Illustrate the elements of fiction including narrative structure, character analysis and comparison between different but related texts.	K2
CO3	Apply and built the dramatic storytelling including play structure, monologues, dialogue, and scene setting.	K3
CO4	Examine the library resources for research and develop arguments about literary works.	K4
CO5	Inspect and analysis skillfully within a team, respect coworkers, delegate work and contribute to a group project.	K4

MAPPING OF CO WITH PO AND PSO

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3	3	3	2	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	2	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	2	3	3	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” indicates there is No Correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Introduction: Poetry-Different forms of poetry- Sonnet, Ode, Elegy, Lyric Ballad. Prose-Short Story, Novella, Novel. Drama- Comedy, Tragedy, Tragi-Comedy.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	Michael Drayton – “The Parting” William Shakespeare – “Sonnet – 18, 116” John Milton – “When I Consider How my Light is Spent”, “Daffodils” John Keats – “Ode to Nightingale” Thomas Gray – “Elegy Written in a Country Churchyard” Robert Frost – “Mending Wall”	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	J.M Barrie - <i>The Admirable Crichton</i> . Lady Gregory - <i>The Rising of the Moon</i> .	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	Shashi Deshpande - <i>Roots and Shadows</i> . Katherine Mansfield - <i>Bliss and other stories</i> .	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	Saki - <i>The Open Window</i> Emmy Laybourne – <i>Sweet</i>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
VI	Self-Study For Enrichment (Not to be included for External Examination) Don Quixote – “Tilting at the Windmills”. Jerome K.Jerome – Excerpt from – <i>Three Men in a Boat-Packing</i> John Keats – “La Belle Dame Sans Merci”	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

TEXT BOOKS

Prasad. B, A Background to the Study of English Literature, Trinity Press Publication, New Delhi, 1999

Kennedy. X.J, Backpack Literature: An Introduction to Fiction, Poetry, Drama and Writing, Pearson, 2016

BOOKS FOR REFERENCE

Portable Literature: Reading, Reacting, Writing - 9th edition—LaurieKirszner, by Cengage Learning, 2016

WEB REFERENCES

ASIATIC: IITUM Journal of English Language & Literature

<https://journals.iium.edu.my/asiatic/index.php/ajell>

PEDAGOGY - Assignment, Discussion, Quiz, and Seminar

COURSE DESIGNER - Ms. A. Violet Pangaja Bai

SIGNATURE OF THE COURSE DESIGNER

SIGNATURE OF THE HOD

Semester I	Internal Marks: 25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
23UEN1CC2	INDIAN WRITING IN ENGLISH	CORE COURSE - II	6	5

COURSE OBJECTIVES

- To familiarize the students with the emergence and growth of Indian Writing in English in the context of colonial experience.
- To help in understanding issues concerning Indian Writing in English such as the representation of culture, identity, history, constructions of nation, (post)national and gender politics, cross-cultural transformations.
- To enable learners to appreciate Nation-Nationalism; Counter Discourse; Subalternity; Identity Movements.
- To closely examine the various themes and methodologies existing in Contemporary Indian Writing in English.
- To help learners apply the ideas encapsulated in Indian Aesthetics to literary text

COURSE OUTCOME AND COGNITIVE LEVEL MAPPING

On the successful completion of this course, the students will be able to

CO NUMBER	CO STATEMENT	COGNITIVE LEVEL
CO1	Relate to find the historical trajectory of various genres of Indian Writing in English from colonial times to till the present	K1
CO2	Demonstrate to illustrate Indian literary texts written in English in terms of colonialism, postcolonialism, regionalism, and nationalism	K2
CO3	Identify and apply the role of English as a medium for political awakening and the use of English in India for creative writing	K3
CO4	Analyze how the sociological, historical, cultural and political context impacted the texts selected for study	K4
CO5	Examine critically the contributions of major Indian English poets and dramatists	K4

MAPPING OF CO WITH PO AND PSO

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	3	3	2	3	3	3	3
CO2	2	3	3	3	3	2	3	3	3	3
CO3	3	3	3	2	3	3	3	3	2	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	2	3	3	2	3	3	3	3	3	2

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” indicates there is No Correlation.

SYLLABUS

UNIT	CONTENT	HOURS	Cos	COGNITIVE LEVEL
I	Poetry Toru Dutt – “The Lotus” Sri Aurobindo – “The Tiger and the Deer” Sarojini Naidu- “The Village Song” A.K. Ramanujam – “Still Another View of Grace” Shiv K Kumar – “Indian Women”	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	Prose Pearl S Buck - excerpt from “My Several Worlds”- India through a Traveller’s Eye. Swami Vivekananda – “The Secret of Work” Arundhati Roy – “The Great Common Good”	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	Short Stories Pandit Vishnu Sharma - <i>Winning of Friends</i> (Panchathantra) Ruskin Bond - <i>Night Train to Deoli</i> K.A. Abbas – <i>Sparrows</i> Rabindranath Tagore - <i>Kabuliwala</i>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	Drama Rabindranath Tagore - <i>Mukthadhara</i> Girish Karnad - <i>Hayavadana</i>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	Novel Ruskin Bond - <i>The Blue Umbrella</i> R.K. Narayan- <i>The Man-Eater of Malgudi</i>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
VI	Self-study for Enrichment (Not Included for End Semester Examination) Nissim Ezekiel - “Night of the Scorpion” A.P.J.Abdul Kalam - “The Power of Prayer” R.K.Narayan - <i>The Missing Mail</i> Mahesh Dattani - <i>Final Solutions</i> Vikram Seth - <i>The Suitable Boy</i>	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

TEXT BOOKS

Singh R.P & Prasad S.K, Anthology of Indian English Poetry, Orient Blackswan, 1989

Pandit Vishnu Sharma - *Winning of Friends* (Panchathantra), Rupa & Company, 2004

Swami Vivekananda – “The Secret of Work”, Advaita Ashrama, 2022

Girish Karnad, *Hayavadana*, Oxford University Press, 2008

R.K. Narayan- *The Man-Eater of Malgudi*, Indian Thought, 2009

BOOKS FOR REFERENCE

Rajaram Mehrotra, Indian English Texts and Interpretation, Amsterdam Philadelphia, 1998

K.R.Srinivasa Iyengar, Indian Writing in English, Sterling, 2019

WEB REFERENCES

<https://www.bookishsanta.com/blogs/booklings-world/sparrows-by-k-a-abbas>

[https://web.cecs.pdx.edu/~sheard/course/Design&Society/Readings/Narmada/greatercommonsgo
od.pdf](https://web.cecs.pdx.edu/~sheard/course/Design&Society/Readings/Narmada/greatercommonsgo.od.pdf)

PEDAGOGY - Assignment, Discussion, Quiz, and Seminar

COURSE DESIGNER – Dr. P. Helan Jona

SIGNATURE OF THE COURSE DESIGNER

SIGNATURE OF THE HOD

Semester I	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	HOURS /WEEK	CREDITS
23UEN1AC1	SOCIAL HISTORY OF ENGLAND	FIRST ALLIED COURSE -I	4	3

COURSE OBJECTIVES

- To provide students with a comprehensive idea about the development of English literature and language over the ages
- To help student trace the trajectory of the growth of English literature from the period of its inception, dating back to the seventh century, to the present era
- To help them develop an understanding of the structural development of the English language
- To inform them about the various external linguistic influences that have contributed to the making of the language
- To create the ability of critically examining a text

COURSE OUTCOME AND COGNITIVE LEVEL MAPPING

On the successful completion of this course, the students will be able to

CO NUMBER	CO STATEMENT	COGNITIVE LEVEL
CO1	Relate profound insight into the history of English literature, while laying special emphasis on various literary movements, genres and writers that are held to be the representatives of their times.	K1
CO2	Illustrate and explain the way socio-cultural and historical phenomena influence the literary production of a particular period	K2
CO3	Apply and build themselves with the socio-cultural ambience and the discursive frameworks of various ages	K3
CO4	Analysis a nuanced appreciation of the literary stalwarts of those times.	K4
CO5	Examine and explore understanding on the growth of the English language under the influence of various other languages including Latin and French, besides being mentored in the structural nitty-gritties of the language.	K4

MAPPING OF CO WITH PO AND PSO

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	2	2	3
CO2	2	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	2	3	3	3	3	2	3	3
CO5	3	3	3	3	3	3	3	3	2	3

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“-” indicates there is No Correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	The Renaissance and its Impact on England, The Reformation - causes and effects, The Tudor Navy and The Spanish Armada	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	The Commonwealth of Nations, The Restoration, Coffee-houses and their Social Relevance	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	Impact of the Industrial, Agrarian, Humanitarian Movements in England and the French Revolutions on the English society.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	The Reform Bills and the Spread of Education, Social impact of the two World Wars, the Labour Movement, the Welfare State	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	The Cold War (1985-1991)- The Falkland War (1981) -The Gulf War (1991).	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
VI	Self-Study For Enrichment (Not included for End Semester Examination) Political, Social and Economic conditions prevailing in England – Trade Unionism - the growth of Transport and Communication - Explore the impact of England on Europe	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

TEXT BOOKS

Xavier, A.G. *An Introduction to the Social History of England*. Viswanathan Printers, 2007.

Ed. Keith Wrightson, *A Social History of England, 1500- 1750*, 2018, Norton Press.

Ed. Julia Crick, Elisabeth Van Houts, *A Social History of England, 900-1200*, 2012, Cambridge University Press.

BOOKS FOR REFERENCE

Ed. Rosemary Horrox, *A Social History of England, 1200-1500*, June 2012, Cambridge University Press

WEB REFERENCES

A Social History of England: Briggs, Asa, 1921- : Free Download, Borrow, and Streaming: Internet Archive

PEDAGOGY - Assignment, Discussion, Quiz, and Seminar

COURSE DESIGNER – Dr. R.Vanitha

SIGNATURE OF THE COURSE DESIGNER

SIGNATURE OF THE HOD



CAUVERY COLLEGE FOR WOMEN, AUTONOMOUS, TRICHY - 18.

PG DEPARTMENT OF ENGLISH

BA ENGLISH - Programme Structure

LEARNING OUTCOME BASED CURRICULUM FRAMEWORK (CBCS - LOCF)

(For the Candidates admitted from the Academic Year 2022 - 2023 onwards)

SEMESTER - III

Semester	Part	Course	Course Title	Course Code	Inst. Hrs /Week	Credits	Exam			Total
							Hours	Marks		
								Int.	Ext.	
III	I	Language Course - III (LC) - Tamil*/ Other Languages*	Kapiyamum Nadagamum	22ULT3	5	3	3	25	75	100
			Hindi Literature & Grammar –III	22ULH3						
			Prose, Textual Grammar and Vakyarachana	22ULS3						
			Intermediate French – I	22ULF3						
	II	English Language Course - III (ELC)	Learning Grammar Through Literature – I	22UE3	6	3	3	25	75	100
	III	Core Course - V (CC)	One Act Plays	22UEN3CC5	6	6	3	25	75	100
		Core Course - VI (CC)	Poetry – II	22UEN3CC6	5	5	3	25	75	100
		Second Allied Course - I (AC)	History of English Literature - I	22UEN3AC3	4	3	3	25	75	100
	IV	Ability Enhancement Compulsory Course - III (AECC)	Innovation and Entrepreneurship	22UGIE	2	1	-	100	-	100
		Generic Elective Course - I (GEC)	Presentation Skills in English	22UEN3GEC1	2	2	3	25	75	100
			Basic Tamil – I	22ULC3BT1						
			Special Tamil – I	22ULC3ST1						
		Extra Credit Course	SWAYAM		As per UGC Recommendation					
Total				30	23				700	
	15 DAYS INTERNSHIP DURING SEMESTER HOLIDAYS									

Note : Our students have opted for GEC – I – Office Automation (P) -22UCSPGEC1P offered by CS Department

Signature		
Name & Designation	Dr. S. Jayashree Agarwal HOD	Dr.N.Savithri Dean

Semester - III	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
22UE3	Learning Grammar Through Literature - I	English Language Course - III	6	3

COURSE OBJECTIVES

- To make the learner connect English language Skills to life activities.
- To encourage the learner, communicate fluently, appropriately and accurately in real life situations.
- To provide opportunities for the learner to appreciate the beauty of universal life through Literature.
- To develop the most important objective of learning the four language skills i.e., Listening, Speaking, Reading and Writing.

COURSE OUTCOMES

Course Outcome and Cognitive Level Mapping

On the successful completion of this course, the students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Remember, recall and develop the interest in poems, short stories and prose to strengthen life values, and appreciative skills with a social and moralistic approach.	K1
CO2	Illustrate and explain role plays and actions based on situational learning for conversational practice.	K2
CO3	Identify poetry through poetical devices and explore the poems in a holistic manner.	K3
CO4	Examine the communicative skills effectively and appropriately in real life situations and enhance grammar knowledge and vocabulary building.	K4
CO5	Compare and contrast literary ideas from texts and arrive at conclusions to improve language through literature for learners to gain better prospects.	K4

MAPPING OF CO WITH PO AND PSO

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	3	3	3	3	3	3	2	3
CO2	3	2	3	3	2	3	2	3	3	3
CO3	3	3	3	3	2	3	2	3	3	3
CO4	3	2	3	3	3	3	3	3	3	3
CO5	2	3	2	3	3	3	3	3	2	3

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” indicates there is No Correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	POETRY - i) Kishwar Naheed's "The Grass is Really Like Me" ii) Sarojini Naidu's "The Coromandel Fishers" GRAMMAR - Verbs, Synthesis and Transformations, Reported Speech, Concord SPOKEN ENGLISH - Greeting and Introducing People	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	POETRY - i) Florence Hoatson's "The Pencil's Story" ii) P.B.Shelley's "Ozymandias" GRAMMAR – Correction of Sentences, Spotting the Errors Synonyms & Antonyms, Choice of Words, SPOKEN ENGLISH - Accepting and Rejecting an Invitation	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	PROSE - i) Jesse Owens' "My Greatest Olympic Prize" GRAMMAR - Idioms, Words often Confused, Expansion of Proverbs. SPOKEN ENGLISH - Asking and Giving Information	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	PROSE - i) Dr. APJ Abdul Kalam's "My Vision for India" GRAMMAR – One Word Substitution, Cloze Test, Dialogue Writing, Letter Writing SPOKEN ENGLISH - Asking and Giving Direction	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	SHORT STORY - i) Saki's <i>The Story Teller</i> GRAMMAR - Precise Writing, Writing an Essay, Reading Comprehension SPOKEN ENGLISH - Thanking and Responding	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
VI	Self-Study for Enrichment (Not Included for End Semester Examination) Personal Integrity - Honesty, Adaptability and Dependability Life Skills – Interpersonal Skills - Solve Problems – Think Critically and Creatively - Communicate Effectively - Build Healthy Relationships - Empathize with Others. Short Story Lal Bahadur Shastri's <i>Honesty</i>	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

TEXT BOOKS

Pillai , Radhakrishna.G, *Emerald English and Composition*, Emerald Publishers,2008.

Chakraverthy Anima, *Comprehensive Grammar Composition*, Pearson, 2012.

Solomom Japhia, *Spoken English*, Srivari Publication.

BOOKS FOR REFERENCE

Murphy, Raymond. *English Grammar in Use: A Self Study and Practice Book Intermediate Learners Book*. Cambridge University Press, 2013.

Hari Mohan Prasad, Uma Rani Sinha, *Objective English for all Competitive Examinations*. Mc Graw Hill, 2000.

Bhatnagar.R.P., *English for Competitive Examinations*, 3rd Edition, Laxmi Publications. 2009

WEBREFERENCES

<https://www.fluentu.com/blog/english/questions-in-english-grammar/>

<https://www.grammar-monster.com/glossary/degree.htm>

<http://sujarithasaravanan.blogspot.com/2020/05/summary-of-sparrows.html?m=1>

<https://allpoetry.com/The-Village-Schoolmaster2>

<https://englishsummary.com/lesson/the-village-school-master-poem-summary-notes-and-line-by-line-explanation-in-english-class-9th/>

PEDAGOGY Assignment, Quiz and Seminar

COURSE DESIGNERS Dr.Prema Joshua & Dr.G.Gayathri

SIGNATURE OF THE COURSE DESIGNER

SIGNATURE OF THE HOD

Semester – III	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22UEN3CC5	One Act Plays	Core Course - V	6	6

COURSE OBJECTIVES

- The course is structured to know the impact of the 20th century One Act Plays.
- Enables the learners to link the incidents and the situations with characterization and expand their ability to resolve situations thereby to create a better self and society.
- Develop a deeper understanding of the various roles, interpretation, performance and production.

COURSE OUTCOMES

Course Outcome and Cognitive Level Mapping

On the successful completion of this course, the students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Relate and recall the theoretical elements of drama in knowing the realities of life.	K1
CO2	Explain the techniques employed in writing One Act Plays.	K2
CO3	Illustrate the diverse theoretical cultures and traditional approaches in the plays for knowing its moral and social values.	K2
CO4	Construct the sub-genres of theoretical art to bring out the aesthetic effect employed in the play and face the challenges.	K3
CO5	Analyse critically the theme, plot and cultural aspects prevalent in the plays for a holistic approach to gain better prospects.	K4

MAPPING OF CO WITH PO AND PSO

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	2	3	3	2
CO2	3	2	2	3	3	2	3	2	2	3
CO3	3	3	3	3	3	3	3	3	2	3
CO4	3	3	2	2	3	3	3	2	3	3
CO5	3	3	2	3	3	3	3	2	3	3

“1” – Slight (Low) Correlation

“2” - Moderate (Medium) Correlation

“3” – Substantial (High) Correlation “-” indicates there is No Correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Alice Gerstenberg : <i>Fourteen</i>	18	CO1, CO2, CO3, CO4, CO5	K1, K2 K3, K4
II	Anton Chekhov : <i>A Marriage Proposal</i>	18	CO1, CO2, CO3, CO4, CO5	K1, K2 K3, K4
III	Norman Mckinnel : <i>The Bishop's Candlesticks</i>	18	CO1, CO2, CO3, CO4, CO5	K1, K2 K3, K4
IV	Fritz Karinthy : <i>Refund</i>	18	CO1, CO2, CO3, CO4, CO5	K1, K2 K3, K4
V	J.M. Synge : <i>Riders to the Sea</i>	18	CO1, CO2, CO3, CO4, CO5	K1, K2 K3, K4
VI	Self-study for Enrichment (Not to be included for External Examination) A.A.Milne : <i>The Ugly Duckling</i>	-	CO1, CO2, CO3, CO4, CO5	K1, K2 K3, K4

TEXT BOOKS

T.B. Reddy. *Nine Modern Plays*. Oxford University, 2015.

K.G. Seshadri. *A Pride of Plays*. Anuradha Publications, 2011.

REFERENCE BOOKS

Sujatha.K. *On the stage: One-Act Plays*. Orient Blackswan, 2011.

Kandaswami.S. *Modern One-Act Plays*. Emerald Publishers, 2004.

WEB REFERENCES

[https://en.wikipedia.org/wiki/Fourteen_\(play\)](https://en.wikipedia.org/wiki/Fourteen_(play))

https://en.wikipedia.org/wiki/A_Marriage_Proposal

https://en.wikisource.org/wiki/The_Bishop%27s_Candlesticks

<https://www.surendra534.com.np/2021/04/refund-by-fritz-karinthy-summary-and.html>

https://en.wikipedia.org/wiki/Riders_to_the_Sea#:~:text=Riders%20to%20the%20Sea%20is,with%20Helen%20Laird%20playing%20Maurya.

PEDAGOGY Quiz, Assignment, Seminar, PowerPoint Presentation, Discussion.

COURSE DESIGNER Dr.Cecilia Merlin Wilton

SIGNATURE OF THE COURSE DESIGNER

SIGNATURE OF THE HOD

Semester – III	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
22UEN3CC6	Poetry II	Core Course - VI	5	5

COURSE OBJECTIVES:

- To enable students to possess thorough background knowledge of the poems, poets and the various poetic devices.
- To make the learners analyze and critically examine the various themes, styles, texture, values and various elements of poetry.
- Explore poetry in depth and train to write creative poetry.

COURSE OUTCOMES

Course Outcome and Cognitive Level Mapping

On the successful completion of this course, the students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Recall and relate poems of various background, with the poet's social background and in real life situations.	K1
CO2	Explain and illustrate poems with an aesthetic sense of nature, patriotism, virtues and values thereby to face the challenges to create a better world.	K2
CO3	Apply and build the knowledge of the students minds by rendering a philosophical and thought-provoking touch.	K3
CO4	Identify the various themes, figures of speech, structure, metrical and poetical devices.	K3
CO5	Examine and explore the poems in depth so as to write creatively for higher learning and better prospects.	K4

MAPPING OF CO WITH PO AND PSO

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	3	3	2	3	3	3	3	3	3	3
CO3	3	3	2	3	3	3	3	3	3	3
CO4	2	3	3	3	3	2	2	3	2	2
CO5	3	3	2	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation

“2” - Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” indicates there is No correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	William Blake : “A Poison Tree” William Wordsworth : “Lines Written a few miles above Tintern Abbey”	15	CO1, CO2, CO3, CO4, CO5	K1, K2 K3, K4
II	John Keats : “Ode to Autumn” Robert Browning : “My Last Duchess”	15	CO1, CO2, CO3, CO4, CO5	K1, K2 K3, K4
III	Matthew Arnold : “The Forsaken Merman” G.M.Hopkins : “Pied Beauty”	15	CO1, CO2, CO3, CO4, CO5	K1, K2 K3, K4
IV	Rudyard Kipling : “If” W.B Yeats : “Easter 1916”	15	CO1, CO2, CO3, CO4, CO5	K1, K2 K3, K4
V	W.H.Auden : “The Unknown Citizen” Dylan Thomas : “Fern Hill”	15	CO1, CO2, CO3, CO4, CO5	K1, K2 K3, K4
VI	Self-study for Enrichment (Not to be included for End Semester Exam) <ul style="list-style-type: none"> The Romantic Age War Poets - War poems Wordsworth - Poems on Nature Modern Poetry 	-	CO1, CO2, CO3, CO4, CO5	K1, K2 K3, K4

TEXT BOOKS

Green, David. *The Winged Word: An Anthology of Poems for Degree Course*. Macmillan, 2006.

REFERENCE BOOKS

Zama, Margaret. *Poetry Down The Ages*. Orient Blackswan, 2006.

Khan. M.Q & Das, Bijay Kumar. *Treasury of Poems*. Oxford University Press, New Delhi, 2012

WEB REFERENCES

<https://www.google.com/search?q=william+blake+poision+tree+text&oq=william+blake+poisio>

[n+tree+t ext&ags=chrome..69i57.14915j0j15&sour ceid=chrome&ie=UTF-](#)

<https://www.owleyes.org/text/lines-composed-few-milesabove-tintern-abbey/read/lines-composed-few>

<https://www.poetsgraves.co.uk/Classic%20poems/keats/to-autumn.htm>

<https://www.poetryfoundation.org/poems/43768/my-last-duchess>

<https://www.poetryfoundation.org/poems/43589/the-forsaken-merman>

<https://www.poetryfoundation.org/poems/44399/pied-beauty>

PEDAGOGY Quiz, Assignment, Seminar, PowerPoint Presentation

COURSE DESIGNER Dr.Cecilia Merlin Wilton

SIGNATURE OF THE COURSE DESIGNER

SIGNATURE OF THE HOD

Semester - III	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
22UEN3AC3	History of English Literature – I	Second Allied Course-I (AC)	4	3

COURSE OBJECTIVES

- To study political, historical, religious and cultural features of England.
- To analyse the birth of genre in literature and their special features and the literary writers.
- To inculcate in depth knowledge about evolution of the literary exponents of every age

COURSE OUTCOMES

Course Outcomes and Cognitive Level Mapping

On the successful completion of the course students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Relate the works of Chaucer, and literary writers influenced by him and the development of Language & Literature with social concerns.	K1
CO2	Illustrate the development of variety in drama with regard to Elizabethan dramatists highlighting the values, themes for a better self and society.	K2
CO3	Construct the ideals of Puritan Age with reference to the paths of the great Renaissance writers for higher learning.	K3
CO4	Examine the Age of Restoration and enhance critical thinking by knowing the complexity of human life through various genres of literature.	K4
CO5	Analyse the essence of classical writings in the Augustan Age through the works of Alexander Pope and his contemporaries in different modes of learning to create a better self and a better world.	K4

MAPPING OF CO WITH PO AND PSO

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	2	3	3	3	2	3	2
CO2	3	3	3	2	3	3	3	3	2	3
CO3	3	3	3	3	3	2	3	3	2	3
CO4	3	3	3	3	2	3	3	3	2	3
CO5	2	3	3	2	3	3	3	2	3	3

“1” – Slight (Low) Correlation

“2” - Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” indicates there is No correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Pre- Chaucerian and The Age of Chaucer i) Pre-Chaucerian Works ii) Historical Background of The Age of Chaucer iii) Geoffrey Chaucer and his contemporaries	12	CO1, CO2, CO3, CO4, CO5	K1, K2 K3, K4,
II	Pre-Shakespearean period, The Age of Shakespeare and Post-Shakespearean period i) Pre- Shakespearean writer ii) Development of Drama iii) University Wits iv) Historical background of the Age of Shakespeare v) William Shakespeare and his contemporaries vi) Jacobean Writers	12	CO1, CO2, CO3, CO4, CO5	K1, K2 K3, K4,
III	The Age of Milton i) Historical background of the Age of Milton ii) John Milton and his Works iii) The Cavaliers' / Caroline iv) The Metaphysicals'	12	CO1, CO2, CO3, CO4, CO5	K1, K2 K3, K4,
IV	The Age of Dryden i) Historical Background of the Age of Dryden ii) John Dryden and his contemporaries iii) Restoration dramatists.	12	CO1, CO2, CO3, CO4, CO5	K1, K2 K3, K4,
V	The Age of Pope i) Historical Background of the Age of Pope ii) Alexander Pope and his contemporaries. iii) The Rise of the English Novels.	12	CO1, CO2, CO3, CO4, CO5	K1, K2 K3, K4,
VI	Self-study for Enrichment: (Not included for End Semester Examination) Minor writers – the importance genres: Epic: <i>Beowulf</i> – Abridged -Early theatre and Elizabethan theatre - Metaphysical Poetry: George Herbert's <i>The Pulley</i> - Restoration writing: Samuel Pepys' <i>The Diary of Samuel Pepys</i> - Anti-sentimental comedy: Oliver Goldsmith <i>She Stoops to Conquer</i>	-	CO1, CO2, CO3, CO4, CO5	K1, K2 K3, K4,

TEXT BOOKS

Albert, Edward. *History of English Literature*, Oxford University Press, 2009.

REFERENCE BOOKS

Hudson, William Henry. *An Outline History of English Literature*, AITBS Publishers, 2011.

Rickett, Compton. *A History of English Literature*, UBS Publishers, 2009.

WEB REFERENCES

<https://www.pdfdrive.com/a-critical-history-of-english-literature-from-the-beginnings-to-milton-v-1-e156749741.html>

<https://www.pdfdrive.com/a-critical-history-of-english-literature-the-restoration-to-the-present-day-v-2-e156803501.html>

PEDAGOGY Group Discussion, Quiz, Assignment & Seminar

COURSE DESIGNER Ms.Vijayarenganayaki & Dr. R. Vanitha

SIGNATURE OF THE COURSE DESIGNER

SIGNATURE OF THE HOD

Semester III	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	HOURS / WEEK	CRED ITS
22UEN3GEC1	Presentation Skills in English	Generic Elective Course -I (GEC)	2	2

COURSE OBJECTIVES

- To enhance the student's personality and to develop their leadership traits
- To improve their communication skills and gain competence in presentation skills
- To be good orators, presenters and skill creators in English Language with a professional touch

COURSE OUTCOMES

Course Outcomes and Cognitive Level Mapping

On the successful completion of the course students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Relate the modalities of presentation skills with a professional touch by being competent and confident in life	K1
CO2	Illustrate the plan and structure for effective presentation with innovative techniques, knowledge with global standards	K2
CO3	Select the mechanism of Audio - Visual aids and its usage for presentation for higher learning purposes	K3
CO4	Apply the presentation skills in public speaking to enhance an all round personality with good presentation skills	K3
CO5	Analyze the different levels in various Presentation skills to comprehend higher learning for a better self and society	K4

MAPPING OF CO WITH PO AND PSO

CO	PSO 1	PSO 2	PSO 3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3	3	3	2	3	3
CO2	3	3	2	3	3	3	3	3	2	3
CO3	2	2	3	2	3	3	3	2	2	3
CO4	3	3	2	3	3	3	2	3	2	3
CO5	3	3	2	3	3	3	3	2	2	3

“1” – Slight (Low) Correlation

“2” - Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” indicates there is No Correlation

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Introduction to Presentation Skills Classic Structure of a Presentation- Getting Started (Greetings, Addressing, Introducing Self, Opening Remarks,) Know Your Audience - Presenting Message with Confidence	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	Preparation for Presentation Skills Think about, the 4 Ps, 8 Ways to Perfect your Presentation Skills in English. Challenges and Benefits of Effective Speaking Skills	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	Presentation Planning Visualize the PowerPoint Presentation - Anticipate the Difficulties - Organize the Aids - Knowing the Target Audience - Good Planning - Visual Representation of Data	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	Deliverance How to Deliver an Effective Presentation Be Aware of your Non – Verbal Communication - Take Time to Think During your Presentation - Pay Attention to your Voice - Body Language	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	Evaluation Concluding a Presentation, Interactive Session, Encouraging Questions - Discussion with the Audience - Maintaining Good Relationship with the Audience	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4,
VI	Self- Study for Enrichment (Not to be included for End Semester Examination) Active Listening Tasks - Practice Speaking – More Visuals Aids - Content Writing	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

TEXT BOOKS

Roz Townsend, *Presentation Skills for the Upwardly Mobile*, Emerald Publishers, 2009

Hill, Monica. Storey Anne, *Speak Easy! Oral Presentation Skills in English for Academic and Professional Use*. Hong Kong University Press, 2000

Kizan , Merrier, Logan and Williams, *Effective business communication* , Cengage Learning, 2008

REFERENCE BOOKS

Bradbury, A. *Successful Presentation Skills* (4th ed.), Kogan Page (2010)

Cottrell, S. *The Study Skills Handbook* (3rd ed.), Palgrave Macmillan (2008)

Abraham, Dulcie. *Planning and Teaching, Practical Suggestions for English in the Classroom*, PenebitFajar Bakit 2022

Hasbany Ghassan : *How to Make Winning Presentation* : Jaico Publication

WEB REFERENCES

<https://www.quora.com>

<https://www.theknowledgeacademy.com>

<https://www.wordstream.com>

<https://presentationskills.me/body-language/>

<https://www.envision-creative.com/top-powerpoint-tips-dos-and-donts/>

PEDAGOGY

Seminar, Quiz, Assignment, Group Discussion

COURSE DESIGNER

Ms.C.Chithra

SIGNATURE OF THE COURSE DESIGNER

SIGNATURE OF THE HOD



Cauvery College for Women (Autonomous), Trichy-18

PG Department of English

M.A Programme Structure

LEARNING OUTCOME BASED CURRICULUM FRAMEWORK (CBCS-LOCF)
(For the Candidates admitted from the Academic year 2023-2024 onwards)

Semester I

Semester	Course	Course Title	Course Code	Inst.	Credits	Exam			Total
						Hrs.	Marks		
							Int.	Ext.	
I	Core Course – I (CC)	English Poetry - From Chaucer to 20th Century	23PEN1CC1	6	5	3	25	75	100
	Core Course – II (CC)	English Drama	23PEN1CC2	6	5	3	25	75	100
	Core Course –III (CC)	English Fiction	23PEN1CC3	6	5	3	25	75	100
	Core Course - IV (CC)	Indian Writing in English	23PEN1CC4	6	5	3	25	75	100
	Discipline Specific Elective Course-I (DSE)	A. Theatre Art	23PEN1DSE1A	6	3	3	25	75	100
		B. Rhetoric & Stylistics	23PEN1DSE1B						
		C. Technical English	23PEN1DSE1C						
	Total			30	23				500
15 Days INTERNSHIP during Semester Holidays									
Signature									
Name & Designation		Dr. P.Urmila PG Head	Dr. N. Savithri Dean of Arts						

Semester I	Internal Marks:25		External Marks:75	
Subject Code	Course Title	Category	Hrs / Week	Credits
23PEN1CC1	English Poetry - From Chaucer to 20th Century	Core Course – I (CC)	6	5

Course Objectives:

- To familiarize students with English Poetry starting from Medieval England to 17th Century.
- To focus on the evolution of Poetic forms such as Sonnet, Ballad, Lyric, Satire, Epic etc.
- Good comprehension of History of English Literature is enhanced.
- Differentiation among the various stages of English could be identified by students.
- Critical approaches towards various literary forms can be learnt.

Pre requisite:

- The learners should have an interest towards learning poetry with the philosophical outlook of life.

COURSE OUTCOMES:

Course Outcome and Cognitive Level Mapping

On the successful completion of this course, the students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Examine ideas about the old English writing style.	K1, K2, K3, K4
CO2	Analyze knowledge about various forms of poetry during different centuries.	K1, K2, K3, K4
CO3	Evaluate various poets as representatives of their periods	K1, K2, K3, K4, K5
CO4	Justify the evolution of various literary movements	K1, K2, K3, K4, K5
CO5	Discuss British Poetry as an aesthetic record of the societies concerned	K1, K2, K3, K4, K5, K6

Mapping of CO with PO and PSO

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	3	3	2	3	2	3	3
CO2	3	3	3	3	2	3	3	2	3	3
CO3	3	3	3	3	2	3	3	3	3	3
CO4	2	3	3	3	3	3	3	2	3	3
CO5	3	3	2	3	2	3	3	2	3	3

“1” – Slight (Low) Correlation “2” - Moderate (Medium) Correlation

“3” – Substantial (High) Correlation “-” indicates there is no Correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Middle English Poetry Chaucer "The General Prologue": Prioress, Physician, Clerk (Oxford), Wife of Bath	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	Elizabethan Poetry Edmund Spenser "Epithalamion" John Donne "A Valediction: Forbidding Mourning" & "The Canonization"	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	Seventeenth Century Poetry John Milton "Paradise Lost" Book IX Andrew Marvell "To His Coy Mistress"	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	Eighteenth Century Poetry John Dryden "Absalom and Achitophel" Lines 150 - 476 Thomas Gray "Elegy Written in a Country Churchyard" William "I Travelled among Unknown Men" Wordsworth "Strange Fits of Passion Have I Known" "She Dwelt among the Untrodden Ways" "Three Years she Grew in Sun and Shower" "A Slumber did my Spirit Seal" Robert Burns "A Red, Red Rose" John Keats "Ode to a Nightingale"	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	Modern Poetry Rupert Brooke "The Soldier" W.B. Yeats "Prayer for My Daughter" W. H. Auden "Elegy on the Death of W. B. Yeats" T.S. Eliot "Journey of the Magi" Dylan Thomas "Do Not Go Gentle into That Good Night" & "Poem in October" Philip Larkin "Whitsun Weddings" Ted Hughes "Hawk Roosting" Seamus Heaney "Digging" Carol Ann Duffy "Standing Female Nude" Eavan Boland "The Achill Woman"	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self-Study for Enrichment (Not to be included for End Semester Examination) P. B. Shelley "Ode to the West Wind" G. M. Hopkins "Pied Beauty" Siegfried Sassoon "The Last Meeting"	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Books

1. 1973, The Oxford Anthology of English Literature Vol. I. The Middle Ages Through the 18th Century. OUP, London.
2. Standard editions of texts.

Reference Books

1. T.S. Eliot, 1932, "The Metaphysical Poets" from Selected Essay; Faber and Faber limited, London.
2. H.S. Bennett, 1970, Chaucer and the Fifteenth Century, Clarendon Press, London.
3. Malcolm Bradbury and David Palmer, ed., 1970 Metaphysical Poetry, Stratford – upon – Avon Studies Vol. II, Edward Arnold, London.
4. William R. Keats, ed., 1971, Seventeenth Century English Poetry: Modern Essays in Criticism, Oxford University Press, London.
5. A.G. George, 1971, Studies in Poetry, Heinemann Education Books Ltd., London.
6. David Daiches, 1981, A Critical History of English Literature Vols. I & II., Secker & Warburg, London.
7. Thomas N. Corns, ed., 1993, The Cambridge Companion to English Poetry: Donne to Marvell, Cambridge University Press, Cambridge.

Web References

<http://www.english/.org.uk/chaucer/htm>
<https://www.britannica.com/topic/The-Canonization>
https://www.worldhistory.org/Elizabethan_Theatre/[https://www.britannica.com/to
pic/Paradise-Lost-epic-poem-by-Milton](https://www.britannica.com/topic/Paradise-Lost-epic-poem-by-Milton)
<https://www.britannica.com/topic/Absalom-and-Achitophel>
https://www.cs.mcgill.ca/~rwest/wikispeedia/wpcd/wp/m/Modernist_poetry_in_English.htm

Pedagogy: Seminar, Quiz, Assignment

Course Designer: Ms. P.K. Durgadevi

Signature of the Course Designer

Signature of the HOD

Semester I	Internal Marks:25		External Marks:75	
Subject Code	Course Title	Category	Hrs / Week	Credits
23PEN1CC2	English Drama	Core Course – II (CC)	6	5

Course Objectives:

- To acquaint the students with the origin of drama in Britain.
- Different stages of British Drama and its evolution in the context of theatre can be understood by the students.
- Socio-cultural scenario can be well comprehended through a study of representative texts from the Elizabethan age to 20th century.
- Evaluating different forms of drama from the historical background could be learnt.
- Understanding dramatic techniques implied by the pioneers of English drama.

Pre requisite:

- The learners should have a thorough knowledge of the dramatic techniques.

COURSE OUTCOMES:

Course Outcome and Cognitive Level Mapping

On the successful completion of this course, the students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Examine various aspects of drama and theatre.	K1, K2, K3, K4
CO2	Classify drama and performance as a cultural process and an artistic discourse.	K1, K2, K3, K4
CO3	Evaluate plot structure, characterization and dialogue.	K1, K2, K3, K4, K5
CO4	Justify drama texts as aesthetic records of their times viz., Elizabethan, Restoration, Victorian and Early Modern ages.	K1, K2, K3, K4, K5
CO5	Formulate the sequential course dealing with Modern and Postmodern British Drama.	K1, K2, K3, K4, K5, K6

Mapping of CO with PO and PSO

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	2	3	3	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	2	3	3	2	3	3

“1” – Slight (Low) Correlation “2” - Moderate (Medium) Correlation
“3” – Substantial (High) Correlation “-” indicates there is no Correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Beginnings of Drama - Miracle and Morality & Mystery Plays, <i>Everyman</i> The Senecan and Revenge Tragedy Thomas Kyd <i>The Spanish Tragedy</i>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	Elizabethan Theatre - Theatres, Theatre groups, Audience, Actors and Conventions Tragedy and Comedy, Christopher Marlowe <i>Dr. Faustus</i> Thomas Middleton <i>The Changeling</i>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	Jacobean Drama John Webster <i>The White Devil</i>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	Restoration William Congreve <i>The Way of the World</i> , Irish Dramatic Movement J.M Synge <i>The Playboy of the Western World</i>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	Epic Theatre Bertolt Brecht <i>Mother Courage and her Children</i> Comedy of Menace Harold Pinter <i>The Birthday Party</i> , Post-Modern Drama Samuel Beckett <i>Waiting for Godot</i>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self-Study for Enrichment (Not to be included for End Semester Examination) G. B. Shaw <i>Pygmalion</i> John Osborne <i>Look Back in Anger</i>	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Books

1. Bradbrook, M.C., 1955, The Growth and Structure and Elizabethan Comedy, London.
2. Tillyard E.M.W., 1958, The Nature of Comedy & Shakespeare, London

Reference Books

1. Una Ellis-Fermor, 1965, The Jacobean Drama: An Interpretation, Methuen & Co., London.
2. Allardyce Nicoll, 1973, British Drama, Harrap, London.
3. Bradbrook, M.C., 1979, Themes and Conventions of Elizabethan Tragedy, Vikas Publishing House Pvt., Ltd., (6thed) New Delhi.
4. Michael Hathaway, 1982, Elizabethan Popular Theatre: Plays in Performance, Routledge, London.
5. Kinney, Arthur.F., 2004, A Companion to Renaissance Drama, Oxford: Blackwell Publishing.

Web References

<http://www.questia.com> (online library for research)
<http://www.clt.astate.edu/wmarey/asste%>
<https://nosweatshakespeare.com/resources/era/jacobean-drama-theatre/>
<https://www.britannica.com/art/English-literature/The-Restoration>
<https://www.britannica.com/art/epic-theatre>

Pedagogy: Seminar, Quiz, Assignment, Role play

Course Designer: Dr. R. Uma Maheswari

Signature of the Course Designer

Signature of the HOD

Semester I	Internal Marks:25		External Marks:75	
Subject Code	Course Title	Category	Hrs / Week	Credits
23PEN1CC3	English Fiction	Core Course – III (CC)	6	5

Course Objectives:

- To familiarize the students with the origin and development of the British Novel up to the 20th Century.
- The contents of the paper are meant to throw light on various concepts and theories of the novel.
- To understand the social background base on the prescribed novels.
- Identifying and differentiating various forms of novels.
- Trying hands in writing a piece of work on their own.

Pre requisite:

- The learners should have critical thinking in analyzing and interpreting the texts.

COURSE OUTCOMES:

Course Outcome and Cognitive Level Mapping

On the successful completion of this course, the students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Examine wide knowledge about different types of novels.	K1, K2, K3, K4
CO2	Analyze the art of writing different forms of novel with the learned notions.	K1, K2, K3, K4
CO3	Evaluate to explore Social, domestic and gothic novels.	K1, K2, K3, K4, K5
CO4	Assess philosophical and political underpinnings of Victorian morality, anti-Victorian realities and the aesthetic movement.	K1, K2, K3, K4, K5
CO5	Formulate themes relating to the turn of the century events through close reading of text.	K1, K2, K3, K4, K5, K6

Mapping of CO with PO and PSO

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	2	2
CO4	3	3	3	2	3	3	3	3	3	3
CO5	3	3	3	3	2	3	3	3	3	3

“1” – Slight (Low) Correlation “2” - Moderate (Medium) Correlation

“3” – Substantial (High) Correlation “-” indicates there is no Correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Novel as a Form, Concepts and Theories about the Novel; Poetics of the Novel – definition, types, narrative modes: omniscient narration. Allegorical Novel and Satire John Bunyan <i>The Pilgrim's Progress (Part I)</i> Jonathan Swift <i>Gulliver's Travels</i>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	The New World Novel Laurence Stern <i>Tristram Shandy</i> Daniel Defoe <i>Robinson Crusoe</i>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	Middle Class Novel of Manners Jane Austen <i>Emma</i>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	Women's Issues Charlotte Bronte <i>Jane Eyre</i>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	Liberal Humanism, Individual Environment and Class Issues, D.H. Lawrence <i>The Rainbow</i> James Joyce <i>Portrait of the Artist as a Young Man</i>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self-Study for Enrichment (Not to be included for End Semester Examination) George Eliot <i>The Mill on the Floss</i> Mary Shelley <i>Frankenstein</i>	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Books

- Wayne C. Booth, 1961, *The Rhetoric of Fiction*, Chicago University Press, London.
- F.R. Leavis, 1973, *The Great Tradition*, Chatto & Windus, London.

Reference Books

- Ian Watt, 1974, *Rise of the English Novel*, Chatto & Windus, London.
- Frederick R Karl, 1977, *Reader's Guide to the Development of the English Novel till the 18th Century*, The Camelot Press Ltd. Southampton.
- Arnold Kettle, 1967, *An Introduction to English Novel Vol. II*, Universal Book Stall, New Delhi.
- Raymond Williams, 1973, *The English Novel: From Dickens to Lawrence*, Chatto & Windus, London.
- Ian Milligan, 1983, *The Novel in English: An Introduction*, Macmillan, Hong Kong

Web References

http://en.wikipedia.org/wiki/English_literature

<http://en.wikipedia.org/wiki/novel>

<https://www.britannica.com/art/picaresque-novel>

<https://www.britannica.com/art/novel-of-manners>

<https://www.britannica.com/topic/Jane-Eyre-novel-by-Bronte>

Pedagogy : Seminar, Quiz, Assignment

Course Designer: Dr. S. Senthil Kumari

Signature of the Course Designer

Signature of the HOD

Semester I	Internal Marks:25		External Marks:75	
Subject Code	Course Title	Category	Hrs / Week	Credits
23PEN1CC4	Indian Writing in English	Core Course – IV (CC)	6	5

Course Objectives:

- Enabling the students to understand the evolution of Indian Writing in English.
- To enable the learners to get exposed to the historical movements of the Indian subcontinent.
- Comprehending different genres through the representation of different texts.
- To inculcate in the students the cultural significance of Indian English literature.
- To comprehend Indian writing in English with its dual focus on the influence of classical Indian tradition and the impact of the West.

Pre requisite:

- A knowledge of various phases in the evolution of Indian Writing in English.

COURSE OUTCOMES:

Course Outcome and Cognitive Level Mapping

On the successful completion of this course, the students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Analyse the themes of Indian Writing in English	K1, K2, K3, K4
CO2	Compare and contrast the major trends in Indian Writing in English	K1, K2, K3, K4
CO3	Determine to study the background and settings of the prescribed texts	K1, K2, K3, K4, K5
CO4	Evaluate the cultural significance of Indian English Literature	K1, K2, K3, K4, K5
CO5	Build exposure to diverse culture and literature and further enlighten them about socio-cultural scenario in the Contemporary era.	K1, K2, K3, K4, K5, K6

Mapping of CO with PO and PSO

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	2	3	3
CO2	3	3	3	3	3	3	3	2	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	2	3	3
CO5	3	3	3	2	2	3	3	3	3	3

“1” – Slight (Low) Correlation “2” - Moderate (Medium) Correlation

“3” – Substantial (High) Correlation “-” indicates there is no Correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Aurobindo “Tiger and the Deer”, “Rose of God” Toru Dutt “The Lotus”, “The Casuarina Tree” Sarojini Naidu “Palanquin Bearers”, “Coromandel Fishers”	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	Kamala Das “Looking Glass”, “An Introduction” Parthasarathy “A River Once”, “Under another Sky” Nissim Ezekiel “Morning Prayer”, “Enterprise”	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	Girish Karnad <i>Nagamandala</i> . Rabindranath Tagore <i>Muktadhara</i>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	Dr. S. Radhakrishnan “Emerging World Society” Salman Rushdie “Imaginary Homelands” (Chap. 11, 14) Dr. A. P. J. Abdul Kalam “Orientation” (Wings of Fire).	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	Shashi Deshpande <i>Roots and Shadows</i> Chitra Banerjee Divakaruni <i>The Mistress of Spices</i>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self-Study for Enrichment (Not to be included for End Semester Examination) Jawaharlal Nehru <i>Glimpses of World History</i> (Chapter – 22 & 56) Anita Desai <i>A Devoted Son</i>	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Book

1. Ramamurti, K.S. (ed.). Twenty-five Indian Poets in English Macmillan. 1995.

Reference Books

1. K.R. Srinivasa Iyengar, 1962, –History of Indian Writing in English, Sterling Publishers, New Delhi.
2. Herbert H. Gowen, 1975, A History of Indian Literature, Seema Publications, Delhi.
3. K. Satchidanandan, 2003, Authors, Texts, Issues: Essays on Indian literature, Pencraft International, New Delhi.
4. Amit Chandri, 2001, The Picador Book of Modern Indian Literature, Macmillan, London
5. Tabish Khair, 2001, Babu Fictions: Alienation in Contemporary Indian English Novels., OUP.

Web References

http://en.wikipedia.org/wik/indian_writing_in_english
<https://www.thehindu.com/books/books-children/short-history-of-indian-writing-in-english/article5226149.ece/amp/>
<https://www.britannica.com/biography/Sri-Aurobindo>
<https://www.literaryladiesguide.com/author-biography/kamala-das-indian-poet/>
<https://www.britannica.com/biography/Anita-Desai>

Pedagogy : Seminar, Quiz, Assignment

Course Designer: Dr. P. Helan Jona

Signature of the Course Designer

Signature of the HOD

Semester I	Internal Marks:25		External Marks:75	
Subject Code	Course Title	Category	Hrs / Week	Credits
23PEN1DSE1A	Theatre Art	Discipline Specific Elective Course-I (DSE)	6	3

Course Objectives:

- To introduce the learners to the literary aspect of dramas.
- To familiarize Theatre as an art form.
- To introduce the concepts of directing and stage management.
- To inculcate in the students the role of Theatre in society.
- To familiarize the students with the components of acting.

Pre requisite:

- The learners should have creativity and aesthetic understanding of theatre art.

COURSE OUTCOMES:

Course Outcome and Cognitive Level Mapping

On the successful completion of this course, the students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Examine a broad range of theatrical disciplines and Experiences	K1, K2, K3, K4
CO2	Analyse the diversity of theatrical experiences and the role of theatre in society	K1, K2, K3, K4
CO3	Evaluate the relationships among the various facets of Theatre	K1, K2, K3, K4, K5
CO4	Estimate drama as a performing art and the aspects of Stagecraft	K1, K2, K3, K4, K5
CO5	Create exposure to diverse components of acting and techniques	K1, K2, K3, K4, K5, K6

Mapping of CO with PO and PSO

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	3	2	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	2	2	3	3	3	2	3	3
CO4	3	3	3	3	3	3	3	3	2	3
CO5	3	3	3	2	2	3	3	2	2	3

“1” – Slight (Low) Correlation “2” - Moderate (Medium) Correlation

“3” – Substantial (High) Correlation “-” indicates there is no Correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Drama as a Performing Art, Relation between Drama and Theatre, The Role of Theatre, The need for Permanent Theatres.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	Greek Theatre, Shakespearean Theatre, The Absurd Theatre, The Epic Theatre, The Multipurpose Theatre, Designing for a Particular Theatre, The Eastern Theatre - Conventional and the Non- Conventional Theatre, Folk Theatre, Urban Theatre, Third Theatre, other Theatre in Vogue.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	Fundamentals of Play Directing: Concept, Technique, Physical Balance, Demonstration the Director and the Stage.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	Components of Acting: Gesture, Voice, Costume, Make-Up, Mask and Different Styles in Acting as an Art Form, Violence in the Theatre, Need for Censorship, Managing Time and Space.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	Theatre of Illusion, Expressionism and Dramatic Symbolism, Stage Design in the Modern World, Lighting in the Modern World, Word versus Spectacles.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self-Study for Enrichment (Not to be included for End Semester Examination) Eugene O'Neil <i>The Hairy Ape</i>	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Book

1. Sangeetha, K and A. Selvalakshmi. An Introduction to Theatre Art. New Century Book House (P) Ltd., 2015.

Reference Books

1. Balme, Christopher B. *The Cambridge Introduction to Theatre Studies*. Cambridge University Press, 2008.
2. Leach, Robert. *Theatre Studies: The Basics*. Routledge, 2013.

Web References

https://paradisevalley.libguides.com/the111/theatre_history_websites
<https://www.britannica.com/place/England/Performing-arts>
https://www.worldhistory.org/Greek_Theatre/
https://archive.org/details/fundamentalsofpl0000dean_y3x3
<http://scriptclickcreate.weebly.com/acting.html>
<https://www.britannica.com/art/theater-building/Production-aspects-of-Expressionist-theatre>

Pedagogy: Seminar, Quiz, Assignment, Enactment, Group project.

Course Designer: Dr . P. Urmila

Signature of the Course Designer

Signature of the HOD

Semester I	Internal Marks:25		External Marks:75	
Subject Code	Course Title	Category	Hrs / Week	Credits
23PEN1DSE1B	Rhetoric & Stylistics	Discipline Specific Elective Course-I (DSE)	6	3

Course Objectives:

- To develop conversance of the learners in English Rhetoric and Stylistic.
- To apply the acquired rhetoric skills, linguistics knowledge and Style in analysis of the language.
- Enables the learners to study and to be familiar with future trends in Language.
- Enhance knowledge in the art of speaking and writing effectively.
- Explore the linguistic style of expression with clarity of communicative skills.

Prerequisites

- Primary understanding in the art of writing and an interest for listening to discourses combined with an intermediate knowledge about the Contemporary topic in Stylistics in English Language.

COURSE OUTCOMES:

Course Outcome and Cognitive Level Mapping

On the successful completion of this course, the students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Examine knowledge on the concepts of Stylistics and Rhetoric in Language and Literature relevant in today's world.	K1, K2, K3, K4
CO2	Evaluate the elements of Rhetoric and Stylistics and identify the problems of writing to contribute the best for genres by facing the challenges.	K1, K2, K3, K4, K5
CO3	Determine and assess the acquired skills with various levels and theories for professional growth.	K1, K2, K3, K4, K5
CO4	Construct novel ideas in the contemporary topics in research projects to enrich critical thinking.	K1, K2, K3, K4, K5, K6
CO5	Creatively design Language and Literature with the emerging trends for higher learning.	K1, K2, K3, K4, K5, K6

Mapping of CO with PO and PSO

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	2	3	3
CO3	2	3	3	3	3	2	3	3	3	3
CO4	2	3	3	3	3	2	3	2	3	3
CO5	3	3	3	3	3	3	3	3	3	3

"1" – Slight (Low) Correlation "2" - Moderate (Medium) Correlation

"3" – Substantial (High) Correlation "-" indicates there is no Correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	THE SCIENCE OF RHETORIC Definition of Rhetoric – Three Elements of Rhetoric: Presentative, Representative and Elaborative-Rhetorical Situation: Grammar, Logic, Aesthetics, and Ethics – 5 Canons of rhetoric writing. Key Concepts: Logic, Aesthetics, Inventive, Arrangement, Style, Memory, Delivery.	18	CO1, CO2, CO3, CO4, CO5	K1, K2 K3, K4 K5, K6
II	DISCOURSE Topic Sentence, Paragraph Unity: Coherence and flow, Methods of Developing Paragraphs, Discourse. Four Kinds of Discourse: Exposition, Argumentation, Description, Narration. Key Concepts: Comparison, Concession, Emphasis, Parallelism	18	CO1, CO2, CO3, CO4, CO5	K1, K2 K3, K4 K5, K6
III	STYLISTICS The Linguistic Levels of foregrounding in Stylistics, Stylistics speech acts and (im)politeness Theory, Power on Face-Management, Stylistics point of view and modality, Speech and thought presentation in stylistics. Key Concepts: Formalist Stylistics, Metaphor and Metonymy, Rhetoric and Poetics, Schema, Script, and Frame Theory	18	CO1, CO2, CO3, CO4, CO5	K1, K2 K3, K4 K5, K6
IV	CONTEMPORARY TOPICS IN STYLISTICS Pedagogical Stylistics, Feminist Stylistics, Critical Stylistics. Key Concepts: Feminist Stylistics, Point of View and Modality, Speech and Thought Presentation, Text World Theory.	18	CO1, CO2, CO3, CO4, CO5	K1, K2 K3, K4 K5, K6
V	EMERGING TRENDS IN STYLISTICS Creative Writing and Stylistics, Stylistics and Film, Stylistics and hypertext Fiction. Practical Work: Creative Writing. Key Concepts: Cognitive Poetics, Drama and Performance, Rhetoric and Poetics, Narratology, Stylistics and Film.	18	CO1, CO2, CO3, CO4, CO5	K1, K2 K3, K4 K5, K6
VI	Self-Study for Enrichment (Not to be included for End Semester Examination) Art of Discourse. Discourse Analysis; Elements of Grammar and Transformation of Sentences. Metaphor and Stylistics. Stylistics and Translation. Stylistics, Emotion and Neuroscience. Abraham Lincoln: Gettysburg Address Martin Luther King: I Have a Dream	-	CO1, CO2, CO3, CO4, CO5	K1, K2 K3, K4 K5, K6

Text Books

1. Weston, Anthony. *A Rulebook for Arguments*. Hackett publication, 2009.
2. Cleanth Brooks and Robert Penn Warren. *Modern Rhetoric*. Harcourt Brace Jovanovich, 1979.
3. Paul Simpson. *Stylistics: A Resource Book for Students*. Routledge, 2nd edition, 2014.
4. Edited by Michael Burke. *The Routledge Handbook of Stylistics*. Routledge, 2014.

Reference Books

1. Robin Wooffitt. *Conversation Analysis and Discourse Analysis: A Comparative and Critical Introduction*, First Edition. SAGE, Publications Ltd, 2005.
2. Widdowson H.G., *Discourse Analysis*. Oxford University Press, 2012.

Web References

<https://rulb.org/en/article/ritorika-lingvistika-i-stilistika-obzor/>
<https://www.degruyter.com/document/doi/10.1515/9781614511335-014/html>
<https://www.thoughtco.com/stylistics-language-studies-1692000>
<https://oxfordre.com/literature/view/10.1093/acrefore/9780190201098.001.0001/acrefore-9780190201098-e-1008>

Pedagogy: Seminar, Quiz, Assignment.

Course Designer: Ms. A. Violet Pangaja Bai

Signature of the Course Designer

Signature of the HOD

Semester I	Internal Marks:25		External Marks:75	
Subject Code	Course Title	Category	Hrs / Week	Credits
23PEN1DSE1C	Technical English	Discipline Specific Elective Course-I (DSE)	6	3

Course Objectives:

- Weave a coherent and structured Language by knowing the principles and practices of technical English
- Emphasis on creativity, accuracy in grammar and LSRW skills.
- Identify the topic sentence in a paragraph, infer meanings to enhance vocabulary.
- Enhance knowledge on short conversations, monologues and role plays, for acquiring flair and fluency in English Language.
- Enrich critical thinking skills in analysing the texts.

Prerequisite:

- Communicate effectively to make learners feel confident and competent in Technical English for Technical purposes.

COURSE OUTCOMES:

Course Outcome and Cognitive Level Mapping

On the successful completion of this course, the students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Analyze the knowledge of understanding the topic sentences lexical and contextual items supporting ideas for technical writing.	K1, K2, K3, K4
CO2	Compare and contrast the given context to overcome the barriers by precise approaches in real life situations.	K1, K2, K3, K4
CO3	Evaluate the technical, graphical representations, compose passages to master English for professional growth.	K1, K2, K3, K4, K5
CO4	Determine to explore language skills for research and realistic thinking in Language and Literature.	K1, K2, K3, K4, K5
CO5	Creatively develop critical thinking with a skilled attitude in being argumentative, descriptive, biographical for higher learning.	K1, K2, K3, K4, K5, K6

Mapping of CO with PO and PSO

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	3	3	3	3	3	2	3
CO2	3	3	3	3	3	3	3	2	3	3
CO3	2	3	3	3	3	2	3	3	2	3
CO4	2	3	3	3	3	2	3	2	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation “2” - Moderate (Medium) Correlation
“3” – Substantial (High) Correlation “-” indicates there is no Correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	READING Predicting the Content - Skimming the Text - Understanding the Gist -Topic Sentence and its Role Scanning Inferring Meanings: Lexical and Contextual- Note-Making.	18	CO1, CO2, CO3, CO4, CO5	K1, K2 K3, K4 K5, K6
II	WRITING Forms - Descriptive Writing -Autobiographical & Biographical Writing - Paragraph Writing - Academic Writing-Tweets - Paraphrasing- Channel Convention Essay Writing: Argumentative Writing-Poster Making- Recommendations-Dialogue Writing- Informal Letters	18	CO1, CO2, CO3, CO4, CO5	K1, K2 K3, K4 K5, K6
III	LISTENING Importance of Listening & Empathy in Communication - Reasons for Poor , Listening - Traits of a Good Listener - Listening Mode - Note Taking - Listening to Short Dialogues - Listening toLong Conversations.	18	CO1, CO2, CO3, CO4, CO5	K1, K2 K3, K4 K5, K6
IV	SPEAKING Describing Places- Giving Opinions - Narration - Introducing Ideas – Justifying Opinions - Formal Conversations - Telephonic Skill - Debating - Apologizing - Extempore - Effective Presentation Strategies-Planning - Outlining & Structuring - Nuances of Delivery - Controlling Nervousness	18	CO1, CO2, CO3, CO4, CO5	K1, K2 K3, K4 K5, K6
V	Nuances of Delivery - Stage Fright -Visual Aids in Presentation- Applications of MS Power Point	18	CO1, CO2, CO3, CO4, CO5	K1, K2 K3, K4 K5, K6
VI	Self- Study for Enrichment (Not to be included for End Semester Examination) Interpreting Graphics in Technical Writing Sequencing of Sentences Reading comprehension Dictionary Skills.	-	CO1, CO2, CO3, CO4, CO5	K1, K2 K3, K4 K5, K6

Text Books

1. Dr.K.Elango, "Resonance", Cambridge University Press, New Delhi, 2013.
2. Dr.APJ Abdul Kalam "India 2020 Vision for the Millennium Brooks/Cole Publishing Company, 2002.

Reference Books

1. Meenakshi Raman, Sangeeta Sharma, "Technical Communication Engineers". Oxford University Press, New Delhi, 2012
2. Nagaraj Geatha "A Course in Grammar and Composition". Cambridge University Press, 2012
3. Samson T. "Innovate with English", Cambridge University Press, 2012
4. Mark Ibbotson, "Cambridge English for Engineering". Cambridge University Press, 2012.
5. B. Sai Lakshmi, "Poly Skills A Course in Communication and Life Skills". Cambridge University Press, 2012.

Web References

<https://www.udemy.com>
<https://www.pearson.com>

Pedagogy: Seminar, Quiz, Assignment

Course Designer: Dr. P. Urmila

Signature of the Course Designer

Signature of the HOD



Cauvery College for Women (Autonomous), Trichy-18

PG Department of English

M.A., Programme Structure

LEARNING OUTCOME BASED CURRICULUM FRAMEWORK (CBCS-LOCF)
(For the Candidates admitted from the Academic year 2022-2023 onwards)

III Semester

Semester	Course	Course Title	Course Code	Inst.	Credits	Exam			Total
						Hrs	Marks		
							Int	Ext	
III	Core Course– VIII (CC)	Asian Literature in English	22PEN3CC8	6	5	3	25	75	100
	Core Course – IX (CC)	Research Methodology	22PEN3CC9	6	5	3	25	75	100
	Core Course - X (CC)	Cultural Studies	22PEN3CC10	5	5	3	25	75	100
	Core Choice Course- II (CCC)	A. Cyber Security	22PGCS3CCC2A	5	4	3	25	75	100
		B. Post Modern Fiction	22PEN3CCC2B						
		C. Australian Literature	22PEN3CCC2C						
	Discipline Specific Elective Course-III (DSE)	A. English Literature for UGC Examinations	22PEN3DSE3A	5	3	2	-	100	100
		B. Single Author Study – Rabindranath Tagore	22PEN3DSE3B			3	25	75	
		C. Global Fiction	22PEN3DSE3C						
	Generic Elective Course -I (GEC)	The Great Indian Epic literature - A Philosophical Approach	22PEN3GEC1	3	2	3	25	75	100
	Credit Extra Course	SWAYAM		As per UGC Recommendation					
Total			30	24				600	

Signature		
Name& Designation	Dr. P.Urmila PG Head	Dr. N. Savithri Dean of Arts

Semester III	Internal Marks:25		External Marks:75	
Subject Code	Course Title	Category	Hrs / Week	Credits
22PEN3CC8	Asian Literature in English	Core Course – VIII (CC)	6	5

Course Objectives:

- To introduce and intimate the learners about Asiatic Literature
- To make learners aware of traditions and cultural heritage of countries in Asia.
- To compare and contrast different cultural backgrounds', writing styles and generic forms of Asian Literature

Pre requisite:

- The learners should know the basic knowledge about the various cultural heritage of Asiatic countries

COURSE OUTCOMES:

Course Outcome and Cognitive Level Mapping

On the successful completion of this course, the students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Examine the language skills and knowledge of critical thinking in a practical context of knowing real life situations of the Asians.	K1, K2, K3, K4
CO2	Analyze various fictional and non-fictional genres to probe and represent contemporary transcultural issues of the society and the world.	K1, K2, K3, K4
CO3	Compare and contrast the writing styles and generic forms of different cultural backgrounds in different periods of Asian Cultures for higher learning.	K1, K2, K3, K4, K5
CO4	Evaluate the motifs of nature in genres of literature focusing on multilingual, social-political issues in post-colonial literature to explore critically for research.	K1, K2, K3, K4, K5
CO5	Create cultural awareness by thinking about regional and global issues analytically and comprehensively for better prospects.	K1, K2, K3, K4, K5, K6

Mapping of CO with PO and PSO

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2	3	3	3	3	2
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	2	3	3	2	3
CO4	3	2	3	3	2	3	3	3	3	2
CO5	3	2	2	2	3	3	2	3	3	3

“1” – Slight (Low) Correlation “2” - Moderate (Medium) Correlation
“3” – Substantial (High) Correlation “-” indicates there is no Correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	POETRY Introduction to Asian Literature – with various genres. Edwin Thumboo (Singapore) – “Renovation” Faiz Ahmed Faiz (Pakistani) – “When Autumn Came” Yehuda Amichai (Israel) – “From Seven Laments for the War-dead” Key Concepts: Society, Homeland, Memory, Loss & Separation, Time, Nature, Landscape, Season, Attitude, And Continuity Of Imagery.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	PROSE J.Vijayatunga (SriLankan) - “The Village Goes to Town” Swami Vivekananda (Indian) – “Modern India” Lafcadio Hearn (Japanese) – “Mosquitoes” Key Concepts: Essence of Social Dimensions, Urbanization, Patriotism, Modernization, Tradition and Culture.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	SHORT STORIES Zawgyi (Myanmar) – “His Spouse” Sunethra Rajakarunanayake (Srilankan) – “SMS Lady” Begum Rokeya Sakhawat Hossein (Bangladeshi) – “Sultana’s Dream” Key Concepts: Cultural Habits, Ethnic Conflict, Equality, Women’s Education, Patriarchal Oppression And Freedom.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	DRAMA Asif Currimboy (Indian) – <i>Inquilab</i> Ayad Akhtar (Pakistani) - <i>Disgraced</i> Key Concepts: Religious, Moral, Social Criticism, Islam Phobia, Self-Identity	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	FICTION Amy Tan (Chinese) – <i>The Joy Luck Club</i> Kyung -Sook Shin (Korean) – <i>Please Look After Mom</i> Key Concepts: Tradition, Immigration, Fate, Sacrifice, Gender Equality, Family Dynamics, Charity	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self-Study for Enrichment (Not to be included for End Semester Examination) Introduction to Asian Literature – Race, Culture, Finding a Sense of Identity, Literary Masterpieces, Characteristics and Theories. Frank Chin – The Year of Dragon (Drama) Kamila Shamsie - Kartography (Fiction)	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Books:

- Curimbhoy, Asif. *Inquilab*, Ind-U. S. Incorporated, 1970.
Akthar, Ayad. *Disgraced*, Back Bay Books, 2013.
Shin Kyung Shook. *Please Look After Mother*, Vintage, 2012.
Tan, Amy. *Joy Luck Club*, Penguin, 2006.

Reference Books:

- Azim, Firdous, and Niaz Zaman. *Galpa: Short Stories by Women from Bangladesh*. Dhaka: Rachana, Writers.ink, 2006.
Ganesan.S. *Asian Voices: An Anthology of Asian Writings in English*. Chennai: New Century Book House, 2015.
Shamsie, Muneeza. *And the World Changed: Contemporary Stories by Pakistani Women*. N.p., 2008.
Tyler, Royall. Ed. & Trans. *Japanese No Dramas*. London: Penguin Books, 2004.
Wijesinha, Rajiva. *Bridging Connections: An Anthology of Sri Lankan Short Stories*. New Delhi: National Book Trust, 2007.
Knight, Sabhina. *Chinese Literature: A Very Short Introduction*, Oxford University Press, 2012.

Web References

- <http://www.poetry.sg/edwin-thumbboo-renovation>
<https://poets.org/poem/when-autumn-came>
<https://allpoetry.com/Seven-Laments-For-The-War-Dead>
<http://archive.spectator.co.uk/article/1st-march-1935/11/the-village-goes-to-town-by-j-vijaya-tunga-from-t>
https://books.google.co.in/books/about/Modern_India.html?id=O6PECwAAQBAJ&redir_esc=y
<https://origamijapan.net/koizumi-yakumo-19/>
https://mrgac.ac.in/elearning-portal/ec/admin/contents/69_P16ENE3_2020121902502222.pdf
<https://yourstoryclub.com/short-stories-love/love-sms-lady/index.html>
<https://archive.org/details/sultanas-dream-by-rokeya-sakhawat-hossain/page/n7/mode/2up>

Pedagogy : Assignment, Quiz, Seminar , Group Discussion.

Course Designer : Dr. J. Jenifer Nancy

Signature of the Course Designer

Signature of the HOD

Semester III	Internal Marks:25		External Marks:75	
Subject Code	Course Title	Category	Hrs / Week	Credits
22PEN3CC9	Research Methodology	Core Course – IX (CC)	6	5

Course Objectives:

- To identify, select and define appropriate research concepts and its methodologies
- To provide a deep insight into the use of different sources and how to document them
- To enable the learners, know the format of research and mechanics of writing

Pre requisite:

- Basic knowledge of research.

COURSE OUTCOMES:

Course Outcome and Cognitive Level Mapping

On the successful completion of this course, the students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Analyze research methodologies by identifying its types and to explore and create forms of communication by connecting it with the kinds of discourse in existing literature.	K1, K2, K3, K4
CO2	Categorize appropriate Library Resources – Journal Articles and Printed Periodicals to examine and interpret the research gap.	K1, K2, K3, K4
CO3	Assess the technicalities of framing thesis statement by formulating appropriate research design.	K1, K2, K3, K4, K5
CO4	Minimize the various forms of Plagiarism and enunciate the mechanics of writing.	K1, K2, K3, K4, K5
CO5	Plan the format of thesis by originating Bibliography and converting it into works cited by identifying the sources of various genres for higher learning to gain better prospects.	K1, K2, K3, K4, K5, K6

Mapping of CO with PO and PSO

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	3	3	3	3	2	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	2	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation “2” - Moderate (Medium) Correlation
“3” – Substantial (High) Correlation “-” indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	<ol style="list-style-type: none"> 1. Definition of Research 2. Primary and Secondary Sources 3. The Research paper as a form of communication 4. Four Kinds of Discourse- Expository, Argumentative, Descriptive, Narrative 5. The Who, How and Why of Research <p>Key Concepts: Understanding Research, Characteristics of Research, Research Ethics</p>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	<ol style="list-style-type: none"> 1. Types of Research 2. Qualitative Research 3. Quantitative Research 4. Quantitative Research Vs Qualitative Research 5. The Research Process <p>Key Concepts: Basic Types of Research, Designing Qualitative Research, Turning Abstraction Into Variables, Collecting Data.</p>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	<ol style="list-style-type: none"> 1. Selecting a Topic 2. Library Resources- Articles and Printed Periodicals 3. Electronic and Web Sources 4. Online Catalogue of Library Holdings 5. Annotated Bibliography - Foot notes & End notes <p>Key Concepts: Print Sources, Academic Journals, Peer-Reviewed Journals, Refereed Journals, Scholarly Journals, Peer Review Process, Gathering Information for Citation, Types Of Bibliography</p>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	<ol style="list-style-type: none"> 1. Taking Notes and Collection of Materials 2. Outlining, Use of Quotations and Thesis Statement 3. Writing Drafts and Evaluation of materials gathered 4. Plagiarism- Forms of Plagiarism 5. Documentation <p>Key Concepts: Types of Note-Taking, Drafts, Research Project Portfolio, Peer review, Evaluation of Print or electronic sources, Different types of Plagiarism, Citing different types of sources, Quotation, Parenthetical Citations, Punctuation, Capitalization, Ellipsis, MLA Style</p>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	<ol style="list-style-type: none"> 1. The Mechanics of Writing 2. The Format of the Thesis 3. Converting Bibliography into list of works cited 4. Citing Periodical and Non- Periodical Print Publications Citing Web Publications & Proof Reading 5. Structuring and Documenting an article with existing tools of documentation and style 	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

	Key Concepts: Formatting your Research Project, Text Formatting, Creating and Formatting Entries			
VI	Self-Study for Enrichment (Not to Be Included for End Semester Examination) <ol style="list-style-type: none"> 1. Different types of essay writing 2. Basics of writing (Concepts of Academic Writing) 3. Organization of Paragraph & Chapters Key Concepts: Definition, extended definition, Causes and effects, comparison and contrast, division and classification, Argumentative/ Discussion, Agree/Disagree.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Books:

Joseph Gibaldi, *MLA Handbook for writers of Research Papers*. 7th ed., MLA 2008.
Joseph Gibaldi, *MLA Handbook for writers of Research Papers*. 8th ed., MLA 2016.
Kumar Ranjith. *Research Methodology: a step-by-step guide for beginners*. 3rd edition, Sage Publications Ltd., 2013.
MLA Handbook: 9th ed., e-book ed., The Modern Language Association of America, New York, 2021.
Vander stoep W. Scott and Deirdre D. Johnston. *Research Methods for Everyday Life: Blending Qualitative and Quantitative Approaches*. Jossey-Bass A Wiley Imprint, 2009.

Reference Books:

Ary Donald. Et al. *Introduction to Research in Education*. Wadsworth Cengage learning, 2010.
Sinha. M.P. *Research Methods in English*. Atlantic Publishers & Distributors (P) Ltd, 2018.
Tavakoli, Hossein. *A Dictionary of Research Methodology and Statistics in Applied Linguistics*. Rahanama Press, 2012.

Web References

<https://pressbooks.online.ucf.edu/strategies/chapter/research-methods/>
<https://universalteacher.com/1/steps-in-research-design/>
<https://guides.auraria.edu/researchmethods/literaturereviews>
<https://www.scribbr.com/methodology/hypothesis/>
<https://gradcoach.com/how-to-write-a-dissertation-or-thesis-101/>

Pedagogy: PPT, Quiz, Group Discussion, Seminar, Assignment

Course Designer: R. Shanthi

Signature of the Course Designer

Signature of the HOD

Semester III	Internal Marks:25		External Marks:75	
Subject Code	Course Title	Category	Hrs / Week	Credits
22PEN3CC10	Cultural Studies	Core Course – X (CC)	5	5

Course Objectives:

- To cater the students, the contemporary and important concepts in literary cultural studies.
- To infer and apply the critical literary and culture theories as tools of analysis in literary text.
- To understand the themes of particular cultural practices in literature.

Pre requisite:

- A comprehensive knowledge of interdisciplinary perspective in reading and understanding Cultural Studies through literature.

COURSE OUTCOMES:

Course Outcome and Cognitive Level Mapping

On the successful completion of this course, the students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Analyze critically a wide range of heterogeneous cultural and literary theories, practices and its influences in society.	K1, K2, K3, K4
CO2	Examine to understand the terminologies involved in the making of culture and its impact in the world.	K1, K2, K3, K4
CO3	Evaluate popular contemporary theories which influenced cultural studies for higher learning and critical thinking.	K1, K2, K3, K4, K5
CO4	Create breadth and depth of understanding the major ideologies that shaped the contemporary literary circle through research.	K1, K2, K3, K4, K5, K6
CO5	Discuss the style of writings of the authors and diagnose the effect it created in the academic world to gain better prospects.	K1, K2, K3, K4, K5, K6

Mapping of CO with PO and PSO

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	2	3
CO2	3	3	3	2	2	3	3	3	2	3
CO3	3	3	3	3	3	2	3	3	3	3
CO4	2	3	3	3	3	2	3	3	3	3
CO5	2	3	3	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation “2” - Moderate (Medium) Correlation
“3” – Substantial (High) Correlation “-” indicates there is no correlation

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	INTRODUCTION Toby Miller - What it is and what it isn't Introducing Cultural Studies. - Carnavalesque – Ethnocentrism-Ideological and Repressive State Apparatus -Panoptic on - Social Mobility. Key concepts: Agency, Hegemony, Leavisism, Power, Sub- Culture	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	CULTURAL STRUCTURALISM Stuart Hall - Cultural Studies – Two Paradigms Roland Barthes - Myth Today in Mythologies Key concepts: Experience, Ideology, Originality, Reader-response, Representation	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	MARXISM AND CULTURE Raymond Williams - Culture in Marxism and Literature. Theodor Adorno and Max Horkheimer - Culture Industry: Enlightenment as Mass Deception Key concepts: Class, Dialectic, Ideology, Marxism, Materialism	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	POST-MODERNISM AND CULTURE Fredric Jameson - Postmodernism and Consumer Society Ian McDonald - Hindu Nationalism, Cultural Spaces and Bodily Practice in India. Key concepts: Post Modernism, Consumption, Society, Capitalism, Resistance	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	GENDER, IDENTITIES AND CULTURE Culture Shock - Cultural Assimilation – Existentialism – Diaspora –Subalternity. Naomi Wolf - Culture in Beauty Myth Key concepts: Beauty Myth, Cultural invasion, Existential, Identity.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self-Study for Enrichment (Not to be included for End Semester Examination) Gayatri Chakravorty Spivak - Can the Subaltern Speak? Jean Baudrillard - The Precession of Simulacra in Simulation and Simulacra. Lévi-Strauss, Wimsatt & Beardsley - The Structural Study of Myth - Affective Fallacy	--	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Books:

- Horkheimer, Max, and Theodor W. Adorno. *Dialectic of Enlightenment*. Burns & Oates, 1997.
- Jameson, Fredric. *Postmodernism, Or, The Cultural Logic of Late Capitalism*. Duke UP, 1991.
- Miller, Toby, editor. *A Companion to Cultural Studies*. Blackwell Pub., 2006.
- Seymour, Laura. *Roland Barthes's The Death of the Author*. Taylor & Francis, 2018.
- Stuart, Hall. *Cultural Studies: Two Paradigms*.
- Washington, Robert E. *Sport, Power, and Society: Institutions and Practices: A Reader*. Routledge, 2018.
- Williams, Raymond. *Marxism and Literature*. Oxford Paperbacks, 1977.
- Wolf, Naomi. *The Beauty Myth: How Images of Beauty Are Used Against Women*. Random House, 2013.

Reference Books:

- Edgar, Andrew and Peter Sedgwick. *Key Concepts in Cultural Theory*. London: Routledge. 1999.
- Baker, Chris. *The SAGE Dictionary of Culture Studies*. London: Sage Publication. 2004.

Web References:

- <https://culturalstudiesnow.blogspot.com/2011/07/mikhail-bakhtin-carnival-and.html>
- <https://anthkb.sitehost.iu.edu/ethnocen.htm>
- <https://literariness.org/2016/04/13/louis-althusser-isa-and-rsa/>
- https://www.brown.edu/Departments/Joukowsky_Institute/courses/13things/7121.html
- <https://www.britannica.com/topic/social-mobility>
- <https://www.investopedia.com/terms/c/culture-shock.asp>
- <https://www.verywellmind.com/what-is-cultural-assimilation-5225960>
- <https://www.britannica.com/topic/existentialism>
- <https://www.eng-literature.com/2015/12/diaspora-overview.html>
- <https://literariness.org/2016/04/08/subaltern-postcolonialism/#:~:text=%E2%80%9CSubaltern%E2%80%9D%2C%20meaning%20%E2%80%9Cof,denied%20access%20to%20hegemonic%20power.>

Pedagogy: Quiz, Assignment, Activity, Power point Presentation.

Course Designer: Ms.T.Mothika

Signature of the Course Designer

Signature of the HOD

Semester III	InternalMarks:25		ExternalMarks:75	
Subject Code	Course Title	Category	Hrs /Week	Credits
22PEN3CCC2B	Post-Modern Fiction	Core Choice Course – II (CCC)	5	4

Course Objectives:

- An exposure to broad developments and trends, concerns of modern novelists and changes in the forms of modernist fiction.
- To appreciate the literary and aesthetic movements that dominates the Modern period in the history of English Literature.
- To provide an insight in learning various literary Post-Modern Fictions from various perspectives with a holistic approach.

Pre requisite:

- Approach Post Modern Literature with the necessary interpretive tools for a more informed reading of different cultures, characters in this wide global world.
-

COURSE OUTCOMES:

Course Outcome and Cognitive Level Mapping

On the successful completion of this course, the students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Examine key concepts and literary forms in Post Modern literatures by understanding the issues in society and in life.	K1, K2, K3, K4
CO2	Analyze Post Modern discourse to develop as critical thinkers and writers across the world.	K1, K2, K3, K4
CO3	Evaluate a positive attitude towards the texts in thinking critically and creatively in relation to postmodern theory	K1, K2, K3, K4, K5
CO4	Discuss the various postmodern issues, themes, characters, styles and techniques present in Post Modern Fiction for research and higher learning.	K1, K2, K3, K4, K5, K6
CO5	Formulate arguments about Post Modern Literatures and texts for holistic thinking to create a better self and a better world.	K1, K2, K3, K4, K5, K6

Mapping of CO with PO and PSO

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	2	2	3	3	2	2
CO3	3	3	3	3	2	2	2	3	2	3
CO4	2	3	3	3	2	3	3	3	3	3
CO5	2	3	3	2	2	3	3	3	3	3

“1” – Slight (Low) Correlation “2” - Moderate (Medium) Correlation
“3” – Substantial (High) Correlation “-” indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Characteristics of Post Modernism Techniques used in Post Modernism - Intertextuality, Meta fiction, Magical Realism Key Concepts: Post Modernism- Definition- Concepts	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	Joseph Conrad – <i>Lord Jim</i> Virginia Woolf – <i>To the Light House</i> Key Concepts: Historical events- Language and Communication	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	E.M. Forster – <i>A Passage to India</i> Graham Greene – <i>The Power and the Glory</i> Key Concepts: Indian Independence Movement – British Raj	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	Dorris Lessing – <i>The Golden Notebook</i> Zadie Smith – <i>White Teeth</i> Key Concepts: Women's Liberation -Communism	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	Kingsley Amis – <i>Lucky Jim</i> Joseph Heller – <i>Catch - 22</i> Key Concepts: Exploitation -World War -II	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self-Study for Enrichment (Not to be included for External Examination) James Joyce – <i>A Portrait of the Artist as a Young Man</i> Thomas Pynchon – <i>The Crying of Lot 49</i>	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Books:

- Conner, Steve. *Postmodern Culture*. Oxford: Blackwell, 1989.
- Eagleton, Terry. *The Illusions of Postmodernism*. Oxford: Blackwell, 1989.
- Hoffman, Gerard. *From Modernism to Postmodernism: Concepts and Strategies of Postmodern American Fiction*. Rodopi, 2005.
- Lyotard, J.F. *The Postmodern Condition: A Report Knowledge*. MUP, 1986.
- Turner, B. ed. *Theories of Modernity and Postmodernity*. Sage, 1990.

Reference Books:

- Best, Steven, and Douglas Kellner. *Postmodern Theory: Critical Interrogations*. Palgrave Macmillan, 1991.
- Best, Steven, and Douglas Kellner. *The Postmodern Turn*. Guilford Publications, 1998.

Web References

- <https://www.britannica.com/topic/Lord-Jim-novel-by-Conrad>
- https://www.bookbrowse.com/reviews/index.cfm/book_number/463/white-teeth
- <https://www.britannica.com/topic/Catch-22-novel-by-Heller>

Pedagogy : Seminar, Assignment

Course Designer : Ms. Diana Betty Garrett

Signature of the Course Designer

Signature of the HOD

Semester III	Internal Marks:25		External Marks:75	
Subject Code	Course Title	Category	Hrs / Week	Credits
22PEN3CCC2C	Australian Literature	Core Choice Course – II (CCC)	5	4

Course Objectives:

- To equip the students to gain insight on the dynamics of literary production in one of the young and emerging colonies around the world.
- To engage questions of colonization, ethnicity, territoriality, nationality, and gender and their impact on Australian literature and culture through the prescribed literary texts.
- To explore the fascinating and diverse literary traditions of the Australian continent, from European colonization to the modern day.

Pre requisite:

- An avid interest in extensive reading and analyzing the colonial texts based on socio-political backgrounds.

COURSE OUTCOMES:

Course Outcome and Cognitive Level Mapping

On the successful completion of this course, the students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Analyze the richness, breadth and depth of Australian literature through a critical engagement with some of the innovative and influential works that have shaped Australia's culture and society.	K1, K2, K3, K4
CO2	Examine the racial, social, ethnic, gender, class, and diasporic issues through the prescribed texts of literatures across the world.	K1, K2, K3, K4
CO3	Evaluate traditional and contemporary literary modes and genres of Australian literature for professional growth.	K1, K2, K3, K4, K5
CO4	Determine literary value and cultural importance of Australia through texts for research and higher learning.	K1, K2, K3, K4, K5
CO5	Formulate the diversity, complexity in Australian literature and analyze the colonial and postcolonial experience in today's global world for better prospects.	K1, K2, K3, K4, K5, K6

Mapping of CO with PO and PSO

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	3	2	3	3	3	3	2	2
CO2	3	3	3	2	3	3	3	3	3	3
CO3	3	3	3	3	3	2	3	3	2	2
CO4	2	3	2	3	3	2	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation “2” - Moderate (Medium) Correlation

“3” – Substantial (High) Correlation “-” indicates there is no correlation

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	MYTHS AND LEGENDS Bunyip The Eagle, Hawk and the Crow The Rainbow Serpent The Emu and the Jabiru Key Concepts: Aboriginals, Bush Myth, Creation, Legends, Symbolism, The Ripping Yarn	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	POETRY Banjo Patterson - “Waltzing Mathilda” A.D. Hope - “Australia” Henry Lawson - “Up the Country” Judith Wright - “Women to Man” Key Concepts: Aboriginal, Bush Poetry, Captivity, Identity, Racial oppression.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	SHORT STORIES Henry Lawson - “A Child in the Dark, and a Foreign Father” Margo Lanagan - “Singing My Sister Down” Key Concepts: Abject Cruelty, Autobiography, Inhabitants, Loss of Identity, Tradition	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	DRAMA Ray Lawler - <i>Summer of the Seventeenth Doll</i> Jack Davis - <i>The Dreamers</i> Key Concepts: Indigenous, Loyalty, Freedom, Friendship, Tradition	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	FICTION Peter Carey - <i>True History of the Kelly Gang</i> Doris Pilkington Garimara - <i>Follow the Rabbit-Proof Fence</i> Key Concepts: Culture, Experience, Estrangement, Isolation, Migration.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self-Study for Enrichment (Not to be included for End Semester Examination) Anita Heiss - “Growing up Aboriginal in Australia” Germaine Greer - “Daddy, We Hardly Knew You” James Mcauley - “To Any Poet” Dorothy - “Crete” Porter Kevin - “My Name” Peter Kenna - “A Hard God” Patrick White - “Voss” Key Concepts: Bush Writers, Identity Crisis, Identity of Settlers, The Ripping Yarn	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Books

Brooks, Linda R., et al. *Waltzing Matilda: ...and Other Australian Yarns*. 2016.
Carey, Peter. *True History of the Kelly Gang*. Penguin Group Australia, 2015.
Davis, Jack. *The Dreamers*. Currency P Pty, 1996.
Hope, A. D. *Selected Poems*. Allen & Unwin, 2012.
Lanagan, Margo. *Singing My Sister Down and other stories*. Allen & Unwin, 2017.
Lawler, Ray. *Summer of the Seventeenth Doll*. Samuel French, 1985.
Lawson, Henry. *A Child in the Dark and a Foreign Father*. Library of Alexandria, 2015.
Lawson, Henry, et al. *Poems of Henry Lawson: With Illustrations by Pro Hart*. 2012.
Pilkington, Doris. *Follow the Rabbit-Proof Fence*. Univ. of Queensland P, 2013.
Wright, Judith. *Woman to Man*. 1968.

Reference Books:

Martin, Arthur P. *The Beginnings of an Australian Literature*, by A. Patchett Martin,... 1898.
Webby, Elizabeth. *The Cambridge Companion to Australian Literature*. Cambridge UP, 2000.

Web References

https://englishverse.com/poems/waltzing_matilda
<https://allpoetry.com/poem/8509645-Australia-by-A-D-Hope>
<http://www.ironbarkresources.com/henrylawson/UpTheCountry.html>
<https://www.lyrikline.org/en/poems/woman-man-1239>
<http://www.telelib.com/authors/L/LawsonHenry/prose/trianglesoflife/childdark.html>
<https://www.dentonisd.org/cms/lib/TX21000245/Centricity/Domain/630/Singing%20My%20Sister%20Down%20by%20Margo%20Lanagan.pdf> <https://theculturetrip.com/pacific/australia/articles/11-fascinating-indigenous-australian-myths-and-legends/>

Pedagogy: Quiz, Assignment, Activity, Power point Presentation.

Course Designer: Ms.T.Mothika

Signature of the Course Designer

Signature of the HOD

Semester III	Internal Marks:25		External Marks:75	
Subject Code	Course Title	Category	Hrs / Week	Credits
22PEN3DSE3A	English Literature for UGC Examinations	Discipline Specific Elective Course -III (DSE)	5	3

Course Objectives:

- To train the students for UGC competitive exams
- To understand and remember the origin and development of genres from the past to the present age.
- To gain in-depth knowledge in wide range of literatures in English and across the world.

Pre requisite:

- To make the students well versed in all literature and crack the UGC examinations.

COURSE OUTCOMES:

Course Outcome and Cognitive Level Mapping

On the successful completion of this course, the students will be able to

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course students will be able to	
CO1	Analyze the literary movements from Chaucer till the present age in chronological order and understand the political, economic and social problems.	K1, K2, K3, K4
CO2	Examine the origin and development of the various genres in Literature across the world.	K1, K2, K3, K4
CO3	Compare and contrast the works of the writers by thinking critically with a holistic approach.	K1, K2, K3, K4, K5
CO4	Assess various concepts in English Language Teaching and Translation Studies for higher learning and research.	K1, K2, K3, K4, K5
CO5	Discuss the literary work with literary theories to gain more knowledge for better job opportunities and career prospects.	K1, K2, K3, K4, K5, K6

Mapping of CO with PO and PSO

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	3	2	3	3	2	2	3
CO2	3	3	3	2	3	3	3	3	2	3
CO3	3	3	3	3	3	3	3	3	2	3
CO4	2	3	3	3	3	3	3	2	3	3
CO5	3	3	3	3	3	3	3	3	2	3

“1” – Slight (Low) Correlation “2” - Moderate (Medium) Correlation

“3” – Substantial (High) Correlation “-” indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Chaucer to Restoration Period Key Concepts: Dream allegory, Eclogues, Puritanism, Satire	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3,K4, K5, K6
II	Romantic Period to Contemporary Period Key Concepts : Pantisocracy, Fancy, Imagination, Negative capability, Gothic.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3,K4, K5, K6
III	American Literature & New Literatures in English (Indian, Canadian, African, Australian) Key Concepts : Transcendentalism, Realism, Partition, Identity	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3,K4, K5, K6
IV	English Language Teaching & Translation Studies Key Concepts : Methods and Approaches, Untranslatability, Equivalence	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3,K4, K5, K6
V	Classicism to New Criticism Literary Theories Key Concepts : Autotelic, Literariness, Structure, Aporia, Metanarratives, Gynocritics, Literature and Environment, Orient, Anxiety.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3,K4, K5, K6
VI	Self-Study for Enrichment (Not to be included for External Examination) Historical background of the ages Romantic movement in different countries Asian Literature in English Translation of G.U.Pope's "Thirukkural" Application of theories in the text	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3,K4, K5, K6

Text Books:

Benet D. E., and Samuel Rufus. *NET. SET..GO... English*. N.p., 2015.

Reference Books:

Masih, K. Ivan. et.al. *An Objective Approach to English Literature: For NET, JRF, SLET and Pre-Ph.D. Registration Test*, Atlantic Publishers, 2007.

Dr. Jha, Vivekanand. *An objective and Analytical Approach to English Literature for NET, JRF, SLET/PRT other Examinations*, New Delhi Publishers, 2020.

Web References

https://www.eng-literature.com/blog-page_29.html

<http://www.teachmatters.in/2014/05/practice-set-ugc-net-english-1.html>

-

Pedagogy: Seminar, Quiz, Discussion.

Course Designer: Ms. G. Vijayarenganayaki / Ms.K.Kanimozhi

Signature of the Course Designer

Signature of the HOD

Semester III	Internal Marks:25		External Marks:75	
Subject Code	Course Title	Category	Hrs / Week	Credits
22PEN3DSE3B	Single Author Study- Rabindranath Tagore	Discipline Specific Elective Course- III (DSE)	5	3

Course Objectives:

- Possess a thorough knowledge of Tagore and his works.
- Expose learners to the various aspects of Indian culture and India's freedom struggle during the British rule.
- Gain a deep insight of Tagore's narrative techniques in poetry, plays, prose, drama and short stories.

Pre requisite:

- Rich knowledge of Tagore's themes, Indian culture and man's inner struggle for freedom.

COURSE OUTCOMES:

Course Outcome and Cognitive Level Mapping

On the successful completion of this course, the students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Analyze the themes in the poems of Tagore with reference to nature, man and his struggles, seeking God in real life situation.	K1, K2, K3, K4
CO2	Examine the religious, cultural and Indian sensibility with a societal and universal outlook.	K1, K2, K3, K4
CO3	Evaluate the plays of Tagore with emphasis on Indian culture and human values for holistic learning.	K1, K2, K3, K4, K5
CO4	Assess the context with gender perspectives, reforms, reality of life, women's struggle, struggle for freedom etc. in higher learning and for research.	K1, K2, K3, K4, K5
CO5	Creatively estimate the characters and narrative techniques with a panoramic view of Tagore's vision for a holistic learning to provide better prospects in the global world.	K1, K2, K3, K4, K5, K6

Mapping of CO with PO and PSO

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	3	2	3	2	2	3	3
CO2	3	2	2	3	3	3	3	2	2	3
CO3	3	2	3	3	2	3	3	2	3	3
CO4	3	3	2	3	3	2	3	2	3	3
CO5	3	3	3	3	2	3	3	2	2	3

“1” – Slight (Low) Correlation “2” - Moderate (Medium) Correlation
“3” – Substantial (High) Correlation “-” indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	POETRY “Gitanjali “ – I, II, VIII, IX, XI, XXXI, XXXV, XXXVI, L, LXII, LXXVI and XC Key Concepts: Spiritual Insights of Tagore, Theme of Nature Theme of Humanity, Mysticism, Spiritual Truths of Tagore	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	PROSE “From the Religion of Man” “Man’s Universe” – Chapter I “The Creative Spirit” – Chapter – 2 Key Concepts: The Creative Principal of Unity, The Relation of Man with God, Religious Unity, Tagore’s Philosophy	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	DRAMA <i>The king and the Queen</i> Key Concepts: Abolition of Animals Sacrifice and Human Beings, Universal Approach Oneness, Love for All Living Things, Sacrifice of Love	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	SHORT STORIES “The Homecoming” “The Castaway” Key Concepts: Theme of Fear, Loneliness and Innocence, Challenges Faced by the individual, Parents Fear and Selfishness, Sacrifice Isolation and Identity.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	FICTION <i>Gora</i> Key Concepts: Self-Searching, Resolution, Conflicts and Self-Discovery, Individual Identity, Social Relationships Etc.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self-Study for Enrichment (Not to be included for External Examination) <u>T.S. Eliot</u> Poetry – “Journey of the Magi” Short Story – “The Man Who was King” Play – <i>The Cocktail Party</i> Criticism – Traditional and Individual Talent	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Books:

Tagore, Rabindranath, *Collected Poems and Plays*, New Delhi: Macmillan India Ltd .2002.
Tagore, Rabindranath, *Gora*, New Delhi: Rupa publication.2002.
The complete works of Rabindranath Tagore, published by General Press, New Delhi: Rupa publication.2002.

Reference Books:

Tagore, Rabindranath: *An Anthology*, London: MacMillan publishers, 1997.
Krishnan, Radha S. *The philosophy of Rabindranath Tagore*. London: Macmillan, 1919.

Web References

[https:// tagoreweb.in](https://tagoreweb.in)
[https:// www.britannica.com](https://www.britannica.com)
<https://eddierockerz.files.wordpress.com/2021/01/the-complete-works-of-rabindranath-tagore-pdfdrive-.pdf>

Pedagogy : Seminar, Assignment

Course Designer : Ms. J. Vanipriya

Signature of the Course Designer

Signature of the HOD

Semester III	Internal Marks:25		External Marks:75	
Subject Code	Course Title	Category	Hrs / Week	Credits
22PEN3DSE3C	Global Fiction	Discipline Specific Elective Course- III (DSE)	5	3

Course Objectives:

- To associate the influences of broad historical periods of Global Literature and writers across the globe.
- To identify and discuss myth in relation to the works.
- To classify the language, period, country, traditions, cultural and social aspects of various writers in fiction.

Pre requisite:

- To analyse major themes, topics, or motifs in the works across the globe.

COURSE OUTCOMES:

Course Outcome and Cognitive Level Mapping

On the successful completion of this course, the students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Examine the historical and social sequence of major literary figures, texts, and movements within the Ancient, Middle, and Renaissance periods in society.	K1, K2, K3, K4
CO2	Analyze the literary concepts, principles, terms, strategies, and styles to a range of literatures in the global scenario.	K1, K2, K3, K4
CO3	Evaluate to synthesize representative fictions from the Eastern and Western traditions and relate them to their literary and cultural contexts for higher learning and professional growth.	K1, K2, K3, K4, K5
CO4	Compare and contrast connections among various periods, texts, authors, characters and to explore novel ideas for research.	K1, K2, K3, K4, K5
CO5	Formulate the ideas presented in a text, their implications, and their relationship to ideas beyond the text to gain more knowledge for better prospects.	K1, K2, K3, K4, K5, K6

Mapping of CO with PO and PSO

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	2	3	3	3	2	2	2
CO2	2	3	3	3	3	3	3	2	2	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	2	3	3	3	3	2	3	2	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation “2” - Moderate (Medium) Correlation

“3” – Substantial (High) Correlation “-” indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Prayaag Akbar - <i>Leila</i> Salman Rushdie - <i>Midnight Children</i> Key Concepts: Totalitarian Regime, Dystopian World, Lost, Mob Mentality, Legacy of Colonialism	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	Saul Bellow - <i>A Silver Dish</i> Katherine Anne Porter - <i>Holiday</i> Key Concepts: Great Depression to Mid 1980's, Inward Thoughts, Feelings, Importance of Appearance Through Child Neglect	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	Chinua Achebe - <i>Civil Peace</i> . Chimamanda Ngozi Adichie - <i>We Should All Be Feminists</i> Key Concepts: Myth and Reality, Gratitude, Optimism, Resilience, Feminism, Power, Gender, Gender Expectations, Coming of Age, Money, Injustice, Equality, Masculinity, Femininity.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	Haruki Murakami - <i>Norwegian Wood</i> Cho Nam-ji - <i>Kim Ji – Young, Born 1982</i> Key Concepts: The Dense, Shadowy Realms of Both Adolescence and Mental Illness, Gender Discrimination, Sexism, Patriarchy In The Korean Society	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	Patrick White - <i>Voss</i> Katherine Mansfield - <i>Bliss and Other Stories</i> Key Concepts: Personal Quest for Life, Natural Obstacles, Repressed Sensuality, Internal Conflict, Social Acceptability	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self-Study for Enrichment (Not to be included for external examination.) Alice Walker - <i>Everyday Use</i> Key Concepts: Heritage and It's Relationship to Daily Life	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Books:

Leila by Prayaag Akbar: Simon & Schuster India, 18 April 2017. ISBN 9788193355206.
Midnight's Children by Salman Rushdie, Penguin Books, January 2013.
A Silver Dish by Saul Bellow, Penguin Books, July 2017.
Holiday by Katherine Anne Porter, Penguin Books, July 2017.
Civil Peace Chinua Achebe, Penguin Books, July 2007. ISBN - 10; 1375378090.
We Should All Be Feminists by Chimamanda Ngozi Adichie; Fourth Estate, 9 October 2014, ISBN 100008115273
Norwegian Wood by Haruki Murakami; RHUK Publisher, 17 May 2001, ISBN 10 9780099448822.
Kim Ji – Young, Born 1982 by Cho Nam-Ji; Scribner UK, 26 January 2021, ISBN 10 1471184307
Voss by Patrick White, Penguin Classics, July 1994.
Bliss and other Stories by Katherine Mansfield, Projapoti, January 2021.
Everyday Use by Alice Walker, Rutgers University Press, June 1994.

Reference Books:

The Bedford Anthology of World Literature, Compact Edition, Volume 1: The Ancient, Medieval, and Early Modern World (Beginnings-1650)

Web References

<https://lonesomereader.com/blog/2018/12/12/leila-by-prayaag-akbar>
<https://www.theguardian.com/books/2021/apr/03/salman-rushdie-on-midnights-children-at-40-india-is-no-longer-the-country-of-this-novel>
<https://www.encyclopedia.com/education/news-wires-white-papers-and-books/silver-dish>
<https://www.lifelonglearningcollaborative.org/wp-content/uploads/Porter-Holiday.pdf>
<https://www.cusd80.com/cms/lib/AZ01001175/Centricity/Domain/2112/Civil%20peace.pdf>
<https://xyonline.net/sites/xyonline.net/files/2021-01/Adichie%20We%20Should%20All%20Be%20Feminists%20282014%29.pdf>
<https://www.harukimurakami.com/book/norwegian-wood>
<https://www.nytimes.com/2020/04/14/books/review/kim-jiyoung-born-1982-cho-nam-joo.html>
<https://readingmattersblog.com/2017/05/18/voss-by-patrick-white/>
<https://babel.hathitrust.org/cgi/pt?id=uc1.b5336132&view=1up&seq=4>

Pedagogy: Quiz, Assignment, Power-point Presentation, Seminar

Course Designer: Ms. A. Violet Pangaja Bai

Signature of the Course Designer

Signature of the HOD

Semester III	Internal Marks: 25		External Marks: 75	
Subject Code	Course Title	Category	Hrs / Week	Credits
22PEN3GEC1	The Great Indian Epic –A Philosophical Approach	Generic Elective Course – I (GEC)	3	2

Course Objectives:

- To gain a high-level empirical understanding of the basic themes, plots and characters of the two great Indian epics.
- To gain deep theoretical understanding of Indian epic literature and cultural practice as a genre.
- To achieve a high level of understanding of epic as a creative process by undertaking the production of epic narrative in a variety of genres and media.

Pre requisite:

- Basic knowledge of Indian Epics and its rich values, cultures and traditions.

COURSE OUTCOMES:

Course Outcome and Cognitive Level Mapping

On the successful completion of this course, the students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Analyze the contemporary relevance of Indian Epics with the present sociological perspectives in reality.	K1, K2, K3, K4
CO2	Examine a deep insight into the famous Epics and cultivate national and regional consciousness of values to create a better self.	K1, K2, K3, K4
CO3	Evaluate the knowledge gained to various real-life situations for a professional outlook.	K1, K2, K3, K4, K5
CO4	Discuss preliminary understanding of the Indian Epics with various genres of literature in thinking creatively with an insight to research.	K1, K2, K3, K4, K5, K6
CO5	Construct and correlate the ideals to one's own life and thinking better in real life situations to gain career prospects.	K1, K2, K3, K4, K5, K6

Mapping of CO with PO and PSO

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2	3	3	3	2	2
CO2	2	3	3	3	2	3	3	3	2	2
CO3	3	2	3	3	3	3	3	3	3	3
CO4	2	3	2	3	2	3	3	3	3	2
CO5	3	2	3	3	3	3	3	3	2	3

“1” – Slight (Low) Correlation “2” - Moderate (Medium) Correlation
“3” – Substantial (High) Correlation “-” indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	<p>Definition of the term Epic - Features of Epic - Introduction to Indian Epics, Characteristics of classical Indian Epics.</p> <p>Historical significance of Ramayana: the first Epic in the world – Epic qualities of Ramayana - Storyline of Ramayana – Study of leading characters in Ramayana - Moral essence in Ramayana - Influence of Ramayana on Indian values and culture.</p> <p>Historical significance of Mahabharata: the largest Epic in the world – Epic qualities of Mahabharata - Storyline of Mahabharata – Study of leading characters in Mahabharata – Kurukshetra War and its significance – Importance of Dharma in society - The Message of the Mahabharata - Impact of Mahabharata on Indian culture and society.</p> <p>Similarities between the Ramayana and the Mahabharata</p> <p>Key Concepts: Epic Genre and Philosophical Approach</p>	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	<p>Episodes of Sita swayavaram in Baala Canto of Ramayana: Sage Vishwamitra – Raama’s adventures – Seeta/Sita - Ahalya - Raama wins Sita's hand.</p> <p>Key Concepts: Ancient marriage rituals, love, adventure.</p>	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	<p>Episodes of Sundara Canto of Ramayana: Son of Vayu - The search in Lanka - Sita in the Asoka Park - Ravana's solicitation - First Among the Astute - Sita Comforted - Sita and Hanuman.</p> <p>Key Concepts: Grief of love, Separation and Reunion.</p>	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	<p>Bhishma Canto of Mahabharata: Episode of Bhishma's Vow - Episode of Amba and Bhishma</p> <p>Key Concepts: Celibacy, Determination, Disappointment and Revenge.</p>	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	<p>Karna Canto of Mahabharata: Episodes of Bhima and Karna.</p> <p>Key Concepts: Identity Crises, Abandoned child Syndrome.</p>	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	<p>Self-Study for Enrichment (Not to be included for external examination.)</p> <p>The Two Great Heads of Ramayana, Ravana And His Prowess, The Soorpanakha Episode, Virada Canto, Thurona Canto of Mahabharata & The Dicing Episode.</p>	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Books:

Krishnananda, Swami, *India's Ancient Culture*, 1989.
Vaidya, C.V. *Epic India*. Chintaman Vinayak Vaidya, Bombay. 1907
Rajagopalachari. C, *Ramayana*, Bharatiya Vidya Bhavan, 2017.
Rajagopalachari. C, *Mahabharata*, Bharatiya Vidya Bhavan, 2010.

Reference Books:

Singh, Varsha. "Epics as cultural commodities: Comics books of the Ramayana and the Mahabharata," *The Journal of Commonwealth Literature*. 2019.
Narayan, R.K. *The Ramayana: A Shortened Modern Prose Version of the Indian Epic*. The Viking Press, 1972.
Narayan, R.K. *The Mahabharata: A Shortened Modern Prose Version of the Indian Epic*. The Viking Press, 2001.
Kosambi, D.D. *Myth and Reality: Studies in the Formation of Indian Culture*. SAGE Publications, 2016.
Amritaswaroopananda Puri, Swami. *Awaken Children* (Volume VII and VIII). M.A.center, 2014.
Amritaswaroopananda Puri, Swami. *From Amma's Heart*. M.A.Center, 2014.
Ramakrishnanda Puri, Swami. *Racing Along the Razor's Edge*. M.A.Center, 2019.

Web References

<https://doi.org/10.1177/0021989419881231>
<https://www.swami-krishnananda.org/india.ancient.culture.html>
<https://prepp.in/news/e-492-epics-of-ancient-india-ancient-indian-history-notes>
<https://devlibrary.in/indian-classical-literature-unit-2-selections-from-epic-sanskrit-literature/>
<https://www.asiahighlights.com/india/hindu-epics>
<https://www.caleidoscope.in/art-culture/the-indian-epics-in-popular-culture-2>

Pedagogy Quiz, Assignment, Activity, PowerPoint Presentation

Course Designer S. Ramalakshmi

Note : Paper Not Opted

Signature of the Course Designer

Signature of the HOD

**Note : Our MA English students have opted
Foundation for Logical Thinking
Paper offered by Department of Mathematics
GENERIC ELECTIVE COURSE –I
(GEC) FOUNDATION FOR
LOGICAL THINKING
(2022-2023 and onwards)**

Semester III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs / Week	CREDITS
22PMA3GEC1	FOUNDATION FOR LOGICAL THINKING	GENERIC ELECTIVE	3	2

Course Objectives

- **Explain** many short tricks to solve mathematical problems easily.
- **Apply** the knowledge to **interpret** and **solve** the problems.
- **Predict** elite knowledge in verbal reasoning.

Prerequisite

Knowledge of basic mathematics

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Explain the knowledge of the various techniques of quantitative aptitude and reasoning.	K1, K2
CO2	Apply the concepts in solving mathematical problems to succeed in various competitive examinations.	K3
CO3	Examine various types of Problems using arithmetic and reasoning test.	K3
CO4	Apply the concept obtained in the course to solve the problems.	K3
CO5	Analyse real-life problems and find solutions.	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3	3	3	2	2	3
CO2	3	2	3	3	3	3	3	3	2	3
CO3	3	3	2	3	3	3	3	3	3	3
CO4	3	2	3	3	2	3	3	2	2	3
CO5	3	2	3	3	2	3	3	3	3	2

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” indicates there is no Correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Arithmetical Ability: Surds and indices - Logarithms – Alligation or Mixture	9	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4
II	Probability – Heights and Distances – Odd Man Out and Series	9	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4
III	Data Interpretation: Bar Graphs - Pie Chart - Line Graphs.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	Reasoning Test: Relationship –Direction Sense Test - Problems based on Alphabet.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	Logical Reasoning	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
VI	Self-Study for Enrichment: (Not included for End Semester Examinations) Arithmetical Ability: Permutation and Combination- Clocks – Calendar. Verbal Reasoning: Analogy- Classification.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

Text Books

1. R.S.Aggarwal (Reprint 2017), *Quantitative Aptitude for Competitive Examinations (Fully Solved)*, S.Chand and Company Ltd., New Delhi.
2. Dr.Lal, Jain and Dr. K. C. Vashisthu (2018), *UGC NET/JRF/SET Teaching & Research Aptitude*, Upkar Prakashan, Agra.

Chapters and Sections

UNIT-I	Section I (9, 10, 21) [1]
UNIT-II	Section I (31, 34, 35) [1]
UNIT-III	Section II (37, 38, 39) [1]
UNIT- IV	Section I (1, 5, 7) [2]
UNIT- V	Section II [2]

Reference Books

1. Dinesh Khattar (2016), *Pearson Guide to Quantitative Aptitude for Competitive Examinations*, Pearson Publication, 3rd Edition.
2. Lal, Jain and Vashisthu .K .C (2018), *UGC NET/JRF/SET Teaching Research Aptitude*.
3. Abhijit Guha (2014), *Quantitative Aptitude for Competitive Examinations*, McGraw Hill Education Private Limited, New Delhi, 5th Edition.

Web References

1. <https://www.indiabix.com/aptitude/questions-and-answers/>
2. <https://www.youtube.com/watch?v=IFHjNbSmsCE>
3. <https://www.sawaal.com/aptitude-reasoning/quantitative-aptitude-arithmetic-ability-questions-and-answers.html>
4. <https://www.youtube.com/watch?v=xRLNYich5Ls>
5. <https://www.youtube.com/watch?v=qwHJtfEUCgE>
6. https://www.youtube.com/watch?v=g0_1ZhueCcE
7. <https://www.indiabix.com/logical-reasoning/questions-and-answers/>
8. <https://byjus.com/govt-exams/logical-reasoning/>

Pedagogy

Power Point Presentations, Group Discussions, Seminar, Quiz and Assignment.

Course Designer

Ms. V. ManiMozhi

ANNEXURE E



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY-18

PG & RESEARCH DEPARTMENT OF SOCIAL WORK

BACHELOR OF SOCIAL WORK

LEARNING OUTCOME BASED CURRICULUM FRAMEWORK (CBCS-LOCF)

(For the Candidates admitted from the Academic year 2023-2024 and onwards)

Semester	Part	Course	Course Title	Course Code	Inst. Hrs. / week	Credits	Exam			Total
							Hrs.	Marks		
								Int	Ext	
I	I	Language Course-I (ELC)	Pothu Tmail-I	23ULT1	6	3	3	25	75	100
			Hindi ka Samanya Gyan aur Nibandh	23ULH1						
			Poetry, Grammar and History of Sanskrit Literaure	23ULH1						
			Foundation Course: Paper -I French-I	23ULF1						
	II	English Language Course-I (ELC)	General English-1	23UE1	6	3	3	25	75	100
	III	Core Course – I(CC)	Introduction to Social Work	23USW1CC1	6	5	3	25	75	100
		Core Practicum -I (CP)	Field Work -I (P)	23USW1CC1P	6	5	3	25	75	100
		First Allied Course- I (AC)	Sociology for Social Work	23USW1AC1	4	3	3	25	75	100
	IV	Ability Enhancement Compulsory Course-I (AECC)	Value Education	23UGVE	2	2	-	100	-	100
					30	21				600

INTRODUCTION TO SOCIAL WORK

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst.	Marks		
								Hrs		CIA	External
23USW1CC1	INTRODUCTION TO SOCIAL WORK	Core Course – CC I	90				5	6	25	75	100
YEAR		2023 onwards									
SEMESTER		I									
PRE-REQUISITE		An idea on concepts such as service, reform, development and the beginning of social work in India									
Learning Objectives											
1	To introduce the basic concepts of Social Work.										
2	To familiarize with the principles, values, and ethics of Social Work.										
3	To kindle the learners to develop the desire to explore the origin of Social Work in India and abroad.										
4	To support the learners to learn the contribution of various religions towards society’s welfare.										
5	To analyze and explain the methods of Social Work.										
Course Outcomes											
On the successful completion of the course, students will be able:											
							Taxonomy Levels				
CO1: To comprehend the Meaning, Definition, Basic Assumptions, Objectives, Philosophy, Ethics, and Principles of social work.							K1, K2, K3				
CO2: To appreciate Social Work as a Profession.							K2, K3, K4				
CO3: To define, recall, explain, demonstrate and outline, the basic concepts of Social Work.							K3,K4				
CO4: Distinguish and examine the history and development of Social Work as a Profession.							K1, K4, K5				
CO5: To apply the methods of Social Work in the various fields of Social Work practice.							K3, K4,K5				

Syllabus

UNIT		HOURS
I	Introduction to Social Work: Meaning & Definition, Objectives, Characteristics, Principles, Values and Ethics. Social Work as a Profession.	18
II	Basic Concepts in Social Work: Social Service, Social Welfare, Social Assistance, Social Development, Social Security, Social Justice, Social Inequality, Social Defense	18
III	History and Development of Social Work: Development of Social Work – USA, UK, India.	18
IV	Methods of Social Work: Meaning, Definition, Objectives & Principles of - Social Case Work, Social Group Work, Community Organization, Social Work Research, Social Welfare Administration and Social Action.	18
V	Fields of Social Work Practice in India: Health Settings, Family and Child Welfare Settings, Rural, Tribal and Urban Community Settings, Correctional Settings, Industrial Settings, Welfare of Youth, Aged and Differently Abled and School Social Work. Roles of Social Worker.	18
VI	Self Study for Enrichment (Not to be included for External Examination) Learners need to present application of methods of social work from the available literature, they should be able to relate social work to the basic concepts of social work, Learners need to gain knowledge about the professional organizations such as NAPSWI, INPSW, NASW and IASW, Learners need to present the autobiography of the founders of each religion, Learners should prepare a list of institutions functioning for the practice of social work in their region.	-

LEARNING SOURCES

Text Books:

1. Ahuja, Ram. (1999) Society in India: Concepts, Theories and Changing Trends, Jaipur: Rawat Publications
2. Bottmore. T.B, 1980: Sociology: "A Guide to Problems and literature", New Delhi. McGraw Hill
3. Kapadia, K.M., (1966) Marriage and Family in India, New Delhi: Oxford University Press
4. Rao Shankar, (2006) Sociology of Indian Society, New Delhi: S Chand
5. Srinivas, M.N., (1970) Social Change in Modern India, Madras: Allied Publishers
6. Misra,P.D.(1994).Social work philosophy & Methods. Inter India Publication.

Reference Books:

- 1.Bhattacharya.S.(2003).Social Work –An Integrated Approach.Deep & Deep publication.
2. Chris Yuill. (2011) Sociology for Social Work. New Delhi: Sage Publication
3. Dhanagare, D., N. (1993) Indian Sociology, Jaipurand New Delhi: Rawat Publications
4. David Howe.(1987).An Introduction to Social Work Theory(community care practice Handbook).Routledge
5. Friedlander, W. A., &Apte, R. Z.(1968). Introduction to social welfare . Englewood, NJ: Prentice-Hall.
6. Heimsath, C. H. (2015). Indian nationalism and Hindu social reform. Princeton University Press
7. Prabhu, P.H., (1970) Hindu Social Organization, Madras: Popular Prakasham
8. Rameshwari Devi & Ravi Prakash.(1998). Social work and Social Welfare Administration (Method and Practice). Mangal Deep Publication.
9. Sachdev Suresh .(2012).A Textbook of Social Work. Laxmi publication.
10. Sanjay Roy.(2011).Introduction to Social Work & practice in India. Akansha publishing.
11. Shah A.M., (2010) The structure of Indian Society: Then and Now, New Delhi, Routledge
12. Singh ,K.(2011).An Introduction to Social Work .ABD Publishers.
13. Singh, Yogendra, (1973) Modernization of Indian Tradition, New Delhi: Thompson Press
14. Skidmore,Rex A.(1991).Introduction to Social Work. Prentice Hall International
15. Skidmore,Rex A.(1991).Introduction to Social Work. Prentice Hall International
16. William,O,Larry Lorenzo Smith,Scott,W.Boyle.(2011).Pearson publishers

Web References

- 1.<https://egyankosh.ac.in/bitstream/123456789/17108/1/Unit-1.pdf>
- 2.<https://egyankosh.ac.in/bitstream/123456789/17105/1/Unit-2.pdf>
- 3.<https://kkhsou.ac.in/eslm/E- SLM Main/5th%20Sem/Bachelor%20Degree/BSW/HPSW/HPSW-3 - with changes incorporated.pmd.pdf>
- 4.<http://www.ignou.ac.in/upload/bswe-02-block1-unit-6-small-size.pdf>
- 5.<http://www.sociologyguide.com/>
- 6.<http://www.importantindia.com/3910/essay-on-social-problems-in-india/>
- 7.<http://www.ignou.ac.in>
- 8.<https://www.researchgate.net>
- 9.<https://shodhganga.inflibnet.ac.in/>

Mapping of CO with PSO and PO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1”- Slight (Low) Correlation –“2” – Moderate (Medium) Correlation
- “3” – Substantial (High) Correlation – “-” indicates there is no correlation

Pedagogy

Chalk& Talk, Seminar, PPT Presentation, Group Discussion, Blended Method, and Case Study.

Course Designer

Dr.G.Mettilda Buvaaneswari

Course Code	Course Name	Category	L	T	P	S	Credits	Inst. Hrs	Marks		
									CIA	External	Total
23USW1CC1P	FIELD WORK -1(P)	CORE PRACTICUM (CP)	90	-	-	-	5	6	40	60	100
Year		I (2023 onwards)									
Semester		I									
Prerequisites		The learners need to have a basic understanding about skills of Social Work									
Learning Objectives											
1	To develop the capacity to reflect over one's own behaviors										
2	To describe its effect on self and others.										
3	To demonstrate skills to establish relationship with individuals ,groups and communities with reference to social work.										
4	To provide an exposure to and understanding about the various agency settings to the students.										
5	To critically understand and appreciate Programmes and projects of governmental and non-governmental organizations										

Course Outcomes and Cognitive Level Mapping

Course Outcomes	
On the successful completion of the course, students will be able:	Taxonomy Levels
CO1: Predict own behavior and analyze its impact.	K1, K2,
CO2: Assess the skills to establish relationship with individuals, groups and communities.	K2,K3
CO3: Experience the activities of various agencies	K4
CO4: Analyze the various projects of government and non-government organizations	K4
CO5: Develop professional skills and to understand role of Social Workers in different settings	K5

Syllabus

UNIT	CONTENT	Hours
1	Interpersonal Relationships (Concept, skills, importance and relevance to social work)	(18 Hours)
2	Communication Skills (Concept, type, importance and relevance to social work)	(18 Hours)

	Listening Skills (Concept, Types of listening , Importance and relevance to Social Work)	
3	Documentation & Report Writing Skills. (Concept, Types of Report, importance and relevance to social work)	(18 Hours)
4	Societal Analysis (Concept, Tools and techniques, importance and relevance to social work)	(18 Hours)
5	Understanding Group Behavior (Concept, importance and relevance to social work)	(18 Hours)
6	Self Study for Enrichment (Not to be included for External Examination) Learners need to apply the skills of social work and also to able analyse society & submit an assignment Indian Social Problems (Concept, Different types of social problem, Causes and consequences)	(18 Hours)

Mapping of CO with PSO and PO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2	3	2	1	1	1
CO2	3	3	3	2	3	2	3	1	1	2
CO3	3	2	3	3	3	3	3	3	1	3
CO4	3	3	3	3	3	3	2	2	1	1
CO5	3	3	2	3	3	3	3	3	3	3

1"- Slight (Low) Correlation –“2” – Moderate (Medium) Correlation -
“3” – Substantial (High) Correlation – “-” indicates there is no correlation

References:

1. Swaminathan V.D and Kaliappan K.V., “Psychology for Effective Living,” The Madras Psychological Society, Chennai, 2001.
2. Robbins S.B., “Organizational Behavior,” Prentice Hall of India, New Delhi, 2005.

Pedagogy: Discussions, Field Observation, Group Discussions

Course Designer: Dr.O.Aisha Manju

Course Code	Course Name	Category	L	T	P	S	Credits	Inst. Hrs	Marks		
									CI A	External	Total
23USW1AC1	SOCIOLOGY FOR SOCIAL WORK	First Allied Course-I (AC)-I	60	-	-	-	3	4	25	75	100
Year		I (2023 onwards)									
Semester		I									
Prerequisites		To have a basic Understanding of Society									
Learning Objectives											
1	To define the concepts in Sociology and its relevance to Social Work										
2	To understand Social Stratification and its significance in the Society										
3	To know the need and importance of Social Institutions										
4	To appreciate the factors responsible for Change in the Society and its importance in Social Work practice										
5	To explain the various Social Problems in India										

Course Outcomes	
On the successful completion of the course, students will be able:	Taxonomy Levels
CO1: To find the relevance of Sociology to Social Work	K1, K2,
CO2: To understand the need, importance, and types of the various systems in the Society	K2,K3
CO3: To apply the knowledge acquired about the Society in the practice of Social Work	K4
CO4: To analyse the issues and challenges in the Society	K4
CO5: To experiment the use of the methods of Social Work in its practice	K5

Syllabus

UNIT	CONTENT	HOUR S
I	Introduction to Sociology: Sociology – Meaning, Definition. Society – Meaning, Definition, Characteristics, Types. Community – Meaning, Definition, and Types. Socialisation – Meaning, Definition, Agents of Socialisation. Culture& Civilisation –	12

	Meaning, Definition, Components. Sociology and its relationship and difference to Social Work	
II	Social Stratification: Social Stratification – Meaning, Definition, Characteristics, Need and Importance. Caste, Class – Definition, Difference between Caste and Class, Changing Patterns in Caste and Class, Social Mobility & Social inequality	12
III	Social Institutions: Social Institutions –Meaning, Definition. Marriage – Meaning, Definition, Types, Changing Trends. Family – Meaning, Definition, Functions, Types, Changing Trends. Kinship – Meaning, Definition, Types. Religion – Meaning, Definition, Types, Role of Institutions in Society	12
IV	Principles of Sociology: Social Control – Meaning, Definition, Functions, Forms of Social Control. Social Processes – Meaning, Definition, Types. Social Change – Meaning, Definition, Causes, Factors affecting Social Change. Social Movements – Meaning, Definition, Factors essential for Social Movements	12
V	Social Problems in India: Meaning, Definition, Types, Causes of the various Social Problems in India – Poverty, Unemployment, Illiteracy, Crime, Addiction, Migration, Gender Discrimination, Corruption	12
VI	Self-study for Enrichment (Not to be included for End Semester Examinations) Learners will be given an assignment on different social problems & its causes & consequences of it	-

Learning Sources:

Text Books

1. Ahuja, Ram. (1999) **Society in India: Concepts, Theories and Changing Trends**, Jaipur: Rawat Publications
2. Rao Shankar, (2006) **Sociology of Indian Society**, New Delhi: S Chand

3. Srinivas M.N., 1966: Social Change in India: New Delhi, Orient Longman
4. Srinivas, M.N., (1970) Social Change in Modern India, Madras: Allied Publishers

Reference Books:

1. Dhanagare, D., N. (1993) Indian Sociology, Jaipur and New Delhi: Rawat Publications
2. Prabhu, P.H., (1970) Hindu Social Organization, Madras: Popular Prakasham
3. Shah A.M., (2010) The structure of Indian Society: Then and Now, New Delhi, Routledge
4. Singh, Yogendra, (1973) Modernization of Indian Tradition, New Delhi: Thompson Press
5. Bottmore. T.B, 1980: Sociology: "A Guide to Problems and literature", New Delhi. McGraw Hill
6. Kapadia, K.M., (1966) Marriage and Family in India, New Delhi: Oxford University Press

Web Resources

1. <http://www.sociologyguide.com/>
2. <http://www.importantindia.com/3910/essay-on-social-problems-in-india/>
3. <https://www.researchgate.net>
4. <https://shodhganga.inflibnet.ac.in/>
5. <http://www.ignou.ac.in/>

Mapping of CO with PSO and PO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

1”- Slight (Low) Correlation –“2” – Moderate (Medium) Correlation - “3”
– Substantial (High) Correlation – “-” indicates there is no correlation.

Pedagogy: Chalk & Talk, Lecture,PPTs,Case Discussion, Group Discussion

Course Designer: Ms.PL.Rani

Course Code	Course Name	Category	L	T	P	S	Credits	Inst. Hrs	Marks		
									CIA	External	Total
23UGVE	VALUE EDUCATION	Value Education	30	-	-	-	2	2	100	-	100
Year		I									
Semester		I									
Prerequisites		Basic Understanding of Values									
Learning Objectives											
1	To enrich the knowledge about ethics and values.										
2	To instil Moral and Social Values and Loyalty and to appreciate the rights of others.										
3	To explain the role of ethics in the operation of human conduct										
4	To promote an understanding and framework for students to achieve value based positive and purposeful lives for themselves and their communities.										
5	To build excellent citizens and leaders for the country										

Course Outcomes and Cognitive Level Mapping

On the successful completion of the course, the students will be able to

CO NUMBER	CO STATEMENT	COGNITIVE LEVEL
CO1	To understand the importance of values and ethical issues at micro, mezzo and macro level of the society and the workplace.	K1, K2
CO2	To apply values and ethics in the daily life.	K3
CO3	To exhibit Ethical Leadership in the workplace and in the society.	K4
CO4	To think logically and reasonably and to handle moral issues with greater clarity	K5
CO5	To Engage in ethical debate and formulate ethical justification.	K6

Syllabus

NIT	CONTENT	HOURS
I	Value education: Meaning, Definition, purpose and significance in the present world. Human Values for Life: Truth, commitment, honesty and integrity, humility, forgiveness, love, empathy, ability to sacrifice, care, unity, inclusiveness, Self Esteem, self-confidence, punctuality – Time, task and resource management.	6
II	Ethics: The Essence of Ethics, Determinants and Consequences of Ethics in Human Interaction. Dimensions of Ethics. Ethics in private and public relationships. Role of family, society and educational institutions in inculcating moral and ethical values	6
III	Theory & Approaches in Ethics: Kohlberg's theory, Gilligan's theory, Damon's View of Moral Identity, & Deontology. The Utilitarian Approach, The Rights Approach, The Fairness or Justice Approach, The Common-Good Approach, The Virtue Approach & Ethical Problem Solving approach.	6

IV	Moral Thinkers & Philosophical Schools of Thought and their contribution: Socrates, Plato, Aristotle, Epicurus, Stoicism. Thomas Aquinas, Contractarianism, Thomas Hobbes, John Locke, Jean-Jacques Rousseau, John Rawls, John Stuart Mill, Emanuel Kant and Hegel, Mother Teresa, Chanakya, Kautilya, Sarojini Naidu, Thiruvalluvar, Rabindranath Tagore, Mahatma Gandhi and Dr. Ambedkar,	6
V	Values and Ethics in Public administration: ethical concerns and dilemmas in government and private institutions; laws, rules, regulations and conscience as sources of ethical guidance; accountability and ethical governance; ethical issues in international relations and funding; corporate governance. Information sharing and transparency in government, Codes of Ethics, Codes of Conduct, Citizen's Charters, Quality of service delivery, Utilization of public funds, challenges of corruption.	6
VI	Self Study for Enrichment Learners need to list ways of practicing human Values. Group Discussion needs to be conducted on strategies to promote human values at various levels – family, community, society, nation and global.	-

Text Books:

1. ETHICS, INTEGRITY & APTITUDE (Prabhat Prakashan). (2021). (n.p.): Prabhat Prakashan.
2. Political Parties and Administrative Reforms in India: At the Centre, in the States and in the Local Bodies. (2019). (n.p.): Notion Press.
3. Sharma, P. D. (2015). Ethics, Integrity and Aptitude: Foundational Values for Civil Service in India. India: Rawat Publications.
4. Vozzola, E. C. (2014). Moral Development: Theory and Applications. United Kingdom: Taylor & Francis.
5. Thinkers and Theories in Ethics. (2011). Ukraine: Britannica Educational Pub..

Reference Books:

1. Bandiste, D.D.: Humanist Values: A Source Book, B.R. Publishing Corporation, Delhi, 1999
2. Ethics in Governance. (2021). (n.p.): K.K. Publications.
3. Maheshwari, S. (2002). Administrative Reforms in India. Germany: Macmillan India.

Bandiste, D.D.: Humanist Values: A Source Book, B.R. Publishing Corporation, Delhi, 1999.

4. Saxena, N. C. (2019). What Ails the IAS and Why It Fails to Deliver: An Insider's View. India: SAGE Publications.
5. Xavier Alphonse S.J (2008) We Shall Overcome – A Textbook on life coping skills ICRDCE Publication, Chennai

Web References

1. <https://publicintegrity.org>
2. <https://www.ethicsage.com>
3. <https://darpg.gov.in>
4. <https://www.ethics.org>
5. <https://ethicsunwrapped.utexas.edu/glossary/integrity>

Pedagogy

Chalk& Talk, Seminar, PPT Presentation, Group Discussion, Blended Method, and Case Study.

ABILITY ENHANCEMENT COMPULSORY COURSE (AECC) I : VALUE EDUCATION (23UGVE)

Assessment Rubrics for 100 Marks

1. Designing Posters / video making / preparation of Album – **20 marks**
2. Case study presentation / Narration of stories / Writing stories – **20 Marks**
3. Writing essay based on the individual life experience following human values

—

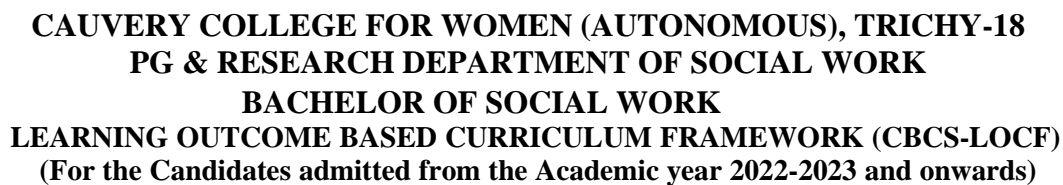
personal, family and society level (minimum 10 pages) – **20 Marks**

4. **VIVA VOCE - 40 Marks**

S.NO	RUBRICS FOR VIVA VOCE	MARKS
1.	Theoretical Knowledge	20
2.	Values Practiced	10
3.	Attitude & Commitment	10
Total		40

Pedagogy: Field study, Individual Conference and Report Writing

Course Designer: **Dr.G.Mettilda Buvaneswari**



III	I	Language Course-III(LC)	Kappiyamum Nadagamum	22ULT3	5	3	3	25	75	100	
			Hindi Literature & Grammar-III	22ULH3							
			Prose, Textual Grammar and Vakyarachana	22ULS3							
			Intermediate French – I	22ULF3							
	II	English Language Course- III (ELC)	Learning Grammar through Literature– I	22UE3	6	3	3	25	75	100	
	III	Core Course– IV (CC)	Human Growth and Development	22USW3CC4	5	5	3	25	75	100	
			Core Practicum – II (CP)	Field work Practicum (P)	22USW3CC2P	6	6	3	40	60	100
			Second Allied Course-I (AC)	Social Legislations	22USW3AC3	4	3	3	25	75	100
	IV	Ability Enhancement Compulsory Course III (AECC)	Innovation and Entrepreneurship	22UGIE	2	1	-	100	-	100	
											Generic Elective Course-I (GEC)
Basic Tamil-I		22ULC3BT1									
Special Tamil-I		22ULC3ST1									
Extra Credit Course		SWAYAM	As per UGC Recommendation								
Total					30	23				700	

15 Days INTERNSHIP during Semester Holidays

Semester III	Internal Marks :25 Marks : 75		External	
COURSE CODE	COURSE TITLE	CATEGORY	Hours/Week	CREDITS
22USW3CC4	HUMAN GROWTH AND DEVELOPMENT	CORE COURSE– IV(CC)	5	5

Course Objectives

- To provide Knowledge on biological development of human beings.
- To understand the principles of human growth and development.
- To introduce various stages and processes in human development.
- To identify the cognitive development occurring from pregnancy to old age.
- To understand physical changes across the lifespan.

Pre-requisites

The learners needs to have a basic understanding on human growth and life stages .

Course Outcomes and Cognitive Level Mapping

On the successful completion of the course, the students will be able to

CO Number	CO Statement	COGNITIVE LEVEL
CO1	Define, Recall, explain, demonstrate, Illustrate, summarise and outline Meaning of Growth and Development and development stages	K1, K2
CO2	Identify, Categorize, discover, Examine and inspect Prenatal Development and Conditions affecting Prenatal Development	K3,K4
CO3	Analyse, categorize, compare, list, distinguish ,examine and dissect Importance of preschool education and Significance of play for all-round development, Development of self-concept and self-esteem and its impact on adolescence	K4
CO4	Evaluate, assess, justify, prioritise, explain and measure vocational and marital hazards of middle age, adulthood, personality characteristics of old age.	K5
CO5	Elaborate, estimate, and discuss role confusion, ego identity etc among adolescents ,role of Social worker in Schools and colleges	K6

Mapping of CO with PSO and PO

COs	PS01	PS02	PS03	PS04	PS05	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1”- Slight (Low) Correlation –“2” – Moderate (Medium) Correlation - “3” – Substantial (High) Correlation –

“-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Introduction to Growth and Development: Meaning of Growth and Development: development tasks. Life span: Characteristics and Development stages, Role of Heredity and Environment in the process of Human Growth and Development.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	Prenatal period – Prenatal Development – Conception, Child Birth : Process and types of child birth, types of delivery, Pregnancy Signs, Symptoms, Complications, Stages of Prenatal Development; Conditions affecting Prenatal Development	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	Infancy and Childhood - Developmental tasks, characteristics, and hazards of infancy, babyhood, early and late childhood. Importance of preschool education and Significance of play for all-round development.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	Puberty and Adolescence – physical, psychological, and social changes and hazards. Development of self-concept and self-esteem and its impact on adolescence. Peers - Importance and Influence, Identity- definition, body image, role confusion and ego identity. Role of Social worker in Schools and colleges	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

V	Adulthood, middle age, and old age - concept of adulthood, Stages of adulthood, developmental tasks, characteristics, adjustments - vocational and marital, and hazards in adulthood. Middle Adulthood :Definition, Developmental tasks, Midlife Crises, vocational and marital hazards of middle age. Aging Process :Definition of aging, Types of aging, personality characteristics of old age.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self-study for Enrichment (Not to be included for End Semester Examinations) Learners can write assignment on emotional and social aspects of adolescence. The need and importance of social workers in school setting can be assessed through a mini research.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Book:

1. Hurlock.B.E. (2017). Developmental psychology. Tata McGraw-Hill Education.

Reference Books

- 1 Hasan.Q. (1997). Personality Assessment: A Fresh Psychological Look. Gyan Publishing House.
2. Morgan.C., King.R., Weisz.J., Schopler.J. (2017). Introduction to Psychology. Mc Graw Hill Publications.
3. Wrightsman, L. S. (1994). Adult Personality Development: Volume 1: Theories and Concepts. Sage Publications.

Web References

<https://www.psychologydiscussion.net/educational-psychology/principles-of-human-grow>
<https://egyankosh.ac.in/bitstream/123456789/17142/1/Unit-1.pdf>
<https://courses.lumenlearning.com/wm-lifespandevelopment/chapter/periods-of-human-development/>
<https://ufhealth.org/puberty-and-adolescence>
<https://www.cliffsnotes.com/study-guides/psychology/psychology/developmental-psychology>
<https://egyankosh.ac.in/bitstream/123456789/17142/1/Unit-1.pdf>

Pedagogy: Lectures, Audios / Videos followed by discussion, PPT, and Student-led seminars.

Course Designer: Dr.O.Aisha Manju

SEMESTER III	Internal Marks:40		External Marks:60	
COURSE CODE	COURSE TITLE	CATEGORY	HOURS/WEEK	CREDITS
22USW3CC2P	FIELD WORK PRACTICUM (P)	CORE PRACTICUM II	6	6

Preamble

To Adopt group living, identify the culture of rural people or Tribal People and to learn the functioning of various social welfare organizations in different geographical areas and to organize specific programmes and holding discussions with different Potential Groups in rural Area or Tribal Area.

Course Outcomes and Cognitive Level Mapping

On Successful completion of this course, the students will be able to:

CO Number	CO Statement	KNOWLEDGE LEVEL
CO1.	Explain the culture of different sections of people in the society	K1
CO2.	Demonstrate the skills of planning, Listening, organizing and reporting	K2
CO3.	Build adjustment with the Environment and Life Situation in Rural Area or Tribal Area and Holding Discussion with Potential Groups	K3
CO4.	Compare the functioning of social welfare organizations in different geographical regions.	K4

Mapping of CO with PSO and PO

CO/PO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	3	3	3	2	2	3	2
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	2	3	3	3	3	2	3	3	3
CO4	3	3	3	3	2	3	3	3	3	2

“1” Slight (LOW) Correlation –“2” Moderate (Medium) Correlation –“3”-Substantial (High) Correlation –“-“ Indicates there is no correlation

Syllabus

RURAL/TRIBAL CAMP AND STUDY TOUR

- Students will be given an opportunity of arranging a Five-day social work camp in rural/tribal areas.
- Students to be given proper orientation and pilot study experience prior to the camp.
- Study tour programme is to be arranged to help the students to learn and compare the functioning of various agencies/settings of social work practice functioning in different geographical areas.
- Students are required to visit 6 – 8 organizations of Social Work practice during their Study Tour to understand different Fields of Social Work.
- Students are expected to write and submit a detailed reports of their activities during their camp and observation remarks of their visits during study tour programme.

GUIDELINES FOR FIELD WORK

EVALUATION

Internal	Marks
1. Attendance in field work	5
2. Regularity in submitting reports	5
3. Participation in camp & Study Tour activities	30
Total	40

External evaluation and VIVA VOCE

I Reporting	-	10
II VIVA VOCE		
1. Theoretical Knowledge	-	10
2. Communication and Presentation	-	10
3. Individual participation and initiative	-	30
Total		60

Pedagogy: Camping, Study tour, Observation and documentation, Discussion with Potential groups and Professional personals

Course Designer: Dr. G. Kanaga

Semester III	Internal Marks :25		External Marks :75	
COURSE CODE	COURSE TITLE	CATEGORY	HOURS/ WEEK	CREDITS
22USW3AC3	SOCIAL LEGISLATIONS	SECOND ALLIED COURSE I	4	3

Course Objectives

- To enlighten the students on the concept of Legislation, Fundamental Rights and Directive Principles of State Policy.
 - To Gain Knowledge on Legislation related to marriage and Divorce under Hindu, Christian and Muslim religion.
 - To understand the legislations related to Protection of Women and Transgenders in the Society.
 - To Acquire the knowledge on legislation related to protection of child Labour ,Sexual Abuse and Child Marriage.
- To Enhance the students on legislations protecting the rights of Weaker Sections People

Prerequisites

The Learner Can understand the Social problem and its related Legislations

Course outcomes and Cognitive Mapping

On the successful completion of the course, the students will be able to:

CO Number	CO Statement	KNOWLEDGE LEVEL
CO1	Define the legislations and rights of citizens from the Indian Constitution	K1
CO2	Explain the legislations related to marriage and other Provisions under Hindu, Christian and Muslim religion .	K2
CO3	Apply the knowledge on the legislations related to welfare of women and Transgender.	K3
CO4	Examine the legislations related to protection of children.	K4
CO5	Analyze the legislations related to protection weaker section of people.	K4

Mapping of CO with PSO and PO

COs	PS01	PS02	PS03	PS04	PS05	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1”- Slight (Low) Correlation –“2” – Moderate (Medium) Correlation - “3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	The concept of legislation, need and importance to legislation, legislation as a process, Fundamental rights and Duties – Directive principles of state policy.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	Salient Features of the Acts: The Hindu, Muslim, and Christian laws governing marriage, Divorce, Hindu adoption and Maintenance act-1956, Hindu Minority and Guardianship act -1956, Hindu succession act-1956.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	Salient Features of the Acts: Dowry Prohibition Act – 1961 Domestic Violence Act-2005 ,Suppression of Immoral Traffic Act – 1977. Medical Termination of Pregnancy Act – 1971.Sexual Harassment at Work Place (Prevention, Prohibition and Redressal) Act,2013	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	Salient Features of the Acts: Juvenile Justice Act – 1986, Child Marriage Restraint Act – 1929. Child Labour (Prohibition and Regulation) Act – 1986. Protection of Children from Sexual Offences Act (POCSO)- 2012	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	Salient Features of the Acts: Protection of civil Rights Act – 1976. Maintenance of Parents and Senior Citizens Act- 2007. Mental Health Act – 1987 and Amendments), Sexual harassment of Women at Workplace.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
VI	Self-study for Enrichment (Not to be included for End Semester Examinations)	-		

	Collect case studies from newspapers based on specific issues related to legislations. Presentation of case studies			
--	--	--	--	--

Text Books

- Shanmugavelayudam, (2000). Social legislation, Govt.of India Publication

References

- Agarwala, R. K.(1981). Hindu law, R. N. Dwivedi (Ed.). Central Law Agency
- Devasia, V.V., &Devasia, L.(1994). Woman Social Justice and Human Rights, Delhi: APH Publishing Corporation.
- Gangrade, K.D. (1978), Social Legislation in India, Concept Publishing Company, New Delhi.
- The Planning Social Legislation : It's Role in Social Commission Welfare, (1956) Government of India, Delhi.

Web resources

https://highcourtchd.gov.in/hclsc/subpages/pdf_files/4.pdf

https://www.indiacode.nic.in/handle/123456789/2148?sam_handle=123456789/1362

<https://districts.ecourts.gov.in/sites/default/files/Sexual%20Harssment%20at%20Workplace.pdf>

Pedagogy: Lectures, Group discussion, PPT presentation, Case study and seminars.

Course Designer: Dr.S.Vidhya

- Historical dictionary of human rights and humanitarian organizations. Robert F. Gorman, Edward S. Mihalkanin. 2nd ed. Lanham, Md. : Scarecrow Press, 2007
- Firestone Library: Non Circulating (Fnc) JC571 .G655 2007

Pedagogy: Lectures, Group discussion, PPT presentation, Case study and seminars

Course Designer: Ms. PL. Rani

Semester III	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	HOURS / WEEK	CREDITS
22UEN3GEC1	Presentation Skills in English	Generic Elective Course -I (GEC)	2	2

COURSE OBJECTIVES

- To enhance the student's personality and to develop their leadership traits
- To improve their communication skills and gain competence in presentation skills
- To be good orators, presenters and skill creators in English Language with a professional touch

COURSE OUTCOMES

Course Outcomes and Cognitive Level Mapping

On the successful completion of the course students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Relate the modalities of presentation skills with a professional touch by being competent and confident in life	K1
CO2	Illustrate the plan and structure for effective presentation with innovative techniques, knowledge with global standards	K2
CO3	Select the mechanism of Audio - Visual aids and its usage for presentation for higher learning purposes	K3
CO4	Apply the presentation skills in public speaking to enhance an all round personality with good presentation skills	K3
CO5	Analyze the different levels in various Presentation skills to comprehend higher learning for a better self and society	K4

Mapping of CO with PO and PSO

CO	PSO 1	PSO 2	PSO 3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3	3	3	2	3	3
CO2	3	3	2	3	3	3	3	3	2	3
CO3	2	2	3	2	3	3	3	2	2	3
CO4	3	3	2	3	3	3	2	3	2	3
CO5	3	3	2	3	3	3	3	2	2	3

“1” – Slight (Low) Correlation

“2” - Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” indicates there is No Correlation

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Introduction to Presentation Skills Classic Structure of a Presentation- Getting Started (Greetings, Addressing, Introducing Self, Opening Remarks,) Know Your Audience - Presenting Message with Confidence	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	Preparation for Presentation Skills Think about, the 4 Ps, 8 Ways to Perfect your Presentation Skills in English. Challenges and Benefits of Effective Speaking Skills	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	Presentation Planning Visualize the PowerPoint Presentation - Anticipate the Difficulties - Organize the Aids - Knowing the Target Audience - Good Planning - Visual Representation of Data	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	Deliverance How to Deliver an Effective Presentation Be Aware of your Non – Verbal Communication - Take Time to Think During your Presentation - Pay Attention to your Voice - Body Language	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	Evaluation Concluding a Presentation, Interactive Session, Encouraging Questions - Discussion with the Audience - Maintaining Good Relationship with the Audience	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4,
VI	Self- Study for Enrichment (Not to be included for End Semester Examination) Active Listening Tasks - Practice Speaking – More Visuals Aids - Content Writing	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

Text Books

Roz Townsend, *Presentation Skills for the Upwardly Mobile*, Emerald Publishers, 2009

Hill, Monica. Storey Anne, *Speak Easy! Oral Presentation Skills in English for Academic and Professional Use*. Hong Kong University Press, 2000

Kizan , Merrier, Logan and Williams, *Effective business communication* , Cengage Learning, 2008

Reference Books

Bradbury, A. *Successful Presentation Skills* (4th ed.), Kogan Page (2010)

Cottrell, S. *The Study Skills Handbook* (3rd ed.), Palgrave Macmillan (2008)

Abraham, Dulcie. *Planning and Teaching, Practical Suggestions for English in the Classroom*, PenebitFajar Bakit 2022

Hasbany Ghassan : *How to Make Winning Presentation* : Jaico Publication

Web References

<https://www.quora.com>

<https://www.theknowledgeacademy.com>

<https://www.wordstream.com>

<https://presentationskills.me/body-language/>

<https://www.envision-creative.com/top-powerpoint-tips-dos-and-donts/>

Pedagogy Seminar, Quiz, Assignment, Group Discussion

Course Designer Ms.C.Chithra



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY-18
PG & RESEARCH DEPARTMENT OF SOCIAL WORK
MASTER OF SOCIAL WORK
LEARNING OUTCOME-BASED CURRICULUM FRAMEWORK
(CBCS-LOCF)

(For the Candidates admitted from the Academic year 2023-2024 onwards)

Semester	Course	Course Title	Course Code	Inst. Hrs. / week	Credits	Exam			Total
						Hrs.	Marks		
							Int.	Ext.	
I	Core Course– I (CC)	Social Work Profession	23PSW1CC1	6	5	3	25	75	100
	Core Course – II (CC)	Social Case Work	23PSW1CC2	6	5	3	25	75	100
	Core Course –III (CC)	Social Group Work	23PSW1CC3	6	5	3	25	75	100
	Core Practicum - I (CP)	Field Work -I (P)	23PSW1CC1P	6	5	3	25	75	100
	Discipline Specific Elective Course-I (DSE)	Sociological and Psychological Foundations for Social Work	23PSW1DSE1A	6	3	3	25	75	100
		Society and Human Behaviour	23PSW1DSE1B						
		Communication for Social Work	23PSW1DSE1C						
	Total				30	23			

Internship : 15 Days INTERNSHIP during Semester Holidays after Semester I. The Credits shall be awarded in the mark statement of Semester – II

SOCIAL WORK PROFESSION

Course Code	Course Name	Category	L	T	P	S	Credits	Inst. Hrs	Marks		
									CI A	External	Total
23PSW1CC1	SOCIAL WORK PROFESSION	Core Course - I	Y	-	-	-	5	6	25	75	100
Prerequisites		The learners need to have basic understanding on social work.									
Learning Objectives											
1	To understand the evolution of Social Work and its emergence as a Profession.										
2	To enable the students to comprehend the significance of professional values, ethics in both micro and macro social work practice										
3	To develop an understanding of the role of Social Workers in various fields.										
4	To facilitate the students to understand the importance of Field Work in Social Work Education.										
5	To learn and apply the methods and approaches of Social Work practice in different settings										

Course Outcomes	Taxonomy Level
On the successful completion of the course, student will be able:	
CO1: To aware an in-depth knowledge on the basic concepts of Social Work.	K1, K2
CO2: To understand the historical background of Social Work in west and India.	K2,K3
CO3: To articulate the student to be familiar with Philosophies, Ethics and Values of Social Work.	K3,K4
CO4 : To analyse the significance of Models in Social Work.	K4,K5
CO5 : To evaluate implication of Social Work Education and Field Work.	K5,K6
CO 6 : To develop the Social Workers to apply the methods and techniques of Social Work in various settings.	K6

Syllabus

UNIT	CONTENT	HOURS
I	Fundamental concepts of Social Work - Social Work - Definition, Objectives, Philosophy and scope. Concept of related terms : Social Service, Social Development, Social Transformation ,Social Reform, Social Defense, Social Welfare and Social Security. Difference between Social service and Social Work. Introduction to the Methods of Social Work.	18
II	Historical Development of Social Work Evolution of Social Work in the West (UK and USA). Social Work in India. Religious Foundation of Social Work in India. Gandhian Thoughts of Social Work, Social Reform Movements: Narmada Bachao Andolan, Chipko Movement, Naxalbari Movement, Sarvodaya Movement.	18
III	Philosophies and Ethics of Social work Social Work as a Profession: Nature and characteristics of a profession. Social Work Values, Code of Ethics in Social Work practice. Social Work Principles. Models of Social work. Roles and Responsibilities of a Professional Social Worker.	18
IV	Development of Social Work Education Social Work Education in India , Focus, Nature and Content of Social Work Education. Field Work in Social Work Profession, Objectives, Need and Importance of field work in social work, Significance of Field Work Supervision. Role of Voluntary Organizations and Government in promoting Social work profession in India. National and International Professional Associations.	18

V	Social Work Practice in Different settings - Fields of Social Work practice : Community Settings, Family and Child Welfare ,Educational Settings, Medical and Psychiatric settings, Industrial Settings ,Correctional Social Work ,Social Work with Marginalized and vulnerable sections, Persons with disability and Social Work, Geriatric Social Work.	18
VI	Self-study for Enrichment (Not to be included for End Semester Examinations) Students should prepare an assignment on Problems and Prospects of Social work profession in India. Learners need to gain knowledge about the professional organizations such as NAPSWI, INPSW, NASW and IASW	-

Text Books

1. Encyclopaedia of Social work in India, 1987 Vol.1,2,3. Director, publication division, ministry of information and broadcasting, New Delhi.
2. Hajira, Kumar 1995 Theories in social work practice, New Delhi: Friends Publication, India.
3. Paul Chowdary, 2018 Social Work –Introduction to Social Work - History, Concept, Methods and Fields, Atma Ram & Sons, New Delhi.
4. Sanjay Bhattacharya, 2013. Social Work Interventions and Management. New Delhi: Deep and Deep Publications.
5. Sanjay Bhattacharya, 2018. Social Work an Integrated Approach, Deep and Deep Publications Pvt., Ltd., New Delhi.

Reference Books

1. Antony, A. Vass 1996 New directions in social work – social work competencies – core knowledge values and skills, New Delhi: sage publications.
2. Banks, S. 1995 Ethics and values in social work; practical social work series, London: Macmillan press Ltd.
3. Bogo, Marion. 2007. Social Work Practice – Concepts, Processes & Interviewing. Jaipur: Rawat Publications.
4. Cox, David & Manohar Pawar. 2006. International Social Work – Issues, Strategies and Programs. New Deli: Vistar Publications.
5. Desai, M. 2000, Curriculum Development on history of ideologies for social change and social work, Mumbai.
6. Desai, Murali 2002 Ideologies and Social Work: Historical and Contemporary Analysis, Jaipur: Rawat Publication.
7. Dominelli, Lena. 2004. Social Work: Theory and Practice for a Changing Profession. London:Polity Press
8. Fink, Arthur E., Wilson, Everett E. - Third Edition, 1959, The Fields of Social Work, New York: Henry Holt and Company.

9. Friedlander, Walter A. 1977 Concepts and Methods of Social Work, New Delhi: Prentice Hall of India Pvt. Ltd.
10. Gilbert, Neil. et. al. 2002. An Introduction to Social Work Practice. New Jersey: Prentice Hall.
11. Jha, Jainendra Kumar. 2002. Practice of Social Work. New Delhi: Anmol Publications
12. Gangrade, K.D. 1976 Dimensions of Social Work in India, Marwah, New Delhi.
13. Narendra Mohan, 2017, Philosophy of Social Work, Centum Press, New Delhi
14. Reamer, F.G. 1995 Social work values and ethics, New York: Columbia University press.
15. Roy, Bailey and Phil, Lee 1982 Theory and Practice in Social Work, London: Oxford Pub. Ltd.
16. Sheldon, B., & Macdonald, G., 2010 A Textbook of Social Work, London: Routledge.
17. Singh, R.R. 1985 Field Work in Social Work Education, A Perspective for Human Service Profession, New Delhi : Concept Publishing Company.
18. Wadia, A. R. (Ed.) 1961 History and Philosophy of Social Work in India, Bombay: II Allied Publisher Private Ltd.

Web References

1. <https://www.ifsw.org/what-is-social-work/global-definition-of-social-work/>
2. <https://www.socialworkers.org/News/Facts/Types-of-Social-Work>
3. <https://www.cswe.org/Students/Discover-Social-Work/What-is-social-work>
4. <https://www.socialworktoday.com/>
5. <https://www.iassw-aiets.org/>
6. <https://www.socialworker.com/>

Mapping of CO with PSO and PO

COs	PS01	PS02	PS03	PS04	PS05	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	3	3	3	3	3	3	2
CO2	3	3	2	3	3	3	3	3	3	3
CO3	2	3	3	3	3	3	2	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1”- Slight (Low) Correlation –“2” – Moderate (Medium) Correlation - “3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Pedagogy: Lectures, Audios / Videos followed by discussion, PPT, and Student-led seminars.

Course Designer: Dr.O.Aisha Manju

SOCIAL CASE WORK

Course Code	Course Name	Category	L	T	P	S	Credits	Inst. Hrs	Marks		
									CI A	External	Total
23PSW1CC2	SOCIAL CASE WORK	Core Course – II	Y	-	-	-	5	6	25	75	100
Prerequisites		To understand work with individuals									
Learning Objectives											
1	To gain the knowledge of conceptual foundations of social Case Work										
2	To understand the basic concepts of casework as a primary method of social work										
3	To develop the skill to analyze problems of individuals and families and factors affecting them.										
4	To know the values, principles, tools and techniques of social case work										
5	To impart knowledge of the scope of using the social work methods in various settings										

Course Outcomes

On the successful completion of the course, student will be able:

CO1: To get knowledge about the different problems faced by the Individuals

CO2: To enhance knowledge on social case work skills in social case work practice.

CO3: To understand the process of casework intervention with client.

CO4: To enhance the ability towards problem solving process.

CO5: To create the ability to critically analyze problem of individuals and factors affecting them.

CO6: To develop the competencies and skills for Practice with different settings

SYLLABUS

UNIT	CONTENT	HOURS
I	Social Casework as a method of Social Work : Concepts, Meaning, objectives, purpose, Historical Development of Social Case Work in West and India. Nature and Scope, its importance and relationship with other methods of Social Work, Principles of Case Work. skills in social case work. Case Worker – Client relationship and the use of Professional Self, Problems in professional relationship.	18
II	Tools and techniques in Case Work: Tools and techniques in casework: observation, interview, collateral contacts, home visits, referrals, Verbal and nonverbal communication, Techniques in practice – ventilation, emotional support, advocacy, Environment modification, modeling, role-playing, confrontation, – Case history taking, Recording – Uses, principles, types, structure and content. Use of genograms, and eco-maps, family schema in records	18
III	Case Work Components and Process: Components of Case Work, Process of Case Work: Intake; Study; Assessment / Social Diagnosis; Treatment / Intervention; Evaluation: Termination; Follow-up. Social Case Work intervention: Direct and indirect multi –dimensional intervention. Transference and counter-transference in social case work	18

IV	Theoretical Approaches to Case Work / Models of case work practice: Psychosocial model, Functional model, Life model, Problem solving model, Crisis intervention, Eclectic approach, Family centered approach, Behavior Modification, and eco-system perspective in social casework. Psychotherapy, Counseling and Social Case Work- similarities and differences	18
V	Social Case Work application / Practice in different settings: Social case work practice with Family and Child Welfare, Educational settings, Industrial settings, De-addiction, Community, Medical and Psychiatric institutions. Correctional settings, Geriatric Setting, Palliative care, Hospice, persons with disability, de-addiction, Rehabilitation centers, Delinquency, LGBT and Child care institution – foster care, adoption, sponsorship. Use of single case evaluation and ethnography as research method in social case work. Limitations of Social Case Work practice in India in current scenario.	18
VI	Self-study for Enrichment (Not to be included for End Semester Examinations) learners need to conduct 2 case work following case work process	-

Text Books

1. Upadhyay, R. K, 2003 Social Casework: A Therapeutic Approach, Rawat Publications, India.
2. Johnson E.J., Huggins C.L. (2019) Social Casework Methodology: A Skills Handbook for the Caribbean Human Services Worker. Springer Briefs in Social Work. Springer, Cham.
3. Johnson, L. C. & Yanaca S. J. (2015). Social Work Practice: A generalist approach, Pearson.
4. Hamilton, G., 2013 _Theory and Practice of Social Case Work, Rawat Publications, India.
5. Hollis, F., & Wood, M. (1981). Casework: A psychosocial therapy (3rd ed.). New York: Random House
6. Perlman, H.H., 2011, Social Case Work-A Problem Solving Process, Rawat Publications
7. Sanjay Bhattacharya, 2008, _Social Work intervention and management‘, Deep & Deep publication (p) Ltd

Books for References

1. Healy, K. 2012, Social Work Methods and Skills, Palgrave MacMillan
2. Bogo, M. (2007). Social work practice: Concepts, process & Interviewing, Rawat Publication.
3. Misra .P.D. 1994, Social Work Philosophy and Methods, Inter-India Publications, New Delhi
4. Misra P.D., BeenaMisra, 2004, Social Work Profession in India, New Royal book Com. Lacknow
5. Mathew, Grace (1992) An Introduction to Social Casework. Bombay: Tata Institute of Social Sciences.

Web Resources

1. https://www.russellsage.org/sites/default/files/Richmond_What%20is%20Social_0.pdf
2. <http://ddceutkal.ac.in/Syllabus/MSW/Paper-5.pdf>
3. <https://www.socialworkfootprints.org/videos/social-casework-philosophy-principles-and-components>
4. <https://www.yourarticlelibrary.com/sociology/social-casework-processes-study-and-diagnosis/36564>
5. <https://www.slideshare.net/surendrashah6/complete-note-of-casework>
6. <https://www.socialworkfootprints.org/videos/social-casework-practice-in-indian-society-relevance-scope-and-influence-of-culture>
7. <http://www.ignou.ac.in/upload/bswe-02-block1-unit-3-small-size.pdf>

Mapping of CO with PSO and PO

COs	PS01	PS02	PS03	PS04	PS05	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	3	2	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	2	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1”- Slight (Low) Correlation –“2” – Moderate (Medium) Correlation - “3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Pedagogy: Lectures, Audios / Videos followed by discussion, PPT, and Student-led seminars.

Course Designer: Dr.S.Vidhya

SOCIAL GROUP WORK

Course Code	Course Name	Category	L	T	P	S	Credits	Inst. Hrs	Marks		
									CIA	External	Total
23PSW1CC3	SOCIAL GROUP WORK	Core Course - III (CC)	Y	-	-	-	5	6	25	75	100
Prerequisites		The learners needs to have basic understanding about Groups									
Learning Objectives											
<u>1</u>	To understand group work as a method of social work and to understand concept, values, principles of Social Group Work										
<u>2</u>	To acquire skills and techniques required for group worker										
<u>3</u>	To develop the ability to critically analyse problems of groups and provide suitable intervention.										
<u>4</u>	To apply the models of Social Group Work in different settings.										
<u>5</u>	To identify the settings and fields for the practice of Social Group Work method										

Course Outcomes and Cognitive Level Mapping

Course Outcomes On the successful completion of the course, the students will be able to CO1: Define, , demonstrate, Illustrate and outline Groups, explain meaning, objectives ,principles of Social Group Work and Recall the skills of Group Worker.	TAXONOMY LEVEL K1, K2
CO2: Identify & demonstrate the Group dynamics & group Functioning, Need and Importance of leadership & Communication in groups	K2, K3, K4

CO3:Analyse, categorize, compare, list, distinguish and examine group process & Group Formation	K4
CO4:Explain & Adapt the types & models of Group Work, Types & Principles of Recording in Group Work	K5
CO5: Discuss the Roles and Responsibilities of Social Group Worker, Elaborate on Group Work Practice in Different settings	K6

Syllabus

UNIT	CONTENT	HOURS
I	Introduction to Social Group Work: The Group: Definition, characteristics, types, functions and group structure. Social Group Work: Definitions, objective, Values and Principles of Social Group Work. Skills and Roles of Social Group Worker. History of Social Group Work in India and abroad. Social Group Work as a method of Social Work.	18
II	Group Dynamics and Group functioning: Dynamics of Groups: Bond, Acceptance, Isolation, Rejection, Subgroups, Conflict and Control. Group Membership, Group Norm, Group Cohesiveness, Group Culture, Group Morale, Group Attraction. Leadership in group, functions, qualities of leader, types and theories of leadership and Communication in groups. Relationships- Sociometry & Sociogram.	18
III	Group formation and Group work process: Group Formation Phases: Forming- Storming, Norming, Performing, Adjourning. Group Work Process: Phases of Social Group Work Process, Intake, Study, Analysis and Assessment, Negotiating, Contracts, Treatment, Evaluation, Termination, Stabilization of change effort	18
IV	Types and models of group work: Models of Social Group Work: Remedial, Mediating or Reciprocal, Developmental, Social Goal Model.Skills, Qualities and Roles of Social Group Worker. Group therapy: Significance of Group therapy. Recording in Social Group Work: Purpose, Types &Principles	18

V	Application of Social Group Work: Application of Social Group Work in School Settings, Community Settings, Health Settings, Family Welfare Settings, Industrial Settings, Women welfare and Child care Settings, Correctional Settings , aged homes	18
VI	Self-study for Enrichment (Not to be included for End Semester Examinations) Students should prepare an assignment on role of Social Group Worker in different Settings.	-

Text Books

1. Dave Capuzzi, Douglas R.Gross, Mark D. Stauffer (2010) Introduction to Group Work, New Delhi, Rawat Publication.
2. David, C., Douglas, R.G. & Mark, D.S. (2010) Introduction To Group Work, New Delhi, Rawat Publication
3. Gravin, Charles. D. Lorriae& M. Gulier. (2007). A Hand Book of Social Work with Groups .New Delhi: Rawat Publications.
4. Toseland, Ronald & Rivas, Robert (2001), Introduction to Group Work Practice, Allyn and Bacon, London.

References

1. Bradler,S and Roman C.P (2016) Group work Skills and strategies for effective Interventions New York: The Howorth Press.
2. Delbecq, A. L. and Van de Ven, A. H. (1977) 'A group process model for problem identification and program planning', in N. Gilbert and H. Specht (eds), Planning For Welfare, Englewood Cliffs, NJ, Prentice-Hall.
3. Gerald Corey (2000) Theory and practice of group counseling, Wordsworth, London.
4. Siddiqy, H Y (2008), Group Work: Theories and Practices, Rawat Publications.
5. Trecker, Harleigh B (2020) Social Group Work: Principles and Practice, New Delhi, Pranava Books.

Web Resources

1. <https://www.socialworkin.com/>
2. <https://socialwelfare.library.vcu.edu/social-work/social-group-work-theory-and-practice>
3. <https://mgcub.ac.in/>
4. <https://www.socialworkin.com/>
5. <https://mgcub.ac.in/pdf/material/2020041217303055424e9f93.pdf>

Mapping of CO with PSO and PO

COs	PS01	PS02	PS03	PS04	PS05	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	3	3	3	3	3	3	2
CO2	3	3	2	3	3	3	3	3	3	3
CO3	2	3	3	3	3	3	2	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

1”- Slight (Low) Correlation –“2” – Moderate (Medium) Correlation - “3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Pedagogy: Lectures, case discussions, PPTs, Group Discussions

Course Designer: Ms.PL.Rani

FIELD WORK - I (P)

Course Code	Course Name	Category	L	T	P	S	Credits	Inst. Hrs	Marks		
									CIA	External	Total
23PSW1CC1P	FIELD WORK - I (P)	Core Practicum (CP)- I	Y	-	-	-	5	6	25	75	100
Prerequisites		Basic Understanding of Non Governmental Organizations									
Learning Objectives											
1	To Understand different fields/settings of Social Work practice										
2	To Understand basic skills required to practice Social Work										
3	To integrate into practice, essential life values, like simple living, living with minimal facilities, and putting into practice the concept of dignity of labour and self-discipline and to utilize street theatre and other types of traditional art forms to create awareness on social issues										
4	To facilitate exposure and organize awareness programmes on social issues by working with underprivileged citizens, including children, women, youth, and senior citizens, as well as oppressed groups including dalits, bonded laborers, and tribal people.										
5	To develop suitable skills in processes like decision-making, planning, Organising, and executing plans of action, coordinating, recording and report writing										

Course Outcomes

On the successful completion of the course, student will be able:

CO1 : . To integrate the classroom learning with field practice - the knowledge related to different field settings- establishment of NGO'S and its work with the beneficiaries

CO2 : To understand the application of different skills related to case work, Group work and other methods of Social Work

CO3: To understand the real life situation of the people living in the community and to address the needs of different community and realise one's development of self and conduct oneself professionally in the field

CO4: To understand the problems of different groups and learn to organise programmes based on felt needs of specific groups.

CO5: To assess and evaluate skills developed for working with different groups of the community.

SYLLABUS

UNIT – I

(12 Hours)

Observation visits: Organizational Profile: History of the Agency, Vision, mission, Organization Chart, funding resources, different types of beneficiaries, its work in the field, networking agencies

UNIT – II

(12 Hours)

Methods Application in Agencies: Various Methods of Social Work – Skills required in the practice of Case work, Group Work, community organization and Social Research, Assessment of the community profile

UNIT – III

(12 Hours)

PHASE – I : Pre-Camp and Form Committees

Identify & Form Committees, Describe Committee Roles & Member's Responsibilities, Engage in Committee Tasks and Involve in Pre-Camp Planning

PHASE – II : Pilot Visits & Finalization of Camp Site

Prepare for Pilot Visits, Undertake the Visits, Present & engage in Critical Evaluation

PHASE – III : Finalization of Camp Theme & Camp Schedule

Engage in analytical evaluation and finalization of camp theme, Draft the Camp Schedule, Demonstrate Leadership Initiatives

PHASE – IV : On-Camp Phase

Accomplishment of Course Objectives, Analysis on Rural Socio-Political & Economic Realities, Hands-on Exposure to Participatory Rural Appraisal , Inputs on Local Governance & Administration through Local Leaders, Engage in Manual Labour, Involve in Community Visits-Interaction with People & Subsequent assessments, Be part of Various Teams to execute, Rural Camp related tasks, Participate in evolving need-based programmes using theatre skills & indigenous folk arts to address concerns, observed in the community, Appreciate the need for Group Living, Practice the art of accommodative reciprocal symbiosis, Contextual Self-Reflection Self-Analysis & Sharing of consolidated and cumulative understanding of the process and outcome, Develop for Professional Development

PHASE – V : Post Camp Phase

Integrative Understanding on the Process and Procedures of Rural Realities & Group Living, Reflective Evaluation, Individual Analytical Report, Group Presentation, Consolidated Batch Report

UNIT – IV

(12 Hours)

Group Project

Identify social issues concerning children, women, youth, and senior citizens, as well as oppressed groups including dalits, bonded laborers, and tribal people. Plan programmes based on felt needs of the specific groups.

UNIT – V

(12 Hours)

Develop suitable skills in processes like decision-making, planning, Organising, and executing plans of action, coordinating, recording and report writing

Mapping of CO with PSO and PO

COs	PS01	PS02	PS03	PS04	PS05	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	3	2	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	2	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1”- Slight (Low) Correlation –“2” – Moderate (Medium) Correlation - “3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Pedagogy: observation visits, camp-pilot visits, conduct survey, organise programmes, Group Project, Report writing.

METHOD OF ASSESSMENT**INTERNAL**

COMPONENTS	MARKS
Attendance in activities	5
Regularity in submitting reports	5
Observation during the visit	5
Participation in camp activities	5
Involvement in Group Project	5
Total	25

EXTERNAL

COMPONENTS	MARKS
VIVA VOCE	
i)Reporting	25
ii)Theoretical Knowledge	25
iii)Communication and Presentation	25
Total	75

Course Designer: Dr.S.Vidhya

SOCIOLOGICAL AND PSYCHOLOGICAL FOUNDATIONS FOR SOCIAL WORK

Course Code	Course Name	Category	L	T	P	S	Credits	Inst. Hrs	Marks		
									CIA	External	Total
23PSW1DSE1A	SOCIOLOGICAL AND PSYCHOLOGICAL FOUNDATIONS FOR SOCIAL WORK	Discipline specific Elective Course – I	N	-	-	-	3	6	25	75	100
PREREQUISITES		Basic Understanding of Sociology and Psychology									
Learning Objectives											
1	To understand the basics of Psychology										
2	To establish the linkage between psychology, sociology and Human behaviour for effective social work practice										
3	To understand the principles of Human Growth and Development										
4	To understand the dynamics of human and social behaviour										
5	To analyse social problems and evaluate the causes for social problems										
6	To understand about Social Institutions										

Course Outcomes	Taxonomy Level
On the successful completion of the course, student will be able to	
CO1 : Recall ,Summarize and Interpret the basic concepts of Psychology, Human Development, Society and Social Institutions	K1,K2,K3
CO2 : Explain and Assess the Social Problems and Developmental tasks of Human	K4,K5
CO3: Examine and Determine the basic concepts of society ,Groups and social stratification	K4,K5
CO4: To Interpret the sociological and psychological concept related to social work	K2
CO5: To Identify, Evaluate and Elaborate the various types of social institutions	K3,K4,K5

SYLLABUS

UNIT	CONTENTS	HOURS
I	Introduction to Psychology: Definition and branches of Psychology –Role of Psychology in Social Work- Sensory Process and Perception: Process of Perception - Learning: Meaning, factors involved in learning ,Classical Conditioning and Operant Conditioning - Memory: Sensory memory, Short-term memory, long term memory, forgetting, improving memory	18
II	Human Development: Developmental Psychology - Meaning and principles of growth and development, heredity, environment, family and community and ecological influences -- Brief outline of Human Development: Characteristics, developmental tasks, personal and social adjustments, vocational, family / marital adjustments and hazards in each stages such as: Prenatal period, infancy and babyhood - Childhood, Puberty & Adolescence - Adulthood – Middle Age and Old Age	18 9
III	Introduction to Society : Society: Definition - meaning and characteristics - Community: Definition, characteristics and types, Social Stratification: Definition, Characteristics, Caste, Class & Race. Social Change: Meaning, Characteristics and Social Control-Meaning and Types	18
IV	Introduction to Groups :Groups - Definition, Characteristics and Classification of Groups -- Primary groups and Secondary Groups Social Interaction & Social Process: Competition, Co-operation, Conflict, Accommodation & Assimilation. Socialization: Definition, Characteristics, Types and Agencies of Socializations -Theories of Socialization	18
	Social Institutions: Types of Social institutions: Marriage, Family ,Kinship, Religion, Education ,Economic system and Judiciary Structural aspects - Norms, Values, Folkways & Mores -	

V	Social Problems - Major Social Problems in India- Untouchability, Poverty, Domestic violence ,Dowry, Alcoholism and Sexual harassment Causes and factors responsible for Social problems,	9
VI	Self Study for Enrichment (Not to be included for External Examination) Case Laws on various Legislation related to Social Problems	

Text Books

1. Vidya, Bhushan., Sachdeva, D.(2005). *Introduction to Sociology*. Allahabad: Kitab Mahal.
2. Haralambos. (2014). *Sociology: Themes and perspectives*. Harper Collins; Eight edition
3. Hurlock, Elizabeth B. (1996). *Developmental Psychology-a life span approach*. Tata New Delhi: Mcgraw-Hill Publishing Co.Ltd.
4. Shankar Rao, C. N. (2007). *Sociology: Principles of Sociology with an Introduction to Social Thought*. New Delhi: S Chand & Co. Ltd.
5. MacIver, R.M., Page, C.H. (2000). *Society an Introductory Analysis*. New Delhi: Macmillan Publishers India

Reference Books

1. Madan, G.R. (2002) .Indian Social Problems, Mumbai : Allied Publishers Pvt. Ltd
2. Morgan, C.T., King, R.A., Weisz, J.R., & Schopler, J (2004) *Introduction to Psychology*. New Delhi: Tata Mc Graw-Hill book Co.
3. Ram Ahuja (2014)Social Problems in India ,Third Edition ,Rawat Publications
4. Rawat, H. (2007). *Sociology Basic Concepts*. Jaipur: Rawat Publications
5. Shah, G. 1990. *Social Movements in India: A Review of Literature*. New Delhi: Sage Publications.
6. Zastrow, C. & , K. (2010). *Understanding Human Behavior and the Social Environment*. Chicago: Nelson-Hall.
7. Elgin, F.H.& David, C.(2017),*Social Science- An Introduction to the Study of Society*. (13th ed.). Newyork: Pearson
8. Hutchison, E. (2007). *Dimensions of Human Behavior: Person and Environment*. Thousand Oaks: Sage Publications, Inc

Web Resources

1. www.egyankosh.ac.in/handle/123456789/43
2. <https://www.epw.in>
3. <https://onlinelibrary.wiley.com>
4. <https://www.frontiersin.org>
5. <https://sagepub.com>
6. <https://ir.inflibnet.ac.in>

Mapping of CO with PSO and PO

CO/PO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	3	3	3	3	2	2	2	2
CO2	3	3	2	2	3	2	2	2	2	2
CO3	3	2	2	2	3	2	3	3	3	3
CO4	3	2	2	3	2	2	2	2	3	2
CO5	3	3	2	3	3	3	3	3	3	3

“1” Slight (LOW) Correlation – “2” Moderate (Medium) Correlation –
“3”-Substantial (High) Correlation –“-“ Indicates there is no correlation

Pedagogy: Chalk& Talk, , Seminar, PPT Presentation, E-Content ,Group Discussion and Case Study.
Course Designer :Ms.S.Hema



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY-18
PG AND RESEARCH DEPARTMENT OF SOCIAL WORK
MASTER OF SOCIAL WORK
LEARNING OUTCOME BASED CURRICULUM FRAMEWORK (CBCS-LOCF)
(For candidates admitted from the academic year 2022-2023 onwards)

III	Core Course – VI (CC)	Specialization –I Public Health	22PSW3CC6A	6	5	3	25	75	100
		Women welfare and Health	22PSW3CC6B						
		Human Resource Development	22PSW3CC6C						
		Rural and Tribal Community Development	22PSW3CC6D						
	Core Course–VII (CC)	Specialization –II Medical Social work	22PSW3CC7A	6	5	3	25	75	100
		Child Rights and Child Protection	22PSW3CC7B						
		Labour laws and Industrial Relations	22PSW3CC7C						
		Urban Community Development	22PSW3CC7D						
	Core Practicum – III (CP)	Social Work Practicum(P)	22PSW3CC3P	6	5	3	40	60	100
	Core Choice Course–II (CC)	Cyber Security	22PGCS3CCC2A	5	4	3	25	75	100
		Life Skills and Soft skills for Social Workers	22PSW3CCC2B						
		Corporate Social Responsibility	22PSW3CCC2C						
	Discipline Specific Elective Course-III (DSE)	Social Work for Competitive Examinations	22PSW3DSE3A	4	3	2	-	100	100
Computer Skills for Social Workers		22PSW3DSE3B	3			25	75		
Environmental Social Work		22PSW3DSE3C							
Generic Elective Course -I (GEC)	Indian Social Problems	22PSW3GEC1	3	2	3	25	75	100	
Extra Credit Course	Swayam online Course	To be Fixed Later							
Total			30	24				600	

Semester III	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hours/ Week	CREDITS
22PSW3CC6A	PUBLIC HEALTH	CORE COURSE	6	5

Course Objectives

1. To inform the students about health and hygiene and related aspects.
2. To enlighten the students about diseases and occupational health.
3. To teach students about the health care delivery system.
4. To make the students aware about health education.
5. To inform students about health work in the community.

Prerequisites

Learners to be aware of health issues and common diseases.

Course Outcomes and Cognitive Level Mapping

On the successful completion of the course, the students will be able to

CO NUMBER	CO STATEMENT	COGNITIVE LEVEL
CO1	Explain the concepts of health and public health	K2
CO2	Identify communicable disease and Non-communicable Diseases	K2
CO3	Identify the role of social worker in Public health	K2
CO4	Identify the role of social worker in Public health	K3
CO5	Discuss about National Health Programmes	K4

Mapping of CO with PSO and PO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2	3	2	1	1	1
CO2	3	3	3	3	3	2	3	1	1	2
CO3	3	2	3	3	2	3	3	3	1	3
CO4	1	1	1	1	1	3	2	2	1	1
CO5	3	3	3	3	3	3	3	3	3	3

“1”- Slight (Low) Correlation –“2” – Moderate (Medium) Correlation - “3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Concept of Health and Community Health , Dimensions of Health, Indicators and Determinants of health- Public Health- Definition, Significance, Evolution of Public health in India, Models of Public health, Health Care delivery system in India- Central ,State ,District and Block/Village.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	Epidemiology and Diseases: Definition, aims and uses of epidemiology. Natural history of disease- Epidemiology, Prevention and Control deficiency syndrome of Communicable and Non-Communicable Disease (NCD), Communicable Disease - Leprosy, Tuberculosis, Sexually transmitted diseases (STDs)-Human Immuno Deficiency Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS)- Emerging disease threats-Severe Acute Respiratory Syndrome (SARS) - Covid Pandemic-Global Issue-role of WHO during Pandemic. Non- Communicable Diseases- Cardio vascular disorders, Cancer, Diabetes, Hypertension, Obesity, Anemia.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	HEALTH SYSTEMS DEVELOPMENT Levels of Health Care- Primary, Secondary & Tertiary. Health care providers (Government, Private, Voluntary/NGO, Indigenous) Alternative systems of medicine (AYUSH) Integrated health care delivery-Preventive, Promotive, curative & rehabilitative. Major health problems of adolescents and Youth. Health related to Sustainable Development Goals.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	HEALTH POLICY, PROGRAMMES AND LEGISLATION Health Policies - National Health Policy, National Health Programmes- National Rural Health Mission (NRHM), National Urban Health Mission (NUHM), National Mental Health Programme, Universal Immunization Programme, School Health Programme, National Cancer Control Programme ,Legislation pertaining to health- Medical Termination of Pregnancy Act 1971, Organ Transplantation Act,1994, Prenatal Diagnostic Test PNDT Act 1994, Food Safety and Standards Act, 2006.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	SOCIAL WORK APPROACHES IN PUBLIC HEALTH Social determinants of health-Social Work strategies and approaches in Public health; Role of Social worker in Public Health sector-Health education, Health awareness programme, Counseling,Referral, Community mobilization and organization.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Semester III	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hours/Week	CREDITS
22PSW3CC6B	WOMEN WELFARE AND HEALTH	CORE COURSE	6	5

Course Objectives

- To inform the students about the demographic profile of women in India.
- To enlighten the students on women's welfare and development.
- To teach students about the issues concerning women's health.
- To make students aware of the health problems of women.
- To update the students on women's welfare programmes.

Prerequisites

The Learner can problems of women and and law related to Women in India

Course Outcomes and Cognitive Level Mapping

On the successful completion of the course, the students will be able to

CO NUMBER	CO STATEMENT	COGNITIVE LEVEL
CO1	Define and explain various problems of Women	K1, K2
CO2	Identify various problems of Women and apply appropriate laws relating to Women	K3
CO3	Compare position of women in different circumstances.	K4
CO4	Explain Methods, Concepts, Values and Contribution, Scope and Fields of Social Work.	K5
CO5	Elaborate on the changing role and status of Women and the various strategies, measures meant for them.	K6

Mapping of CO with PSO and PO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2	3	2	1	1	1
CO2	3	3	3	3	3	2	3	1	1	2
CO3	3	2	3	3	2	3	3	3	1	3
CO4	1	1	1	1	1	3	2	2	1	1
CO5	3	3	3	3	3	3	3	3	3	3

“1”- Slight (Low) Correlation –“2” – Moderate (Medium) Correlation - “3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Demographic profile of women in India: changing role and status of women in India; problems of women: gender bias, child marriage, dowry, widowhood, desertion, divorce, destitution, educational backwardness, discrimination in employment; problems of employed women and mothers; problems of unmarried mothers; delinquency, prostitution, trafficking in women and girls. Domestic violence and Trauma; Intimate partner violence.	18	CO1, CO2, CO3, CO4, CO5, CO6	K1, K2, K3, K4, K5, K6
II	Women Welfare, Development and Empowerment: Indicators of women development; Government of India Schemes for Women's Development; National commission for Women. Women and law: legislations relating to women; legal and constitutional rights, marriage, divorce, and property rights; labour laws for women; women empowerment: meaning, characteristics of empowered women; Life Skills for Women; feminism; women's movement abroad and in India.	18	CO1, CO2, CO3, CO4, CO5, CO6	K1, K2, K3, K4, K5, K6
III	Health needs of Women: Early middle and late adulthood - nutritional needs in adulthood period - Poly cystic ovarian disease - hormonal imbalances - menopause hormonal changes - nutritional care in menopause period - Food chart during menopause - Mental health during menopause.	18	CO1, CO2, CO3, CO4, CO5, CO6	K1, K2, K3, K4, K5, K6
IV	Life Style Diseases of Women: Breast cancer, cervical cancer, osteoporosis – arthritis - other degenerative diseases: incidence - causes - dietary preventive measures - Health care programs to improve women's health: International - national and state level agencies for women' health	18	CO1, CO2, CO3, CO4, CO5, CO6	K1, K2, K3, K4, K5, K6
V	International Perspectives On Health : Health as a Critical Area of Concern in the Beijing platform for action; Women's Health at ICPD, Cairo; WHO, UNICEF, UNESCO, CARE and others; MDG's and women's health.	18	CO1, CO2, CO3, CO4, CO5, CO6	K1, K2, K3, K4, K5, K6
VI	Self Study for Enrichment (Not to be included in External Examination) Learners need to present case studies of women in different circumstances and Women achievers. Develop strategies to enhance the status of women in all walks of their life. Make a critical analysis of policies,	-	CO1, CO2, CO3, CO4, CO5, CO6	K1, K2, K3, K4, K5, K6

	programmes and legislations with regard to women			
--	--	--	--	--

Text Books:

Das Gupta Monica & Krishnan T.N.(1998). Women and Health. Delhi: Oxford.

Reference Books:

1. Avasthi et.al.(2001). Modernity, Feminism, and Women Empowerment, Delhi :Rawat Publications
2. Bansal, D, K .(2006). Gender Justice. New Delhi: Mahaveer and Sons
3. Dalal, Ajit K and Ray, Subha. (2005). Social Dimensions of Health. Jaipur: Rawat Publications
4. Fernandez. B., Alex. (2014). Social Work for Women and Children. PacificBooks International.
5. Maithrey, Krishnaraj (ed) (1999). Gender, population and development. New Delhi: Oxford
6. Park J Rand Park K. (1983). Text Book of Preventive and Social Medicine. Habalpure: M.S.Banarside
7. Patel, Tulsi (Ed).(2007). Sex-selective Abortion in India: Gender, Society and New Reproductive Technologies. New Delhi: Sage
8. Petchesky, Rosalind Pollack. (2003). Gendering Health and Human Rights. London: Jed Book
9. Shukla P.K. (1982). Nutritional Problems of India. New Delhi: Prentice Hall of India.
10. Swaminathan M. (1986). Principles of Nutrition and dietetics. Bangalore: Bangalore printing and publishing.
11. Reddy, P. R., and R. Sumangla. (1998). Women in development. New Delhi: Publishing Corporation.
12. Sebasti L. Raj (1991). Quest for gender justice: a critique of the status of women in India. New Delhi: South Asia Books
13. Shrivastava & Sudharani. (1999). Women in India. New Delhi: Common Wealth Publishers
14. Theis,Joachim. (2004). Promoting Rights–Based Approaches, Experiences and Ideas from Asia and the Pacific. Sweden: Save The Children.
15. World Health Organization.(2000). Women of South East Asia: A health profile. New Delhi : WHO, Regional Office for South East Asia

16. Zubaan , Mohan Rao (Ed).(2004). The Unheard Scream: Reproductive Health and Women's Rights in India. New Delhi: Sage

Web References

1. <https://www.youtube.com/watch?v=RkBV7DORxhs>
2. <https://www.slideshare.net/eternal05/welfare-schemes-for-women-in-india-1-copy>
3. <https://www.slideshare.net/abigailabalos/adult-nutrition-powerpoint>
4. <https://www.slideshare.net/athirarajan94/lifestyle-diseases-ppt>
5. <https://www.unwomen.org/en/news/in-focus/csw59/feature-stories>

Pedagogy

Chalk & Talk, Seminar, PPT Presentation, Group Discussion, Blended Method, and Case Study.

Course Designer

Dr.G.Mettilda Buvaneswari

SEMESTER III	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	HOURS/WEEK	CREDITS
22PSW3CC6C	HUMAN RESOURCE DEVELOPMENT	CORE COURSE	6	5

Course Objectives

To inform the students about the basic concept of Human Resource Development

To make the students to aware about Performance Management and Performance Appraisal

To teach the students about Training and Development and Various methods of Training

To make the students to aware about HRD Trends in industries

Pre-requisties

The learners need to understand about the basic concept of Human Resource Development and its various functions

Course Outcomes and Cognitive Level Mapping

On Successful completion of this course, the Students will be able to:

CO Number	CO Statement	KNOWLEDGE LEVEL
CO1.	Recall, Explain and Evaluate the Concept of Human resource Resource Development and its functions	K1,K2,K5
CO2.	Explain,Examine the concept of Performance management and Performance Appraisal Methods	K2,K3,K5
CO3.	Apply and Assess the process Training and Development	K3,K5
CO4.	Identify and Evaluate the various methods of Training	K3,K5
CO5	Explain and Develop the knowledge on HRD trends in Industries	K2,K5,K6

Mapping of CO with PSO and PO

CO/ PO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	2	2	2	2
CO2	3	3	3	3	3	2	2	2	2	2
CO3	3	3	3	3	3	2	3	3	3	3
CO4	3	3	3	3	3	2	2	2	3	2
CO5	3	3	3	3	3	3	3	3	3	3

“1” Slight (LOW) Correlation –“2” Moderate (Medium) Correlation –“3”- Substantial (High) Correlation–“-“ Indicates there is no correlation

UNIT	CONTENTS	HOURS	Cos	COGNITIVE LEVEL
I	HRD-Macro Perspective: HRD Concept, Origin and Need, HRD as a Total System; Approaches to HRD; HRD at Macro and Micro Climate	18	CO1,CO2,CO3 , CO4,C05	K1,K2,K2 ,K3,K4,K5
II	Performance Management: Meaning, Purpose and Principles of Performance Management, Dimensions of Performance Management Performance Appraisal- Meaning, Definition, Objectives, Significance of Performance Appraisal, Performance Appraisal Methods :Traditional Methods, Modern Methods Difference between Performance Management and Performance Appraisal	18	CO1,CO2,CO3 ,CO4,C05	K1,K2,K2 ,K3,K4,K5
III	Human Resource Learning and Development: Concept and Importance; Assessing Learning and Development Needs; Designing and Evaluating L& D Programmes; Role, Responsibilities and challenges to Training Managers. Globalization challenges and Strategies of Training Program	18	CO1,CO2,CO3 ,CO4,C05	K1,K2,K2 ,K3,K4,K5
IV	Training Methods: Training with in Industry (TWI): On the Job & Off the Job Training; Management Development: Lecture Method; Role Play; In-basket Exercise; Simulation; Vestibule Training; Management Games; Case Study; Programmed Instruction; Team Development; Sensitivity Training; Globalization challenges and Strategies of Training Program	18	CO1,CO2,CO3 , CO4,C05	K1,K2,K2 ,K3,K4,K5
V	HRD Trends:Job rotation, Job enlargement, Job enrichment. Quality of work life, Total Quality Management (TQM) Human Resource Information system: Meaning and Importance; ISO 9000 Series, Competency Management Meaning & Importance. Retention, downsizing and outsourcing.Talent Management, Artificial Intelligence & Machine Learning. Talent Management, Artificial Intelligence.	18	CO1,CO2,CO3 ,CO4,C05	K1,K2,K2 ,K3,K4,K5
VI	Self Study for Enrichment (Not to be included for End Semester Examination) Human Resource Management: - Introduction - Characteristics - scope of HRM -Objectives Importance and Functions of HRM -. Human Resource Planning – Concept – Objective-Need and Importance – Process	18	CO1,CO2,CO3 ,CO4,C05	K1,K2,K2 ,K3,K4,K5

Text Books

- 1.Aswathappa, K .(2008).*Human Resource Management Text and Cases*. McGraw- Hill Publishing company Limited,New Delhi.
- 2.Bhatia, B. S., and Batra G.S .(2001) .*Human Resource Development* .Deep and Deep Publications.

Reference Books

- 1.Gosh, B .(2000) . *Human Resource Development and Management*. Vikas Publishing House pvt ltd
- 2.Khanka, S .S .(2007). *Human Resource Management – Text and Cases*.S.Chand publication
3. Rao, T.V. (2015). *Performance Management towardsexcellence*. SAGE Publications Pvt Ltd.
4. Sharma, R.C. and Sharma N. (2018).*Human resource management -theory and Practice*.SAGE PublicationsPvtLtd.
- 5.Wermer ,J .M .and Randy L.Simone. De (2012). *Human Resource development*.Cengage Learning India Private Limited,
6. Rao, T.V.(et.al): HRD in the New Economic Environment, Tata McGraw-Hill Pub.Pvt, Ltd.,New Delhi , 2003
7. Rao, T.V: HRD Audit, Sage Publications, New Delhi

Web Resources:

<https://dhr.gov.in/schemes/human-resource-development-health-research-hrd>
<https://www.youtube.com/watch?v=b2UZKco-drw>

Pedagogy: Chalk& Talk, , Seminar, PPT Presentation, Group Discussion and Case Study.

Course Designer: Ms.S.Hema

SEMESTER III	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	HOURS/WEEK	CREDITS
22PSW3CC6D	RURAL& TRIBAL COMMUNITY DEVELOPMENT	CORE COURSE	6	5

Preamble

The course will introduce the students the basic concepts, policies, programmes, approaches to Rural and Tribal Community development.

Pre-Requisites

The learners need to understand about the basic conditions of Rural & Tribal communities.

Course Outcomes and Cognitive Level Mapping

On Successful completion of this course, the students will be able to:

CO Number	CO Statement	KNOWLEDGE LEVEL
CO1.	Describe the conceptual framework related to Rural Community Development and Tribal Community Development.	K1
CO2.	Deliberate on social structure, social relations and institutions related to Rural and Tribal communities	K2
CO3.	Categorize the need and importance of Rural and Tribal Community Development.	K3
CO4.	Evaluate the policies& programmes related to the Rural and Tribal Community Development.	K4
CO5.	Evaluate the legislative provisions that are related to Rural and Tribal Community Development.	K5

Mapping of CO with PSO and PO

CO/PO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	3	3	3	2	2	3	2
CO2	3	3	3	3	3	3	3	3	3	3
CO3	2	2	3	3	3	2	2	2	3	3
CO4	3	3	2	3	2	3	3	3	2	2
CO5	3	3	3	2	3	3	3	3	3	3

“1” Slight (LOW) Correlation –“2” Moderate (Medium) Correlation –“3”- Substantial (High) Correlation–“-“ Indicates there is no correlation

Syllabus

UNIT	CONTENTS	HOURS	Cos	COGNITIVE LEVEL
I	RURAL COMMUNITY Rural Community: Concept, Characteristics, Problems related to Agriculture and its allied activities, Income equality, Employment, Food Security, Fisheries, Migration, Community Health and Infrastructure, Eco farming and Sustainable Development.	18	CO1, CO2, CO3, CO4, C05	K1,K2,K3,K4, K5
II	RURAL COMMUNITY DEVELOPMENT Concept, Philosophy, Principles and Early Experiments of Rural Community Development. Extension Education: Concept, Characteristics & Methods. Contemporary Approaches to Rural Community Development: Community Driven Development (CDD) and Asset Based Community Development (ABCD).	18	CO1, CO2, CO3, CO4, C05	K1,K2,K3,K4, K5
III	RURAL DEVELOPMENT ADMINISTRATION & PROGRAMMES Panchayat Raj Institutions, Salient Features of 73rd Amendment. Cooperative Movements. Administrative Structure of Rural Development at the Central, State and District level, Rural Development Agencies – CAPART, NABARD, Regional Rural Development Banks. Rural Development Programmes – MGREGA, PMGSY, SGSY, SSA. Programmes sponsored by World Bank for Rural Development, National Rural Livelihood Mission, Rastriya Sama Vikash Yojana(RSVY), Deen Dayal Upadhyay-Grameen Kaushalya Yojana, Deen Dayal Antyodaya Yojana, Sampoorna Grameen Rozgar Yojana, Provision of Urban Amenities in Rural Areas(PURA), Support for Marginalised Individuals for Livelihood, Pradhan Mantri Mudra Yojana, Problems in the implementation of programmes, Rural Entrepreneurship, Role of NGOs in Rural Community Development and Role of Social Worker in Rural Community Development. Micro Credit and Women's Development.	18	CO1, CO2, CO3, CO4, C05	K1,K2,K3,K4, K5
IV	TRIBAL COMMUNITY Concept, Characteristics and Types of Tribal Community, Geographical distribution of Tribes, Scheduled. De-notified and Nomadic Tribes. Life Style of Tribes – Socio-economic conditions, Cultural & Religious practices. Problems of Tribes. Exploitation and Atrocities on Tribes. Problems related to Resettlement and Rehabilitation.	18	CO1, CO2, CO3, CO4, C05	K1,K2,K3,K4, K5

V	TRIBAL DEVELOPMENT ADMINISTRATION & PROGRAMMES Constitutional, Legal and Economic provisions for the protection of Tribes, Functions of Tribal Development Blocks, Tribal Sub-Plans, Administrative Structure at Central, State, and District levels. Research and Training in Tribal Development. Services and Facilities of Tribes. Adivasi Mahila Sashakti Karan Yojana, Adivasi Shiksha Rinn Yojana, Micro Credit Scheme for SHGs, Tribal Forest Dwellers Empowerment Scheme, Scheduled Tribe Component (STC), Vanbandhu Kalyan Yojana, Tamilnadu Adidraavidar Housing and Development Corporation Limited(TAHDCO). Role of NGOs in Tribal Development. Tribal Development Policies, Application of Social Work Methods and Problems in implementation of Tribal Development Programmes.	18	CO1, CO2, CO3, CO4, CO5	K1,K2,K3,K4 ,K5
VI	Self-Study for Enrichment (Not to be included for End Semester Examination) Grameen Bank Model, SHG Movement, ECO SAN, WASHTribal Leadership, Belief System,Tribal Revolts, Tribal Movements.Case Studies of Best Practices pertinent to Rural & Tribal Community Development	18	CO1, CO2, CO3, CO4, CO5	K1,K2,K3,K4 ,K5

Text Book

Mello, L.D. (2018) Community Development: Rural, Urban and Tribal perspective, FSP media publications.

Reference Books

- Gupta, K.B (2010). Rural development in India, Atlantic Publication.
- Soundarapandian, M (2010). Rural Entrepreneurship: Growth and Potentials. Kanshika Publications.
- Singh, K. (2008) Rural Development: Principles, Policies and Management, Sage Publications.
- Soundarapandian, M (2001). Tribal Development in India: A Case Study. Anmol Publisher.
- Singh, K.S (2002). Tribal Situation in India, Indian Institute of Advanced publication.

Web Resources:

<https://www.scribd.com/doc/18799723/Introduction-to-Rural-Community-Development>
https://www.researchgate.net/publication/328289155_RURAL_DEVELOPMENT_IN_INDIA-A_WAY_FORWARD
http://planningcommission.nic.in/plans/planrel/fiveyr/10th/volume2/v2_ch4_2.pdf
<https://tribal.nic.in/writereaddata/AnnualReport/AnnualReport2016-17.pdf>

Pedagogy: Chalk& Talk, Seminar, PPT Presentation, Group Discussion and Case Study.

Course Designer: Dr. G. Kanaga

Semester III	Internal Marks :25		External Marks : 75	
COURSE CODE	COURSE TITLE	CATEGORY	HOURS/WEEK	CREDITS
22PSW3CC7A	MEDICAL SOCIAL WORK	CORE COURSE	6	5

Course Objectives

- 1.To equip students by imparting knowledge to understand the concept, definition, objectives, of Medical Social Work.
- 2.To apply the models of Health care while working at micro, mezzo and macro level.
- 3.To acquire skills and techniques required for medical social worker, values and ethics of professional social work.
- 4.To develop the ability to critically analyse problems of patients and caregivers in health setting.
- 5.To identify the settings and fields for the practice of medical social work.

Pre-requisites

The learners needs to have basic understanding about social Work and hospital settings.

Course Outcomes and Cognitive Level Mapping

On the successful completion of the course, the students will be able to

CO Number	CO Statement	COGNITIVE LEVEL
CO1	Define, , demonstrate, Illustrate and outline Social Work , concept, history, scope and trends in Medical Social Work	K1, K2
CO2	Identify, analyse, problems and Interventions for patients and care givers.	K3,K4

CO3	Analyse, categorize, compare, list, distinguish and examine health care models in the practice setting	K4
CO4	Explain & elaborate medical Social Work Department, patients rights, Medical ethics, Medico legal cases, Government schemes. Discuss the meaning of recording & types	K5
CO5	Discuss the Roles and Responsibilities of a Medical Social Worker, Elaborate on Social Work Practice in Different settings	K6

Mapping of CO with PSO and PO

COs	PS01	PS02	PS03	PS04	PS05	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	3	3	3	3	3	3	2
CO2	3	3	2	3	3	3	3	3	3	3
CO3	2	3	3	3	3	3	2	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1”- Slight (Low) Correlation –“2” – Moderate (Medium) Correlation - “3” – Substantial (High) Correlation – “-” indicates there is no correlation.

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Introduction to Medical Social Work: Medical Social Work: Definition, Concept, objectives. Historical Development of medical social work in India and abroad. Trends & Scope of Medical Social work practice in India.skills of Medical Social Worker Organisation and administration of Medical Social Work in hospitals.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	Understanding Patient and illness behaviour: Concept of- Acute illness, chronic illness, terminal illness, disability, impairment and handicaps.Concept of patient as a person. Patient as a whole, Sick role and illness behaviours. Impact of illness on the patient and caregivers. Hospitalization of patient – impact on family. Impact of long-term hospitalization on the patients and their families.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	Healthcare Models: Preventive, Curative, Promotional, Integrative and Development Model. Holistic Approach to Health Alternative System of Health - AYUSH. Health Education: Concept and Principles, Models, Methods and Techniques	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

IV	Medical Social Work Department : Organization and administration; Functions, Public relations in hospital, Medical Social Work in relation to other disciplines, Multidisciplinary approach and teamwork; Medico-Legal issues, Euthanasia, Organ Transplant. Patient's Rights and Medical Ethics in health care. Government health insurance scheme, documentation & record keeping in hospital.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	Medical social work practice in different settings: Role of medical social worker in Out-Patient departments, Emergency / Crisis Care, ART Centers, Hospice, Community Health, Geriatric Department, Pediatric Department and Oncology department. Rehabilitation: Definition, Types and principles, physical medicine, physiotherapy and occupational therapy Community based rehabilitation. Ambulatory, Palliative care, Hospice and Convalescent care.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self-study for Enrichment (Not to be included for End Semester Examinations) Students should prepare an assignment on role of Medical Social Workers in different departments	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Books

- Brandell, J R (1997). Theory and Practice of Clinical Social Work, London: Free Press
- Brannon & Feist, (2000) Health Psychology, TLARC Publication, Toronto.
- Dowding & Barr, (2002) Managing in Health Care, Pearson Education Ltd. London.
- Park and Park, 23 rd (Ed), 2015 Preventive and Social Medicine, Banarsidas Bhanot Publishers, Jaipur.
- Pathak, S.H., (1961) Medical Social Work in India, Delhi School of Social Work, New Delhi.
- Sarah Ghelert, 2006 Hand book of Health Social Work, John Wiley & Co., London.
- References
- Kapil, Krishnana (1971) Social Service Opportunities in Hospitals, Bombay, TISS
- Bajpai P.K. (ed.). (1997). Social Work Perspectives in Health. Rawat Publications. Delhi.
- Blaxter, Mildred (2004), Key Concepts on Health, Polity Publishers, New Delhi
- Bradshaw & Bradshaw, (2004) Health Policy for Health Care Professional, Sage Publications, New Delhi.
- Beder, J. (2006). Hospital social work: The interface of medicine and caring. New York, NY: Routledge.
- D'Ambruoso, S. (Ed.) (2006). Handbook of social work in health and aging. New York, NY: Oxford University Press.
- Egan, M. (2010). Evidence-based interventions for social work in health care. New York, NY: Routledge.
- Field M. (1963). Patients are people-A Medical-Social Approach to Prolonged Illness, Columbia University Press, New York.
- Gehlert, S., & Browne, T. A. (Eds.). (2006). Handbook of health social work. New York, NY: Wiley.
- Gambrell, E. (1997). Delhi Social work in the 21st century, Pine for ge press, New Delhi.
- Golstein D. (1955), Expanding horizons in medical social work, The University of Chicago Press, Chicago.

Web Resources

1. <https://mgcub.ac.in/>
2. <https://rmlh.nic.in/>
3. <https://www.tandfonline.com/>
4. <https://www.ncbi.nlm.nih.gov/pmc/>
5. <https://www.sweducarebd.com/>
6. <http://www.pitt.edu/>

Pedagogy: Lectures, case discussions, PPTs, Group Discussions

Course Designer: Ms.PL.Rani

Semester III	Internal Marks :25 75		External Marks :	
COURSE CODE	COURSE TITLE	CATEGORY	Hours/Week	CREDITS
22PSW3CC7B	CHILD RIGHTS &CHILD PROTECTION	CORE COURSE	6	5

Course Objectives

- To inform the students about the demographic profile of children in India.
- To make the students understand the problems of children.
- To teach students about the rights of children.
- To make students aware about the policies of children.
- To update the students on laws to protect children.

Pre-requisites

The learners need to have basic knowledge on child, their basic rights and means of protection.

Course Outcomes and Cognitive Level Mapping

On the successful completion of the course, the students will be able to

CO Number	CO Statement	COGNITIVE LEVEL
CO1	Define and Recall the meaning of Child , Illustrate and outline the Vulnerability of children	K1, K2
CO2	Identify the Child Rights , demonstrate the Legal protection to children in various occupations	K2,K3
CO3	Analyse, categorize and list the Child related policies, Examine the meaning and significance of human rights.	K4
CO4	Evaluate the International Perspectives on child welfare	K5
CO5	Elaborate and Discuss the National Mechanisms for child rights and protection	K6

Mapping of CO with PSO and PO

Cos	PS01	PS02	PS03	PS04	PS05	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	3	3	3	3	3	3	3
CO2	3	3	2	3	3	3	2	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1”- Slight (Low) Correlation –“2” – Moderate (Medium) Correlation - “3” – Substantial (High) Correlation – “-” indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Basic Profile of Children: Child: meaning, demographic profile of children in India. Socialisation; Vulnerability of children- poverty, child labour, trafficked children, street children, Abused children, children with disability, children in institutions or homes, Neglected Children, Children of Disorganized family system, Children of commercial sex workers, Children affected by HIV/AIDS, victims of calamities, victims of domestic violence-need for legislative intervention.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	Basic human rights and Child Rights: Child Rights : meaning, scope, origin and development of child rights in India. Constitutional Rights, National Policy on Child Labour. Comprehending child's right to life, survival and development. Basic concepts of human rights- dignity, liberty, equality, justice, ethics and morals, meaning and significance of human rights.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	National Mechanisms and Child related policies (Salient features of children related policies) National Mechanisms and Child related policies, National Policy on Education 1986&2021, National Policy on Child Labour 1987, National Nutrition Policy 1993, National Health Policy. National Commission for Protection of Child Rights (NCPCR), Child Line.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

IV	Children Related Acts (Salient features of children related acts): Constitutional Provisions for Children in India,National Policy for Children (1974 and 2013), Protection of Children from Sexual Offences Act (POCSO) 2012, Child Labour (Abolition and Prohibition) Act , Amendment Act 2016 The Prohibition of Child Marriage Act 2006 –Right of Children to Free and Compulsory Education Act,2009, The prenatal Diagnostic Techniques (Regulation and Prevention of Misuse) Act,1994, Juvenile Justice (Care and Protection of Children) Act,2021	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	International Perspective: Sustainable Development Goals in relevance to children, United Nation's Convention on the Rights of Child 1989.International mechanisms for the welfare of children SAARC, AHRC, ASEAN, European Union and Child Rights.UNICEF-Evolution,Objectives, Programmes, Achievements in India. ILO-In the context of Children.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self-study for Enrichment (Not to be included for End Semester Examinations) Students can conduct case study on child rights violation.Collect data on National Child Labour Project. Prepare an econtent on Stakeholders in Child Development - Roles and Functions of the Central and State level Commission for Protection of Child Rights in India	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Book:

Adrian L. James, Kate Wilson. (2007). The Child Protection Handbook-The Practitioner's Guide to Safeguarding Children. Paris: Bailliere Tindall.

Bajpai, A. (2003). Child Rights in India: Law, Policy and Practice, New Delhi: Oxford University Press.

Enakshi Ganguly Thukral India (2005). Status of Children in , Bharti Ali ,New Delhi:Aspire Design.

Manoharan, A. & Mehendale, A. (2012). Commissions for Protection of Child Rights: Answers to Common Questions Children May Have, Bangalore: Centre for Child and the Law National Law School of India University. Status of Children in India (2005). By Enakshi Ganguly Thukral, Bharti Ali ,New Delhi:Aspire Design.

The Child Protection Handbook(2007). The Practitioner's Guide to Safeguarding Children. Adrian L. James, Kate Wilson. Paris: Bailliere Tindall.

Reference Books

1. Bajpai, Asha.(2006). Child Rights in India: Law, Policy, and Practice. India. New Delhi:Oxford.
2. Basu, Durga Das. (1994). Human Rights in Constitutional law. New Delhi: PrenticeHall
3. Baxi, Upendra.(2002). Future of Human Rights. New Delhi: Bueren
4. Bhatia, Vinita.(2011). Social Laws & Child Rights. New Delhi: Alfa
5. Chowdhry, Dharam Paul.(1980). Child welfare [and] development. New Delhi: AtmaRam
6. Cocker Christine.(2011). Advanced Social Work with Children and Families. New Delhi: LearningMatters. Syllabus
7. Devi, Laxmi.(1998). Child and family welfare. Egully.Com
8. Gathia, Joseph Anthony.(1999). Child prostitution in India. New Delhi: Concept Publishing Company
9. Gupta D.N. and Singh. (2001). Human Rights and Freedom of Conscience: Some suggestions for its Development and Application. New Delhi: Chandrachud.
10. Misra, Rabi Narayan.(2003). Child Labour in Hazardous Sectors. New Delhi: Discovery Publishing House.
11. Peter, S.E.(1994). Human Rights: Perspective and Challenges. New Delhi: Lancers Books.
12. Sarada, D., Rajini. N.(2009). Child Rights and Young Lives: Theoretical Issues & Empirical Studies. New Delhi: Discovery India.
13. Shrivastava, Rekha.(2009). International Encyclopaedia of Women Rights and Children Rights. New Delhi: Anmol Publications.
14. Tandon, R.K. & Sudarshan, K.N.(1998). Directory & Handbook on Children. New Delhi: Ashish.
15. Theis, Joachim. (2004). Promoting Rights – Based Approaches, Experiences and Ideas from Asia and the Pacific. Sweden: Save The Children.
16. Upadhyaya, Shivendra. (2009). Encyclopaedia of Juvenile Rights, Child Rights and Women Rights, volume 2. New Delhi: Anmol publications.

17. Wal. S.(1999). International Encyclopaedia of Child Development Priorities for 21Century. New Delhi: Sarup and Sons

Web References

- 1.<https://egyankosh.ac.in/bitstream/123456789/46438/1/Unit-11.pdf>,child rights and legislation.
- 2.<https://egyankosh.ac.in/bitstream/123456789/21223/1/Unit-3.pdf>,child rights and child protection counselling.
- 3.https://epgp.inflibnet.ac.in/epgpdata/uploads/epgp_content/social_work_education/social_work_with_children_and_child_protection/04._child_protection_meaning_and_issues/et/6084_et_et.pdf
- 4.http://www.unicef.org/about/history/index_milestones.htmlaccessed on 15.10.2013
- 5.[http://www.iicrd.org/sites/default/files/resources/A_Developmental_Child_Rights_Approach__\(1\)_0.pdf](http://www.iicrd.org/sites/default/files/resources/A_Developmental_Child_Rights_Approach__(1)_0.pdf)
6. <https://www.unicef.org/child-rights-convention/convention-text-childrens-version>
7. <https://www.unicef.org/child-rights-convention/child-rights-why-they-matter>
- 8.https://www.ohchr.org/sites/default/files/Documents/Issues/RtD/InfoNote_ChildrenYouth.pdf
9. https://en.wikipedia.org/wiki/Child_development_in_India

Pedagogy: Lectures, Audios / Videos followed by discussion, PPT, and Student-led seminars.

Course Designer: Dr.O.Aisha Manju

SEMESTER III	Internal Marks:25		External Marks :75	
COURSE CODE	COURSE TITLE	CATEGORY	HOURS/WEEK	CREDITS
22PSW3CC7C	LABOUR LAWS AND INDUSTRIAL RELATIONS	CORE COURSE	6	5

Course Objectives

- To familiarize the legislations related to regulating Working Conditions in Factories and shops , Protection of Women from Sexual Harassment in Workplace
- To Gain knowledge on legislations related to Welfare fund , Compulsory National and Festival Holidays along with Industrial Relations Legislations.
- To Understand the Wage legislations and Social Security legislations to provide Wages without Exploitations and to provide social security for employees in the Industry
- To develop the knowledge on the concept of Industrial Relations , Mechanism for settling disputes.

Course Outcomes

On the Successful completion of this course, the Students will be able to

CO Number	CO Statement	COGNITIVE LEVEL
CO1	Interpret the labour legislations regulating work conditions and working hours in their Work Environment.	K2
CO2	Develop the knowledge on legislations related to industrial Relations and Various Legislations	K3
CO3	Analyse the legislations related to wages and social security of employees in the society.	K4
CO4	Explain the concept of Industrial relations	K5
CO5	Elaborate the knowledge on Mechanism of Industrial Relations	K6

Mapping of CO with PSO and PO

CO/PO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	2	2	2	2
CO2	3	3	3	3	3	2	2	2	2	2
CO3	3	3	3	3	3	2	3	3	3	3
CO4	3	3	3	3	3	2	2	2	3	2
CO5	3	3	3	3	3	3	3	3	3	3

“1” Slight (LOW) Correlation –“2” Moderate (Medium) Correlation –“3”- Substantial (High) Correlation–“-“ Indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	Cos	COGNITIVE LEVEL
I	<p>Legislation: Meaning, objectives and Evolution of Labour Legislation.</p> <p>Legislations pertaining to working conditions: Salient Features - Factories Act 1948, Child labour prohibition and regulation Act 1986, Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013, Apprentices act 1961, Tamil Nadu shops and establishment Act 1947</p>	18	CO1, CO2, CO3, CO4, CO5	K2, K3, K4, K5, K6
II	<p>Labour Legislations in Tamilnadu: Salient Features - Tamil Nadu Labour welfare fund Act, 1972. The Tamil Nadu Industrial establishments (National and Festival Holidays) Act, 1958.</p> <p>Industrial Relations Legislations: Industrial disputes act 1947, Industrial employment (standing orders) Act 1946, The Trade union act 1926.</p>	18	CO1, CO2, CO3, CO4, CO5	K2, K3, K4, K5, K6
III	<p>Wage Legislations: Payment of wages act 1936, the Minimum wages act 1948, Payment of Bonus act 1965</p> <p>Social Security Legislations: Employees' State Insurance act 1948; Employee's provident fund act 1952 including the pension scheme 1995; the Maternity benefit act 1961, Payment of gratuity act 1972</p>	18	CO1, CO2, CO3, CO4, CO5	K2, K3, K4, K5, K6
IV	<p>Industrial Relations: Meaning, Objectives and Importance, Background to Industrial Relations- Scope, Evolution and Development, Approaches and forms of Industrial relations in India.</p>	18	CO1, CO2, CO3, CO4, CO5	K2, K3, K4, K5, K6
V	<p>Mechanism of Industrial Relations: Collective Bargaining, Joint Management Councils, works committee, Workers Participation in Management, Grievance handling procedures.</p> <p>Industrial Relations machinery in India: Conciliation, Arbitration and Adjudication, Code of discipline- Recent trends, Role of Government, Employers and Trade Unions in maintaining Industrial Relations.</p>	18	CO1, CO2, CO3, CO4, CO5	K2, K3, K4, K5, K6

VI	Self Study for Enrichment (Not to be included for End Semester Examination) New Labour Codes 2020-Objectives and Salient Features Various forms related to legislations and Case laws	-	CO1,CO2,C O3,CO4,CO 5	K2,K3,K4,K5, K6
----	---	---	-----------------------------	--------------------

Text Books

1. Dwivedi. R.S (1997) 'Human Relations & Organisational Behaviour', Macmillan India Ltd, New Delhi
2. Joseph, Jerome (2004) Industrial relations: Towards a new theory of negotiated connectedness, New Delhi: Response Books
3. Malhotra O.P .(1985). Industrial Disputes Act 1947, Lucknow: East law book company
4. Mamoria C.B. and Mamoria. Satish,(1998). 'Dynamics of Industrial Relations', Himalaya Publishing House, New Delhi
5. Paul Edwards .(2009).Industrial Relations: Theory and Practice, 2nd Edition

Reference Books

1. Srivastava ,S.C.(2000). 'Industrial Relations and Labour laws', Vikas Publications pvt ltd, 4th edition
2. Ratna Sen, (2003)'Industrial Relations in India', Shifting Paradigms, Macmillan India Ltd., New Delhi
3. Venkata Ratnam.C.S.(2001). 'Globalisation and Labour Management Relations:Dynamics of change',SAGE Publications Pvt Ltd.
4. Subba Rao,P.(2012). Essentials of Human Resource Management and industrial Relations(Text, Cases and Games),Himalaya Publishing House
5. Jerry S.Rosen bloom (2014) The Handbook of Employee Benefits -Health and Group Benefits,7th Edition,Mc Graw Hill
6. Sarma, A.M (2014),Employee Welfare and Social Security,Himalaya Publishing House.
7. Kulshreshtha,U.C.(2020). Labour Problems and Social Welfare,Lakshmi narain Agarwal publishers

Web Resources:

- <https://labour.gov.in/labour-law-reforms>
- <https://www.youtube.com/watch?v=QcVPILsV84Q>
- <https://www.ilo.org/global/topics/labour-law/lang--en/index.html>

Pedagogy: Chalk& Talk, , Seminar, PPT Presentation, E-Content ,Group Discussion and Case Study.

Course Designer :Ms.S.Hema

SEMESTER III	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	HOURS/WEEK	CREDITS
22PSW3CC7D	URBAN COMMUNITY DEVELOPMENT	CORE COURSE	6	5

Course Objectives

The course will introduce the students the basic concepts, policies, programmes, approaches to Urban Community development.

Pre-requisties

The learners need to understand about the basic conditions of Urban Community.

Course Outcomes and Cognitive Level Mapping

On Successful completion of this course, the students will be able to:

CO Number	CO Statement	KNOWLEDGE LEVEL
CO1.	Describe the conceptual framework related to Urban Community Development	K1
CO2.	Deliberate on social structure, social relations and institutions related to Urban Communities.	K2
CO3.	Categorize the need and importance of Urban Community Development	K3
CO4.	Evaluate the policies& programmes related to Urban Community Development.	K4
CO5.	Evaluate the legislative provisions that are related to Urban Community Development.	K5

Mapping of CO with PSO and PO

CO/PO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	3	3	3	2	2	3	2
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	2	3	3	3	3	2	3	3	3
CO4	3	3	3	3	2	3	3	3	3	2
CO5	3	2	3	3	2	2	3	3	3	2

“1” Slight (LOW) Correlation –“2” Moderate (Medium) Correlation –“3”- Substantial (High) Correlation–“-“ Indicates there is no correlation

Syllabus

UNIT	CONTENTS	HOURS	COs	COGNITIVE LEVEL
I	URBAN COMMUNITIES AND URBANIZATION Urban Communities: Types, features& Rural Urban contrast. City- Meaning & Classification. Urbanization - Trends in Urbanization process, Historical formulation of Urbanization: level of urbanization and urban infrastructure in India, Causes and consequences of Urbanization and unplanned Urban growth. Urbanism – Meaning, Characteristics. Slums – Concept, Culture of Slums and Factors contributing to slum development, Approaches. Theories and Classification, consequences and issues around evictions and relocation.	18	CO1, CO2, CO3, CO4, CO5	K1,K2,K2,K3, K4,K5
II	URBAN PROBLEMS AND CHALLENGES Urban poor: Identity and location, Challenges and options for the Urban poor: Housing, Migration, Drug Addiction, Family Disorganization, Divorce, Crime & Abuse, Juvenile Delinquency, Commercial Sex Work, LGBT issues.Issues of Pollution. Urban basic services for the poor, Institutionalisation of Children,Women, Older Persons and its related Issues.	18	CO1,CO2,CO3, CO4,CO5	K1,K2,K2,K3, K4,K5
III	URBAN COMMUNITY DEVELOPMENT Concept, Historical Background, Approaches, Principles, Process and Methods of Urban Community Development, Urban Development Planning: features and contours, various models. Role of Community Development workers and Application of Social Work methods in Urban Development.	18	CO1,CO2,CO3, CO4,CO5	K1,K2,K2,K3, K4,K5
IV	URBAN DEVELOPMENT ADMINISTRATION National, State and Local levels; Structure and Functions of Urban Development Agencies; Urban Services and Urban Deficiencies. Nagapalika Act (74th Amendment) Functions of Officials and Non-Officials in Urban Self Government. Housing Policies, Housingand Urban Development Corporation (HUDCO) Metropolitan Development Authorities Role of Central Social Welfare Board (CSWB). Concept of Smart Cities.	18	CO1,CO2,CO3, CO4,CO5	K1,K2,K2,K3, K4,K5

V	URBAN DEVELOPMENT PROGRAMMES AND PARTICIPATION, ACTION & ADVOCACY Urban Development Projects I,II,& III, Urban Basic Services Programmes, Smart Cities Mission, Atal Mission for Rejuvenation and Urban Transformation, Pradhan Mantri Awas Yojana(Urban) or Housing for All By 2022, Heritage City Mission Development and Augmentation Yojana, Solid Waste Management Program,TNSCB,JNNURM, National Urban Livelihood Mission and Swach Bharat Mission-Urban, Self-Employment Program of Urban Poor, Integrated Urban Development Mission, Special Area Development Program, Tamilnadu Urban Road Infrastructure Development Program, Problems in implementation, Role of NGOs in Urban Development People's participation: Concept, importance, Scope and problems. Social Action and Advocacy in Urban Development: Public Distribution Systems - Acts and Reforms, Right to Information and Accountability.	18	CO1,CO2,CO3, CO4,C05	K1,K2,K2,K3, K4,K5
VI	Self-Study for Enrichment (Not to be included for End Semester Examination) Theories of Urbanization, Civil society organizations and initiatives for urban community development. Case studies of best practices	18	CO1,CO2,CO3, CO4,C05	K1,K2,K2,K3, K4,K5

Text Book

1. Nagpal, H. 1994 Modernization and Urbanisation in India .Jaipur: Rawat Publications.
2. Kasambi, M. 1994 Urbanization and Urban Development in India. New Delhi: ICSSR

Reference Books

1. Sharma, K. 2001 Rediscovering Dharavi. New Delhi: Penguin
2. Chaubey, P.K. 2004 Urban Local Bodies in India. New Delhi: Indian Institute of Public Administration
3. Roy, P. & Das Gupta, S. 1995 Urbanisation and Slums. New Delhi: Har-Anand Publications.

4. Sandhu, R.S.(ed.) 2003 Urbanisation in India: Sociological Contribution. New Delhi: Sage Publications.
5. Pernia, E.M. (ed.) 1994 Urban Poverty in Asia. Hong Kong: Oxford University Press.
6. Thakur, B. (ed.) 2005 Urban and Regional Development in India: Vol I New Delhi: Concept Publishing Company.
7. Kundu, A. 1993 In the Name of Urban Poor. New Delhi: Sage Publications.
8. Mishra, G.K. & Narain, K. (ed.) 1989 Development Programmes for Urban Poor. New Delhi: Indian Institute of Public Administration.
9. Kundu, A. 2000 Inequality Mobility and Urbanisation. New Delhi: Indian council of Societal Science Research and Manak.
10. De Souza, A.(ed.) 1988 Urban Growth and Urban Planning. Political Context and People's Priorities. New Delhi: Indian Social Institute.
11. Bhargava, G. 1981 Urban Problems and Policy Perspectives. New Delhi: Abhinav Publishers.

Web Resources:

1. http://planningcommission.nic.in/hackathon/Urban_Development.pdf
2. <http://wcr.unhabitat.org/wp-content/uploads/sites/16/2016/05/WCR-%20Full-Report-2016.pdf>
3. [http://smartcities.gov.in/upload/uploadfiles/files/SmartCityGuidelines\(1\).pdf](http://smartcities.gov.in/upload/uploadfiles/files/SmartCityGuidelines(1).pdf)
4. <https://kingcenter.stanford.edu/sites/default/files/publications/231wp.pdf>

Pedagogy: Chalk& Talk, Seminar, PPT Presentation, Group Discussion and Case Study.

Course Designer: Dr. G. Kanaga

SEMESTER III	Internal Marks:25 External Marks:75			
COURSE CODE	COURSE TITLE	CATEGORY	HOURS/WEEK	CREDITS
22PSW3CC3P	SOCIAL WORK PRACTICUM	Core Practicum III	6	5

Course Objectives

1. To expose students to various fields of Social Work Practice.
2. To enable the students to apply theoretical knowledge.
3. To help the students to equip interventions skills in area of interest.

Pre –requisites

The learner will get a Practical exposure in various fields of Social Work

Course Outcome

On the Successful completion of this course, the students will be able to

CO Number	CO Statement	Knowledge Level
CO1.	Develop knowledge regarding the Specialized Area	K3
CO2.	Survey the numerous problems of the Clients in the specialized area.	K4
CO3.	Deduct the specific problems of the client group.	K5
CO4.	Recommend an area of a mini research study.	K6
CO5	Plan policies and programmes based on the findings of the mini research study.	K6

Mapping of CO with PSO and PO

CO/PO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	2	2	2	2
CO2	3	3	3	3	3	2	2	2	2	2
CO3	3	3	3	3	3	2	3	3	3	3
CO4	3	3	3	3	3	2	2	2	3	2
CO5	3	3	3	3	3	3	3	3	3	3

“1” Slight (LOW) Correlation –“2” Moderate (Medium) Correlation “3”- Substantial (High) Correlation–“-“ Indicates there is no correlation

Syllabus

1. Agency placement based on their specialisations
2. The placement will be for a minimum duration of 30 fieldwork days for two days per week/semester.
3. Importance to be given for the practice of social work methods.

Each student is expected to conduct case work with a minimum of three clients, group work with at least two groups, and organise one institutional/ community-based programme (trainees of all specialisations).

Guidelines for Medical and Psychiatric Social Work Specialisation

1. Practice of Social Case Work with at least five clients
2. Practice of Social Group Work with at least two groups
3. One Community based programme.

Guidelines for Family and Child Welfare Specialisation

1. Exposure to family and child welfare programmes
2. Practice of social group work with at least two groups
3. One community based programme.

Guidelines for Human Resource Management Specialisation

1. Exposure to welfare measures and programmes in industries.
2. Orientation to IR activities/Trade Union and case laws on labour legislations
3. Understanding of Organisation profile/Organisational Culture.
4. One Career Guidance Programme

Guidelines for Community Development Specialisation

1. Exposure to DRDA/Panchayat Union and Panchayat administration
2. Orientation to community based surveys/PRA
3. Organise at least two need based community programmes
4. Practice of Social Work methods in Community Settings(Rural/Tribal areas)
5. Knowledge of CD programmes.

Evaluation

Internal (40marks)

- | | | | |
|----|--------------------------|---|----------|
| 1. | Case Work Practice | : | 10 marks |
| 2. | Group Work | : | 10 marks |
| 3. | Awareness Programme | : | 10marks |
| 4. | Reporting | : | 5 marks |
| 5. | Attendance for fieldwork | : | 5 marks |

40 marks

External (60 marks)

- | | | | |
|----|----------------------------------|---|---------|
| 1. | Theoretical Knowledge | : | 20marks |
| 2. | Practice Skills | : | 20marks |
| 3. | Agency Evaluation | : | 10marks |
| 4. | Communication and Presentation : | : | 10marks |

60 Marks

Pedagogy: Case Presentation, Individual conference, Group Conferences, Discussions, Supervision
Course designer : Ms.S.Hema

Semester III	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hours/ Week	CREDITS
22PSW3DSE3A	SOCIAL WORK FOR COMPETITIVE EXAMINATIONS	Discipline Specific Elective III (DSE)	4	3

Course Objectives

1. To train the learners on the nature and the basic concepts of Social Work.
2. To enlighten the learners on the process of Working with individuals and Groups.
3. To make the learners acquire comprehensive knowledge of the concepts of Sociology
4. To make learners understand the methods of Community Organization, Social Action and Social Work Research
5. To update the learners the concepts of Social Welfare Administration

Prerequisites

The learner can prepare them for Competitive Examinations

Course Outcomes and Cognitive Level Mapping

On the successful completion of the course, the students will be able to

CO NUMBER	CO STATEMENT	COGNITIVE LEVEL
CO1	Define and explain the methods of Social Work	K1, K2
CO2	Apply various methods of Social Work in different settings for practice,	K3
CO3	Compare the methods and approaches of Social Work.	K4
CO4	Examine different treatment techniques of methods of Social Work.	K5
CO5	Elaborate on the historical development of Social Work and various methods.	K6

Mapping of CO with PSO and PO

[illegible]

“1”- Slight (Low) Correlation –“2” – Moderate (Medium) Correlation - “3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Nature and Development of Social Work: Definition, Scope, Principles, Nature and Goals; Historical Development; Social Work as a Profession; Basic concepts of Social Work	15	CO1, CO2, CO3, CO4, CO5, CO6	K1, K2, K3, K4, K5, K6
II	Social Work with Individuals and Groups: Basic Concepts of Social Case Work; Approaches and Process to Social Case Work Practice. Social Group Work: Definition, Characteristics, Functions and Group Structure, Classification of Groups; Social Group Work Process and Group Dynamics; Group Development.	15	CO1, CO2, CO3, CO4, CO5, CO6	K1, K2, K3, K4, K5, K6
III	Sociological Concepts : Social Structure, Social Institutions and Social Groups, Socialization, Social Control and Social Change; Social System and Stratification; Type of Communities: Rural ,Urban, Tribal Communities and various Vulnerable Groups/ sections viz. Women, Child , Aged, Dalits etc; Caste and Class – Their Characteristics; Human Behavior; Theories of Personality; Social Psychology: Social Perception, Attitude Formation, Communication and Theories of Collective Behavior	15	CO1, CO2, CO3, CO4, CO5, CO6	K1, K2, K3, K4, K5, K6
IV	Community Organization – Concept , Definition , Scope and Historical Perspective; Process and approaches to Community Organization; Social Action and Social Movements; Models of Social Action: Conscientisation model of Paulo Freire, Role of ideology, Saul Alinsky as a radical community organizer; Social Change. Basics of Social Research and Social Work Research; Steps in Social Research; Basic Statistical Concepts; Qualitative Research; Managing Qualitative Data; Mixed Method Research	15	CO1, CO2, CO3, CO4, CO5, CO6	K1, K2, K3, K4, K5, K6

V	Social Welfare Administration: Meaning, History, Principles, Nature and Type of Organizations; Types of Administration; Components of Administration: Planning, Coordination, Staff Recruitment, Training and Development, Recording and Documentation, Budgeting, Monitoring and Evaluation, Networking and Maintaining Public Relations. Social Policy : Concept, Goals, Scope , Context and Models of Social Policy and applicability in Indian context. Application of methods of Social Work in various settings.	15	CO1, CO2, CO3, CO4, CO5, CO6	K1, K2, K3, K4, K5, K6
VI	Self Study for Enrichment (Not to be included in External Examination) Learners need to present the application of Social Work methods in various settings and the learners need to list the roles of social workers in various settings based on their fieldwork experiences.	-	CO1, CO2, CO3, CO4, CO5, CO6	K1, K2, K3, K4, K5, K6

Text Books:

- Misra,P.D.(1994).Social work philosophy & Methods. Inter India Publication.

Reference Books:

- Ahuja, Ram. (1999) Society in India: Concepts, Theories and Changing Trends, Jaipur:Rawat Publications
- Bottmore. T.B, 1980: Sociology: "A Guide to Problems and literature", New Delhi. McGraw Hill
- Kapadia, K.M., (1966) Marriage and Family in India, New Delhi: Oxford University Press
- Rao Shankar, (2006) Sociology of Indian Society, New Delhi: S Chand
- Srinivas, M.N., (1970) Social Change in Modern India, Madras: Allied Publishers

Web References

- 1.<https://egyankosh.ac.in/bitstream/123456789/17108/1/Unit-1.pdf>
- 2.<https://egyankosh.ac.in/bitstream/123456789/17105/1/Unit-2.pdf>
3. <https://kkhsou.ac.in/eslm/E- SLM Main/5th%20Sem/Bachelor%20Degree/BSW/HPSW/HPSW-3 - with changes incorporated.pmd.pdf>
- 4.<http://www.ignou.ac.in/upload/bswe-02-block1-unit-6-small-size.pdf>
- 5.<http://www.sociologyguide.com/>
- 6.<http://www.importantindia.com/3910/essay-on-social-problems-in-india/>
7. <http://www.ignou.ac.in>
8. <https://www.researchgate.net>
9. <https://shodhganga.inflibnet.ac.in/>

Pedagogy: Chalk& Talk, Seminar, PPT Presentation, Group Discussion, Blended Method, and Case Study.

Course Designer: Dr.G.Mettilda Buvaneswari

Semester : III	Internal Marks:40		External Marks:60	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22PCS3GEC1P	DATA ANALYSIS (P)	GENERIC ELECTIVE	3	2

Course Objective

- To provide fundamental concepts of data analysis
- To interpret, summarize and present numerical data using Excel
- To explore, analyse, and visualise data in Python

Prerequisites

Basic Computer Knowledge

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	Recall and understand the different types of data analysis and their use cases	K1, K2
CO2	Apply Exploratory Data Analysis on a real-world dataset	K3
CO3	Analyze the various methods and functions in Excel	K4
CO4	Compare and recommend external libraries in Python for analysing the data	K4, K5
CO5	Create powerful and dynamic Excel dashboard	K6

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO 1	PO 2	PO 3	PO 4	PO 5
CO1	3	2	3	3	2	3	3	2	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	2	2	3	3	2	2	3	2	3	2
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	2

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“-” indicates there is no correlation

Exercises

Using MS-Excel

1. Importing data
2. Demonstrate the usage of essential Functions and methods
3. Publish worksheet as web page with interactivity
4. Using PivotTables and Charts to create dashboards
5. Connect multiple slicers to the pivot tables

Using Python

1. Working with libraries
2. Importing and exporting data
3. Cleaning and preparing data
4. Replacing strings with numbers
5. Exploratory Data Analysis

Web References

1. <https://www.analyticsvidhya.com/blog/2021/11/a-comprehensive-guide-on-microsoft-excel-for-data-analysis/>
2. https://www.academia.edu/34282340/Excel_data_analysis_tutorial
3. <https://www.datacamp.com/courses/data-analysis-in-excel?>
4. <https://www.myexcelonline.com/blog/connect-slicers-to-multiple-excel-pivot-tables/>
5. <https://www.geeksforgeeks.org/data-analysis-with-python/>
6. <https://www.geeksforgeeks.org/data-analysis-with-scipy/?ref=rp>

Pedagogy

Demonstration

Course Designer

Dr.K.Reka

ANNEXURE F

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)

Nationally Accredited (III cycle) with 'A' Grade by NAAC

ISO 9001:2015 Certified

TIRUCHIRAPPALLI

DEPARTMENT OF BUSINESS ADMINISTRATION



BBA

SYLLABUS

2023 -2024 and Onwards



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY – 18
DEPARTMENT OF BUSINESS ADMINISTRATION

BBA

LEARNING OUTCOME BASED CURRICULUM FRAMEWORK (CBCS - LOCF)

(For the candidates admitted from the academic year 2023 – 2024 onwards)

Semester	Part	Course	Title	Subject Code	Hours	Credit	Exam Hours	Marks		Total
								Internal	External	
I	I	Language Course - I (LC)	General Tamil - I	23ULT1	6	3	3	25	75	100
			Hindi ka Samanya Gyan aur Nibandh	23ULH1						
			Poetry, Grammar and History of Sanskrit Literature	23ULS1						
			Foundation Course: Paper I - French – I	23ULF1						
	II	English Language Course - I (ELC)	General English – I	23UE1	6	3	3	25	75	100
	III	Core Course - I (CC)	Principles of Management	23UBA1CC1	6	5	3	25	75	100
		Core Course - II (CC)	Accounting for Managers - I	23UBA1CC2	6	5	3	25	75	100
		Allied Course - I (AC)	Managerial Economics	23UBA1AC1	4	3	3	25	75	100
	IV	Ability Enhancement Compulsory Course – I (AECC)	Value Education	23UGVE	2	2	-	100	-	100
		Total			30	21				600

CORE COURSE I – PRINCIPLES OF MANAGEMENT

2023 – 2024 Batch Onwards

Semester I	Internal Marks 25		External Marks 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs. / Week	CREDITS
23UBA1CC1	Principles of Management	CORE	6	5

Course Objectives:

- To acquaint the student with a conceptual framework for understanding the basic theories of management, planning, goal setting, decision making, organizational structure, and effective control mechanisms.
- To utilize these concepts in various decisive functions of an organizations.

Pre-Requisites: Basic Knowledge in Business Studies

Course Outcomes:

Course Outcomes and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Define and acquire the concepts of functions of Management.	K1, K2
CO2	Apply the concepts of Planning and decision-making process in an organization.	K3
CO3	Analyse the knowledge of Business organization structure and its resources.	K4
CO4	Elucidate the process of effective controlling in organization	K2
CO5	Discuss the significance of ethics in business and its implications.	K2

MAPPING OF CO WITH PO AND PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2	3	3	3	3	2
CO2	3	3	3	3	3	3	3	3	2	3
CO3	3	3	3	3	3	3	2	3	3	3
CO4	3	3	3	3	2	3	3	3	3	2
CO5	3	3	2	3	2	3	3	3	2	3

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –

“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVELS
I	Introduction to Business - Management – Meaning – Definition – Nature– Importance–Scope and Functions – Role and Functions of a Manager– Levels of Management –Contribution of F.W. Taylor, Henry Fayol.	16	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
II	Planning – Meaning – Definition – Nature – Importance – Process – Types of plans – Steps in Planning– Objectives– Policies– Procedures and Methods–Types of Policies– Decision making – Meaning–Process of Decision making– Types of decision making .	14	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
III	Organizing– Meaning – Definition– Types of Organizations – Organization Structure – Departmentalization – Meaning– Need and Importance–Authority – Difference between Authority and Power–Delegation – Meaning –Types and Process of delegation –Decentralization – Advantages and Disadvantages of Decentralization	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
IV	Direction – Meaning – Definition – Nature and Purpose. Co- ordination – Meaning– Need, Type and Techniques and requisites for excellent Co- ordination – Controlling – Meaning and Importance – Control Process.	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
V	Definition of Business ethics – Types of Ethical issues –Role and importance of Business Ethics and Values in Business – Ethics internal – Ethics External–Environment Protection – Responsibilities of Business.	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3

VI	SELF STUDY FOR ENRICHMENT: (Not to be included for External examination) Management as an Art, Science and Profession – Administration Vs Management– Programmes and Budgets –Distinction between Centralization and Decentralization – Characteristics of Directing – Techniques of Controlling.		CO1 CO2 CO3 CO4 CO5	K1 K2 K3
----	--	--	---------------------------------	----------------

Text Books:

1. Prasad, L.M. (2021), *Principles and Practices of Management*, 10th Edition, Sultan Chand and Sons.
2. Ramasamy, T. (2017), *Principles of Management*, 2nd Edition, Himalaya Publishing House.
3. Stephen A. Robbins & David A. Decenzo & Mary Coulter. (2011), *Fundamentals of Management*, 7th Edition, Pearson Education.
4. JAF Stoner, Freeman R.E and Daniel R Gilbert. (2014), *Management*, 6th Edition, Prentice Hall India, New Delhi.
5. Griffin, T.O. (2014), *Management*, 8th Edition, Houghton Mifflin Company, Boston, USA.

Books for Reference:

1. Gupta, C.B. (2012), *Principles of Management*, 3rd Edition, Sultan Chand& Sons.
2. Dinkar and Pagare. (2018), *Business Management*, 6th Edition, Prentice Hall of India.
3. Tripathi, P.C. & Reddy, P.N. (2021), *Principles of Management*, 7th Edition, Mc Graw Hill Education.
4. Harold Koontz, Hienz Weihrich, A Ramachandra Aryasri,(2015). *Principles of Management*, 2nd Edition, McGraw Hill Education.

Web Resources:

1. <https://vtechworks.lib.vt.edu/bitstream/handle/10919/70961/Fundamentals%20of%20Business%20%28complete%29.pdf>
2. <https://studyresearch.in/2018/03/11/case-studies-principles-of-management/>
3. https://www.researchgate.net/publication/338967220_INTRODUCTION_TO_BUSINESS_MANAGEMENT
4. <https://www.just.edu.jo/~mqais/CIS151.html>
5. <https://blog.hubspot.com/marketing/management-principles>
6. <https://open.umn.edu/opentextbooks/textbooks/693>

Pedagogy: Lectures, Quiz, Power Point Presentation, Assignments and Seminar.

Course Designer: Dr. A. SIVARANJANI, Associate Professor.

CORE COURSE II - ACCOUNTING FOR MANAGERS I

2023 – 2024 Batch Onwards

Semester I	Internal Marks 25		External Marks 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs. / Week	CREDITS
23UBA1CC2	Accounting for Managers I	CORE	6	5

Course Objectives:

- The content of this course is designed to impart the basic knowledge of financial accounting theory, standards, principles and procedures to accounting problems and its application in business.
- To enable the students to acquire accounting skills and facilitate them to prepare final accounts of business and non-trading organization.

Pre-Requisite: Basic knowledge required in Accounting concepts.

Course Outcomes:

Course Outcomes and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Explain the basic concepts and their application in business.	K1,K2
CO2	Analyze and interpret financial reports of a company.	K4
CO3	Evaluate the methods for preparing financial reports	K4
CO4	Acquire basic knowledge on Depreciation Accounting.	K3
CO5	Elucidate the procedures of Accounting under Single entry system	K2

MAPPING OF CO WITH PO AND PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2	3	3	3	3	2
CO2	3	3	3	3	3	3	3	2	3	3
CO3	3	3	3	3	3	2	3	3	3	3
CO4	3	3	3	3	2	3	3	3	2	3
CO5	3	3	2	3	2	2	3	3	3	3

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –

“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVELS
I	Meaning and scope of Accounting, Basic Accounting Concepts and Conventions – Objectives of Accounting – Accounting Transactions – Double Entry Book Keeping – Advantages of Double Entry System – Journal, Ledger, Difference between Journal and Ledger– Preparation of Trial Balance.	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4
II	Subsidiary book – Purchase Book– Sales Book – Purchase return Book – Sales return Book – Preparation of cash Book – Single Column Cash Book– Double Column Cash Book– Three Column Cash Book–Bank reconciliation statement.	16	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4
III	Preparation of Final Accounts – Trading Account, Profit and loss Account and Balance Sheet– Adjustments – Closing stock, outstanding, prepaid and accrued, depreciation, bad and doubtful debts, provision and discount on debtors and creditors, interest on drawings and capital.	14	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4
IV	Partnership Accounts – Meaning, Basic concepts of admission, retirement and death of a partner. Depreciation – Meaning, Causes, Types – Straight Line Method – Written Down Value.	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4
V	Single Entry – Meaning, Features, Defects, Differences between Single Entry and Double Entry System – Statement of Affairs Method – Differences between Statement of Affairs and Balance Sheet – Conversion Method.	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4

VI	SELF STUDY FOR ENRICHMENT:			
	(Not to be included for External examination)			
	Financial Accounting Standards – Formation –		CO1	K1
	Scope of Accounting standards – Capital and		CO2	K2
	Revenue – Classification of Expenditure – Annuity Method.		CO3 CO4 CO5	K3 K4

Text Books:

1. Gupta, R. L.& Gupta,V. K. (2016), *Financial Accounting*, 13th Edition, Sultan Chand and Sons.
2. Maheswari, S.N. (2017), *Financial Accounting*, 2nd Edition, Vikas Publishing House.
3. Goel.D.K and Shelly Goel. (2018), *Financial Accounting*, 2nd Edition Arya Publications,
4. Rakesh Shankar. R & Manikandan.S. (2017), *Financial Accounting*, 3rd Edition, SCITECH Publication.
5. Shukla & Grewal. (2002), *Advanced Accounting*, 15th Edition, Sultan Chand & Sons,New Delhi.

Books for Reference:

1. Jain, S.P. & Narang, K.L. (2014), *Advanced Accountancy*, 10th Edition, Kalyani Publishing & Co.
2. Gupta, R.L & Radhasamy, L. (2018), *Advanced Accountancy*, 13th Edition, Sultan Chand and Sons.
3. Reddy, T.S. & Murthy, A. (2021), *Financial Accounting*, 2nd Edition, Margham Publications.
4. Tulsian P.C.(2006), *Financial Accounting*, 2nd Edition, Pearson Education
5. T. Horngren Charles, L. Sundern Gary, A. Elliott John. (2017), *Introduction to Financial Accounting*, 11th Edition, Pearson Publications.

Web Resources:

1. www.accountingcoach.com
2. https://ebooks.lpude.in/management/mba/term_1/DMGT403_ACCOUNTING_FOR MANAGERS.pdf
www.accountingplay.com
3. www.accounting.com
4. <https://www.profitbooks.net/what-is-depreciation>
5. <https://www.accountingtools.com/articles/2017/5/15/basic-accounting-principles>
6. [https://en.wikipedia.org/wiki/Single-entry_bookkeeping_system\](https://en.wikipedia.org/wiki/Single-entry_bookkeeping_system)

Pedagogy: Lectures, Quiz and Assignments

Course Designer: Dr. A. SIVARANJANI, Associate Professor.

ALLIED COURSE I - MANAGERIAL ECONOMICS**2023 – 2024 Batch Onwards**

Semester I	Internal Marks 25		External Marks 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs. / Week	CREDITS
23UBA1AC1	Managerial Economics	ALLIED	4	3

Course Objectives:

- To enable the students to learn the various economic concepts and their application in business decisions.
- To make students to understand the relevance of economics in business decisions.
- To equip the students with economic tools for business analysis.

Pre-Requisite: Basic knowledge in Economics.**Course Outcomes:**

Course Outcomes and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Analyze & apply the various economic concepts in individual & business decisions.	K1, K2
CO2	Explain demand concepts, underlying theories and identify demand forecasting techniques.	K2
CO3	Employ production, cost and supply analysis for business decision making	K3
CO4	Identify pricing strategies	K3
CO5	Classify market under competitive scenarios.	K4

MAPPING OF CO WITH PO AND PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2	3	3	3	3	3
CO2	3	3	3	3	3	3	2	3	2	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	2	2	3	2	3	2
CO5	3	3	2	3	2	3	3	3	3	2

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –

“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVELS
I	Definition of Economics –important concepts of economics – Scope of managerial economics – Relationship between micro, macro and managerial economics – objectives of firm.	10	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4
II	Marginal utility analysis – Indifference curve analysis. Meaning of demand – Demand analysis – Law of demand – Types of demand- Determinants of demand – Elasticity of demand.	9	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4
III	Production and cost analysis – Production – Factors of production – production function – Concept – Law of variable proportion – Law of return to scale and economics of scale – cost analysis – Different cost concepts – Cost output relationship short run and long run.	9	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4
IV	Pricing – Factors – General consideration of pricing – methods of pricing – Dual pricing - determinants of pricing –Revenueand Revenue curves –Relationship between Average revenue, Marginal revenue and Total Revenue.	9	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4
V	Market Structure: Perfect competition – Monopoly and monopsony – Monopolistic Competition – Duopoly - Oligopoly.	8	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4
VI	SELF STUDY FOR ENRICHMENT: (Not to be included for External examination) Nature of Managerial Economics – Exceptions in Law of Demand – Classification of Economics of Large-scaleproduction – Objectives of Pricing - Difference between perfect competition and Monopoly.		CO1 CO2 CO3 CO4 CO5	K1 K2 K3

Text Books:

1. Varshney, R.L. & Maheswari, K.L. (2018), *Managerial Economics*, 19th Edition, SultanChand and Sons.
2. Cauvery, R. SudhaNayak, M. Giriza, & Meenakshi, R. (2015), *Managerial Economics*, 3rd Edition, Sultan Chand and Sons.
3. Mehta, P.L. (2016), *Managerial Economics Analysis, Problems and Cases*, 21st Edition, Sultan Chand and Sons.
4. Mithani D.M. (2016), *Managerial Economics*, 8th Edition, Himalaya Publishing House, Mumbai.
5. Dwivedi, D N. (2015), *Managerial Economics*, 8th Edition, Vikas Publishing House.

Books for Reference:

1. Sankaran, S. (2019), *Managerial Economics*, 5th Edition, Margham Publication.
2. Jhingam, M.L. & Stephen, J.K. (2014), *Managerial Economics*, 2nd Edition, VrindaPublicaions Private Limited.
3. Thomas and Maurice. (2017), *Managerial Economics: Foundations of Business Analysis and Strategy*, 10th Edition, McGraw Hill Education.
4. Ahuja, H L. (2017), *Managerial Economics*, 9th Edition, Sultan Chand and Sons.
5. Dominick Salvatore. (2016), *Managerial Economics: Principles and Worldwide Applications*, 8th Edition, Oxford University Press.

Web Resources:

1. <https://www.studocu.com/row/document/azerbaycan-dovlet-iqtisad-universiteti/business-and-management/lecture-notes-on-managerial-economics/6061597>
2. <http://www.simplynotes.in/e-notes/mbabba/managerial-economics/>
3. <https://businessjargons.com/determinants-of-elasticity-of-demand.html>
4. <http://www.economicsdiscussion.net/laws-of-production/laws-of-production-laws-of-returns-to-scale-and-variable-proportions/5134>
5. <https://www.intelligenteconomist.com/profit-maximization-rule/>

Pedagogy: Lecture, Power Point Presentation, Assignment, Seminar.

Course Designer: Dr.M.NEELA, Associate Professor.

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)

**Nationally Accredited (III cycle) with 'A' Grade by
NAACISO 9001:2015 Certified**

TIRUCHIRAPPALLI

DEPARTMENT OF BUSINESS ADMINISTRATION



BBA SYLLABUS

2022 -2023 and Onwards



**CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS),
DEPARTMENT OF BUSINESS ADMINISTRATION**
(For the candidates admitted from the academic year 2022 – 2023 onwards)

Semester	Part	Course	Title	Subject Code	Hours	Credit	Exam Hours	Marks		Total
								Internal	External	
III	I	Language Course- III (LC)	Kappiyamum, Nadagamum	22ULT3	5	3	3	25	75	100
			Hindi Literature & Grammar - III	22ULH3						
			Prose, Textual Grammar and Vakyarachana	22ULS3						
			Intermediate French – I	22ULF3						
	II	English Language Course III (ELC)	Learning Grammar Through Literature - I	22UE3	6	3	3	25	75	100
	III	Core Course - V (CC)	Organizational Psychology	22UBA3CC5	6	6	3	25	75	100
		Core Practical - I (CP)	Computer Applications Package for Managers - MS-Office (P)	22UBA3CC1P	5	5	3	40	60	100
		Allied Course - III (AC)	Business Law	22UBA3AC3	4	3	3	25	75	100
	IV	Ability Enhancement Compulsory Course – III (AECC)	Innovation in Entrepreneurship	22UGIE	2	1	-	100	-	100
			Generic Elective Course –I (GEC)	Stock Exchange Practices	22UBA3GEC1	2	2	3	25	75
		Special Tamil	22ULC3BT1							
		Basic Tamil	22ULC3ST1							
	V	Extra Credit Course	SWAYAM		As per UGC Recommendation					
	Total			30	23				700	

CORE COURSE V - ORGANIZATIONAL PSYCHOLOGY

2022 – 2023 Batch Onwards

Semester III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs./Week	CREDITS
22UBA3CC5	Organizational Psychology	CORE	6	6

Course Objectives:

- To have an understanding of recent trends in Organizational Behaviour.
- To learn the basic structure for managing behavior in Organization at both individual and group level.
- To expose the students about the basic concepts of motivation and group dynamics.
- To help them acquire interpersonal skills.
- To measure the organizational development and analyze the importance of coordination.

Pre-Requisites: Basic Knowledge in Organizational Behaviour.

Course Outcomes:

Course Outcomes and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Knowledge Level
CO1	Create the knowledge on fundamental concepts of Organization behavior and application of the organization concepts.	K1
CO2	Discuss the issues relating to individual and group behaviour.	K2
CO3	Define Human behaviour at work place and apply the concept of Group dynamics, Group cohesiveness and Group Norms.	K3
CO4	Communicate the knowledge about the motivation, leadership and learning theories at work place.	K2
CO5	Analyze the complexities and solutions relating organizational behaviour in the recent business scenario.	K3

MAPPING OF CO WITH PO AND PSO :

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	2	3	3	3	2	3
CO5	3	3	3	3	2	3	3	3	3	3

“1”-Slight(Low) Correlation-“2”- Moderate (Medium) Correlation-
“3”- Substantial (High) Correlation –“-“ indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVELS
I	Meaning of Organizational Behaviour – Nature – Levels – Approaches of Organizational Behaviour – Disciplines contributing to Organizational Behaviour .	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
II	Individual Behaviour – Learning -Importance of Learning- Perception - Factors influencing perception – Perceptual Process - Personality – Characteristics - Determinants – Types of Personality – Type A and Type B Personality.	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
III	Group – Characteristics – Types – Group Dynamics – Importance – Managerial implications of Group Dynamics - Group Norms –Importance – Types – Development of Group Norms - Group Cohesiveness – Factors influencing Group Cohesiveness – Consequences of Group Cohesiveness.	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
IV	Leadership –Characteristics – Functions – Approaches - Styles of leadership – Power – Types- Sources of Power – Authority – Types – Determinants – Limitations of Authority.	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
V	Morale – Importance – Factors affecting Morale - Measurement of Morale – Steps to improve Morale in an Organization - Motivation – Nature –Motivation Process - Theories of Motivation – Maslow needs theory – Herzberg’s Two Factor Theory- Organizational Culture	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
VI	SELF STUDY FOR ENRICHMENT: (Not to be included for External examination) Challenges of Organizational Behaviour – Significance of Personality – Advantages and Disadvantages of working in Group – Difference between Power and Authority – Significance of Motivation.		CO1 CO2 CO3 CO4 CO5	K1 K2 K3

Text Books:

1. L.M.Prasad, (2019), *Organizational Behaviour*, Sultan Chand and Sons, New Delhi.
2. S.S. Khanka, (2013), *Organizational Behaviour*, Sultan Chand and Sons, New Delhi.

Books for Reference:

1. Jerald Green Berg and Robert, (2011), *Behaviour in organizations*, 10th Edition, Prentice Hall of India.
2. Stephen P. Robbins, (2018), *Organization Behaviour, Concepts, Controversies and application*, 12th Edition, Prentice Hall of India.
3. V.S.P. Rae & D.S Narayana, (2000), *Organization theory and behaviour*, 2nd Edition, Konark Publishers Pvt. Ltd.

Web Resources:

1. <https://www.iedunote.com/organizational-behavior>
2. <https://www.london.edu/faculty-and-research/organisational-behaviour>
3. Journal of Organizational Behavior on JSTOR
4. International Journal of Organization Theory & Behavior | Emerald Publishing
5. <https://2012books.lardbucket.org/pdfs/an-introduction-to-organizational-behavior-v1.1.pdf>

Pedagogy: Lecture, Power Point Presentation, Assignment, Seminar.

Course Designer: Dr.J.Tamilselvi, Professor and Head.

CORE PRACTICAL - I (CP)- COMPUTER APPLICATIONS PACKAGE FOR MANAGERS

(MS-OFFICE PRACTICAL)

2022 – 2023 Batch Onwards

Semester III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs./Week	CREDITS
22UBA3CC1P	COMPUTER APPLICATIONS PACKAGE FOR MANAGERS (MS-OFFICE PRACTICAL)	CORE	6	6

Course Objectives:

- To impart the basic knowledge of the computer to the students.
- To understand the basics of Microsoft Office and usage of Internet.
- To Create slide presentations that include text, graphics, and animation.
- To identify resources available on the Internet.

Pre-Requisites: Basic Knowledge in Ms-Office.

Course Outcomes:

Course Outcomes and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Knowledge Level
CO1	Analyse the areas of application of computer.	K1
CO2	Create business letters using wizard and to create mail merge.	K2
CO3	Demonstrate hands on experience with Ms-Excel for business activities and to create different types of charts.	K3
CO4	Design power point presentation and apply animations.	K3
CO5	Demonstrate the usage of Internet.	K3

MAPPING OF CO WITH PO AND PSO :

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	3	3	2	3	3	3	3	3	3	3
CO3	3	3	3	3	2	3	3	3	3	3
CO4	3	3	2	3	2	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1”-Slight(Low) Correlation-“2”- Moderate (Medium) Correlation-

“3”- Substantial (High) Correlation –“-“ indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVELS
I	MS Word – Working with word document, Opening an existing document/creating a new document; Saving, Selecting text, Bullets and numbering, Tabs, Paragraph Formatting, Page Setup – Editing and formatting documents- Spelling and Grammar check- Header and Footer-Word count- Thesaurus - Auto correct – Business letter using wizards - Mail merge - Working with tables – Saving, opening and closing documents.	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
II	MS Excel- Worksheets and Workbooks- Entering data into MS Excel- Formatting a Worksheet - Creating different types of Charts- Application of financial and statistical function - Saving, opening and closing workbooks.	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
III	MS Power Point -Creating, Editing and Formatting Presentation – Adding and Formatting Text - Customizing Presentations - Working with Shapes and Pictures - Applying Transition and Animation Effects - Applying Design Templates - Viewing and Setting up a Slide Show.	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
IV	Introduction to Internet - Usage of Internet to society - World Wide Web - Search Engines - Understanding URL - Domain name - IP Address - Printing or saving portion of web pages - Down loading - Chatting on Internet.	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
V	Introduction to Social Media - Usage of different types of Social media - Digital Security - E - Payments system -Types Email - Email addressing - Mailbox: Inbox and outbox - Using Emails - Viewing an email - Sending an Email - Saving mails - Sending same mail to various users - Sending soft copy as attachment.	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
VI	SELF STUDY FOR ENRICHMENT: (Not to be included for External examination) Advantages of computers – Usage of Worksheet for Research – Pre -requisites for preparing sound Business Presentations - Limitations of Internet – Pros and cons of using Social Media.		CO1 CO2 CO3 CO4 CO5	K1 K2 K3

Text Books:

1. P.Rizwan Ahmed, (2019), *Computer Application in Business*, Margham Publications.
2. Pradeep K Sinha and Priti Sinha, (2003), *Computer Fundamentals*, 6th Edition, B P B Publications, New Delhi.

Books for Reference:

1. Ananthi Sheshasaayee & Sheshasaayee, (2019), *Computer Applications in Business and Management*, Margham Publications.
2. S.S. Shrivatsava, (2015), *Ms-Office*, 1st Edition, Laxmi Publications.

Web Resources:

1. <https://www.microsoft.com/en-us/microsoft-365/blog/>
2. <https://www.ipjugaad.com/syllabus/ggsip-university-bba-1st-semester-computer-applications-syllabus/18>
3. <https://byjus.com/govt-exams/microsoft-word/>
4. <https://edu.gcfglobal.org/en/google-forms/>

Pedagogy: Lecture, Assignment, Seminar, Computer Practical.

Course Designer: Dr.M.Neela , Associate Professor.

ALLIED COURSE III - BUSINESS LAW
2022 – 2023 Batch Onwards

Semester III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs./Week	CREDITS
22UBA3AC3	BUSINESS LAW	ALLIED	4	3

Course Objectives:

- To learn the basic principles and legal aspects of Business law.
- To enhance the understanding of various legislations relating to business.
- To enable the students to understand the basic concepts and provisions for a valid contract.
- To impart the students to complete the practical business law ideas.

Pre-Requisites: Basic Knowledge in Business law.

Course Outcomes:

Course Outcomes and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Knowledge Level
CO1	Identify the essential elements for a valid contract in business.	K1
CO2	Discuss the Performance of Contract and Remedies for breach of contract.	K2
CO3	Elucidate the Law of Agency and the various classification of Agent.	K2
CO4	Discuss the knowledge of Sale of goods Act relating to Performance of contract of sale and Rights of an unpaid seller.	K2
CO5	Acquire the conceptual knowledge on Partnership Act.	K3

MAPPING OF CO WITH PO AND PSO:

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	2	3	2	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1”-Slight(Low) Correlation-“2”- Moderate (Medium) Correlation-
“3”- Substantial (High) Correlation –“-“ indicates there is no correlation

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVELS
I	Contract-Classification-Essentials of a contract- Offer Legal rules as to offer - Acceptance- Legal rules as to acceptance- Consideration - Legal rules as to consideration -Contractual capacity-Free consent.	9	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
II	Performance of contract- Modes of Discharge of Contract- Remedies for Breach of contract- Quasi contract.	8	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
III	Law of Agency- Mode of creation- Agency by Ratification- Classification of Agents- Termination of Agency- Bailment and Pledge.	10	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
IV	Sale of goods Act-Definition-Condition and warranties – Caveat Emptor- performance of contracts of sale – Rights of an unpaid seller- Auction sales.	9	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
V	Partnership - Definition- - Rights, Duties and Liabilities of Partners - Types of Partnership- Dissolution of Partnership.	9	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
VI	SELF STUDY FOR ENRICHMENT: (Not to be included for External examination) Legality of object- Sub- Agent and Substitute Agent- Indemnity and Guarantee- Transfer of property- Essentials of Partnership.		CO1 CO2 CO3 CO4 CO5	K1 K2 K3

Text Books:

1. N.D.Kapoor (2015), *Elements of Business Law*, 37th Revised Edition, Sultan Chand and Sons, New Delhi.
2. M.C. Shukla (2016), *A Manual of Mercantile Law*, 13th Edition, Sultan Chand and Sons, New Delhi.

Books for Reference:

1. R.S.N Pillai & Bagawathi (2010), *Business Law*, Sultan Chand and Sons, New Delhi.
2. Kuchhal M C (2013) , *Mercantile Law*, 8th edition, Vikas Publishing House Ltd.

Web Resources:

- 1.<http://kamarajcollege.ac.in/Department/Corporate/III%20Year/003%20Core%2015%20-%20Business%20Law%20-%20V%20Sem.pdf>
- 2.<https://www.studocu.com/in/document/periyar-university/bcom/business-law-study-material-for-undergraduate-students/19955618>
- 3.<https://www.researchgate.net/publication/369143740>

Pedagogy: Lecture, Assignments, Seminar and Quiz.

Course Designer: Dr. A. Sivaranjani, Associate Professor.

**GENERIC ELECTIVE COURSE – I (GEC): STOCK EXCHANGE PRACTICES
2022 – 2023 BATCH ONWARDS**

SEMESTER III	INTERNAL MARKS: 25		EXTERNAL MARKS: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs./Week	CREDITS
22UBA3GEC1	STOCK EXCHANGE PRACTICES	GENERIC ELECTIVE COURSE	2	2

Course Objectives:

- To impart the basic knowledge of stock marketing.
- To predict the movements in the stock in various investment avenues and to rate them.
- To equip the students about credit rating of the companies.

Pre-Requisites: Basic Knowledge in stocks.

Course Outcomes:

Course Outcomes and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Knowledge Level
CO1	Identify the essential of Capital Markets and to evaluate the need for New Issue Markets.	K1
CO2	Framing the role and functions of Secondary Markets.	K2
CO3	Discuss the necessity of Listing in Stock Exchanges.	K3
CO4	Assess the predominant role of Stock brokers in the trading mechanism.	K3
CO5	Formulate the methods of ranking of institutions through credit rating.	K3

MAPPING OF CO WITH PO AND PSO :

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	2	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	2	3

“1”-Slight(Low) Correlation-“2”- Moderate (Medium) Correlation-
“3”- Substantial (High) Correlation –“-“ indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVELS
I	Capital Market – Need and importance – Financial instruments – features - New Issue Market – Functions and Methods of Issue.	6	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
II	Secondary Market – Origin and Growth – Role and Functions of Stock Exchange – Weaknesses of Stock exchange. Indian stock exchange – objectives .	6	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
III	Listing of Securities – Group A, Group B, Group C Shares – Listing Procedures – Criteria for Listing.	5	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
IV	Mechanics of Trading in Stock Exchanges – Registration of Stock Brokers – Functions – Kinds of brokers – Kinds of Speculators – Speculative Transactions.	7	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
V	Credit Rating – CRISIL – CARE – ICRA Agencies, DEMAT Accounts – Depositories.	6	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
VI	SELF STUDY FOR ENRICHMENT: (Not to be included for External examination) Relationship between New issue market and Stock Exchange – Recent developments in Secondary market – Online trading – BSE, NSE, OTCEI, MCX and SX.		CO1 CO2 CO3 CO4 CO5	K1 K2 K3

Text Book:

1. Gordon E & Natarajan K, (2016), *Financial Markets and Institutions*, 11th Revised Edition, Himalaya Publishing House.

Books for Reference:

1. Punithavathy Pandian, (2012), *Security Analysis and Portfolio Management*, Vikas Publishing House Ltd.
2. Joseph Anbarasu D, Boomonathan V. K., Manoharan P, Gnanaraj G, (2014), *Financial Services*, 1st Edition, Sultan Chand & Sons.
3. Gurusamy S, (2015), *Financial Market and Institutions*, 1st Edition, Vijay Nicole Imprints Pvt. Ltd.

Web Resources:

1. <http://vskub.ac.in/wp-content/uploads/2020/04/FINANCIAL-SERVICES-6th-Sem.pdf>
2. <http://kamarajcollege.ac.in/Department/BBA/II%20Year/e003%20Core%2011%20-%20Financial%20Services%20-%20IV%20Sem.pdf>
3. <https://academyfinancial.org/journal>
4. Financial Remedies Journal
5. https://sist.sathyabama.ac.in/sist_coursematerial/uploads/SBAA1403.pdf

Pedagogy: Lecture, Assignments, Seminar and Quiz.

Course Designer: Dr. M. Gayathri, Associate Professor.

ANNEXURE G



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY – 18
DEPARTMENT OF COMMERCE
B.Com.– PROGRAMME STRUCTURE

LEARNING OUTCOME BASED CURRICULUM FRAMEWORK (CBCS - LOCF)
(For the candidates admitted from the academic year 2022 – 2023 onwards)

Semester	Part	Course	Title	Subject Code	Hours	Credit	Exam Hours	Marks		Total
								Internal	Internal	
III	I	Language Course - III (LC)	காப்பியமும், நாடகமும்	22ULT3	5	3	3	25	75	100
			Hindi Literature & Grammar - III	22ULH3						
			Prose, Textual Grammar and Vakyarachana	22ULS3						
			Intermediate French - I	22ULF3						
	II	English Language Course - III (ELC)	Learning Grammar through Literature - I	22UE3	6	3	3	25	75	100
	III	Core Course - V (CC)	Cost Accounting	22UCO3CC5	6	6	3	25	75	100
		Core Course - VI (CC)	Business Correspondence and Reporting	22UCO3CC6	5	5	3	25	75	100
		Second Allied Course – I (AC)	Business Law	22UCO3AC3	4	3	3	25	75	100
	IV	Ability Enhancement Compulsory Course – III (AECC)	Innovation and Entrepreneurship	22UGIE	2	1	-	100	-	100
		Generic Elective Course – I (GEC)	Elements of Insurance	22UCO3GEC1	2	2	3	25	75	100
			Basic Tamil - I	22ULC3BT1						
			Special Tamil - I	22ULC3ST1						
	Extra Credit Course		Swayam Online Course		As per UGC Recommendations					
	Total				30	23				700

***15 Days INTERNSHIP during Semester Holidays.**

Semester III	Internal Marks:25	External Marks:75		
COURSE CODE	COURSE TITLE	CATEGORY	Hrs. / Week	CREDITS
22UCO3CC5	COST ACCOUNTING	CORE	6	5

Course Objective

- To acquire knowledge about accounting concepts and methods.
- To provides information that relates to how cost accounting information is developed and used for various purpose in different types of business entity.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Define the cost accounting concepts and understand the elements, classification of cost and overheads, levels of material control, purchase and stores control.	K1, K2
CO2	Summarize the techniques of costing and apply the preparation of cost sheet, material control, idle time of labour, methods of calculation of labour turnover and classification of overheads.	K2, K5
CO3	Identify the cost of producing a product and providing a service using job costing,, activity based costing and process costing	K3
CO4	Analyse the process losses, wastage scrap, normal and abnormal losses and reconcile the profit of financial & cost accounting	K4
CO5	Evaluate and solve ethical issues in accounting and business	K5

Mapping of CO with PO and PSO

COs/ PSOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	3	2	3	3	3	2	2	3
CO2	3	3	2	2	3	3	3	3	3	3
CO3	3	3	2	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	2	3	3	3	3	3	3	3	3	3

“1”–Slight(Low)Correlation–“2”–Moderate(Medium)Correlation–

“3”–Substantial(High)Correlation–“-”indicatesthereisnocorrelation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Cost Accounting – Objectives – Classification of Costs – Cost Unit, Cost Centre – Elements of Cost – Financial Accounting Vs. Cost Accounting – Steps in installing a Cost Accounting System – Preparation of Cost Sheet – Quotation.	18	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
II	Material Control: Techniques of Material Control – Level Setting, Economic Order Quantity (EOQ), JIT Inventory System, ABC Analysis, VED Analysis, Perpetual Inventory System and FSND Analysis, Material Purchase and Storage Methods of Valuing Material issues: Cost Price Method – FIFO, LIFO, Simple Average, Weighted Average.	18	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
III	Methods and Measurement of Labour Turnover – Idle time and Over time – Methods of Remuneration: Time rate system, Piece rate system, Straight piece rate system, Taylors differential piece rate system, Merrick's Multiple or differential piece rate system, Gantt's task and bonus plan – Premium Bonus Plan: Halsey premium plan, Halsey-weir scheme, Rowan plan, Barth's variable sharing plan, Emerson's Efficiency plan, Bedeaux's point premium system.	18	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
IV	Overhead Distribution: Concept – Collection and Classification of Overheads, Allocation and Apportionment of factory overheads – Primary – Secondary distribution – Repeated and Simultaneous Equation Method – Absorption of Factory Overheads – Machine Hours Rate – Reconciliation of Profits as per Cost and Financial Accounts.	18	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5

V	Methods of Costing – Contract Costing – Cost Plus – Contracts – Escalation Clause, Process Costing – Normal Loss – Abnormal Loss – Abnormal Gain (Excluding Inter Process Profit and Equivalent Production) – Service Costing – Transport Costing	18	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
IV	Self-Study for Enrichment (Not to be included for End Semester Examination) Activity based Costing, Life Cycle Costing, Target Costing Lean Costing and Six Sigma.	-	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5

Distribution of Marks: Theory 20% & Problem 80%

Text Book

1. Jain & Narang (2015). *Cost Accounting*, Kalyani Publications

Reference Books

1. S.N. Maheswari (2017), *Cost Accounting*, Sultan Chand & Sons
2. Pillai & Bhagavathi (2016), *Cost Accounting*, Sultan Chand & Sons
3. Reddy T.S & Hari Prasad Reddy Y (2018), *Cost Accounting*, Margham Publications

Web References

1. [https://www.investopedia.com/terms/a/abc.asp#:~:text=Activity%2Dbased%20costing%20\(ABC\)%20is%20a%20method%20of%20assigning,task%20with%20a%20specific%20goal.](https://www.investopedia.com/terms/a/abc.asp#:~:text=Activity%2Dbased%20costing%20(ABC)%20is%20a%20method%20of%20assigning,task%20with%20a%20specific%20goal.)
2. <https://www.godigit.com/business-insurance/business-terms/life-cycle-costing>
3. <https://www.goskills.com/Lean-Six-Sigma>

Pedagogy

Chalk and Talk, PPT, Discussion, Assignment, Demo, Quiz and Seminar.

Course Designer

Ms. S. Praveena

Semester III	Internal Marks: 25	External Marks: 75		
COURSE CODE	COURSE TITLE	CATAGORY	Hrs/ Week	CREDITS
22UCO3CC6	BUSINESS CORRESPONDENCE AND REPORTING	CORE	5	5

Course Objective

- To acquire good communication skills requisite for business correspondence and reporting.
- To provide an overview of prerequisites to Business Communication.
- To impart and prepare the strategies of Effective Business report writing.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Outline the basic concept of business communication	K1, K2
CO2	Explains the skill of ethical, legal, cultural and global issues affecting business communication	K2
CO3	Discover and Develop the knowledge of trade enquiries	K3, K4
CO4	Analyze the situation of writing various types of Business letters and reports.	K4
CO5	Evaluate the problem solving skills appropriate to business communication.	K5

Mapping of CO with PO and PSO

COs / PSOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	2	2	3	3	2	3	2	2
CO2	3	3	2	3	3	3	3	2	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	2	3	3	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation
 “3” – Substantial (High) Correlation “-” Indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	CO'S	COGNITIVE LEVEL
I	Introduction to Communication – Meaning and Definition – Needs – Types of Communication – Process – Characteristics – Barriers to Communication – E-Communication – Forms of Modern Communication – Applications of the various forms of communication.	15	CO1,CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Business Letters –Meaning, Need and kinds of Business letters – Essentials of an effective Business Letter – Layout – Appearance –Size – Style – Form and punctuation –Routine request letters – Responses to letters –Refusal letters – Claim letters – Collection letters – Application Letters – Curriculum Vitae.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Trade Enquiries, Quotations and Offers – Trade Enquiries – Format for trade enquiry letter – Orders and their Execution – Complaints and Adjustments – Quotations – Voluntary offers and quotations – Sentences regarding offers and quotations – Placing an order – Cancellation, Acknowledgement, Refusal and execution of order.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Circular, Sales and Bank Correspondence – Meaning of Circular letters – Objectives – Situations that need Circular letters – Meaning of Sales letters – Objectives – Advantages –Three P's functions, Bank Correspondence – Types – Structure of Banking Correspondence.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Report writing and Communication using Technology – Meaning of a Report – Types of Business Reports – Characteristics of Good Report–Preparing a Report – Organization of a Report–Spoken Communication, the telephone, the public addressing system – Word processor – Telex, Fax, Email – Teleconferences, Voicemail – Internet -	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

	Multimedia – Teleconferencing- Mobile Phone Conversation – Video Conferencing – SMS – Telephone Answering Machine.			
VI	Self Study for Enrichment (Not to be included for External Examination) Steps to overcome barriers of communication – Functions of Business Letters - Elements of a Good Banking Correspondence - Importance of Oral and Written Reports.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Books

1. Rajendra Pal and Korlahalli,J.S., Essentials of Business Communication ,Sultan Chand & Sons, 2015
2. Sharma., Business Correspondence and Report Writing, Tata McGraw Hill,2017
3. Jain, G, Business Communication, Sahityabahvan Publication,New Delhi.

Reference Books

1. Hartley, P., & Bruckmann, C, (200), Business Communication, Routledge
2. Subba Roa.P, Business Communication, Cengage,2013

Web References

1. <https://accountingseekho.com/>
2. <https://www.testpreptraining.com/business-communications-practice-exam-questions>
3. <https://bachelors.online.nmims.edu/degree-programs>

Pedagogy

Chalk and Talk, PPT, Discussion, Assignment, Demo, Quiz and Seminar.

Course Designer

Ms. A. Vinodhini

Semester III	Internal Marks: 25	External Marks:75		
COURSECODE	COURSE TITLE	CATEGORY	Hrs. /Week	CREDITS
22UCO3AC3	BUSINESS LAW	ALLIED	4	3

Course Objective

- To make the students to learn the elements of general contract and special contracts.
- To enable the students to understand and deal with various contracts in day – to – day life, be it for his business or profession.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Recall and summarize consequences of applicability of various laws on business situation.	K1, K2
CO2	Outline and Examine the rights and duties under various legal acts.	K2, K4
CO3	Explain and analyze the legal framework governing business trade and commerce in India.	K2, K4
CO4	Identify the fundamental legal principles behind contractual agreement	K3
CO5	Explain important laws that have a bearing on the conduct of business in India.	K5

Mapping of CO with PO and PSO

COs/ PSOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	3	3	3	3	2	2	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1”– Slight (Low) Correlation □ “2”–Moderate (Medium) Correlation□
“3”–Substantial (High) Correlation□ “-”indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Meaning & Definition of Contract – Nature of Contract – Classification of Contract –Essentials of a valid Contract – Offer and Acceptance – Consideration – Contractual Capacity – Free Consent – Legality of Objects – Void Agreements.	12	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
II	Performance of Contract – Different Modes of discharge of Contract – Remedies of Breach – Quasi Contracts – Contract of Indemnity and Guarantee – Contract of Bailment and Pledge – Law of Agency.	12	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
III	Introduction of Sale of Goods Act 1930 - Formalities of the Contract of Sale – Distinction between Sale & Agreement to Sell – Distinction between sale and Hire Purchase agreement – Conditions and Warranties – Transfer of Property as between the seller and the buyer – Principle of “Caveat Emptor” and its limitations – Rights of an unpaid seller	12	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
IV	Indian Partnership Act1932 - definition – Essentials of Partnership – Kinds of Partners – rights and duties of partners – reconstitution of firms – Dissolution of a firm – Limited Liability Partnership, 2008 – Nature of LLP – Distinction between LLP and Partnership – Conversion to LLP – Extent and Limitation of liability of LLP and its partners.	12	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
V	Introduction of Competition Act 2002 – Objectives – Salient features – Anti Competitive Agreements–Prevention of abuse of dominant position– Combination– Competition advocacy– Competition Commission of India.	12	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
IV	Self-Study for Enrichment (Not to be included for End Semester Examination)	-	CO1,CO2, CO3,CO4,	K1, K2, K3, K4, K5

	Contingent Contract – Winding up and Dissolution of the LLP – Intellectual Property Rights – Indian Companies Act 2013		CO5	
--	--	--	------------	--

Text Books

1. N. D. Kapoor, *Element of Mercantile Law*, Sultan Chand & Sons Private Limited, New Delhi, 2001.
2. R.S.N. Pillai & Bagavathi, *Business Law*, S. Chand & Co. Ltd, New Delhi, 2006.
3. N. D. Kapoor, *Elements of Company Law*, Sultan Chand & Sons Private Limited, New Delhi, 2020.

Reference Books

1. Srinivasan, *Business Law*, Margham Publishers, Chennai, 2004.
2. Kuchcal, *Mercantile Law*, Vikas Publishing house, New Delhi, 2003.

Web References

1. <https://www.legalserviceindia.com/legal/article-2190-essential-elements-of-a-contract.html><https://www.simplynotes.in/e-notes/mcomb-com/business-regulatory-framework/special-contracts-indemnity-guarantee-bailment-and-pledge-agency/>
2. <https://blog.iplayers.in/the-sale-of-goods-act-1930/>
3. <http://student.manupatra.com/Academic/Abk/Indian-Partnership-Act/Toc.htm>
4. https://www.srcc.edu/sites/default/files/B.com%20H_sem%20vi_Consumer%20affairs%20and%20Customer%20Care_Ms.%20Kavita%20Kamboj.pdf

Pedagogy

Chalk and Talk, Seminar, PPT Presentation, Assignment and Group Discussion and Case Study.

Course Designer

Dr. J. Praba

GENERIC ELECTIVE COURSE –I (GEC): STOCK EXCHANGE PRACTICES
2022 – 2023 BATCH ONWARDS

SEMESTER III	INTERNAL MARKS: 25 EXTERNAL MARKS: 75			
COURSE CODE	COURSE TITLE	CATEGORY	Hrs./ Week	CREDITS
22UBA3GEC1	STOCK EXCHANGE PRACTICES	GENERIC ELECTIVE COURSE	2	2

Course Objectives:

- To impart the basic knowledge of stock marketing.
- To predict the movements in the stock in various investment avenues and to rate them.
- To equip the students about credit rating of the companies.

Pre-Requisites: Basic Knowledge in stocks.

Course Outcomes:

Course Outcomes and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Knowledge Level
CO1	Identify the essential of Capital Markets and to evaluate the need for New Issue Markets.	K1
CO2	Framing the role and functions of Secondary Markets.	K2
CO3	Discuss the necessity of Listing in Stock Exchanges.	K3
CO4	Assess the predominant role of Stock brokers in the trading mechanism.	K3
CO5	Formulate the methods of ranking of institutions through credit rating.	K3

MAPPING OF CO WITH PO AND PSO :

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	2	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	2	3

“1”-Slight(Low) Correlation-“2”- Moderate (Medium) Correlation-
“3”- Substantial (High) Correlation –“-“ indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVELS
I	Capital Market – Need and importance – Financial instruments – features - New Issue Market – Functions and Methods of Issue.	6	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
II	Secondary Market – Origin and Growth – Role and Functions of Stock Exchange – Weaknesses of Stock exchange. Indian stock exchange – objectives .	6	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
III	Listing of Securities – Group A, Group B, Group C Shares – Listing Procedures – Criteria for Listing.	5	CO1 CO2 CO3 CO4 CO5	K1 K2 K3

IV	Mechanics of Trading in Stock Exchanges – Registration of Stock Brokers – Functions – Kinds of brokers – Kinds of Speculators – Speculative Transactions.	7	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
V	Credit Rating – CRISIL – CARE – ICRA Agencies, DEMAT Accounts – Depositories.	6	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
VI	SELF STUDY FOR ENRICHMENT: (Not to be included for External examination) Relationship between New issue market and Stock Exchange – Recent developments in Secondary market – Online trading – BSE, NSE, OTCEI, MCX and SX.		CO1 CO2 CO3 CO4 CO5	K1 K2 K3

Text Book:

1. Gordon E & Natarajan K, (2016), *Financial Markets and Institutions*, 11th Revised Edition, Himalaya Publishing House.

Books for Reference:

1. Punithavathy Pandian, (2012), *Security Analysis and Portfolio Management*, Vikas Publishing House Ltd.
2. Joseph Anbarasu D, Boomonathan V. K., Manoharan P, Gnanaraj G, (2014), *Financial Services*, 1st Edition, Sultan Chand & Sons.
3. Gurusamy S, (2015), *Financial Market and Institutions*, 1st Edition, Vijay Nicole Imprints Pvt. Ltd.

Web Resources:

1. <http://vskub.ac.in/wp-content/uploads/2020/04/FINANCIAL-SERVICES-6th-Sem.pdf>
2. <http://kamarajcollege.ac.in/Department/BBA/II%20Year/e003%20Core%2011%20-%20Financial%20Services%20-%20IV%20Sem.pdf>
3. <https://academyfinancial.org/journal>
4. Financial Remedies Journal
5. https://sist.sathyabama.ac.in/sist_coursematerial/uploads/SBAA1403.pdf

Pedagogy: Lecture, Assignments, Seminar and Quiz.

Course Designer: Dr. M. Gayathri, Associate Professor.

B.Com.



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY – 18

DEPARTMENT OF COMMERCE

B.Com.– PROGRAMME STRUCTURE

LEARNING OUTCOME BASED CURRICULUM FRAMEWORK (CBCS - LOCF)

(For the candidates admitted from the academic year 2023 – 2024 onwards)

Semester	Part	Course	Title	Subject Code	Hours	Credit	Exam Hours	Marks		Total
								Internal	External	
I	I	Language Course – I (LC)	Podhuth Tamil - 1	23ULT1	6	3	3	25	75	100
			Hindi Ka Samanya Gyan Aur Nirbandh	23ULH1						
			Poetry, Grammar and History of Sanskrit Literature	23ULS1						
			Foundation Course Paper I French -I	23ULF1						
	II	English Language Course – I (ELC)	General English – I	23UE1	6	3	3	25	75	100
	III	Core Course – I (CC)	Financial Accounting – I	23UCO1CC1	6	5	3	25	75	100
		Core Course – II (CC)	Principles of Management	23UCO1CC2	6	5	3	25	75	100
		First Allied Course – I (AC)	Business Economics	23UCO1AC1	4	3	3	25	75	100
	IV	Ability Enhancement Compulsory Course – I (AECC)	Value Education	23UGVE	2	2	-	100	-	100
		Total			30	21				600

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation
 “3” – Substantial (High) Correlation “-” Indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	CO'S	COGNITIVE LEVEL
I	Fundamentals of Financial Accounting Financial Accounting – Meaning, Definition, Objectives, Basic Accounting Concepts and Conventions - Journal, Ledger Accounts– Subsidiary Books — Trial Balance - Classification of Errors – Rectification of Errors – Preparation of Suspense Account – Bank Reconciliation Statement - Need and Preparation.	18	CO1,CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Final Accounts Final Accounts of Sole Trading Concern- Capital and Revenue Expenditure and Receipts – Preparation of Trading, Profit and Loss Account and Balance Sheet with Adjustments. Accounts of Non-Profit Organisation Receipt & Payment Accounts – Income &Expenditure Accounts – Balance Sheet – Adjustments.	21	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Depreciation and Bills of Exchange Depreciation - Meaning – Objectives – Accounting Treatments - Types - Straight Line Method – Diminishing Balance method – Conversion method. Units of Production Method – Cost Model vs. Revaluation Bills of Exchange – Definition – Specimens – Discounting of Bills – Endorsement of Bill – Collection – Noting – Renewal – Retirement of Bill under rebate	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Accounting from Incomplete Records – Single Entry System	18	CO1, CO2,	K1, K2, K3,

	Incomplete Records – Meaning and Features – Limitations – Difference between Incomplete Records and Double Entry System – Methods of Calculation of Profit – Statement of Affairs Method – Preparation of final statements by Conversion method.		CO3, CO4, CO5	K4, K5
V	Royalty and Insurance Claims Meaning – Minimum Rent – Short Working – Recoupment of Short Working – Lessor and Lessee – Sublease – Accounting Treatment. Insurance Claims – Calculation of Claim Amount-Average clause (Loss of Stock only)	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self Study for Enrichment (Not to be included for External Examination) Difference between Balance Sheet and Trial Balance, Adjustment and Closing Entries – Negotiable Instrument, Difference between Promissory note and Bills of Exchange.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Distribution of Marks: Theory 20% & Problem 80%

Text Books

1. S. P. Jain and K. L. Narang Financial Accounting- I, Kalyani Publishers, New Delhi.
2. S.N. Maheshwari, Financial Accounting, Vikas Publications, Noida.
3. Shukla Grewal and Gupta, “Advanced Accounts”, volume 1, S.Chand and Sons, New Delhi.
4. Radhaswamy and R.L. Gupta: Advanced Accounting, Sultan Chand, New Delhi.
5. R.L. Gupta and V.K. Gupta, “Financial Accounting”, Sultan Chand, New Delhi.

Reference Books

1. Dr.Arulanandan and Raman: Advanced Accountancy, Himalaya Publications, Mumbai.
2. Tulsian, Advanced Accounting, Tata McGraw Hills, Noida.

3. Charumathi and Vinayagam, Financial Accounting, S.Chand and Sons, New Delhi.
4. Goyal and Tiwari, Financial Accounting, Taxmann Publications, New Delhi.
5. Robert N Anthony, David Hawkins, Kenneth A. Merchant, Accounting: Text and Cases. McGraw-Hill Education, Noida.

Web References

1. <https://www.slideshare.net/mcsharma1/accounting-for-depreciation-1>
2. <https://www.slideshare.net/ramusakha/basics-of-financial-accounting>
3. <https://www.accountingtools.com/articles/what-is-a-single-entry-system.html>

Pedagogy

Chalk and Talk, PPT, Discussion, Assignment, Demo, Quiz and Seminar.

Course Designer

Ms. J. Lalithambigai

Semester I	Internal Marks: 25	External Marks: 75		
COURSE CODE	COURSE TITLE	CATAGORY	Hrs/ Week	CREDITS
23UCO1CC2	PRINCIPLES OF MANAGEMENT	CORE	6	5

Course Objective

- To understand the basic management concepts and functions
- To know the various techniques of planning and decision making
- To familiarize with the concepts of organisation structure
- To gain knowledge about the various components of staffing
- To enable the students in understanding the control techniques of management

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	On the successful completion of the course, students will be able to Define the basic principles and concepts of management and summarize the various authorization and responsibilities of an organization.	K1
CO2	Explain the importance of planning and decision making in an organization	K2
CO3	Apply and integrate planning, organizing, decision-making, staffing and directing processes in an organization.	K3
CO4	Analyze the various methods of performance appraisal	K4
CO5	Explain the notions of directing, co-ordination and control in management.	K5

Mapping of CO with PO and PSO

COs / PSOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	2	2	3	3	3	3	3
CO3	3	3	3	2	2	3	3	3	2	2
CO4	3	3	3	3	3	3	3	2	2	2
CO5	3	3	3	2	2	3	3	3	3	2

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation
 “3” – Substantial (High) Correlation “-” Indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	CO'S	COGNITIVE LEVEL
I	Introduction to Management Meaning – Definitions – Nature and Scope – Levels of Management – Importance – Management Vs. Administration – Management: Science or Art – Evolution of Management Thoughts – F. W. Taylor, Henry Fayol, Peter F. Drucker, Elton Mayo - Functions of Management – Trends and Challenges of Management. Managers – Qualification – Duties & Responsibilities.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Planning Planning – Meaning – Definitions – Nature – Scope and Functions – Importance and Elements of Planning – Types – Planning Process – Tools and Techniques of Planning – Management by Objective (MBO). Decision Making: Meaning – Characteristics – Types – Steps in Decision Making – Forecasting – Rational Decision Making – Process – Decision Making Under Different Conditions.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Organizing Meaning – Definitions – Nature and Scope – Characteristics – Importance – Types – Formal and Informal Organization – Organization Chart – Organization Structure: Meaning and Types – Departmentalization – Authority and Responsibility – Centralization and Decentralization – Span of Management.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Staffing Introduction – Concept of Staffing-	18	CO1, CO2,	K1, K2, K3,

	Staffing Process – Recruitment – Sources of Recruitment – Modern Recruitment Methods – Selection Procedure – Test – Interview– Training: Need – Types– Promotion – Management Games – Performance Appraisal – Meaning and Methods – 360 degree Performance Appraisal – Work from Home – Managing Work from Home [WFH].		CO3, CO4, CO5	K4, K5
V	Directing Motivation – Meaning – Theories – Communication – Types - Barriers to Communications – Measures to Overcome the Barriers. Leadership – Nature – Types and Theories of Leadership – Styles of Leadership – Qualities of a Good Leader – Successful Women Leaders – Challenges faced by women in workforce – Supervision. Co-ordination and Control Co-ordination – Meaning - Techniques of Co-ordination. Control - Characteristics - Importance – Stages in the Control Process - Requisites of Effective Control and Controlling Techniques – Management by Exception [MBE].	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self Study for Enrichment (Not to be included for End Semester Examination). Departmentalisation – Basis – Meaning and Importance – Policies – Meaning and Types –Procedure – Requisites for excellent co-ordination.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Books

1. Gupta. C. B, -Principles of Management-L.M. Prasad, S. Chand& Sons Co. Ltd, New Delhi.
2. Dinkar Pagare, Principles of Management, Sultan Chand & Sons Publications, New Delhi.
3. P. C. Tripathi& P.N Reddy, Principles of Management. Tata McGraw, Hill, Noida.

4. L.M. Prasad, Principles of Management, S.Chand&Sons Co. Ltd, New Delhi.
5. R.K. Sharma, Shashi K. Gupta, Rahul Sharma, Business Management, Kalyani Publications, New Delhi.

Reference Books

1. K Sundhar, Principles Of Management, Vijay Nichole Imprints Limited, Chennai
2. Harold Koontz, Heinz Weirich, Essentials of Management, McGraw Hill, Sultan Chand and Sons, New Delhi.
3. Griffffin, Management principles and applications, Cengage learning, India.
4. Eccles, R. G. & Nohria, N. Beyond the Hype: Rediscovering the Essence of Management. Boston The Harvard Business School Press, India.

Web References

- <http://www.universityofcalicut.info/syl/management>
- <https://www.managementstudyguide.com/manpower-planning.htm>
- <https://www.businessmanagementideas.com/notes/managementnotes/coordination/coordination/21392>

Pedagogy

Chalk and Talk, PPT, Discussion, Assignment, Demo, Quiz and Seminar.

Course Designer

Ms. Shilpa A. Talreja.

Semester I	Internal Marks: 25	External Marks: 75		
COURSE CODE	COURSE TITLE	CATAGORY	Hrs/ Week	CREDITS
23UCO1AC1	BUSINESS ECONOMICS	ELECTIVE	4	3

Course Objective

- To understand the approaches to economic analysis
- To know the various determinants of demand
- To gain knowledge on concept and features of consumer behaviour
- To learn the laws of variable proportions
- To enable the students to understand the objectives and importance of pricing policy

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Recall and summarize the core economic principles, concepts and how they apply to a wide range of real-world issues.	K1 , K2
CO2	Explain the positive and negative approaches in economic analysis	K2
CO3	Relate and apply the various methods of pricing	K1, K3
CO4	Analyze and interpret the concept of price and output decisions of the firms under various market structures. the factors of demand forecasting	K4, K5
CO5	Explain the assumptions and significance of indifference curve	K5

Mapping of CO with PO and PSO

COs / PSOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	2	2	3	3	2	2	2	3
CO2	3	3	2	2	3	3	2	2	2	3
CO3	3	3	2	2	3	3	2	2	2	3
CO4	3	3	2	2	3	3	2	2	2	3
CO5	3	3	3	2	3	3	2	3	2	3

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation
 “3” – Substantial (High) Correlation “-” Indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	CO'S	COGNITIVE LEVEL
I	Introduction to Economics Introduction to Economics – Wealth, Welfare and Scarcity Views on Economics – Positive and Normative Economics - Definition – Scope and Importance of Business Economics - Concepts: Production Possibility frontiers – Opportunity Cost – Accounting Profit and Economic Profit – Incremental and Marginal Concepts – Time and Discounting Principles – Concept of Efficiency – Business Cycle: - Theory, Inflation, Depression, Recession, Recovery, Reflation and Deflation, – Objectives of Business – Social Responsibility of business.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Demand & Supply Functions Meaning of Demand – Demand Analysis: Demand Determinants, Law of Demand and its Exceptions. Elasticity of Demand: Definition, Types, Measurement and Significance. Demand Forecasting – Factors Governing Demand Forecasting – Methods of Demand Forecasting, Law of Supply and Determinants.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Consumer Behaviour Consumer Behaviour – Meaning, Concepts and Features – Law of Diminishing Marginal Utility – Equi-Marginal Utility – Cardinal and Ordinal concepts of Utility - Indifference Curve: Meaning, Definition, Assumptions, Significance and Properties	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

	– Consumer’s Equilibrium. Price, Income and Substitution Effects. Types of Goods: Normal, Inferior and Giffen Goods – Derivation of Individual Demand Curve and Market Demand Curve with the help of Indifference Curve.			
IV	Theory of Production Concept of Production – Production Functions: Linear and Non – Linear Homogeneous Production Functions - Law of Variable Proportion – Laws of Returns to Scale - Difference between Laws of variable proportion and returns to scale – Economies of Scale – Internal and External Economies – Internal and External Diseconomies – Producer’s equilibrium.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Market Structure Price and Output Determination under Perfect Competition, Short Period and Long Period Price Determination, Objectives of Pricing Policy, its importance, Pricing Methods and Objectives – Price Determination under Monopoly, kinds of Monopoly, Price Discrimination, Determination of Price in Monopoly – Monopolistic Competition – Price Discrimination, Equilibrium of Firm in Monopolistic Competition–Oligopoly – Meaning – features, “Kinked Demand” Curve.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self-Study for Enrichment (Not to be included for End Semester Examination) Characteristics of Indian Economy – Recent trends in Indian Economy.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Books

1. H.L. Ahuja, Business Economics–Micro & Macro - Sultan Chand & Sons, New Delhi.
2. C.M. Chaudhary, Business Economics-RBSA Publishers - Jaipur-03.

3. Aryamala.T, Business Economics, Vijay Nocole, Chennai.
4. T.P Jain, Business Economics, Global Publication Pvt. Ltd, Chennai.
5. D.M. Mithani, Business Economics, Himalaya Publishing House, Mumbai.

Reference Books

1. S.Shankaran, Business Economics-Margham Publications, Chennai.
2. P.L.Mehta, Managerial Economics–Analysis, Problems & Cases, Sultan Chand & Sons, New Delhi.
3. Peter Mitchelson and Andrew Mann, Economics for Business-Thomas Nelson Australia
4. Ram singh and Vinaykumar, Business Economics, Thakur Publication Pvt. Ltd, Chennai.
5. Saluram and Priyanka Jindal, Business Economics, CA Foundation Study material, Chennai.

Web References

1. https://youtube.com/channel/UC69_-P77nf5-rKrjcpVEsqQ
2. <https://www.icsi.edu/>
3. <https://www.yourarticlelibrary.com/marketing/pricing/product-pricing-objectives-basis-and-factors/74160>

Pedagogy

Chalk and Talk, PPT, Discussion, Assignment, Demo, Quiz and Seminar.

Course Designer

Dr. N. Savithri.



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY – 18
DEPARTMENT OF COMMERCE
B.Com.– PROGRAMME STRUCTURE

LEARNING OUTCOME BASED CURRICULUM FRAMEWORK (CBCS - LOCF)

(For the candidates admitted from the academic year 2022 – 2023 onwards)

Semester	Part	Course	Title	Subject Code	Hours	Credit	Exam Hours	Marks			Total
								Internal	Internal	Internal	
III	I	Language Course - III (LC)	காப்பியமும், நாடகமும்	22ULT3	5	3	3	25	75	100	
			Hindi Literature & Grammar - III	22ULH3							
			Prose, Textual Grammar and Vakyarachana	22ULS3							
			Intermediate French - I	22ULF3							
	II	English Language Course - III (ELC)	Learning Grammar through Literature - I	22UE3	6	3	3	25	75	100	
	III	Core Course - V (CC)	Cost Accounting	22UCO3CC5	6	6	3	25	75	100	
		Core Course - VI (CC)	Business Correspondence and Reporting	22UCO3CC6	5	5	3	25	75	100	
		Second Allied Course – I (AC)	Business Law	22UCO3AC3	4	3	3	25	75	100	
	IV	Ability Enhancement Compulsory Course – III (AECC)	Innovation and Entrepreneurship	22UGIE	2	1	-	100	-	100	
		Generic Elective Course – I (GEC)	Elements of Insurance	22UCO3GEC1	2	2	3	25	75	100	
			Basic Tamil - I	22ULC3BT1							
			Special Tamil - I	22ULC3ST1							
	Extra Credit Course		Swayam Online Course		As per UGC Recommendations						
	Total				30		23				700

***15 Days INTERNSHIP during Semester Holidays.**

Semester III	Internal Marks:25	External Marks:75		
COURSE CODE	COURSE TITLE	CATEGORY	Hrs. / Week	CREDITS
22UCO3CC5	COST ACCOUNTING	CORE	6	5

Course Objective

- To acquire knowledge about accounting concepts and methods.
- To provides information that relates to how cost accounting information is developed and used for various purpose in different types of business entity.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Define the cost accounting concepts and understand the elements, classification of cost and overheads, levels of material control, purchase and stores control.	K1, K2
CO2	Summarize the techniques of costing and apply the preparation of cost sheet, material control, idle time of labour, methods of calculation of labour turnover and classification of overheads.	K2, K5
CO3	Identify the cost of producing a product and providing a service using job costing,, activity based costing and process costing	K3
CO4	Analyse the process losses, wastage scrap, normal and abnormal losses and reconcile the profit of financial & cost accounting	K4
CO5	Evaluate and solve ethical issues in accounting and business	K5

Mapping of CO with PO and PSO

COs/ PSOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	3	2	3	3	3	2	2	3
CO2	3	3	2	2	3	3	3	3	3	3
CO3	3	3	2	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	2	3	3	3	3	3	3	3	3	3

“1”–Slight(Low)Correlation–“2”–Moderate(Medium)Correlation–

“3”–Substantial(High)Correlation–“-”indicatesthereisnocorrelation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Cost Accounting – Objectives – Classification of Costs – Cost Unit, Cost Centre – Elements of Cost – Financial Accounting Vs. Cost Accounting – Steps in installing a Cost Accounting System – Preparation of Cost Sheet – Quotation.	18	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
II	Material Control: Techniques of Material Control – Level Setting, Economic Order Quantity (EOQ), JIT Inventory System, ABC Analysis, VED Analysis, Perpetual Inventory System and FSND Analysis, Material Purchase and Storage Methods of Valuing Material issues: Cost Price Method – FIFO, LIFO, Simple Average, Weighted Average.	18	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
III	Methods and Measurement of Labour Turnover – Idle time and Over time – Methods of Remuneration: Time rate system, Piece rate system, Straight piece rate system, Taylors differential piece rate system, Merrick's Multiple or differential piece rate system, Gantt's task and bonus plan – Premium Bonus Plan: Halsey premium plan, Halsey-weir scheme, Rowan plan, Barth's variable sharing plan, Emerson's Efficiency plan, Bedeaux's point premium system.	18	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
IV	Overhead Distribution: Concept – Collection and Classification of Overheads, Allocation and Apportionment of factory overheads – Primary – Secondary distribution – Repeated and Simultaneous Equation Method – Absorption of Factory Overheads – Machine Hours Rate – Reconciliation of Profits as per Cost and Financial Accounts.	18	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5

V	Methods of Costing – Contract Costing – Cost Plus – Contracts – Escalation Clause, Process Costing – Normal Loss – Abnormal Loss – Abnormal Gain (Excluding Inter Process Profit and Equivalent Production) – Service Costing – Transport Costing	18	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
IV	Self-Study for Enrichment (Not to be included for End Semester Examination) Activity based Costing, Life Cycle Costing, Target Costing Lean Costing and Six Sigma.	-	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5

Distribution of Marks: Theory 20% & Problem 80%

Text Book

1. Jain & Narang (2015). *Cost Accounting*, Kalyani Publications

Reference Books

1. S.N. Maheswari (2017), *Cost Accounting*, Sultan Chand & Sons
2. Pillai & Bhagavathi (2016), *Cost Accounting*, Sultan Chand & Sons
3. Reddy T.S & Hari Prasad Reddy Y (2018), *Cost Accounting*, Margham Publications

Web References

1. [https://www.investopedia.com/terms/a/abc.asp#:~:text=Activity%2Dbased%20costing%20\(ABC\)%20is%20a%20method%20of%20assigning,task%20with%20a%20specific%20goal.](https://www.investopedia.com/terms/a/abc.asp#:~:text=Activity%2Dbased%20costing%20(ABC)%20is%20a%20method%20of%20assigning,task%20with%20a%20specific%20goal.)
2. <https://www.godigit.com/business-insurance/business-terms/life-cycle-costing>
3. <https://www.goskills.com/Lean-Six-Sigma>

Pedagogy

Chalk and Talk, PPT, Discussion, Assignment, Demo, Quiz and Seminar.

Course Designer

Ms. S. Praveena

Semester III	Internal Marks: 25	External Marks: 75		
COURSE CODE	COURSE TITLE	CATAGORY	Hrs/ Week	CREDITS
22UCO3CC6	BUSINESS CORRESPONDENCE AND REPORTING	CORE	5	5

Course Objective

- To acquire good communication skills requisite for business correspondence and reporting.
- To provide an overview of prerequisites to Business Communication.
- To impart and prepare the strategies of Effective Business report writing.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Outline the basic concept of business communication	K1, K2
CO2	Explains the skill of ethical, legal, cultural and global issues affecting business communication	K2
CO3	Discover and Develop the knowledge of trade enquiries	K3, K4
CO4	Analyze the situation of writing various types of Business letters and reports.	K4
CO5	Evaluate the problem solving skills appropriate to business communication.	K5

Mapping of CO with PO and PSO

COs / PSOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	2	2	3	3	2	3	2	2
CO2	3	3	2	3	3	3	3	2	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	2	3	3	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation
“3” – Substantial (High) Correlation “-” Indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	CO'S	COGNITIVE LEVEL
I	Introduction to Communication – Meaning and Definition – Needs – Types of Communication – Process – Characteristics – Barriers to Communication – E-Communication – Forms of Modern Communication – Applications of the various forms of communication.	15	CO1,CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Business Letters –Meaning, Need and kinds of Business letters – Essentials of an effective Business Letter – Layout – Appearance –Size – Style – Form and punctuation –Routine request letters – Responses to letters –Refusal letters – Claim letters – Collection letters – Application Letters – Curriculum Vitae.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Trade Enquiries, Quotations and Offers – Trade Enquiries – Format for trade enquiry letter – Orders and their Execution – Complaints and Adjustments – Quotations – Voluntary offers and quotations – Sentences regarding offers and quotations – Placing an order – Cancellation, Acknowledgement, Refusal and execution of order.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Circular, Sales and Bank Correspondence – Meaning of Circular letters – Objectives – Situations that need Circular letters – Meaning of Sales letters – Objectives – Advantages –Three P's functions, Bank Correspondence – Types – Structure of Banking Correspondence.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Report writing and Communication using Technology – Meaning of a Report – Types of Business Reports – Characteristics of Good Report–Preparing a Report – Organization of a Report–Spoken Communication, the telephone, the public addressing system – Word processor – Telex, Fax, Email – Teleconferences, Voicemail – Internet -	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

	Multimedia – Teleconferencing- Mobile Phone Conversation – Video Conferencing – SMS – Telephone Answering Machine.			
VI	Self Study for Enrichment (Not to be included for External Examination) Steps to overcome barriers of communication – Functions of Business Letters - Elements of a Good Banking Correspondence - Importance of Oral and Written Reports.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Books

1. Rajendra Pal and Korlahalli,J.S., Essentials of Business Communication ,Sultan Chand & Sons, 2015
2. Sharma., Business Correspondence and Report Writing, Tata McGraw Hill,2017
3. Jain, G, Business Communication, Sahityabahvan Publication,New Delhi.

Reference Books

1. Hartley, P., & Bruckmann, C, (200), Business Communication, Routledge
2. Subba Roa.P, Business Communication, Cengage,2013

Web References

1. <https://accountingseekho.com/>
2. <https://www.testpreptraining.com/business-communications-practice-exam-questions>
3. <https://bachelors.online.nmims.edu/degree-programs>

Pedagogy

Chalk and Talk, PPT, Discussion, Assignment, Demo, Quiz and Seminar.

Course Designer

Ms. A. Vinodhini

Semester III	Internal Marks: 25	External Marks:75		
COURSECODE	COURSE TITLE	CATEGORY	Hrs. /Week	CREDITS
22UCO3AC3	BUSINESS LAW	ALLIED	4	3

Course Objective

- To make the students to learn the elements of general contract and special contracts.
- To enable the students to understand and deal with various contracts in day – to – day life, be it for his business or profession.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Recall and summarize consequences of applicability of various laws on business situation.	K1, K2
CO2	Outline and Examine the rights and duties under various legal acts.	K2, K4
CO3	Explain and analyze the legal framework governing business trade and commerce in India.	K2, K4
CO4	Identify the fundamental legal principles behind contractual agreement	K3
CO5	Explain important laws that have a bearing on the conduct of business in India.	K5

Mapping of CO with PO and PSO

COs/ PSOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	3	3	3	3	2	2	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1”– Slight (Low) Correlation □ “2”–Moderate (Medium) Correlation□
“3”–Substantial (High) Correlation□ “-”indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Meaning & Definition of Contract – Nature of Contract – Classification of Contract –Essentials of a valid Contract – Offer and Acceptance – Consideration – Contractual Capacity – Free Consent – Legality of Objects – Void Agreements.	12	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
II	Performance of Contract – Different Modes of discharge of Contract – Remedies of Breach – Quasi Contracts – Contract of Indemnity and Guarantee – Contract of Bailment and Pledge – Law of Agency.	12	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
III	Introduction of Sale of Goods Act 1930 - Formalities of the Contract of Sale – Distinction between Sale & Agreement to Sell – Distinction between sale and Hire Purchase agreement – Conditions and Warranties – Transfer of Property as between the seller and the buyer – Principle of “Caveat Emptor” and its limitations – Rights of an unpaid seller	12	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
IV	Indian Partnership Act1932 - definition – Essentials of Partnership – Kinds of Partners – rights and duties of partners – reconstitution of firms – Dissolution of a firm – Limited Liability Partnership, 2008 – Nature of LLP – Distinction between LLP and Partnership – Conversion to LLP – Extent and Limitation of liability of LLP and its partners.	12	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
V	Introduction of Competition Act 2002 – Objectives – Salient features – Anti Competitive Agreements–Prevention of abuse of dominant position– Combination– Competition advocacy– Competition Commission of India.	12	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
IV	Self-Study for Enrichment (Not to be included for End Semester Examination)	-	CO1,CO2, CO3,CO4,	K1, K2, K3, K4, K5

	Contingent Contract – Winding up and Dissolution of the LLP – Intellectual Property Rights – Indian Companies Act 2013		CO5	
--	--	--	------------	--

Text Books

1. N. D. Kapoor, *Element of Mercantile Law*, Sultan Chand & Sons Private Limited, New Delhi, 2001.
2. R.S.N. Pillai & Bagavathi, *Business Law*, S. Chand & Co. Ltd, New Delhi, 2006.
3. N. D. Kapoor, *Elements of Company Law*, Sultan Chand & Sons Private Limited, New Delhi, 2020.

Reference Books

1. Srinivasan, *Business Law*, Margham Publishers, Chennai, 2004.
2. Kuchcal, *Mercantile Law*, Vikas Publishing house, New Delhi, 2003.

Web References

1. <https://www.legalserviceindia.com/legal/article-2190-essential-elements-of-a-contract.html><https://www.simplynotes.in/e-notes/mcomb-com/business-regulatory-framework/special-contracts-indemnity-guarantee-bailment-and-pledge-agency/>
2. <https://blog.iplayers.in/the-sale-of-goods-act-1930/>
3. <http://student.manupatra.com/Academic/Abk/Indian-Partnership-Act/Toc.htm>
4. https://www.srcc.edu/sites/default/files/B.com%20H_sem%20vi_Consumer%20affairs%20and%20Customer%20Care_Ms.%20Kavita%20Kamboj.pdf

Pedagogy

Chalk and Talk, Seminar, PPT Presentation, Assignment and Group Discussion and Case Study.

Course Designer

Dr. J. Praba

GENERIC ELECTIVE COURSE –I (GEC): STOCK EXCHANGE PRACTICES
2022 – 2023 BATCH ONWARDS

SEMESTER III	INTERNAL MARKS: 25 EXTERNAL MARKS: 75			
COURSE CODE	COURSE TITLE	CATEGORY	Hrs./ Week	CREDITS
22UBA3GEC1	STOCK EXCHANGE PRACTICES	GENERIC ELECTIVE COURSE	2	2

Course Objectives:

- To impart the basic knowledge of stock marketing.
- To predict the movements in the stock in various investment avenues and to rate them.
- To equip the students about credit rating of the companies.

Pre-Requisites: Basic Knowledge in stocks.

Course Outcomes:

Course Outcomes and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Knowledge Level
CO1	Identify the essential of Capital Markets and to evaluate the need for New Issue Markets.	K1
CO2	Framing the role and functions of Secondary Markets.	K2
CO3	Discuss the necessity of Listing in Stock Exchanges.	K3
CO4	Assess the predominant role of Stock brokers in the trading mechanism.	K3
CO5	Formulate the methods of ranking of institutions through credit rating.	K3

MAPPING OF CO WITH PO AND PSO :

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	2	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	2	3

“1”-Slight(Low) Correlation-“2”- Moderate (Medium) Correlation-
“3”- Substantial (High) Correlation –“-“ indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVELS
I	Capital Market – Need and importance – Financial instruments – features - New Issue Market – Functions and Methods of Issue.	6	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
II	Secondary Market – Origin and Growth – Role and Functions of Stock Exchange – Weaknesses of Stock exchange. Indian stock exchange – objectives .	6	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
III	Listing of Securities – Group A, Group B, Group C Shares – Listing Procedures – Criteria for Listing.	5	CO1 CO2 CO3 CO4 CO5	K1 K2 K3

IV	Mechanics of Trading in Stock Exchanges – Registration of Stock Brokers – Functions – Kinds of brokers – Kinds of Speculators – Speculative Transactions.	7	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
V	Credit Rating – CRISIL – CARE – ICRA Agencies, DEMAT Accounts – Depositories.	6	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
VI	SELF STUDY FOR ENRICHMENT: (Not to be included for External examination) Relationship between New issue market and Stock Exchange – Recent developments in Secondary market – Online trading – BSE, NSE, OTCEI, MCX and SX.		CO1 CO2 CO3 CO4 CO5	K1 K2 K3

Text Book:

1. Gordon E & Natarajan K, (2016), *Financial Markets and Institutions*, 11th Revised Edition, Himalaya Publishing House.

Books for Reference:

1. Punithavathy Pandian, (2012), *Security Analysis and Portfolio Management*, Vikas Publishing House Ltd.
2. Joseph Anbarasu D, Boomonathan V. K., Manoharan P, Gnanaraj G, (2014), *Financial Services*, 1st Edition, Sultan Chand & Sons.
3. Gurusamy S, (2015), *Financial Market and Institutions*, 1st Edition, Vijay Nicole Imprints Pvt. Ltd.

Web Resources:

1. <http://vskub.ac.in/wp-content/uploads/2020/04/FINANCIAL-SERVICES-6th-Sem.pdf>
2. <http://kamarajcollege.ac.in/Department/BBA/II%20Year/e003%20Core%2011%20-%20Financial%20Services%20-%20IV%20Sem.pdf>
3. <https://academyfinancial.org/journal>
4. Financial Remedies Journal
5. https://sist.sathyabama.ac.in/sist_coursematerial/uploads/SBAA1403.pdf

Pedagogy: Lecture, Assignments, Seminar and Quiz.

Course Designer: Dr. M. Gayathri, Associate Professor.



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY – 18
DEPARTMENT OF COMMERCE

B.Com. CA – PROGRAMME STRUCTURE

LEARNING OUTCOME BASED CURRICULUM FRAMEWORK (CBCS - LOCF)

(For the candidates admitted from the academic year 2022 – 2023 onwards)

Semester	Part	Course	Title	Subject Code	Hours	Credit	Exam Hours	Marks			Total
								Internal	Internal	Internal	
III	I	Language Course - III (LC)	Kaapiyamum Nadagamum	22ULT3	5	3	3	25	75	100	
			Hindi Literature & Grammar - III	22ULH3							
			Prose, Textual Grammar and Vakyarachana	22ULS3							
			Intermediate French - I	22ULF3							
	II	English Language Course - III (ELC)	Learning Grammar through Literature - I	22UE3	6	3	3	25	75	100	
	III	Core Course - V (CC)	Business Accounting	22UCC3CC5	6	6	3	25	75	100	
		Core Course - VI (CC)	Database Management Systems	22UCC3CC6	5	5	3	25	75	100	
		Second Allied Course – I (AC)	Business Law	22UCC3AC3	4	3	3	25	75	100	
	IV	Ability Enhancement Compulsory Course – III (AECC)	Innovation and Entrepreneurship	22UGIE	2	1	-	100	-	100	
		Generic Elective Course – I (GEC)	Office Management	22UCC3GEC1	2	2	3	25	75	100	
			Basic Tamil - I	22ULC3BT1							
			Special Tamil - I	22ULC3ST1							
	Extra Credit Course		Swayam Online Course		As per UGC Recommendations						
	Total				30		23				700

***15 Days INTERNSHIP during Semester Holidays.**

Semester III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs. / Week	CREDITS
22UCC3CC5	BUSINESS ACCOUNTING	CORE	6	6

Course Objective

- To develop a skills to prepare different kinds of financial statements in Partnership Firms.
- To understand different types of branch and departmental accounts.
- To enable the students to maintain books of recording under Hire Purchase and Instalment method

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Define and outline the accounting methods for the various partnership related transactions	K1, K2
CO2	Explain the purpose and use of financial accounting.	K3
CO3	Apply the accounting procedures for recording various financial transactions.	K3
CO4	Analysis the accounting concepts to interpret the performance of partnership firm and Business enterprises.	K4
CO5	Evaluate and solve the problems in Partnership firm and Business organization.	K5

Mapping of CO with PO and PSO

COs / PSOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	2	3	3	2	3
CO3	3	2	3	2	3	3	3	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	2	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –
“3” – Substantial (High) Correlation – “-” indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Partnership – Meaning, Partnership deed – Admission of a Partner – Calculation of	18	CO1,CO2, CO3,CO4,	K1,K2,K3, K4,K5,K6

	Sacrificing Ratio – Adjustment for Goodwill – Adjustment in Partners Capital Account – Accumulated Profit and Losses – Partners capital account and Balance sheet.		CO5	
II	Retirement of a Partner – Calculation of Gaining Ratio – Accumulated Reserves and Profit – Adjustments regarding partners capital account – Death of a Partner- Preparation of capital account and Balance sheet	18	CO1,CO2, CO3,CO4, CO5	K1,K2,K3, K4,K5,K6
III	Dissolution of Firm – Preparation of Realisation Accounts, Partners Capital account and Bank Account – Insolvency of partner – Insolvency of all partners – Garner Vs. Murray – Piecemeal Distribution – Proportionate Capital	18	CO1,CO2, CO3,CO4, CO5	K1,K2,K3, K4,K5,K6
IV	Branch Accounts – Dependent Branch – Debtors System – Stock and Debtors System – Final Accounts System – Wholesale Branches – Independent Branches (Excluding Foreign Branches) – Departmental Accounts – Inter Departmental Transfers – Stock Reserve	18	CO1,CO2, CO3,CO4, CO5	K1,K2,K3, K4,K5,K6
V	Hire Purchase Accounts – Default and Repossessions – Complete Repossession – Partial Repossession – Hire Purchase Trading Accounts – Debtors Method – Stock and Debtors Method – Instalment – Purchase System	18	CO1,CO2, CO3,CO4, CO5	K1,K2,K3, K4,K5,K6
VI	Self-Study for Enrichment (Not to be included for End Semester Examination) Distinguish Between Departments and Branches – Difference Between Hire Purchase and Instalment systems. Need for Valuation of Goodwill – Methods of Goodwill – Treatment of unrecorded Assets and Liabilities	-	CO1,CO2, CO3,CO4, CO5	K1,K2,K3, K4,K5,K6

Text Book

1. S.P.Jain and K.L.Narang (2016), Fundamentals of Accounting, Kalyani Publishers, 2017
2. T.S. Reddy & Murthy (2020), Financial Accounting, Margham Publications, 2017

Reference Books

1. Shukla MC, Grewal TS & Gupta CS,(2016) Advanced Accounts (2016), S.Chand Company ltd.
2. R.L. Gupta & Radhaswamy M. (2018). Financial Accounting. 8th Edition, Sultan Chand Sons
3. Arulanandam M.A, & Raman K.S. (2018). Advanced Accountancy. 7thEdition, Himalaya Publishing House.

Web References

1. <https://www.icai.org/post/icai-publications-accounting-standards-board>
2. <https://cleartax.in/g/terms/hire-purchase-agreements>
3. www.accountingcoach.com
4. www.accountingstudyguide.com
5. www.futureaccountant.com
6. www.onlinelibrary.wiley.com

Pedagogy

Lecture, PowerPoint Presentation, Assignment, Quiz, Seminar & Group Discussion.

Course Designer

Ms. G. Kanagavalli

Semester III	Internal Marks:25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS./ WEEK	CREDITS
22UCC3CC6	DATABASE MANAGEMENT SYSTEMS	CORE	5	5

Course Objective

- To understand the basic concepts and the applications of database systems
- To provide the basics of SQL and construct queries using SQL
- To inculcate the knowledge of join operations, views, transactions and E-R model in database management systems

Course Outcome and Cognitive Level Mapping

On the successful completion of the course, students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Define the basic concepts of database design, architecture and its data model	K1
CO2	Illustrate the structure of Relational database	K2
CO3	Apply the various queries in the database	K3
CO4	Examine the Join operations, Views and Transactions	K4
CO5	Select the appropriate E-R model for the real time enterprises	K5

Mapping of CO with PSO and PO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	3	2	1	1	3	3	2	3	2
CO2	3	2	3	1	1	3	2	2	3	3
CO3	3	3	3	2	2	3	3	2	3	2
CO4	3	2	3	2	2	3	3	2	3	2
CO5	3	3	3	2	2	3	3	2	2	3

“1”-Slight(Low)Correlation
“3” -Substantial(High)Correlation

“2”-Moderate(Medium)Correlation
“-” - Indicates there Is no Correlation

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Introduction to Database System Concepts: Introduction – Database-System Applications – Purpose of Database Systems – View of Data : Data Abstraction – Instances and Schemas –	15	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5

	Data Models – Database Languages – Relational Databases : Tables – Data-Manipulation Language – Data - Definition Language – Database Design : Design Process – The Entity – Relationship Model – Normalization – Data Storage and Querying : Storage Manager – The Query Processor – Transaction Management – Database Architecture–Database Users and Administrators : Database Users and User Interfaces – Database Administrator.			
II	Introduction to Relational Model and SQL: Structure of Relational Databases – Database Schema – Keys – Schema Diagrams – Relational Query Languages – Relational Operations- Introduction to SQL: Overview of the SQL Query Language – SQL Data Definition: Basic Types – Basic Schema Definition – Basic Structure of SQL Queries: Queries on Single Relation – Queries on Multiple Relations - The Natural Join.	15	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
III	Introduction to SQL: Additional Basic Operations: The Rename Operation – String Operations – Attributes Specification in Select Clause –Ordering the Display of Tuples – Where clause Predicates– Set Operations : The Union Operation– The Intersect Operation - Except Operation – Null Values – Aggregate Functions : Basic Aggregation – Aggregation with Grouping - The Having Clause - Nested Subqueries : Set Membership – Set Comparison – Modification of the Database.	15	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
IV	Intermediate SQL Join Expressions: Join Conditions – Outer Joins – Join Types and Conditions –Views : View Definition – Using Views in SQL Queries – Materialized Views – Update of a View – Transactions –Integrity Constraints – Constraints on a Single Relation – Not Null Constraint – Unique Constraint – The Check Clause – Referential Integrity - SQL Data Types and Schemas – Authorization.	15	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5

V	Database Design and the E-R Model The Entity – Relational Model: Entity Sets – Relationship Sets – Attributes – Constraints: Mapping Cardinalities–Keys – Entity-Relationship Diagrams : Basic Structure – Mapping Cardinality- Complex Attributes - Weak Entity Sets – E-R diagram for the University Enterprise.	15	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
VI	Self Study for Enrichment (Not to be included for End Semester Examination) History of Database Systems – Aggregation with Null and Boolean Values – Test for Empty Relations – Test for the Absence of Duplicate Tuples – Subqueries in the From Clause – Overview of the Design Process– Participation Constraints – Removing Redundant Attributes in Entity Sets – Nonbinary Relationship Sets.	-	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5

Textbook

Abraham Silberschatz, Henry F Korth & Sudarshan (2013), Database System Concepts, 6th Edition, McGraw Hill Education India Private Limited.

Reference Books

1. Peter Rob, Carlos Coronel (2009), Database System Concepts, Lengage Learning.
2. Alexis Leon, Mathews Leon (2009), Essential of Database Management Systems, Tata McGraw Hill Education India Private Limited.

Web References

<https://www.geeksforgeeks.org/introduction-of-dbms>
<https://www.javatpoint.com/dbms-tutorial>
<https://www.w3schools.in/dbms>
<https://www.bmc.com/blogs/dbms-database-management-systems>

Pedagogy

Chalk & Talk, PowerPoint Presentation, Discussion, Assignment, Demo, Quiz and Seminar

Course Designer

Ms. A. Anandhavalli, Assistant Professor, Department of Computer Applications.

Semester III	Internal Marks: 25	External Marks:75		
COURSECODE	COURSE TITLE	CATEGORY	Hrs. /Week	CREDITS
22UCC3AC3	BUSINESS LAW	ALLIED	4	3

Course Objective

- To make the students to learn the elements of general contract and special contracts.
- To enable the students to understand and deal with various contracts in day – to – day life, be it for his business or profession.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Recall and summarize consequences of applicability of various laws on business situation.	K1, K2
CO2	Outline and Examine the rights and duties under various legal acts.	K2, K4
CO3	Explain and analyze the legal framework governing business trade and commerce in India.	K2, K4
CO4	Identify the fundamental legal principles behind contractual agreement	K3
CO5	Explain important laws that have a bearing on the conduct of business in India.	K5

Mapping of CO with PO and PSO

COs/ PSOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	3	3	3	3	2	2	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1”– Slight (Low) Correlation □ “2”–Moderate (Medium) Correlation □

“3”–Substantial (High) Correlation □ “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Meaning & Definition of Contract – Nature of Contract – Classification of Contract –Essentials of a valid Contract – Offer and Acceptance – Consideration – Contractual Capacity – Free Consent – Legality of Objects – Void Agreements.	12	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
II	Performance of Contract – Different Modes of discharge of Contract – Remedies of Breach – Quasi Contracts – Contract of Indemnity and Guarantee – Contract of Bailment and Pledge – Law of Agency.	12	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
III	Introduction of Sale of Goods Act 1930 - Formalities of the Contract of Sale – Distinction between Sale & Agreement to Sell – Distinction between sale and Hire Purchase agreement – Conditions and Warranties – Transfer of Property as between the seller and the buyer – Principle of “Caveat Emptor” and its limitations – Rights of an unpaid seller	12	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
IV	Indian Partnership Act1932 - definition – Essentials of Partnership – Kinds of Partners – rights and duties of partners – reconstitution of firms – Dissolution of a firm – Limited Liability Partnership, 2008 – Nature of LLP – Distinction between LLP and Partnership – Conversion to LLP – Extent and Limitation of liability of LLP and its partners.	12	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
V	Introduction of Competition Act 2002 – Objectives – Salient features – Anti Competitive Agreements–Prevention of abuse of dominant position– Combination– Competition advocacy– Competition Commission of India.	12	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5

IV	Self-Study for Enrichment (Not to be included for End Semester Examination) Contingent Contract – Winding up and Dissolution of the LLP – Intellectual Property Rights – Indian Companies Act 2013	-	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
----	--	---	-----------------------	--------------------

Text Books

1. N. D. Kapoor, *Element of Mercantile Law*, Sultan Chand & Sons Private Limited, New Delhi, 2001.
2. R.S.N. Pillai & Bagavathi, *Business Law*, S. Chand & Co. Ltd, New Delhi, 2006.
3. N. D. Kapoor, *Elements of Company Law*, Sultan Chand & Sons Private Limited, New Delhi, 2020.

Reference Books

1. Srinivasan, *Business Law*, Margham Publishers, Chennai, 2004.
2. Kuchcal, *Mercantile Law*, Vikas Publishing house, New Delhi, 2003.

Web References

1. <https://www.legalserviceindia.com/legal/article-2190-essential-elements-of-a-contract.html><https://www.simplynotes.in/e-notes/mcomb-com/business-regulatory-framework/special-contracts-indemnity-guarantee-bailment-and-pledge-agency/>
2. <https://blog.ipleaders.in/the-sale-of-goods-act-1930/>
3. <http://student.manupatra.com/Academic/Abk/Indian-Partnership-Act/Toc.htm>
4. https://www.srcc.edu/sites/default/files/B.com%20H_sem%20vi_Consumer%20affairs%20and%20Customer%20Care_Ms.%20Kavita%20Kamboj.pdf

Pedagogy

Chalk and Talk, Seminar, PPT Presentation, Assignment and Group Discussion and Case Study.

Course Designer

Dr. J. Praba

INNOVATION & ENTREPRENEURSHIP

Semester III	Internal marks:40		External marks: 60	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs/week	CREDITS
22UGIE	INNOVATION & ENTREPRENEURSHIP	Ability Enhancement Compulsory Course -III	2	1

Course Objective

- The course is designed to motivate the students in Entrepreneurship with innovative ideas and build interest in Venture Creation.

Course Outcome and Cognitive Level Mapping

The students will be able to

CO	CO Statement	Knowledge Level
CO 1	Identify Self-Entrepreneurial traits and passion leads.	K3
CO 2	Discover problem solving opportunities and generate ideas	K3
CO 3	Analyse the process of design thinking	K4
CO 4	Develop Business Model canvas for the idea generated	K5
CO 5	Validate the business idea by creating Capstone project	K6

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
-----	------	------	------	------	------	-----	-----	-----	-----	-----

CO1	3	3	2	3	3	2	3	2	2	2
CO2	2	2	3	3	3	2	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	2	3	3	2	3	3	2	3	3
CO5	2	3	3	2	3	3	2	3	3	3

“1” – Slight (Low) Correlation □ “2” – Moderate (Medium) Correlation □
 “3” – Substantial (High) Correlation □ “-” indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	CO'S	COGNITIVE LEVELS
I	<p><u>Entrepreneurship & Intrapreneurship</u></p> <p>Importance of Entrepreneurship Development-The entrepreneurial mind set –Attributes and Characteristics of a successful entrepreneur.</p> <p>Intrapreneurship- Importance- Attributes, Contribution and Characteristics of a successful Intrapreneur- Types of Intrapreneurs.</p> <p>Self-Discovery- Learnings from famous company cases that promote entrepreneurship and Intrapreneurship. (Activity)</p>	6	<p>CO1</p> <p>CO2</p> <p>CO3</p> <p>CO4</p> <p>CO5</p>	<p>K3</p> <p>K4</p> <p>K5</p>
II	<p><u>Entrepreneurial Skill Sets</u></p> <p>Significance of Entrepreneurship skills- Business Management Skill- Decision making skills- Principles of Effectuation- Analytical & Problem- solving skill- Critical thinking skill- Lateral thinking skill- Factors associated with lateral thinking along with examples.</p> <p>Opportunity Discovery- Identify problems worth solving through JTBD method (Activity)</p>	6	<p>CO1</p> <p>CO2</p> <p>CO3</p> <p>CO4</p> <p>CO5</p>	<p>K3</p> <p>K4</p> <p>K5</p>

III	Design Thinking & Innovation Innovation & Creativity- Role in Industry and Organizations- Dynamics of Creative Thinking-Process of Design Thinking-Implementing the Process in Driving Innovation through scientific technologies and Non technology process. Business Idea Generation – Build your own Idea Bank with Innovative Approaches (Activity)	6	CO1 CO2 CO3 CO4 CO5	K3 K4 K5
IV	Crystallising the business Idea Customer Discovery- Identification of customer segments-Drafting of Value Proposition Canvas with a venture creation Idea. Basics of Business Model and LEAN Approach, Blue Ocean Strategy Approach. Crafting business model for a venture using the Lean Canvas – (Activity)	6	CO1 CO2 CO3 CO4 CO5	K3 K4 K5
V	Start -up Business Plan Presentation of Capstone project; Validation Analysis; Pre-incubation and Incubation stages to develop a start-up ecosystem.	6	CO1 CO2 CO3 CO4 CO5	K3 K4 K5 K6
VI	Self study for enrichment: (Not to be included for External examination) Case study analysis on Entrepreneurship	-	CO1 CO2 CO3 CO4 CO5	K3 K4 K5

Textbooks:

1. Elias G.Carayannis, Elbida.D.Samra (2015), Innovation and Entrepreneurship,
2. Peter.F. Drucker (2006), Innovation and Entrepreneurship, Harper Publications

Reference books:

1. John R.Bessant, Joe Tidd (2015), Innovation and Entrepreneurship, Wiley Publications
2. Mike Kennard (2021), Innovation and Entrepreneurship, Routledge, Taylor and Francis

Web References:

1. <https://innovation-entrepreneurship.springeropen.com/>
2. <https://www.worldcat.org/title/innovation-and-entrepreneurship-practice-and-principles/oclc/11549089/lists>

Pedagogy:

e- Content modules, Activity worksheet, Case Studies

Course Designer:

Dr.R.Subha, Assistant Professor, Innovation ambassador, Department of Chemistry

Dr.S.Sowmya, Assistant Professor, Innovation ambassador, Department of Commerce

ABILITY ENHANCEMENT COMPULSORY COURSE - III

INNOVATION AND ENTREPRENEURSHIP

Assessment Rubrics for 100 marks

S.No	Particulars	Marks
1	Self Analysis / Preparation of Self Identification Report / Case study presentation	20
2	Identification of Problem / Innovative practice/ Business plan report	20
3	Lean Canvas / Value Proposition Model / Prototype	20
4	VIVA VOCE	
	a. Novelty of Business Idea	20
	b. Commercial Scalability	10
	c. Pitching Presentation	10
	TOTAL	100

There will be no End Semester Examination for this Course. The subject teacher will make the assessment of students performance based on the above mentioned components and an internal VIVA VOCE will be conducted by the Institution Innovation Ambassadors of Institution Innovation Council, Ministry of Education. Marks will be awarded and submitted to CoE in the Prescribed format specified by the Controller of the examination approved by the Head of respective Departments.

Semester III	Internal Marks: 25	External Marks: 75		
COURSE CODE	COURSE TITLE	CATEGORY	Hrs. / Week	CREDITS
22UCC3GEC1	OFFICE MANAGEMENTT	ELECTIVE	2	2

Course Objective

- To enable the students to gain knowledge on office maintenance and management.
- To give knowledge about modern structure and environment of Office.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	List out the concepts of modern office management	K1, K2
CO 2	Explain how to maintain the office independently and effectively.	K2
CO3	Identify and apply office manager's skills and competencies	K3
CO 4	Develop the practice of record management system.	K3
CO 5	Analyze the skills require for control over the office and adapt to the contemporary work atmosphere.	K4

Mapping of CO withPO and PSO

COs / PSOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	3	3	3	3	2	2	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –

“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENTS	NO. OF HOURS	CO's	COGNITIVE LEVEL
I	Modern Office and Its Function: Meaning – Functions of Office – Importance of Office – the Paperless Office – Office management – e Elements – Duties and Qualities of Office Manager –Planning and Scheduling of Office Work – Success Rules for Office Managers.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

II	Office Systems and Procedures: The Systems Concept – Definitions – Systems Analysis – Flow of Work – Analysis of Flow of Work – Role of Office Manager in Systems and Procedures – Systems Illustrated – Office Machines and Equipments. Office forms – Design, Management and Control	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Records Management: Importance of Records-Filing – Essentials and Characteristics of a Good Filing System – Classification and Arrangement of Files – Filing Equipment – Methods of Filing – Modern Filing Devices – Centralised vs. Decentralised Filing – Indexing – Types of Indexing – Selection of Suitable Indexing System – The Filing Routine – The Filing Manual – Records Retention – Evaluating the Records Management Programme –Modern Tendencies in Records Making.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Office Maintenance Management: Cost Control – Methods of cost reduction and savings – Organisation and methods (O&M) – Need and objectives – Office Work – Work Simplification – Budgetary Control – organization for budgetary control – office budget – Store Management and Housekeeping.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Modern Technology and Office Communication: Email – Voice Mail – Internet – Multimedia – Scanner – Video – Conferencing – Web – Casting. Agenda and Minutes of Meeting – Drafting – Fax-Messages – Maintenance of Appointment Diary.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self-Study for Enrichment (Not to be included for End Semester Examination). Office Accommodation and Layouts – Location of Office, steps in office layout, principles of office layout, Office Environment.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Book

1. R.K. Chopra, *Office Management*, Himalaya Publishing House, Mumbai 2022.
2. R S N Pillai & Bagavathi ,*Office Management*, S Chand Publications, New Delhi, 2014.
3. P.K. Ghosh, *Office Management*, Sultan Chand & Sons, New Delhi 2015.

Reference Books

1. Chhabra, T.N., *Modern Business Organisation*, Dhanpat Rai & Sons New Delhi, 2002.
2. T Ramaswamy, *Principles of Office Management*, Himalaya Publishers, Mumbai 2010.
3. Bhatia, R. C, *Principles of Office Management*, Lotus Press, New Delhi, online edition also 2007.

Web References

1. <https://accountlearning.com/basic-functions-modern-office/>
2. <https://records.princeton.edu/records-management-manual/records-management-concepts-definitions>
3. http://books.google.co.in/books/about/Principles_of_Office_Management.

Pedagogy

Chalk and Talk, PPT, Demo, Assignment and Seminar

Course Designer

Dr. P. Banu,

B.Com.CA



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY – 18
DEPARTMENT OF COMMERCE

B.Com. CA – PROGRAMME STRUCTURE

LEARNING OUTCOME BASED CURRICULUM FRAMEWORK (CBCS - LOCF)

(For the candidates admitted from the academic year 2023 – 2024 onwards)

Semester	Part	Course	Title	Subject Code	Hours	Credit	Exam Hours	Marks		Total
								Internal	External	
I	I	Language Course – I (LC)	Podhuth Tamil - 1	23ULT1	6	3	3	25	75	100
			Hindi Ka Samanya Gyan aur Nirbandh	23ULH1						
			Poetry, Grammar and History of Sanskrit Literature	23ULS1						
			Foundation Course: Paper - I French -I	23ULF1						
	II	English Language Course – I (ELC)	General English – I	23UE1	6	3	3	25	75	100
	III	Core Course – I (CC)	Financial Accounting –I	23UCC1CC1	6	5	3	25	75	100
		Core Course – II (CC)	Principles of Management	23UCC1CC2	6	5	3	25	75	100
		First Allied Course – I (AC)	Python Programming and Lab (Theory – 2 hrs. Practical – 2 hrs.)	23UCC1AC1	4	3	3	25	75	100
	IV	Ability Enhancement Compulsory Course – I (AECC)	Value Education	23UGVE	2	2	-	100	-	100
		Total			30	21				600

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation
 “3” – Substantial (High) Correlation “-” Indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	CO'S	COGNITIVE LEVEL
I	Fundamentals of Financial Accounting Financial Accounting – Meaning, Definition, Objectives, Basic Accounting Concepts and Conventions - Journal, Ledger Accounts– Subsidiary Books — Trial Balance - Classification of Errors – Rectification of Errors – Preparation of Suspense Account – Bank Reconciliation Statement - Need and Preparation.	18	CO1,CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Final Accounts Final Accounts of Sole Trading Concern- Capital and Revenue Expenditure and Receipts – Preparation of Trading, Profit and Loss Account and Balance Sheet with Adjustments. Accounts of Non-Profit Organisation Receipt & Payment Accounts – Income & Expenditure Accounts – Balance Sheet – Adjustments.	21	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Depreciation and Bills of Exchange Depreciation - Meaning – Objectives – Accounting Treatments - Types - Straight Line Method – Diminishing Balance method – Conversion method. Units of Production Method – Cost Model vs.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

	Revaluation Bills of Exchange – Definition – Specimens – Discounting of Bills – Endorsement of Bill – Collection – Noting – Renewal – Retirement of Bill under rebate			
IV	Accounting from Incomplete Records – Single Entry System Incomplete Records – Meaning and Features – Limitations – Difference between Incomplete Records and Double Entry System – Methods of Calculation of Profit – Statement of Affairs Method – Preparation of final statements by Conversion method.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Royalty and Insurance Claims Meaning – Minimum Rent – Short Working – Recoupment of Short Working – Lessor and Lessee – Sublease – Accounting Treatment. Insurance Claims – Calculation of Claim Amount-Average clause (Loss of Stock only)	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self Study for Enrichment (Not to be included for External Examination) Difference between Balance Sheet and Trial Balance, Adjustment and Closing Entries – Negotiable Instrument, Difference between Promissory note and Bills of Exchange.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Distribution of Marks: Theory 20% & Problem80%

Text Books

1. S. P. Jain and K. L. Narang Financial Accounting- I, Kalyani Publishers, New Delhi.
2. S.N. Maheshwari, Financial Accounting, Vikas Publications, Noida.
3. ShuklaGrewal and Gupta, “Advanced Accounts”, volume 1, S.Chand and Sons, New Delhi.
4. Radhaswamy and R.L. Gupta: Advanced Accounting, Sultan Chand, New Delhi.
5. R.L. Gupta and V.K. Gupta, “Financial Accounting”, Sultan Chand, New Delhi.

Reference Books

1. Dr.Arulanandan and Raman: Advanced Accountancy, Himalaya Publications, Mumbai.
2. Tulsian , Advanced Accounting, Tata McGraw Hills, Noida.
3. Charumathi and Vinayagam, Financial Accounting, S.Chand and Sons, New Delhi.
4. Goyal and Tiwari, Financial Accounting, Taxmann Publications, New Delhi.
5. Robert N Anthony, David Hawkins, Kenneth A. Merchant, Accounting: Text and Cases. McGraw-Hill Education, Noida.

Web References

1. <https://www.slideshare.net/mcsharma1/accounting-for-depreciation-1>
2. <https://www.slideshare.net/ramusakha/basics-of-financial-accounting>
3. <https://www.accountingtools.com/articles/what-is-a-single-entry-system.html>

Pedagogy

Chalk and Talk, PPT, Discussion, Assignment, Demo, Quiz and Seminar.

Course Designer

Ms. J. Lalithambigai.

Semester I	Internal Marks: 25	External Marks: 75		
COURSE CODE	COURSE TITLE	CATAGORY	Hrs/ Week	CREDITS
23UCC1CC2	PRINCIPLES OF MANAGEMENT	CORE	6	5

Course Objective

- To understand the basic management concepts and functions
- To know the various techniques of planning and decision making
- To familiarize with the concepts of organisation structure
- To gain knowledge about the various components of staffing
- To enable the students in understanding the control techniques of management

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Define the basic principles and concepts of management and summarize the various authorization and responsibilities of an organization.	K1
CO2	Explain the importance of planning and decision making in an organization	K2
CO3	Apply and integrate planning, organizing, decision-making, staffing and directing processes in an organization.	K3
CO4	Analyze the various methods of performance appraisal	K4
CO5	Explain the notions of directing, co-ordination and control in management.	K5

Mapping of CO with PO and PSO

COs / PSOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	2	2	3	3	3	3	3
CO3	3	3	3	2	2	3	3	3	2	2
CO4	3	3	3	3	3	3	3	2	2	2
CO5	3	3	3	2	2	3	3	3	3	2

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation
 “3” – Substantial (High) Correlation “-” Indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	CO'S	COGNITIVE LEVEL
I	Introduction to Management Meaning – Definitions – Nature and Scope – Levels of Management – Importance – Management Vs. Administration – Management: Science or Art – Evolution of Management Thoughts – F. W. Taylor, Henry Fayol, Peter F. Drucker, Elton Mayo - Functions of Management – Trends and Challenges of Management. Managers – Qualification – Duties & Responsibilities.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Planning Planning – Meaning – Definitions – Nature – Scope and Functions – Importance and Elements of Planning – Types – Planning Process – Tools and Techniques of Planning – Management by Objective (MBO). Decision Making: Meaning – Characteristics – Types – Steps in Decision Making – Forecasting – Rational Decision Making – Process – Decision Making Under Different Conditions.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Organizing Meaning – Definitions – Nature and Scope – Characteristics – Importance – Types –	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

	Formal and Informal Organization – Organization Chart – Organization Structure: Meaning and Types – Departmentalization – Authority and Responsibility – Centralization and Decentralization – Span of Management.			
IV	Staffing Introduction – Concept of Staffing- Staffing Process – Recruitment – Sources of Recruitment – Modern Recruitment Methods – Selection Procedure – Test – Interview– Training: Need – Types– Promotion – Management Games – Performance Appraisal – Meaning and Methods – 360 degree Performance Appraisal – Work from Home – Managing Work from Home [WFH].	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Directing Motivation – Meaning – Theories – Communication – Types - Barriers to Communications – Measures to Overcome the Barriers. Leadership – Nature – Types and Theories of Leadership – Styles of Leadership – Qualities of a Good Leader – Successful Women Leaders – Challenges faced by women in workforce – Supervision. Co-ordination and Control Co-ordination – Meaning - Techniques of Co-ordination. Control - Characteristics - Importance – Stages in the Control Process - Requisites of Effective Control and Controlling Techniques – Management by Exception [MBE].	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

VI	Self Study for Enrichment (Not to be included for End Semester Examination). Departmentalisation – Basis – Meaning and Importance – Policies – Meaning and Types – Procedure – Requisites for excellent co-ordination.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
----	--	---	-------------------------------	-----------------------

Text Books

1. Gupta. C. B, -Principles of Management-L.M. Prasad, S. Chand& Sons Co. Ltd, New Delhi.
2. Dinkar Pagare, Principles of Management, Sultan Chand & Sons Publications, New Delhi.
3. P. C. Tripathi& P.N Reddy, Principles of Management. Tata McGraw, Hill, Noida.
4. L.M. Prasad, Principles of Management, S.Chand&Sons Co. Ltd, New Delhi.
5. R.K. Sharma, Shashi K. Gupta, Rahul Sharma, Business Management, Kalyani Publications, New Delhi.

Reference Books

1. K Sundhar, Principles Of Management, Vijay Nichole Imprints Limited, Chennai
2. Harold Koontz, Heinz Weirich, Essentials of Management, McGraw Hill, Sultan Chand and Sons, New Delhi.
3. Griffffin, Management principles and applications, Cengage learning, India.
4. Eccles, R. G. & Nohria, N. Beyond the Hype: Rediscovering the Essence of Management. Boston The Harvard Business School Press, India.

Web References

- <http://www.universityofcalicut.info/syl/management>
- <https://www.managementstudyguide.com/manpower-planning.htm>
- <https://www.businessmanagementideas.com/notes/managementnotes/coordination/coordination/21392>

Pedagogy

Chalk and Talk, PPT, Discussion, Assignment, Demo, Quiz and Seminar.

Course Designer

Ms. Shilpa A. Talreja.

ALLIED COURSE - I (AC)
PYTHON PROGRAMMING AND LAB

Semester I	Internal Mark: 25		External Mark: 75		
COURSE CODE	COURSE TITLE	CATEGORY	Hrs/Week		CREDITS
			T	P	
23UCC1AC1	PYTHON PROGRAMMING AND LAB	ALLIED	2	2	3

Course Objective

- Describe the core syntax and semantics of Python programming language.
- Discover the need for working with the strings and functions.
- Illustrate the process of structuring the data using lists, dictionaries, tuples and sets.
- Understand the usage of packages and Dictionaries.

Course Outcomes and Cognitive Level Mapping

COs	CO STATEMENTS On the successful completion of the course, students will be able to	COGNITIVE LEVEL
CO1	Define the basic concepts of Python Programming	K1
CO2	Recognize the structure of Python	K2
CO3	Use conditionals and looping statements to solve problems	K3
CO4	Analyse a Python program using functions	K4
CO5	Develop the skill of designing graphical-user interfaces (GUI) in Python using Python lists, dictionaries etc	K5

Mapping of CO with PO and PSO

	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	2	3	3	3	3	3
CO4	3	3	3	2	2	3	3	2	3	2
CO5	3	3	2	2	2	3	2	2	3	2

“1” – Slight (Low) Correlation “2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Introduction: Computer algorithms - Computer Hardware-Computer Software-Python programming language - Literals - Variables and Identifiers - Operators - Expressions and Data types, Input/output	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Control Structures: Selection Control - If Statement-Indentation in Python- Multi-Way Selection(if- elif-else Statement) - Iterative Control- While Statement.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Functions: Introduction - Defining Functions- More on Functions: Function Call - Parameter Passing - Variable Scope - Keyword Arguments in Python - Default Arguments in Python - Recursive Functions: Fibonacci Series	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Turtles and Modules: Simple Graphics using Turtle – Methods in Turtle – Examples - Modular Design: Modules – The from... import statement – Name of module – Making Your own modules - The Python Module – Modules and Namespace	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Dictionaries: Definition - Creating a Dictionary – Sets: Creating a Set- Set operations. Operations on Strings: Concatenation – Multiplication – Slice a String.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self Study for Enrichment (Not to be included for External Examination) Boolean Expressions - Infinite loops- Definite vs. Indefinite Loops- Boolean Flag - Manipulations Building blocks of python programs, Understanding and using ranges – Types of Files.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

List of Programs

1. Program to convert the given temperature from Fahrenheit to Celsius and vice versa depending upon user's choice.
2. Write a Python program to construct the following pattern, using a nested loop

```

*
**
***
****
*****
*****
****
***
**
*
```

3. Program to calculate total marks, percentage and grade of a student. Marks obtained in each of the five subjects are to be input by user. Assign grades according to the following criteria:
Grade A: Percentage ≥ 80 Grade B: Percentage ≥ 70 and < 80
Grade C: Percentage ≥ 60 and < 70 Grade D: Percentage ≥ 40 and < 60
Grade E: Percentage < 40
4. Program, to find the area of rectangle, square, circle and triangle by accepting suitable input parameters from user.
5. Write a Python script that prints prime numbers less than 20.
6. Program to find factorial of the given number using recursive function.
7. Write a Python program to count the number of even and odd numbers from array of N numbers.
8. Write a Python class to reverse a string word by word.
9. Read a file content and copy only the contents at odd lines into a new file.
10. Create a Turtle graphics window with specific size.

Textbook

1. Reema Thareja. (2017). Python Programming using Problem Solving Approach, 1st Edition, Oxford University Press.

References

1. Charles Dierbach. (2015). Introduction to Computer Science using Python - A Computational Problem-solving Focus, Wiley India Edition.
2. Wesley J. Chun. (2016). Core Python Applications Programming, 3rd Edition, Pearson Education.
3. Mark Lutz. (2018). Learning Python Powerful Object Oriented Programming, 5th Edition, O'reilly Media.

Web References

1. https://onlinecourses.swayam2.ac.in/cec22_cs20/preview
2. <https://www.w3schools.com/python/>
3. <https://www.tutorialspoint.com/python/index.htm>

Pedagogy

Chalk & Talk, PowerPoint Presentation, Discussion, Assignment, Demo, Quiz and Seminar

Course Designer

Dr.R. Merlin Packiam, Head & Professor, Department of Computer Applications



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY – 18
DEPARTMENT OF COMMERCE

B.Com. CA – PROGRAMME STRUCTURE

LEARNING OUTCOME BASED CURRICULUM FRAMEWORK (CBCS - LOCF)

(For the candidates admitted from the academic year 2022 – 2023 onwards)

Semester	Part	Course	Title	Subject Code	Hours	Credit	Exam Hours	Marks			Total
								Internal	Internal		
III	I	Language Course - III (LC)	□□□□□□□□□□, □□□□□□□□	22ULT3	5	3	3	25	75	100	
			Hindi Literature & Grammar - III	22ULH3							
			Prose, Textual Grammar and Vakyarachana	22ULS3							
			Intermediate French - I	22ULF3							
	II	English Language Course - III (ELC)	Learning Grammar through Literature - I	22UE3	6	3	3	25	75	100	
	III	Core Course - V (CC)	Business Accounting	22UCC3CC5	6	6	3	25	75	100	
		Core Course - VI (CC)	Database Management Systems	22UCC3CC6	5	5	3	25	75	100	
		Second Allied Course – I (AC)	Business Law	22UCC3AC3	4	3	3	25	75	100	
	IV	Ability Enhancement Compulsory Course – III (AECC)	Innovation and Entrepreneurship	22UGIE	2	1	-	100	-	100	
		Generic Elective Course – I (GEC)	Office Management	22UCC3GEC1	2	2	3	25	75	100	
			Basic Tamil - I	22ULC3BT1							
			Special Tamil - I	22ULC3ST1							
	Extra Credit Course		Swayam Online Course		As per UGC Recommendations						
	Total					30	23				700

***15 Days INTERNSHIP during Semester Holidays.**

Semester III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs. / Week	CREDITS
22UCC3CC5	BUSINESS ACCOUNTING	CORE	6	6

Course Objective

- To develop a skills to prepare different kinds of financial statements in Partnership Firms.
- To understand different types of branch and departmental accounts.
- To enable the students to maintain books of recording under Hire Purchase and Instalment method

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Define and outline the accounting methods for the various partnership related transactions	K1, K2
CO2	Explain the purpose and use of financial accounting.	K3
CO3	Apply the accounting procedures for recording various financial transactions.	K3
CO4	Analysis the accounting concepts to interpret the performance of partnership firm and Business enterprises.	K4
CO5	Evaluate and solve the problems in Partnership firm and Business organization.	K5

Mapping of CO with PO and PSO

COs / PSOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	2	3	3	2	3
CO3	3	2	3	2	3	3	3	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	2	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –
“3” – Substantial (High) Correlation – “-” indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Partnership – Meaning, Partnership deed – Admission of a Partner – Calculation of Sacrificing Ratio – Adjustment for Goodwill – Adjustment in Partners Capital Account – Accumulated Profit and Losses – Partners capital account and Balance sheet.	18	CO1,CO2, CO3,CO4, CO5	K1,K2,K3, K4,K5,K6
II	Retirement of a Partner – Calculation of Gaining Ratio – Accumulated Reserves and Profit – Adjustments regarding partners capital account – Death of a Partner-Preparation of capital account and Balance sheet	18	CO1,CO2, CO3,CO4, CO5	K1,K2,K3, K4,K5,K6
III	Dissolution of Firm – Preparation of Realisation Accounts, Partners Capital account and Bank Account – Insolvency of partner – Insolvency of all partners – Garner Vs. Murray – Piecemeal Distribution – Proportionate Capital	18	CO1,CO2, CO3,CO4, CO5	K1,K2,K3, K4,K5,K6
IV	Branch Accounts – Dependent Branch – Debtors System – Stock and Debtors System – Final Accounts System – Wholesale Branches – Independent Branches (Excluding Foreign Branches) – Departmental Accounts – Inter Departmental Transfers – Stock Reserve	18	CO1,CO2, CO3,CO4, CO5	K1,K2,K3, K4,K5,K6
V	Hire Purchase Accounts – Default and Repossessions – Complete Repossession – Partial Repossession – Hire Purchase Trading Accounts – Debtors Method – Stock and Debtors Method – Instalment – Purchase System	18	CO1,CO2, CO3,CO4, CO5	K1,K2,K3, K4,K5,K6
VI	Self-Study for Enrichment (Not to be included for End Semester Examination) Distinguish Between Departments and Branches – Difference Between Hire Purchase and Instalment systems. Need for	-	CO1,CO2, CO3,CO4, CO5	K1,K2,K3, K4,K5,K6

	Valuation of Goodwill – Methods of Goodwill – Treatment of unrecorded Assets and Liabilities			
--	--	--	--	--

Text Book

1. S.P.Jain and K.L.Narang (2016), Fundamentals of Accounting, Kalyani Publishers, 2017
2. T.S. Reddy & Murthy (2020), Financial Accounting, Margham Publications, 2017

Reference Books

1. Shukla MC, Grewal TS & Gupta CS,(2016) Advanced Accounts (2016), S.Chand Company ltd.
2. R.L. Gupta & Radhaswamy M. (2018). Financial Accounting. 8th Edition, Sultan Chand Sons
3. Arulanandam M.A, & Raman K.S. (2018). Advanced Accountancy. 7th Edition, Himalaya Publishing House.

WebReferences

1. <https://www.icai.org/post/icai-publications-accounting-standards-board>
2. <https://cleartax.in/g/terms/hire-purchase-agreements>
3. www.accountingcoach.com
4. www.accountingstudyguide.com
5. www.futureaccountant.com
6. www.onlinelibrary.wiley.com

Pedagogy

Lecture, PowerPoint Presentation, Assignment, Quiz, Seminar & Group Discussion.

Course Designer

Ms. G. Kanagavalli

Semester III	Internal Marks:25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS./ WEEK	CREDITS
22UCC3CC6	DATABASE MANAGEMENT SYSTEMS	CORE	5	5

Course Objective

- To understand the basic concepts and the applications of database systems
- To provide the basics of SQL and construct queries using SQL
- To inculcate the knowledge of join operations, views, transactions and E-R model in database management systems

Course Outcome and Cognitive Level Mapping

On the successful completion of the course, students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Define the basic concepts of database design, architecture and its data model	K1
CO2	Illustrate the structure of Relational database	K2
CO3	Apply the various queries in the database	K3
CO4	Examine the Join operations, Views and Transactions	K4
CO5	Select the appropriate E-R model for the real time enterprises	K5

Mapping of CO with PSO and PO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	3	2	1	1	3	3	2	3	2
CO2	3	2	3	1	1	3	2	2	3	3
CO3	3	3	3	2	2	3	3	2	3	2
CO4	3	2	3	2	2	3	3	2	3	2
CO5	3	3	3	2	2	3	3	2	2	3

“1”-Slight(Low)Correlation
“3” -Substantial(High)Correlation

“2”-Moderate(Medium)Correlation
“-” - Indicates there Is no Correlation

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Introduction to Database System Concepts: Introduction – Database-System Applications – Purpose of Database Systems – View of Data : Data Abstraction – Instances and Schemas – Data Models – Database	15	CO1, CO2, CO3, CO4,	K1, K2,

	Languages – Relational Databases : Tables – Data-Manipulation Language – Data - Definition Language – Database Design : Design Process – The Entity – Relationship Model – Normalization – Data Storage and Querying : Storage Manager – The Query Processor – Transaction Management – Database Architecture– Database Users and Administrators : Database Users and User Interfaces – Database Administrator.		CO5	K3, K4, K5
II	Introduction to Relational Model and SQL: Structure of Relational Databases – Database Schema – Keys – Schema Diagrams –Relational Query Languages – Relational Operations- Introduction to SQL: Overview of the SQL Query Language – SQL Data Definition: Basic Types – Basic Schema Definition – Basic Structure of SQL Queries: Queries on Single Relation – Queries on Multiple Relations - The Natural Join.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Introduction to SQL: Additional Basic Operations: The Rename Operation – String Operations – Attributes Specification in Select Clause –Ordering the Display of Tuples – Where clause Predicates–Set Operations : The Union Operation– The Intersect Operation - Except Operation – Null Values – Aggregate Functions : Basic Aggregation – Aggregation with Grouping - The Having Clause - Nested Subqueries : Set Membership – Set Comparison – Modification of the Database.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Intermediate SQL Join Expressions: Join Conditions – Outer Joins – Join Types and Conditions –Views : View Definition – Using Views in SQL Queries – Materialized Views – Update of a View – Transactions –Integrity Constraints – Constraints on a Single Relation – Not Null Constraint – Unique Constraint – The Check Clause – Referential Integrity - SQL Data Types and Schemas – Authorization.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Database Design and the E-R Model The Entity – Relational Model: Entity Sets – Relationship Sets – Attributes – Constraints: Mapping Cardinalities– Keys – Entity-Relationship Diagrams : Basic Structure – Mapping Cardinality- Complex Attributes - Weak Entity Sets – E-R diagram for the University Enterprise.	15	CO 1,C O2, CO 3,C O4, CO	K1, K2, K3, K4, K5

			5	
VI	Self Study for Enrichment (Not to be included for End Semester Examination) History of Database Systems – Aggregation with Null and Boolean Values – Test for Empty Relations – Test for the Absence of Duplicate Tuples – Subqueries in the From Clause – Overview of the Design Process– Participation Constraints – Removing Redundant Attributes in Entity Sets – Nonbinary Relationship Sets.	-	CO 1,C O2, CO 3,C O4, CO 5	K1, K2, K3, K4, K5

Textbook

Abraham Silberschatz, Henry F Korth & Sudarshan (2013), Database System Concepts, 6th

Edition, McGraw Hill Education India Private Limited.

Reference Books

1. Peter Rob, Carlos Coronel (2009), Database System Concepts, Lengage Learning.
2. Alexis Leon, Mathews Leon (2009), Essential of Database Management Systems, Tata

McGraw Hill Education India Private Limited.

Web References

<https://www.geeksforgeeks.org/introduction-of-dbms>
<https://www.javatpoint.com/dbms-tutorial>
<https://www.w3schools.in/dbms>
<https://www.bmc.com/blogs/dbms-database-management-systems>

Pedagogy

Chalk & Talk, PowerPoint Presentation, Discussion, Assignment, Demo, Quiz and Seminar

Course Designer

Ms. A. Anandhavalli, Assistant Professor, Department of Computer Applications.

Semester III	Internal Marks: 25	External Marks:75		
COURSECODE	COURSE TITLE	CATEGORY	Hrs. /Week	CREDITS
22UCC3AC3	BUSINESS LAW	ALLIED	4	3

Course Objective

- To make the students to learn the elements of general contract and special contracts.
- To enable the students to understand and deal with various contracts in day – to – day life, be it for his business or profession.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Recall and summarize consequences of applicability of various laws on business situation.	K1, K2
CO2	Outline and Examine the rights and duties under various legal acts.	K2, K4
CO3	Explain and analyze the legal framework governing business trade and commerce in India.	K2, K4
CO4	Identify the fundamental legal principles behind contractual agreement	K3
CO5	Explain important laws that have a bearing on the conduct of business in India.	K5

Mapping of CO with PO and PSO

COs/ PSOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	3	3	3	3	2	2	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1”– Slight (Low) Correlation □ “2”–Moderate (Medium) Correlation □
 “3”–Substantial (High) Correlation □ “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Meaning & Definition of Contract – Nature of Contract – Classification of Contract –Essentials of a valid Contract – Offer and Acceptance – Consideration – Contractual Capacity – Free Consent – Legality of Objects – Void Agreements.	12	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
II	Performance of Contract – Different Modes of discharge of Contract – Remedies of Breach – Quasi Contracts – Contract of Indemnity and Guarantee – Contract of Bailment and Pledge – Law of Agency.	12	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
III	Introduction of Sale of Goods Act 1930 - Formalities of the Contract of Sale – Distinction between Sale & Agreement to Sell – Distinction between sale and Hire Purchase agreement – Conditions and Warranties – Transfer of Property as between the seller and the buyer – Principle of “Caveat Emptor” and its limitations – Rights of an unpaid seller	12	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
IV	Indian Partnership Act1932 - definition – Essentials of Partnership – Kinds of Partners – rights and duties of partners – reconstitution of firms – Dissolution of a firm – Limited Liability Partnership, 2008 – Nature of LLP – Distinction between LLP and Partnership – Conversion to LLP – Extent and Limitation of liability of LLP and its partners.	12	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
V	Introduction of Competition Act 2002 – Objectives – Salient features – Anti Competitive Agreements–Prevention of abuse of dominant position– Combination– Competition advocacy– Competition Commission of India.	12	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5

IV	Self-Study for Enrichment (Not to be included for End Semester Examination) Contingent Contract – Winding up and Dissolution of the LLP – Intellectual Property Rights – Indian Companies Act 2013	-	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
-----------	--	---	--------------------------------------	-------------------------------

Text Books

1. N. D. Kapoor, *Element of Mercantile Law*, Sultan Chand & Sons Private Limited, New Delhi, 2001.
2. R.S.N. Pillai & Bagavathi, *Business Law*, S. Chand & Co. Ltd, New Delhi, 2006.
3. N. D. Kapoor, *Elements of Company Law*, Sultan Chand & Sons Private Limited, New Delhi, 2020.

Reference Books

1. Srinivasan, *Business Law*, Margham Publishers, Chennai, 2004.
2. Kuchcal, *Mercantile Law*, Vikas Publishing house, New Delhi, 2003.

Web References

1. <https://www.legalserviceindia.com/legal/article-2190-essential-elements-of-a-contract.html><https://www.simplynotes.in/e-notes/mcomb-com/business-regulatory-framework/special-contracts-indemnity-guarantee-bailment-and-pledge-agency/>
2. <https://blog.ipleaders.in/the-sale-of-goods-act-1930/>
3. <http://student.manupatra.com/Academic/Abk/Indian-Partnership-Act/Toc.htm>
4. https://www.srcc.edu/sites/default/files/B.com%20H_sem%20vi_Consumer%20affairs%20and%20Customer%20Care_Ms.%20Kavita%20Kamboj.pdf

Pedagogy

Chalk and Talk, Seminar, PPT Presentation, Assignment and Group Discussion and Case Study.

Course Designer

Dr. J. Praba

GENERIC ELECTIVE COURSE –I (GEC): STOCK EXCHANGE PRACTICES

2022 – 2023 BATCH ONWARDS

SEMESTER III	INTERNAL MARKS: 25 EXTERNAL MARKS: 75			
COURSE CODE	COURSE TITLE	CATEGORY	Hrs./ Week	CREDITS
22UBA3GEC1	STOCK EXCHANGE PRACTICES	GENERIC ELECTIVE COURSE	2	2

Course Objectives:

- To impart the basic knowledge of stock marketing.
- To predict the movements in the stock in various investment avenues and to rate them.
- To equip the students about credit rating of the companies.

Pre-Requisites: Basic Knowledge in stocks.

Course Outcomes:

Course Outcomes and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Knowledge Level
CO1	Identify the essential of Capital Markets and to evaluate the need for New Issue Markets.	K1
CO2	Framing the role and functions of Secondary Markets.	K2
CO3	Discuss the necessity of Listing in Stock Exchanges.	K3
CO4	Assess the predominant role of Stock brokers in the trading mechanism.	K3
CO5	Formulate the methods of ranking of institutions through credit rating.	K3

MAPPING OF CO WITH PO AND PSO :

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	2	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	2	3

“1”-Slight(Low) Correlation-“2”- Moderate (Medium) Correlation-
“3”- Substantial (High) Correlation –“-“ indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVELS
I	Capital Market – Need and importance – Financial instruments – features - New Issue Market – Functions and Methods of Issue.	6	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
II	Secondary Market – Origin and Growth – Role and Functions of Stock Exchange – Weaknesses of Stock exchange. Indian stock exchange – objectives .	6	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
III	Listing of Securities – Group A, Group B, Group C Shares – Listing Procedures – Criteria for Listing.	5	CO1 CO2 CO3 CO4 CO5	K1 K2 K3

IV	Mechanics of Trading in Stock Exchanges – Registration of Stock Brokers – Functions – Kinds of brokers – Kinds of Speculators – Speculative Transactions.	7	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
V	Credit Rating – CRISIL – CARE – ICRA Agencies, DEMAT Accounts – Depositories.	6	CO1 CO2 CO3 CO4 CO5	K1 K2 K3
VI	SELF STUDY FOR ENRICHMENT: (Not to be included for External examination) Relationship between New issue market and Stock Exchange – Recent developments in Secondary market – Online trading – BSE, NSE, OTCEI, MCX and SX.		CO1 CO2 CO3 CO4 CO5	K1 K2 K3

Text Book:

1. Gordon E & Natarajan K, (2016), *Financial Markets and Institutions*, 11th Revised Edition, Himalaya Publishing House.

Books for Reference:

1. Punithavathy Pandian, (2012), *Security Analysis and Portfolio Management*, Vikas Publishing House Ltd.
2. Joseph Anbarasu D, Boomonathan V. K., Manoharan P, Gnanaraj G, (2014), *Financial Services*, 1st Edition, Sultan Chand & Sons.
3. Gurusamy S, (2015), *Financial Market and Institutions*, 1st Edition, Vijay Nicole Imprints Pvt. Ltd.

Web Resources:

1. <http://vskub.ac.in/wp-content/uploads/2020/04/FINANCIAL-SERVICES-6th-Sem.pdf>
2. <http://kamarajcollege.ac.in/Department/BBA/II%20Year/e003%20Core%2011%20-%20Financial%20Services%20-%20IV%20Sem.pdf>
3. <https://academyfinancial.org/journal>
4. Financial Remedies Journal
5. https://sist.sathyabama.ac.in/sist_coursematerial/uploads/SBAA1403.pdf

Pedagogy: Lecture, Assignments, Seminar and Quiz.

Course Designer: Dr. M. Gayathri, Associate Professor.

M.Com.



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY – 18
DEPARTMENT OF COMMERCE
M.Com – PROGRAMME STRUCTURE

LEARNING OUTCOME BASED CURRICULUM FRAMEWORK (CBCS - LOCF)
(For the Candidates admitted from the Academic year 2023-2024 onwards)

I Semester

Semester	Course	Title	Course Code	Inst. Hrs. / Week	Credit	Exam Hours	Marks		Total
							Internal	External	
I	Core Course – I (CC)	Business Finance	23PCO1CC1	6	5	3	25	75	100
	Core Course – II (CC)	Digital Marketing	23PCO1CC2	6	5	3	25	75	100
	Core Course –III (CC)	Banking and Insurance	23PCO1CC3	6	5	3	25	75	100
	Core Course – IV (CC)	Strategic Human Resource Management	23PCO1CC4	6	5	3	25	75	100
	Discipline Specific Elective Course – I (DSE)	A. Security Analysis and Portfolio Management	23PCO1DSE1A	6	3	3	25	75	100
		B. Operations Research	23PCO1DSE1B						
		C. Labour Laws	23PCO1DSE1C						
	Total			30	23				500

Semester I	Internal Marks: 25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs. / Week	CREDITS
23PCO1CC1	BUSINESS FINANCE	CORE	6	5

Course Objective

- To outline the fundamental concepts in finance
- To estimate and evaluate risk in investment proposals
- To evaluate leasing as a source of finance and determine the sources of startup financing.
- To examine cash and inventory management techniques.
- To appraise capital budgeting techniques for MNCs.

Prerequisite

Basic knowledge in Finance and Capital Budgeting.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Explain and Analyze the important finance concepts	K2, K4
CO2	Estimate risk and interpret its impact on return	K2, K3
CO3	Appraise leasing and other sources of finance for startups	K4
CO4	Summarize and Estimate the cash, receivable, inventory and working capital management techniques	K5, K6
CO5	Relate and Evaluate techniques of long term investment decision incorporating risk factor	K5, K6

Mapping of CO with PO and PSO

COs / PSOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	2	2	3	2	2	3	2
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	2	3	3	3	3	2	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –

“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Introduction to Business Finance and Time value of money and Cost of Capital Business Finance: Meaning, Objectives, Scope -Time Value of money: Meaning, Causes – Compounding – Discounting – Sinking Fund Deposit Factor – Capital Recovery Factor – Multiple Compounding – Effective rate of interest – Doubling period (Rule of 69 and Rule of 72) – Practical problems - Cost of Capital.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	Risk Management Risk and Uncertainty: Meaning – Sources of Risk – Measures of Risk – Measurement of Return – General pattern of Risk and Return – Criteria for evaluating proposals to minimise Risk (Single Asset and Portfolio) – Methods of Risk Management – Hedging currency risk.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	Startup Financing and Leasing Startup Financing: Meaning, Sources, Modes (Bootstrapping, Angel investors, Venture capital fund) - Leasing: Meaning – Types of Lease Agreements – Advantages and Disadvantages of Leasing – Financial evaluation from the perspective of Lessor and Lessee.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	Cash, Receivable, Inventory and Working Capital Management Cash Management: Meaning, Objectives and Importance – Cash Cycle – Minimum Operating Cash – Safety level of cash – Optimum cash balance - Receivable Management: Meaning – Credit policy – Controlling receivables: Debt collection period, Ageing schedule, Factoring – Evaluating investment in accounts receivable - Inventory Management: Meaning and Objectives – EOQ with price breaks – ABC Analysis – Working Capital Management.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

V	Multi National Capital Budgeting Multi National Capital Budgeting: Meaning, Steps involved, Complexities, Factors to be considered – International sources of finance – Techniques to evaluate multi-national capital expenditure proposals: Discounted Pay Back Period, NPV, Profitability Index, Net Profitability Index and Internal Rate of Return – Capital rationing -Techniques of Risk analysis in Capital Budgeting.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self-Study for Enrichment (Not to be included for End Semester Examination) Capital Structure – Theories - Determinants		CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Book

1. Maheshwari S.N., (2019), “Financial Management Principles and Practices”, 15th Edition, Sultan Chand & Sons, New Delhi.
2. Khan M.Y & Jain P.K, (2011), “Financial Management: Text, Problems and Cases”, 8th Edition, McGraw Hill Education, New Delhi.
3. Prasanna Chandra, (2019), “Financial Management, Theory and Practice”, 10th Edition, McGraw Hill Education, New Delhi.
4. Apte P.G, (2020), “International Financial Management” 8th Edition, Tata McGraw Hill, New Delhi.

Reference Books

1. Pandey I. M., (2021), “Financial Management”, 12th Edition, Pearson India Education Services Pvt. Ltd, Noida.
2. Kulkarni P. V. & Satyaprasad B. G., (2015), “Financial Management”, 14th Edition, Himalaya Publishing House Pvt Ltd, Mumbai.
3. Rustagi R. P., (2022), “Financial Management, Theory, Concept, Problems”, 6th Edition, Taxmann Publications Pvt. Ltd, New Delhi.
4. Arokiamary Geetha Rufus, Ramani N. & Others, (2017), “Financial Management”, 1st Edition, Himalaya Publishing House Pvt Ltd, Mumbai.

Web References

1. <https://resource.cdn.icai.org/66674bos53808-cp8.pdf>
2. <https://resource.cdn.icai.org/66677bos53808-cp10u2.pdf>
3. <https://resource.cdn.icai.org/66592bos53773-cp4u5.pdf>
4. <https://resource.cdn.icai.org/65599bos52876parta-cp16.pdf>

Pedagogy

Chalk and talk, PPT, Discussion, Assignment, Quiz, Seminar

Course Designer

Prof. Dr.N.Savithri

Semester I	Internal Marks: 25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs. / Week	CREDITS
23PCO1CC2	DIGITAL MARKETING	CORE	6	5

Course Objective

- To assess the evolution of digital marketing
- To appraise the dimensions of online marketing mix
- To infer the techniques of digital marketing
- To analyse online consumer behaviour
- To interpret data from social media and to evaluate game based marketing

Prerequisite

Basic knowledge in Marketing.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Describe and Explain the dynamics of digital marketing	K1, K2
CO2	Indicate and Apply the online marketing mix	K2, K3
CO3	Demonstrate and Compare digital media channels	K3, K4
CO4	Examine and Categorize the online consumer behavior	K4, K5
CO5	Summarize and Appraise social media data	K5, K6

Mapping of CO with PO and PSO

COs / PSOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	2	2	3	3	2	2	3
CO2	3	3	2	2	3	3	3	2	2	3
CO3	3	3	2	2	2	3	3	2	2	3
CO4	3	3	2	2	2	2	2	2	2	3
CO5	3	2	2	2	3	3	2	2	2	3

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –
“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Introduction to Digital Marketing Digital Marketing – Transition from traditional to digital marketing – Rise of internet – Growth of e-concepts – Growth of e-business to advanced e-commerce – Emergence of digital marketing as a tool – Digital marketing channels – Digital marketing applications, benefits and limitations – Factors for success of digital marketing – Emerging opportunities for digital marketing professionals – Content marketing – Strategic flow of marketing activities – skills of content writer.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	Online marketing mix Online marketing mix – E-product – E-promotion – E-price – E-place – Consumer segmentation – Targeting – Positioning – Consumers and online shopping issues – Website characteristics affecting online purchase decisions – Distribution and implication on online marketing mix decisions.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	Digital media channels Digital media channels – Search engine marketing – ePR – Affiliate marketing – Interactive display advertising – Opt-in-email marketing and mobile text messaging, Invasive marketing – Campaign management using – Facebook, Twitter, Corporate Blogs – Advantages and disadvantages of digital media channels – Metaverse marketing.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	Online consumer behavior Online consumer behavior – Cultural implications of key website characteristics – Dynamics of online consumer visit – Models of website visits – Web and consumer decision making process – Data	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

	base marketing – Electronic consumer relationship management – Goals – Process – Benefits – Role – Next generation CRM.			
V	Analytics and Gamification Digital Analytics – Concept – Measurement framework – Demystifying web data - Owned social metrics – Measurement metrics for Facebook, Twitter, YouTube, Slide Share, Pinterest, Instagram, Snapchat and LinkedIn – Earned social media metrics - Digital brand analysis – Meaning – Benefits – Components – Brand share dimensions – Brand audience dimensions – Market influence analytics – Consumer generated media and opinion leaders – Peer review – Word of mouth – Influence analytics – Mining consumer generated media – Gamification and game based marketing – Benefits – Consumer motivation for playing online games.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self-Study for Enrichment (Not to be included for End Semester Examination) Search Management - Search Engine Optimization - Types of Search Engine Optimization.		CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Book

1. Puneet Singh Bhatia, (2019) “Fundamentals of Digital Marketing”, 2nd Edition, Pearson Education Pvt Ltd, Noida.
2. Dave Chaffey, Fiona Ellis-Chadwick, (2019) “Digital Marketing”, Pearson Education Pvt Ltd, Noida.
3. Chuck Hemann & Ken Burbary, (2019) “Digital Marketing Analytics”, Pearson Education Pvt Ltd, Noida.
4. Seema Gupta, (2022) “Digital Marketing” 3rd Edition, McGraw Hill Publications Noida.
5. Kailash Chandra Upadhyay, (2021) “Digital Marketing: Complete Digital Marketing Tutorial”, Notion Press, Chennai.
6. Michael Branding, (2021) “Digital Marketing”, Empire Publications India Private Ltd, New Delhi.

Reference Books

1. Vandana Ahuja, (2016) “Digital Marketing”, Oxford University Press. London.
2. Ryan Deiss & Russ Henneberry, (2017) “Digital Marketing”, John Wiley and Sons Inc. Hoboken.

3. Alan Charlesworth, (2014), “Digital Marketing - A Practical Approach”, Routledge, London.
4. Simon Kingsnorth, Digital Marketing Strategy, (2022) “An Integrated approach to Online Marketing”, Kogan Page Ltd. United Kingdom.
5. Maity Moutusy, (2022) “Digital Marketing” 2nd Edition, Oxford University Press, London.

Web References

1. <https://www.digitalmarketer.com/digital-marketing/assets/pdf/ultimate-guide-to-digital-marketing.pdf>
2. <https://uwaterloo.ca/centre-for-teaching-excellence/teaching-resources/teaching-tips/educational-technologies/all/gamification-and-game-based-learning>
3. <https://journals.ala.org/index.php/ltr/article/download/6143/7938>

Pedagogy

Chalk and talk, PPT, Discussion, Assignment, Quiz, Seminar

Course Designer

Dr. S.Shameem

Semester I	Internal Marks: 25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs. / Week	CREDITS
23PCO1CC3	BANKING AND INSURANCE	CORE	6	5

Course Objective

- To understand the evolution of new era banking
- To explore the digital banking techniques
- To analyse the role of insurance sector
- To evaluate the mechanism of customer service in insurance and the relevant regulations
- To analyse risk and its impact in banking and insurance industry

Prerequisite

Basic knowledge in Banking Practices and Insurance Services.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Relate and Discuss the transformation in banking from traditional to new age	K1, K2
CO2	Explain and Apply modern techniques of digital banking	K2, K3
CO3	Interpret and Analyze the role of insurance sector	K3, K4
CO4	Examine and Summarize the regulatory mechanism	K4, K5
CO5	Construct and Assess the risk mitigation strategies	K5, K6

Mapping of CO with PO and PSO

COs / PSOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	3	3	3	3	2	3	3
CO2	3	3	2	3	3	3	3	2	3	3
CO3	3	3	2	3	3	3	3	2	3	3
CO4	3	3	2	3	3	3	3	2	3	3
CO5	3	3	2	3	3	3	3	2	3	3

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –

“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Introduction to Banking Banking: Brief History of Banking - Rapid Transformation in Banking: Customer Shift - Fintech Overview - Fintech Outlook - The Financial Disruptors - Digital Financial Revolution - New Era of Banking. Digital Banking – Electronic Payment Systems– Electronic Fund Transfer System – Electronic Credit and Debit Clearing – NEFT – RTGS –VSAT–SFMS–SWIFT - Overview of Domestic payment system – RuPay and RuPay Secure – IMPS (Immediate Payment Service).	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	Contemporary Developments in Banking Distributed Ledger Technology – Blockchain: Meaning - Structure of Block Chain - Types of Block Chain - Differences between DLT and Block chain - Benefits of Blockchain and DLT - Unlocking the potential of Block chain – Crypto currencies, Central Bank Digital Currency (CBDC) - Role of DLT in financial services - AI in Banking: Future of AI in Banking - Applications of AI in Banking - Importance of AI in banking - Banking reimagined with AI. Cloud banking - Meaning - Benefits in switching to Cloud Banking.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	Indian Insurance Market History of Insurance in India – Definition and Functions of Insurance – Insurance Contract – Indian Insurance Market – Reforms in Insurance Sector – Insurance Organisation – Insurance organisation structure. Insurance Intermediaries: Insurance Broker – Insurance Agent - Surveyors and Loss Assessors - Third Party Administrators (Health Services) – Procedures - Code of Conduct.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	Customer Services in Insurance Customer Service in Insurance – Quality of	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

	Service - Role of Insurance Agents in Customer Service-Agent's Communication and Customer Service –Ethical Behaviour in Insurance – Grievance Redressal System in Insurance Sector –Integrated Grievance Management System-Insurance Ombudsman - Insurance Regulatory and Development Authority of India Act (IRDA) – Regulations and Guidelines.			
V	Risk Management Risk Management and Control in banking and insurance industries – Methods of Risk Management – Risk Management by Individuals and Corporations – Tools for Controlling Risk.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self-Study for Enrichment (Not to be included for End Semester Examination) Nationalization of Commercial Bank and its effects, Reserve Bank of India – Functions.		CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Book

1. Indian Institute of Banking and Finance (2021), "Principles & Practices of Banking", 5th Edition, Macmillan Education India Pvt. Ltd, Noida, Uttar Pradesh.
2. Mishra M N & Mishra S B, (2016), "Insurance Principles and Practice", 22nd Edition, S. Chand and Company Ltd, Noida, Uttar Pradesh.
3. Emmett, Vaughan, Therese Vaughan M., (2013), "Fundamentals of Risk and Insurance", 11th Edition, Wiley & Sons, New Jersey, USA.
4. Theo Lynn , John G. Mooney, Pierangelo Rosati, Mark Cummins (2018), Disrupting Finance: FinTech and Strategy in the 21st Century (Palgrave Studies in Digital Business & Enabling Technologies), Macmillan Publishers, NewYork (US)

Reference Books

1. Sundharam KPM & Varshney P. N., (2020), "Banking Theory, Law and Practice", 20th Edition, Sultan Chand & Sons, New Delhi.
2. Gordon & Natarajan, (2022), "Banking Theory, Law and Practice", 9th Edition, Himalaya Publishing House Pvt Ltd, Mumbai.
3. Gupta P. K. (2021), "Insurance and Risk Management" 6th Edition, Himalaya Publishing House Pvt Ltd, Mumbai.
4. Susanne Chishti., & Janos Barberis (2016), The Fintech book: The financial technology handbook for investors, entrepreneurs and visionaries. John Wiley & Sons.

Web References

1. <https://corporatefinanceinstitute.com/resources/knowledge/finance/fintech-financial-technology>
2. [https://mrcet.com/downloads/digital_notes/CSE/IV%20Year/CSE%20B.TECH%20IV%20YEAR%20II%20SEM%20BCT%20\(R18A0534\)%20NOTES%20Final%20PDF.pdf](https://mrcet.com/downloads/digital_notes/CSE/IV%20Year/CSE%20B.TECH%20IV%20YEAR%20II%20SEM%20BCT%20(R18A0534)%20NOTES%20Final%20PDF.pdf)
3. https://www.irdai.gov.in/ADMINCMS/cms/frmGeneral_Layout.aspx?page=PageNo108&flag=1

Pedagogy

Chalk and talk, PPT, Discussion, Assignment, Quiz, Seminar

Course Designer

Dr.D.Ramya

Semester I	Internal Marks: 25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs. / Week	CREDITS
23PCO1CC4	STRATEGIC HUMAN RESOURCE MANAGEMENT	CORE	6	5

Course Objective

- To appreciate the importance of HRM as a field of study and as a central management function
- To understand the implication of HRM on Government regulations and corporate decisions
- To analyse the key elements of the HR functions
- To gain knowledge about the elements, key concepts and terminology of HRM
- To apply the principles and techniques of HRM to the discussion of major personnel issues in case studies.

Prerequisite

Basic knowledge in Human Resource Management.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Indicate and Apply the fundamentals of strategic Human Resource Management	K2, K3
CO2	Recognize and Examine the conceptual framework of strategic Human Resource Management	K2, K4
CO3	Interpret and Outline the knowledge of various strategies in Human Resource Management in the corporate arena	K3, K4
CO4	Analyze and Assess the drafting of HR policies	K4, K6
CO5	Summarize and Evaluate the latest trend in the strategic Human Resource Management.	K5, K6

Mapping of CO with PO and PSO

COs / PSOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –
“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Introduction to SHRM SHRM - Meaning, Features, Evolution, Objectives, Advantages, Barriers to SHRM, SHRM v/s Traditional HRM - Best fit' approach Vs 'Best practice' approach , Typology of HR activities -Steps in SHRM, Roles in SHRM: Top Management, Front - line Management, HR - Changing Role of HR Professionals.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	Models of SHRM Models of SHRM – High Performance Working Model, High Commitment Management Model, High Involvement Management Model - HR Environment – Environmental trends and HR Challenges - - Linking SHRM and Business Performance.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	Strategic Planning and Compensation Resourcing Strategy: Meaning and Objectives - Strategic HR Planning: Meaning, Advantages, Interaction between Strategic Planning and HRP, Work force Utilization and Employment Practices; Efficient Utilization of Human Resources - Managing HR Surplus and Shortages, Strategic Recruitment and Selection: Meaning and Need - Strategic Human Resource Development: Meaning, Advantages and Process - Strategic Compensation as a Competitive Advantage - Rewards Strategies: Meaning, Importance - Employee Relations Strategy, Retention Strategies, Strategies for Enhancing Employee Work Performance.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	Human Resource Policies Human Resource Policies – Meaning, Features, Purpose of HR Policies, Process of Developing HR Policies, Factors affecting HR Policies, Areas of HR Policies	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

	in Organisation, Requisites of Sound HR Policies – Recruitment, Selection, Training and Development, Performance Appraisal, Compensation, Promotion, Outsourcing, Retrenchment, Barriers to Effective Implementation of HR Policies and Ways to Overcome these Barriers.			
V	Latest trends in Strategic HRM Mentoring - Employee Engagement – Meaning, Factors Influencing Employee Engagement, Strategies for Enhancing Employee Engagement - Competency based HRM: Meaning, Types of Competencies and Benefits of Competencies for Effective Execution of HRM Functions - Human Capital Management: Meaning and Role - New Approaches to Recruitment – Employer Branding - Managing Global Human Resources , Evaluating HR functions in International Context.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self-Study for Enrichment (Not to be included for End Semester Examination) Environment Forecasting: Analysing the Company Profiles; Formulating Long-Term Objectives and Grand Strategies		CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Book

5. [Mathur, SP](#) **Strategic Human Resource Management 1st Edition 2015, New Age International (P) Ltd Publishers, New Delhi.**
6. Catherine Truss, David Mankin & Clare Kelliher (2014), “Strategic Human Resource Management”, Oxford University Press, India.
7. Anuradha Sharma and [Aradhana Khandekar](#) (2006), “Strategic Human Resource Management: An Indian Perspective”, Sage Publications Pvt. Ltd, New Delhi.

Reference Books

1. Jean M Phillips & Stan M Gully, “Strategic staffing”, Pearson International Edition, India.
2. Ananda Das Gupta (2021), “Strategic Human Resource Management - Formulating and Implementing HR Strategies for a Competitive Advantage”, Productivity Press; 1st edition, Routledge

Web References

1. <https://emeritus.org/in/learn/what-is-strategic-human-resource-management-shrm/>
2. <https://www.shrm.org/resourcesandtools/tools-and-samples/toolkits/pages/practicingstrategichumanresources.aspx>
3. <https://www.cegid.com/en/blog/5-steps-for-developing-and-implementing-an-effective-hr-strategy-in-2021/>
4. <https://www.managementstudyhq.com/hrm-evaluation-approaches>.

Pedagogy

Chalk and talk, PPT, Discussion, Assignment, Quiz, Seminar

Course Designer

Prof. Dr. N. Savithri

Semester II	Internal Marks: 25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs. / Week	CREDITS
23PCO1DSE1A	SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT	DISCIPLINE SPECIFIC ELECTIVE	6	3

Course Objective

- To become familiar with various Investment avenues and Portfolio Construction
- To understand the Equity Shares, Preference Shares and Bonds valuation models
- To learn about long-term and short-term investment analysis tools.
- To analyse with Portfolio theories.
- To gain knowledge in Portfolio performance methods.

Prerequisite

Basic knowledge in Security and Investment Management.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Define and Classify the investment options and structure a portfolio	K1, K2
CO2	Discuss and compute the value of Equity Shares, Preference Shares and Bonds	K2, K3
CO3	Predict and Analyze the stock performance through fundamental and technical analysis	K3, K4
CO4	Examine and Summarize the various Portfolio Theories.	K4, K5
CO5	Interpret and Evaluate the portfolio performance.	K5, K6

Mapping of CO with PO and PSO

COs / PSOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	3	3	3	3	2	3	3
CO2	3	3	2	3	3	3	3	2	3	3
CO3	3	3	2	3	3	3	3	2	3	3
CO4	3	3	2	3	3	3	3	2	3	3
CO5	3	3	2	3	3	3	3	2	3	3

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –

“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Investment and Portfolio Management Investment – Meaning – Nature and scope of Investment – Investment vs Speculation – Type of Investors – Investment Planning – Investment Alternatives - Securities Market. Risk and Return – Systematic and Unsystematic Risk – Minimizing Risk. - Investment Avenues – Factors influencing the investment choice – Portfolio Management: Meaning and significance, Active vs. Passive portfolio management - Strategic vs. Tactical asset allocation - Factors Affecting Investment Decisions in Portfolio Management.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	Valuation of Securities Bond: Introduction – Reasons for issuing Bonds – Features of Bond – Types of Bonds – Determinants of bond safety – Bond Prices, Yields and Interest Rates – Measuring Price Volatility of Bonds – Macaulay Duration and Modified Duration - Preference Shares: Introduction – Features of Preference Shares – Preference Shares Yield – Holding Period Return – Yield to Call – Concept of Present Value – Equity Share Valuation Models.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	Fundamental Analysis and Technical Analysis Fundamental Analysis: Objectives – Economic Analysis, Industry Analysis, Company Analysis – Technical Analysis: Meaning – Assumptions – Pros and cons of technical analysis – Differences between fundamental analysis and technical analysis – Dow Theory – Types of Charts – Chart Patterns – Trend Analysis – Support Line and Resistance Line – Volume Analysis –	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

	Indicators and Oscillators – Simple Moving Average – Exponential Moving Average – Relative Strength Index – Bollinger Band – Elliott Wave Theory.			
IV	Efficient Market Hypothesis Efficient Market Hypothesis – Markowitz Model, Arbitrage Pricing Theory – Sharpe’s Single index portfolio selection method – Capital Asset Pricing Model (CAPM).	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	Portfolio Performance Evaluation Portfolio Performance Evaluation – Meaning - Need for Evaluation - Methods of calculating Portfolio return - Sharpe’s Ratio - Treynor’s Ratio - Jensen’s Differential Returns - Portfolio Revision - Need for Portfolio Revision - Formula Plans.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self Study for Enrichment (Not to be included for End Semester Examinations) Securities and Exchange Board of India – National Stock Exchange – Unit Trust of India - Mutual Fund.		CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Book

1. Prasanna Chandra (2021), “Investment Analysis and Portfolio Management”, 6th Edition, McGraw Hill, Noida, UP
2. Rustagi RP (2022), “Investment Analysis and Portfolio Management”, 5th Edition, Sultan Chand & Sons, New Delhi
3. Bhalla V.K. (2019), “Investment Management”, 19th Edition, S.Chand & Co. Ltd., New Delhi

Reference Books

1. Donald E. Fischer, Ronald J. Jordan, Ashwini. K. Pradhan (2018), “Security Analysis Portfolio Management”, 7th Edition, Pearson Publication Pvt. Ltd., India, Noida
2. Avadhani V.A. (2016), “Securities Analysis and Portfolio Management”, 12th Edition, Himalaya Publishing House, Mumbai
3. Ranganathan M. and Madhumathi R (2012), “Security Analysis and Portfolio Management”, 2nd Edition., Pearson Education India Pvt Ltd, Noida
4. Punithavathy Pandian (2019), “Securities Analysis and Portfolio Management”, Himalaya Publishing House, Mumbai
5. Subrata Mukherjee (2021), “Security Analysis and Portfolio Management”, S.Chand & Co. Ltd, New Delhi

Web References

1. https://www.iare.ac.in/sites/default/files/lecture_notes/IARE_SAPM_Lecture_Notes.pdf
2. <https://www.studocu.com/in/document/galgotias-university/equity-portfolio-management/portfolio-management-lecture-notes-1-10/17701348>
3. <https://www.educba.com/fundamental-analysis-vs-technical-analysis>

Pedagogy

Lecture, Power Point Presentation, Assignment, Seminar, Group Discussions

Course Designer

Dr. C. Subha

Semester I	Internal Marks: 25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs. / Week	CREDITS
23PCO1DSE1B	OPERATIONS RESEARCH	CORE	6	3

Course Objective

- To outline the fundamentals of Operations Research
- To use OR models for problem solving
- To examine the role of sequencing and game theory
- To design and apply network analysis
- To apply modelling techniques

Prerequisite

Basic knowledge in Mathematics and Problem Solving.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Recall and Identify the knowledge of OR fundamentals	K1, K2
CO2	Indicate and Demonstrate the models for problem solving	K2, K4
CO3	Apply and Analyze the sequencing and game theory	K3, K4
CO4	Appraise and Develop network analysis to enhance effectiveness	K4, K5
CO5	Formulate and Evaluate the models for decision making	K5, K6

Mapping of CO with PO and PSO

COs / PSOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	3	2	2	2	3	3	2	2	2
CO2	2	3	2	2	2	3	3	2	2	2
CO3	2	3	2	2	2	3	3	2	2	2
CO4	3	3	2	2	2	3	3	2	2	2
CO5	3	3	2	3	2	3	3	2	3	2

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –

“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Introduction and Linear Programming Problem Introduction to Operations Research – Uses and Limitations – Linear Programming Problem: Formulation, Solving LPP: Graphical method, Simplex method, the Big-M Method.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	Transportation and Assignment Problems Transportation problem: Introduction – Assumptions – Formulation of Transportation models – Basic feasible solution (North-West Corner Method, Least Cost Method, Vogel's Approximation Method) – Optimal solution (Stepping-Stone Method, Modified Distribution Method) – Degeneracy in Transportation problem. Assignment Problem: Introduction – Comparison with the Transportation problem – Formulation of assignment problems - The Hungarian method of solution.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	Sequencing and Game Theory Sequencing problem: Introduction – Assumptions – Processing of n jobs through one machine – Processing n jobs through two machines – Processing of n jobs through three machines. Game Theory: Introduction – Rules for Games theory – Two person zero sum game without saddle point – Mixed strategies (2xn games, mx2 games) – Graphical method (2xn, mx2 games).	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	Replacement and Network Analysis Replacement: Introduction – Individual replacement problems – Group replacement problems. Network Analysis: PERT and CPM.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

V	Decision Tree Analysis and Queuing Theory Decision Tree analysis – Queuing: Introduction – Applications of queuing models, Waiting time and idle time costs – Single channel Poisson arrivals with Exponential Service, Infinite population model.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self-Study for Enrichment (Not to be included for End Semester Examination) Inventory Management - EMV Criterion - EOL and EVPL Tree Analysis - Construction of net work diagram - Simple CPM Calculation.		CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Book

1. Gupta P.K and Hira D.S., (2022) “Operations Research”, 7th Edition, S.Chand, Noida (UP).
2. Kapoor V.K., (2014) “Operations Research”, 9th Edition, Sultan Chand, New Delhi.
3. Natarajan, Balasubramani and Tamilarasi, (2014) “Operations Research”, 2nd Edition, Pearson Education India, Noida.
4. Kothari C.R., (2022) “An Introduction to Operational Research”, 3rd Edition, S. Chand, Noida (UP)

Reference Books

1. Tulsian P.C. and Bharat Tulsian, (2022) “Fundamentals of Operations Research (Theory and Practice)”, 3rd Edition, S. Chand, Noida (UP).
2. Sharma J.K., (2016) “Operations Research”, 6th Edition, Lakshmi Publications, Chennai.
3. Nagarajan N., (2017) “Text Book of Operations Research: A Self Learning Approach”, New Age Publications, Chennai.
4. Rina Rani Rath, (2021) “Operations Research”, 2nd Edition, Bhavya Books, New Delhi.

Web References

1. <https://www.bbau.ac.in/dept/UIET/EMER-601%20Operation%20Research%20Queuing%20theory.pdf>
2. [https://mdu.ac.in/UpFiles/UpPdfFiles/2021/Jun/4_06-11-2021_16-06-34_OPERATIONS%20RESEARCH%20TECHNIQUES\(20MAT22C5\).pdf](https://mdu.ac.in/UpFiles/UpPdfFiles/2021/Jun/4_06-11-2021_16-06-34_OPERATIONS%20RESEARCH%20TECHNIQUES(20MAT22C5).pdf)
3. <https://repository.up.ac.za/bitstream/handle/2263/25427/02chapter3.pdf?sequence=3>
4. <https://hbr.org/1964/07/decision-trees-for-decision-making>

Pedagogy

Chalk and talk, PPT, Discussion, Assignment, Quiz, Seminar

Course Designer

Ms. S.J.Sureya

Semester I	Internal Marks: 25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs. / Week	CREDITS
23PCO1DSE1C	LABOUR LAWS	CORE	6	3

Course Objective

- To Understand the provisions of Trade Unions Act
- To gain knowledge on various measures and provisions relating to employees as per the Factories Act and Equal Remuneration Act
- To become familiar with compensation payable to workmen under different situations and understand the provisions of the Employees State Insurance Act
- To learn different provisions relating to payment of wages and minimum wages to employees
- To understand employee welfare measures with respect to provident fund, gratuity and bonus

Prerequisite

Basic knowledge in Company Laws and Business Laws.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Recall and Discuss the basic labour legislations pertaining to Trade Unions	K1, K2
CO2	Explain and Apply the various provisions of the Factory's Act and Equal Remuneration Act	K2, K4
CO3	Identify and Assess provisions relating to the workmen's compensations and state insurance.	K3, K6
CO4	Examine and Assemble the provisions relating to payment of wages and minimum wages.	K4, K5
CO5	Summarize and Discuss the provisions of provident fund, gratuity and bonus schemes.	K5, K6

Mapping of CO with PO and PSO

COs / PSOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	2	2	2	3	2	2	2	2
CO2	3	2	2	2	2	3	2	2	2	2
CO3	3	2	2	2	2	3	2	2	2	2
CO4	3	2	2	2	2	3	2	2	2	2
CO5	3	2	2	2	2	3	2	2	2	2

"1" – Slight (Low) Correlation – "2" – Moderate (Medium) Correlation –

"3" – Substantial (High) Correlation – "-" indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	Cos	COGNITIVE LEVEL
I	Introduction and The Trade Unions Act, 1926 Labour legislations: Origin – Nature – Scope – Need – Objectives – Principles – Labour policy and its special features – Constitution as the basis for labour legislation – The Trade Unions Act, 1926: Definition – Objectives – Deficiencies – Registration of trade union – Cancellation of registration and appeal – Duties and obligations – Rights and privileges – Dissolution.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	The Factories Act, 1948 and Equal Remuneration Act, 1976 The Factories Act, 1948: Objects – Definition – Licensing and Registration of factories – Inspecting staff – Health, safety and welfare measures – Provisions relating to hazardous processes – Working hours – Holidays – Annual leave - Employment of women and young persons. Equal Remuneration Act – Payment of remuneration at equal rates to men and women workers – Advisory committee – Offences and penalties.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	The Workmen's Compensation Act, 1923 and The Employees' State Insurance Act, 1948 The Workmen's Compensation Act, 1923: Definitions – Objectives – Disablement – Employer's liability for compensation – Amount of compensation – Disbursement of compensation – Notice and claims – Penalties – The Employees' State Insurance Act 1948: Objects – Definitions – Administration of ESI Scheme – ESI Fund – ESI Corporation - Medical benefit council – Benefits under the Act – ESI court.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	The Payment of Wages Act, 1936 and	18	CO1, CO2,	K1, K2, K3,

	The Minimum Wages Act, 1948 The Payment of Wages Act, 1936: Object and Scope – Definition – Procedure regarding payment of wages – Deduction from wages – Mode of payment of wages. The Minimum Wages Act, 1948: Objects - Scope – Definition – Items to be included in the minimum wages – Fixation and revision of minimum wages – Norms to be followed in the payments of minimum wages.		CO3, CO4, CO5	K4, K5, K6
V	The Provident Fund and Miscellaneous Provision Act, 1952, The Payment of Gratuity Act, 1972 and The Payment of Bonus Act, 1965 Provident Fund and Miscellaneous Provision Act, 1952: Definitions – Scope – Nature – Objects – Various schemes – The Payment of Gratuity Act, 1972: Definitions – Scope – Conditions and circumstances of payment - Wages for computing gratuity – Maximum gratuity – Nomination – Penalties – The Payment of Bonus Act: Applicability of the Act – Eligibility and rate of Bonus – Allocable surplus and available surplus - Set and set off – Offences and penalties.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self-Study for Enrichment (Not to be included for End Semester Examination) International Labour Organization – Law of Welfare & Working condition – Social Security Legislations – Industrial Relations		CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Book

1. Mishra S.N. (2018), “Labour & Industrial Laws”, 29th Edition, Central Law Publications, Classic Edition, Allahabad, UP.
2. Srivastava S C (2022), “Industrial Relations and Labour Laws”, 8th Edition., Vikas Publishing, New Delhi
3. Tripathi PC, Gupta CB, Kapoor ND (2020), “Industrial Relations and Labour Laws”, 6th Edition., Sultan Chand & Sons, New Delhi

Reference Books

1. Sinha P.R.N., Sinha Indu Bala, Shekhar Seema Priyadarshini (2017), “Industrial Relations, Trade Unions and Labour Legislation”, 3rd Edition., Pearson Education India Pvt. Ltd., Noida
2. Piyali Ghosh, Shefali Nandan (2017), “Industrial Relations and Labour Laws”, 1st Edition, McGraw Hill, Noida
3. Sharma J.P. (2018), “Simplified Approach to Labour Laws”, 5th Edition., Bharat Law House Pvt. Ltd.

Web References

1. https://www.icsi.edu/media/webmodules/Labour_Laws_&_Practice.pdf
2. https://www.icsi.edu/media/webmodules/LabourLaws&Practice_June_2020.pdf

Pedagogy

Chalk and talk, PPT, Discussion, Assignment, Quiz, Seminar

Course Designer

Mrs. N.Aruna.



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY – 18
DEPARTMENT OF COMMERCE

M.Com. – PROGRAMME STRUCTURE

LEARNING OUTCOME BASED CURRICULUM FRAMEWORK (CBCS - LOCF)
(For the candidates admitted from the academic year 2022 – 2023 onwards)

III Semester

Semester	Course	Title	Course Code	Inst.Hrs./ we ek	Credit	Exam Hours	Marks		Total
							Internal	External	
III	Core Course – VIII (CC)	Advanced Corporate Accounting	22PCO3CC8	6	5	3	25	75	100
	Core Course – IX (CC)	International Trade Finance	22PCO3CC9	6	5	3	25	75	100
	Core Practical – I (CP)	Data Analytics using Excel (P)	22PCO3CC1P	5	5	3	40	60	100
	Core Choice Course– II (CCC)	A. Cyber Security	22PGCS3CCC2A	3(T) + 2(P)	4	3	25	75	100
		B. Project Management	22PCO3CCC2B	5					
		C. Managerial Communication	22PCO3CCC2C						
	Discipline Specific Elective Course-III (DSE)	A. Commerce for Competitive Examinations	22PCO3DSE3A	5	3	2	-	100	100
		B. Advertisement and Sales Promotion	22PCO3DSE3B			3	25	75	
		C. Human Resource Analytics	22PCO3DSE3C						
	Generic Elective Course –I (GEC)	Entrepreneurship and New Venture Creation	22PCO3GEC1	3	2	3	25	75	100
	<i>Extra Credit Course</i>	<i>Swayam Online Course</i>		<i>As per UGC Norms</i>					
		Total		30	24				600

Semester III	Internal Marks: 25	External Marks:75		
COURSE CODE	COURSE TITLE	CATEGORY	Hrs. / Week	CREDITS
22PCO3CC8	ADVANCED CORPORATE ACCOUNTING	CORE	6	5

Course Objective

- To understand the accounting treatment for issue of shares and prepare consolidated financial statements.
- To determine and adopt the financial reporting standards.

Prerequisite

Basic knowledge in Corporate Accounting.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Explain and Make use of various methods in valuation of shares and goodwill.	K2,K3
CO2	Apply AS 14 for the accounting treatment of amalgamation and absorption.	K3
CO3	Compare and Estimate the different methods in alternation of share capital.	K4, K5
CO4	Analyze and Determine to prepare Consolidated Financial Statements of Holding Companies in accordance with AS 21.	K4, K5
CO5	Assess and Examine the Financial Reporting based on appropriate Accounting Standards and provisions of Companies Act 2013	K5, K6

Mapping of CO with PO and PSO

COs / PSOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	2	3	3
CO2	3	3	2	3	3	3	3	2	3	3
CO3	3	3	2	3	3	3	3	2	3	3
CO4	3	3	2	3	3	3	3	2	3	3
CO5	3	3	2	3	3	3	3	2	3	3

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –
“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Valuation of Goodwill – Nature – Sources - Factors affecting the value of Goodwill – Methods: Average Profit, Super Profit and Capitalization. Valuation of Shares - Need - Factors affecting the value of Shares – Methods: Net Asset, Yield and Fair Value.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	Holding Companies and Subsidiary Company – Meaning – Definition – Pre-Acquisition Profits – Post- Acquisition Profits - Minority Interest - Cost of Control or Capital Reserve – Elimination of Unrealized Profit included in Stock – Consolidated Balance Sheet as per AS 21.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	Alteration of Share Capital – Kinds – Accounting Entries. Internal Reconstruction - Reduction of Share Capital – Procedure – Difference between Internal and External Reconstruction. Liquidation – Modes of Winding up – Order of Payments - Statement of Affairs -Deficiency or Surplus Account – Liquidator's Remuneration - Liquidators Final Statement of Accounts.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	Amalgamation, Absorption and External Reconstruction – Meaning – Types of Amalgamation - Computation of Purchase Consideration – Methods - Accounting Entries as per AS 14.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	Human Resource Accounting – Meaning – Definition –Objectives - Assumptions – Human Resource Valuation Methods. – Inflation Accounting – Limitations of Historical Accounting - Methods. (Theory Only).	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self Study for Enrichment (Not to be included for End Semester Examination) Indian Accounting Standards – Social Responsibility Accounting.		CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Distribution of Marks: Theory 20% and Problem 80%

Text Book.

1. Reddy T.S. & Muruthy A., (2022), Corporate Accounting, 17th edition, Margham Publications, Chennai.
2. Jain S.P. & Narang, K.L. (2019), Advanced Accountancy – Corporate Accounting – Volume II, 22nd edition, Kalyani Publishers, New Delhi
3. Shukla M C, Grewal T S & Gupta S C, (2022), Advanced Accounts - Volume II, 19th edition, Sultan Chand & Sons, New Delhi.

Reference Books

1. Gupta R. L. & Radhaswamy M. (2021), “Corporate Accounting – Volume I & II”, 14th Edition, Sultan Chand & Sons, New Delhi.
2. Arulanandam M.A & Raman K.S., (2021), “Advanced Accounting (Corporate Accounting – II)”, 8th Edition, Himalaya Publishing House Pvt Ltd, Mumbai.
3. Gupta R. L., (2022), “Problems and Solutions in Company Accounts”, 2nd Edition, Sultan Chand & Sons, New Delhi.
4. Reddy T.S. & Hari Prasad Reddy Y., (2022), Corporate Accounting - Volume I & II , 17th edition Margham Publications, Chennai.

Web References

1. <https://resource.cdn.icai.org/66550bos53754-p1-cp9.pdf>
2. <https://resource.cdn.icai.org/66545bos53754-p1-cp4.pdf>
3. <https://resource.cdn.icai.org/66638bos53803-cp1.pdf>
4. <http://ppup.ac.in/download/econtent/pdf/MBA%201st%20sem%20Lecture%20note%20on%20forensic%20accounting%20by%20Anjali.pdf>

Pedagogy

Lecture, Power Point Presentations, Group Discussion, Seminar, Quiz, Assignment, Discussion and Activity

Course Designer

Dr. D. Ramya

Semester III	Internal Marks: 25	External Marks: 75		
COURSE CODE	COURSE TITLE	CATEGORY	Hrs. / Week	CREDITS
22PCO3CC9	INTERNATIONAL TRADE FINANCE	CORE	6	5

Course Objective

- To provide students with a through grounding in the theory of International trade as well as Current Trade Policies.

Prerequisites

Basic knowledge in International Trade.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Explain the theory and current developments in International Trade	K1, K2
CO2	Identify the various Financial Institutions support to the International Trade	K2, K3
CO3	Analyze the factors influencing Exchange Rates	K2,K4
CO4	Assess the importance of documentation in International Trade	K4, K6
CO5	Discuss about various Export Promotion Schemes.	K5, K6

Mapping of CO with PO and PSO

COs / PSOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	3	2	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	2	3	3	3	3	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –
“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	International Trade – Meaning and Benefits – Basis of International Trade – Theories of International Trade – Foreign Trade and Economic Growth – Balance Trade – Balance of Payment – Current Trends in India – Barriers to International Trade – WTO – Indian EXIM Policy.		CO1, CO2, CO3,CO4, CO5	K1,K2,K3, K4,K5,K6
II	Special Need for Finance in International Trade – INCO Terms – Payment Terms – Letters of Credit – Pre Shipment and Post Shipment Finance – Forfeiting – Deferred Payment Terms – EXIM Bank – ECGC and its Schemes – Import Licensing – Financing Methods for Import of Capital Goods		CO1, CO2, CO3,CO4, CO5	K1,K2,K3, K4,K5,K6
III	Foreign Exchange Markets – Spot Prices and Forward Prices – Factors influencing Exchange Rates – The effects of Exchange Rates in Foreign Trade – Tools for Hedging against Exchange Rate Variations – Forward, Futures and Currency Options – FEMA – Determination of Foreign Exchange Rate and Forecasting.		CO1, CO2, CO3,CO4, CO5	K1,K2,K3, K4,K5,K6
IV	Export Procedure – Methods of exporting – Step by Step procedure for export – Export Documentation – Types of documents in export – Payment of export proceeds – Methods – ISO 9001 Certificate.		CO1, CO2, CO3,CO4, CO5	K1,K2,K3, K4,K5,K6
V	Export Finance and Assistance – Pre-Shipment Credit – Post Shipment Finance -Types - Procedures - Government Organizations Promoting Exports – Export Incentives: Duty Exemption – IT Concession – Marketing Assistance – EPCG.		CO1, CO2, CO3,CO4, CO5	K1,K2,K3, K4,K5,K6
VI	Self Study for Enrichment (Not to be included for End Semester Examinations) Export Promotion – EPZ – EOU – SEZ and Export House.		CO1, CO2, CO3,CO4, CO5	K1,K2,K3, K4,K5,K6

Text Book

1. Francis Cherunilam (2019), International Trade and Export Management, Himalaya Publishing House
2. Avadhani V.A. (2017), International Finance, Himalaya Publishing House.
3. Jeff Madura (2020), International Corporate Finance, 14th Edition, Cengage Learning.

Reference Books

1. Alan C. Shapiro (2019) , Multinational Financial Management, 11th edition , John Wiley & sons
2. Eun and Resnik (2020), International Financial Management, 9th Edition, Tata McGraw Hill
3. Bhat M.K. (2010), International Trade and Financial Environment, Ane Books Pvt,Ltd.
4. Dr. Pawan Kumar (2016), International Trade, Global Academic Publishers and Distributors.

Web References

1. https://www.tutorialspoint.com/international_finance/international_trade_finance.htm.
2. <https://www.dripcapital.com/en-us/resources/finance-guides/international-trade-finance>
3. <https://in.video.search.yahoo.com/search/video?fr=mcafee&ei=UTF-8&p=http%3A%5C%5Cinternational+trade+finance+meaning&vm=r&type=E211IN714G91769#id=1&vid=7b400b192e778d884d8dd9c9b116b790&action=click>

Pedagogy

Chalk and talk, Power Point Presentation, Discussion, Assignment, Seminar

Course Designer

Dr. D.Sarala

Semester III	Internal Marks: 40		External Marks: 60	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs / Week	CREDITS
22PCO3CC1P	DATA ANALYTICS USING EXCEL (P)	CORE PRACTICAL	5	5

Course Objective

- **Develop** analytical and critical thinking abilities for data-based decision making
- **Flexible** for users to conduct investigation of complex problems using modern tools and techniques
- **Apply** an innovative ideas and knowledge of business project management principles

Prerequisite

Basic knowledge in Statistics.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Summarize the features available in spreadsheets and gain knowledge about basic as well as advanced searching functions	K1,K2,K3
CO2	Understand the various types of text functions and get an idea about how to apply these text functions in real world scenarios	K3
CO3	Utilize knowledge about financial functions and be able to make use of these functions to solve financial problems.	K3,K4
CO4	Analyze the applications of various data and time functions of spread sheet.	K4
CO5	Evaluate various slice and dice methods of spread sheets to develop better decision making.	K5,K6

Mapping of CO with PO and PSO

COs / PSOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	2	2	3	3	2	2	2
CO2	3	3	3	2	2	2	3	2	2	3
CO3	2	2	2	2	2	2	2	2	2	2
CO4	2	3	2	3	2	3	2	3	2	2
CO5	2	2	2	2	2	2	2	2	2	2

“1” – Slight (Low) Correlation □ “2” – Moderate (Medium) Correlation □

“3” – Substantial (High) Correlation □ “-” indicates there is no correlation.

LIST OF PROGRAM

	BASIC OPERATIONS
1.	Introduction to spread sheets, steps to create and save spread sheets.
2.	How to use various MS Excel Add – ins in spread sheet.
3.	Use of if function and nested if in MS – Excel spread sheets.
4.	V Lookup function in MS –Excel.
5.	Implementation of index and match functions.
6.	How to use various text functions in MS – Excel (finding first name and last name from a given list of full names).
7.	Illustrate the use of yearfrac function and dateif function to find the age of students from the given date of birth.
8.	Apply pivot table tool available in MS-Excel to analyze the data.
	DESCRIPTIVE STATISTICS
9.	Measures of Central Tendency using Excel.
10.	Measures of Variability using Excel.
11.	Measures of Shape using Excel.
	HYPOTHESIS PARAMETRIC TEST USING EXCEL
12.	Independent t- Test using Excel.
13.	One-Way ANOVA using Excel
	HYPOTHESIS NON- PARAMETRIC TEST USING EXCEL
14.	Friedman’ S Test
15.	Kruskal-Wallis (KW) Test
16.	Mann Whitney U Test
17.	Chi-Square Test
18.	Wilcoxon Signed Rank Test
	CORRELATION & REGRESSION USING EXCEL
19.	Pearson’s Correlation
20.	Rank Correlation
21.	Linear Regression
	FORECASTING USING EXCEL
22.	Time Series Data
23.	Auto-regression
	PORTFOLIO SELECTION
	RISK AND SENSITIVIY ANALYSIS USING EXCEL
24.	Calculating Present Value
25.	Calculating Net Present Value

Web References

1. <https://www.simplilearn.com/learn-business-analytics-excel-fundamentals-skillup>
2. <https://www.youtube.com/watch?v=W3vrMSah3rc>
3. <https://in.coursera.org/learn/business-analytics-excel>
4. <https://www.nobledesktop.com/classes-near-me/blog/how-business-analysts-use-excel>
5. <https://www.senacea.co.uk/post/excel-skills-business-analytics>

Pedagogy

Power point presentations.

Course Designer

Dr. P. Sudha

Semester: III	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22PGCS3CCC2A	CYBER SECURITY	CORE CHOICE	3(T)+2(P)	4

Course Objective

- To develop skills in students that can help them plan, implement, and monitor cyber security mechanisms to ensure the protection of information technology assets.
- To expose students to governance, regulatory, legal, economic, environmental, social, and ethical context so cyber security.
- To expose students to the responsible use of online social media networks.
- To systematically educate the necessity to understand the impact of cyber-crimes and threats with solutions in a global and societal context.
- To select suitable ethical principles, commit to professional responsibilities and human values, and contribute value and wealth for the benefit of society

Prerequisites

Basic Knowledge of Cyber Security

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	Understand the cyber security threat landscape	K1,K2
CO2	Develop a deeper understanding and familiarity with various types, cyber crimes, vulnerabilities, and remedies thereto.	K2,K3
CO3	Analyse and evaluate existing legal framework and laws on cyber security.	K4,k5
CO4	Analyse and evaluate the digital payment system security and remedial measures.	K4,K5
CO5	Analyse and evaluate the cyber security risks, plan suitable security controls	K4,k5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO 1	PO 2	PO 3	PO 4	PO 5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	2	3	3	3	3	2
CO4	3	3	3	3	2	3	3	3	3	2
CO5	3	3	3	3	2	3	3	3	3	2

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –
“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Overview of Cyber Security: Cyber security increasing threat landscape, - Cyberspace, attack, attack vector, attack surface, threat, risk, vulnerability, exploit, exploitation, hacker., Non – state actors, Cyber terrorism, Protection of end user machine, Critical IT and National Critical Infrastructure, Cyber warfare, Case Studies.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Cyber Crimes: Cyber Crimes targeting Computer systems and Mobiles- data diddling attacks, spyware, logic bombs, DoS, DDoS, APTs, virus, Trojans, ransomware, data breach., Online scams and frauds- email scams, Phishing, Vishing, Smishing, Online job fraud, Online sextortion, Debit/credit card fraud, Online payment fraud, Cyber bullying, website defacement, Cyber-squatting, Pharming, Cyberespionage, Cryptojacking, Darknet-illegal trades, drug trafficking, human trafficking., Social Media Scams & Frauds- impersonation, identity theft, job scams, misinformation, fake news cyber crime against persons–cyber grooming, child pornography, cyber stalking., Social Engineering attacks, Cyber Police stations, Crime reporting procedure, Case studies.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Cyber Law: Cyber Crime and legal landscape around the world, IT Act, 2000 and its amendments. Limitations of IT Act, 2000. Cyber Crime and punishments, Cyber Laws and Legal and ethical aspects related to new technologies-AI/ML, IoT, Block chain, Darknet and Social media, Cyber Laws of other countries, Case Studies.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Data Privacy and Data Security: Defining data, meta-data, big data, non-personal data. Data protection, Data privacy and data security, Personal Data Protection Bill and its compliance, Data protection principles, Big data security issues and challenges, Data protection regulations of other countries-	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Cyber security Management, Compliance and Governance: Cyber security Plan-cyber	9	CO1, CO2, CO3,	K1, K2, K3,

	security policy, cyber crises management plan., Business continuity, Risk assessment, Types of security controls and their goals, Cyber security audit and compliance, National cyber security policy and strategy.		CO4, CO5	K4, K5
VI	Self Study for Enrichment (Not included for End Semester Examinations) Case Studies: Largest Cyber Attacks: Yahoo Data Breach, Equifax Data Breach, WannaCry Malware Attack, Simple Locker.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Reference Books

1. Vivek Sood,(2017). *Cyber Law Simplified*. McGraw Hill Education
2. Sumit Belapure and Nina Godbole, (2011). *Computer Forensics and Legal Perspectives*. Wiley India Pvt. Ltd.
3. Dorothy F.Denning,(1998). *Information Warfare and Security*. Addison Wesley.
4. Henry A.Oliver,(2015). *Security in the Digital Age: Social Media Security Threats and Vulnerabilities*. Create Space Independent Publishing Platform.
5. Natraj Venkataramanan and AshwinS hriram, (2016). *Data Privacy Principles and Practice*. 1st Edition, CRC Press.
6. W.Krag Brothy,(2008). *Information Security Governance, Guidance for Information Security Managers*. 1st Edition, Wiley Publication.
7. Martin Weiss, Michael G.Solomon,(2015). *Auditing IT Infrastructures for Compliance*. 2nd Edition, Jones & Bartlett Learning.

Web References

1. <https://www.tutorialspoint.com/principles-of-information-system-security>
2. <https://www.geeksforgeeks.org/principle-or-information-system-security/>
3. <https://www.techtarget.com/searchsecurity/definition/cybersecurity>
4. <https://www.ukessays.com/essays/computer-science/analysis-of-the-yahoo-data-breaches.php>
5. <https://www.csoononline.com/article/3444488/equifax-data-breach-faq-what-happened-who-was-affected-what-was-the-impact.html>
6. <https://www.techtarget.com/searchsecurity/definition/WannaCry-ransomware>
7. <https://www.cloudflare.com/learning/ddos/syn-flood-ddos-attack/>

Practicals:**List of Exercises:** (Not included for End Semester Examinations)

1. Platforms for reporting cyber crimes.
2. Checklist for reporting cyber crimes online
3. Setting privacy settings on social media platforms.
4. Do's and Don'ts for posting content on Social media platforms.
5. Registering complaints on a Social media platform.
6. Prepare password policy for computer and mobile device.
7. List out security controls for computer and implement technical security controls in the personal computer.
8. List out security controls for mobile phone and implement technical security controls in the personal mobile phone.
9. Log into computer system as an administrator and check the security policies in the system.

Web References

1. <https://cybercrime.gov.in/>
2. https://cybercrime.gov.in/webform/crime_onlinesafetytips.aspx
3. <https://www.digitalvidya.com/blog/social-media-dos-and-donts/>
4. <https://www.medianama.com/2023/02/223-platform-grievance-appellate-committees-social-media/>
5. <https://www.ibm.com/topics/security-controls>
6. <https://docs.oracle.com/cd/E19683-01/817-0365/concept-2/index.html>

Pedagogy

Chalk and Talk, Group discussion, Seminar & Assignment.

Course Designer

From UGC SYLLABUS

Semester III	Internal Marks: NIL		External Marks:100	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs. / Week	CREDITS
22PCO3DSE3A	COMMERCE FOR COMPETITIVE EXAMINATIONS	DISCIPLINE SPECIFIC ELECTIVE	5	3

Course Objective

- To pursue knowledge about the various Disciplines of Commerce, Information and Communication Technology Numerical and Reasoning ability to face competitive examinations.
- To provide high quality education in systematic and structured way.

Prerequisite

Basic knowledge in Commerce Subjects .

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Recall and Explain the concepts of Business Management, Environment and International Business	K1, K2
CO2	Summarize and Identify the various statistical methods and discuss latest development in banking and ICT	K2,K3
CO3	Develop and Evaluate the problems in Income Tax, Cost and Management Accounting	K3,K5
CO4	Examine and Construct the communication skills and evaluate the reasoning ability	K4 ,K5
CO5	Assess and Formulate the role of regulatory bodies in corporate and finance sectors.	K5,K6

Mapping of CO with PO and PSO

COs / PSOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	3	3	3	3	2	3	3
CO2	3	3	2	3	3	3	3	2	3	3
CO3	3	3	2	3	3	3	3	2	3	3
CO4	3	3	2	3	3	3	3	2	3	3
CO5	3	3	2	3	3	3	3	2	3	3

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –

“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Business Management - Principles and functions of management-Organizational Structure - Corporate Governance-Human Resource Management-Marketing Management. Business & Environment and International Business - Micro and Macro Environment – Theories of International Trade – FEMA – CSR – FDI – BOP – WTO – International Economic Institutions	15	CO1, CO2, CO3,CO4, CO5	K1,K2,K3, K4,K5,K6
II	Business Economics - Meaning and Scope of Business Economics–Demand Analysis– Consumer Behaviour– Theory of Cost– Market Forms– Pricing Strategies Business Statistics: Measures of Central Tendency–Dispersion –Skewness – Correlation and Regression – Probability – Research Concepts and Types – Classification of Data– Sampling–Testing of Hypothesis. Banking and Financial Institution - Indian Financial System – Financial Markets –Financial Institutions– Financial Sector Reforms-RBI–NBFCs–E-Banking.	15	CO1, CO2, CO3,CO4, CO5	K1,K2,K3, K4,K5,K6
III	Business Finance - Scope and Sources of Finance – Cost of Capital – Capital Structure – Capital Budgeting – Working Capital Management – Risk and Return Analysis. Accounting - Accounting Principles, Concepts and Postulates – Partnership Accounts – Corporate Accounting – Cost and Management Accounting – Human Resource Accounting – Indian Accounting Standards (IAS) - Income Tax - Basic Concepts –	15	CO1, CO2, CO3,CO4, CO5	K1,K2,K3, K4,K5,K6

	Residential Status – Tax Incidence – Exempted Income – Computation of Taxable Income under various heads – GST.			
IV	Communication - Meaning, types and characteristics of communication – barriers to effective communication – Comprehensive – Idioms and Phrase – Mass media and society – Teaching Skills – ICT – General Abbreviations and Terminology – Basics of Internet, Intranet, E-Mail, Audio and Video Conferencing – Digital Initiatives in Higher Education.	15	CO1, CO2, CO3,CO4, CO5	K1,K2,K3, K4,K5,K6
V	Legal aspects of Business - Indian Contract Act, 187 - Special contracts - Sale of Goods Act, 1930 - Negotiable Instruments Act,1881 - The Companies Act, 2013 - Limited Liability Partnership - The Competition Act, 2002 – The Information Technology Act, 2000 - Intellectual Property Rights (IPRs)	15	CO1, CO2, CO3,CO4, CO5	K1,K2,K3, K4,K5,K6
VI	Self Study for Enrichment (Not to be included for End Semester Examination) Basic Concepts of Logistic Management- Stress Management.		CO1, CO2, CO3,CO4, CO5	K1,K2,K3, K4,K5,K6

Distribution of Marks : Multiple Choice Questions – 100

Text Book.

1. Agarwal R.S, (2017), Logical Reasoning & Aptitude, Sultan Chand Publishing House, New Delhi.
2. Gupta C.B (2015), Business Management, Sultan Chand Publishing House, New Delhi.
3. Francis Cherunelam (2011), International Business, PHI Learning, New Delhi.
4. Sankaran S (2014), Business Economics, Margham Publication, Chennai.
5. Pandey I M. (2018), Financial Management, Vikas Publications,Kolkata.
6. Reddy & Murthy (2016), Corporate Accounting, Margham Publications, Chennai.
7. Jain & Narang (2014), Cost and Management Accounting, Kayani Publication, New Delhi.
8. Reddy & Hari Prasad Reddy (2022), Income Tax theory & Practices, Margham Publications, Chennai.

Reference Books

1. Upkar (2017), UGCNET/JRF/SET Commerce, Upkar Publication, New Delhi.
2. Anusha, Kataria, Shivani & Parveen Kataria (2016), Trueman's UGCNET/SET, Trueman's Publishing, New Delhi

Web References

1. <https://www.teachmint.com/tfile/studymaterial/cafoundation/commerce/competitiveexamspdf/ffa76e82-22ab-47a6-8d3e-c1147fb88cdd>
2. <https://www.examrace.com/Study-Material/Commerce/Commerce-Fundamentals/>
3. <https://byjusexamprep.com/ugc-net-commerce-books-i>

Pedagogy

Lecture, Power Point Presentations, Group Discussion, Seminar, Quiz, Assignment, Discussion and Activity

Course Designer

Prof. Dr. N. Savithri

GENERIC ELECTIVE COURSE –I (GEC)
FOUNDATION FOR LOGICAL THINKING
(2022-2023 and Onwards)

Semester III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs / Week	CREDITS
22PMA3GEC1	FOUNDATION FOR LOGICAL THINKING	GENERIC ELECTIVE	3	2

Course Objectives

- **Explain** many short tricks to solve mathematical problems easily.
- **Apply** the knowledge to **interpret** and **solve** the problems.
- **Predict** elite knowledge in verbal reasoning.

Prerequisite

Knowledge of basic mathematics

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Explain the knowledge of the various techniques of quantitative aptitude and reasoning.	K1, K2
CO2	Apply the concepts in solving mathematical problems to succeed in various competitive examinations.	K3
CO3	Examine various types of Problems using arithmetic and reasoning test.	K3
CO4	Apply the concept obtained in the course to solve the problems.	K3
CO5	Analyse real-life problems and find solutions.	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3	3	3	2	2	3
CO2	3	2	3	3	3	3	3	3	2	3
CO3	3	3	2	3	3	3	3	3	3	3
CO4	3	2	3	3	2	3	3	2	2	3
CO5	3	2	3	3	2	3	3	3	3	2

“1” – Slight (Low) Correlation “2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation “-” indicates there is no Correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Arithmetical Ability: Surds and indices - Logarithms – Alligation or Mixture	9	CO1,CO2, CO3,CO4, CO5	K1,K2,,K3,K4
II	Probability – Heights and Distances – Odd Man Out and Series	9	CO1,CO2, CO3,CO4, CO5	K1,K2,K3,K4
III	Data Interpretation: Bar Graphs - Pie Chart - Line Graphs.	9	CO1,CO2, CO3,CO4, CO5	K1,K2,K3,K4
IV	Reasoning Test: Relationship –Direction Sense Test - Problems based on Alphabet.	9	CO1,CO2, CO3,CO4, CO5	K1,K2,K3,K4
V	Logical Reasoning	9	CO1,CO2, CO3,CO4, CO5	K1,K2,K3,K4
VI	Self-Study for Enrichment: (Not included for End Semester Examinations) Arithmetical Ability: Permutation and Combination- Clocks – Calendar. Verbal Reasoning: Analogy- Classification.	-	CO1,CO2, CO3,CO4, CO5	K1,K2,K3,K4

Text Books

1. R.S.Aggarwal (Reprint 2017), *Quantitative Aptitude for Competitive Examinations (Fully Solved)*, S.Chand and Company Ltd., New Delhi.
2. Dr.Lal, Jain and Dr. K. C. Vashisthu (2018), *UGC NET/JRF/ SET Teaching & Research Aptitude*, Upkar Prakashan, Agra.

Chapters and Sections

- UNIT-I Section I (9, 10, 21) [1]
UNIT-II Section I (31, 34, 35) [1]
UNIT-III Section II (37, 38, 39) [1]
UNIT- IV Section I (1, 5, 7) [2]
UNIT- V Section II [2]

Reference Books

1. Dinesh Khattar (2016), *Pearson Guide to Quantitative Aptitude for Competitive Examinations*, Pearson Publication, 3rd Edition.
2. Lal, Jain and Vashisthu .K .C (2018), *UGC NET/JRF/SET Teaching Research Aptitude*.
3. Abhijit Guha (2014), *Quantitative Aptitude for Competitive Examinations*, Mcgraw Hill Education Private Limited, New Delhi, 5th Edition.

Web References

1. <https://www.indiabix.com/aptitude/questions-and-answers/>
2. <https://www.youtube.com/watch?v=IFHjNbSmsCE>
3. <https://www.sawaal.com/aptitude-reasoning/quantitative-aptitude-arithmetic-ability-questions-and-answers.html>
4. <https://www.youtube.com/watch?v=xRLNYich5Ls>
5. <https://www.youtube.com/watch?v=qwHJtfEUCgE>
6. https://www.youtube.com/watch?v=g0_1ZhueCcE
7. <https://www.indiabix.com/logical-reasoning/questions-and-answers/>
8. <https://byjus.com/govt-exams/logical-reasoning/>

Pedagogy

Power Point Presentations, Group Discussions, Seminar, Quiz and Assignment.

Course Designer

Ms. V. ManiMozhi

ANNEXURE H

**CAUVERY COLLEGE FOR WOMEN
(AUTONOMOUS)**

**Nationally Accredited with 'A' Grade by NAAC
ISO 9001:2015 Certified**

**PG AND RESEARCH DEPARTMENT OF
MATHEMATICS**



**B.Sc., MATHEMATICS
AUTONOMOUS SYLLABUS
(2023-2024 and ONWARDS)**



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)
PG AND RESEARCH DEPARTMENT OF MATHEMATICS
B.Sc MATHEMATICS PROGRAMME STRUCTURE

LEARNING OUTCOME BASED CURRICULUM FRAMEWORK(CBCS-LOCF)

(For the candidates admitted from the Academic year 2023-2024 Onwards)

Semester	Part	Course	Course Title	Course Code	Inst. Hrs. / week	Credits	Exam			Total
							Hrs.	Marks		
								Int	Ext	
I	I	Language Course-I (LC)	பொதுத்தமிழ் -1	23ULT1	6	3	3	25	75	100
			Hindi ka Samanya Gyan our Nibandh	23ULH1						
			Poetry, Grammar and History of Sanskrit Literature	23ULS1						
			Foundation Course: Paper I- French I	23ULF1						
	II	English Language Course – I (ELC)	General English-I	23UE1	6	3	3	25	75	100
	III	Core Course – I (CC)	Algebra and Trigonometry	23UMA1CC1	4	4	3	25	75	100
		Core Course – II (CC)	Differential Calculus	23UMA1CC2	5	4	3	25	75	100
		First Allied Course – I (AC)	Mathematical Statistics	23UMA1AC1	5	4	3	25	75	100
		First Allied Course – II (AP)	Programming Language using MATLAB (P)	23UMA1AC2P	2	2	3	25	75	100
	IV	Ability Enhancement Compulsory Course-I (AECC)	Value Education	23UGVE	2	2	-	100	-	100
	Total				30	22				700

CORE COURSE – I (CC)
ALGEBRA AND TRIGONOMETRY
(2023-2024 Onwards)

Semester I	Internal Marks: 25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs /Week	CREDITS
23UMA1CC1	ALGEBRA AND TRIGONOMETRY	CORE	4	4

Course Objective

- Basic ideas on the Theory of Equations, Matrices and Number Theory.
- Knowledge to find expansions of trigonometry functions, solve theoretical and applied problems.
- Understanding of how Hyperbolic functions can be used as a powerful tool in solving problems in science.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Knowledge Level
	On the successful completion of the course, students will be able to	
CO1	Define and interpret on reciprocal equations	K1, K2
CO2	Illustrate the sum of binomial, exponential and logarithmic series	K3
CO3	Compute Eigen values, eigen vectors, verify Cayley – Hamilton theorem and diagonalize a given matrix.	K3
CO4	Determine the powers and multiples of trigonometric functions in terms of sine and cosine.	K4
CO5	Evaluate the relationship between circular and hyperbolic functions and the summation of trigonometric series.	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	3	2	3	3	3	2	2
CO2	3	3	3	2	2	3	2	2	2	2
CO3	3	3	3	3	3	3	2	2	2	2
CO4	3	2	3	3	2	3	3	3	2	2
CO5	2	2	3	2	2	3	3	2	2	2

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –

“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Reciprocal Equations - Standard form - To increase or decrease the roots of a given equation by a given quantity- Removal of terms- Horner's method – related problems.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	Binomial Series– The following are the deductions from the Binomial Series - Approximations using Binomial Series- The Exponential Series – The Logarithmic series- related problems.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	Inverse matrix -Characteristic equation – Eigen values and Eigen Vectors-Similar matrices - Cayley – Hamilton Theorem (Statement only) - Finding powers of square matrix, Inverse of a square matrix up to order 3, Diagonalization of square matrices - related problems.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	Expansions of $\cos n\theta$ and $\sin n\theta$ - Expansion of $\tan n\theta$ in powers of $\tan \theta$ - Expansion of $\tan(A+B+C+...)$ - Powers of sines and cosines of θ in terms of functions of multiples of θ , Expansions of $\cos^n \theta$, $\sin^n \theta$, $\sin^n \theta \cos^n \theta$ when n is a positive integer - Expansions of $\sin \theta$ and $\cos \theta$ in a series of ascending powers of θ - related problems.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	Hyperbolic functions – Relation between circular and hyperbolic functions - Inverse hyperbolic functions - Logarithm of complex quantities - related problems.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self Study for Enrichment: (Not included for End Semester Examination) Symmetric function of the roots - Partial Fractions- Rank of a matrix - To resolve into factors the expression $x^n - a^n, x^n + a^n$ - Summation of trigonometric series.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

Text Books

1. Manicavachagom Pillay, T.K, Natarajan T, Ganapathy K S (2018). *Algebra, Volume I*. S.Viswanathan (Printers &Publishers), Pvt. Ltd.

2. Sudha S (1998). *Algebra, Analytical Geometry(2D) and Trigonometry*. Emerald Publishers.
3. Manicavachagom Pillay, T.K, Natarajan T, Ganapathy K S (2015). *Algebra, Volume II*. S.Viswanathan (Printers &Publishers), Pvt. Ltd.
4. Narayanan, S, Manicavachagom Pillay, T.K (2013). *Trigonometry*. S.Viswanathan (Printers &Publishers), Pvt. Ltd.

Chapters and Sections

UNIT-I	Chapter VI: Sections 16-17,19, 30 [1]
UNIT-II	Chapter V: Sections 1.1-1.5 [2]
UNIT-III	Chapter II: Sections 8, 16 [3]
UNIT- IV	Chapter III: Sections 1-5 [4]
UNIT- V	Chapter IV: Fully [4] Chapter V : Section 5 [4]

Reference Books

1. David C. Lay, *Linear Algebra and its Applications*, 3rd Ed., Pearson Education Asia, Indian Reprint, 2020.
2. Frank Ayres JR, *Theory and Problems of Plane and Spherical Trigonometry*, Schaum's Outline Series McGraw-Hill Book Company, 1954.
3. Vittal P.R, Malini V, *Algebra, Analytical Geometry and Trigonometry*, Margham Publications, 2010.

Web Links

1. <https://www.youtube.com/watch?v=0HwGGTdrBzg>
2. <https://www.youtube.com/watch?v=BydVprh9NgQ>
3. <https://www.youtube.com/watch?v=r-b4m2-yCt0>
4. <https://www.youtube.com/watch?v=IcBXhQNx4fY>
5. <https://www.youtube.com/watch?v=ZjBcmEeUWXg>

Pedagogy

Power point presentations, Group Discussions, Seminar, Quiz, Assignment.

Course Designer

Dr. R.Divya

CORE COURSE – II (CC)
DIFFERENTIAL CALCULUS
(2023-2024 Onwards)

Semester I	Internal Marks: 25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs /Week	CREDITS
23UMA1CC2	DIFFERENTIAL CALCULUS	CORE	5	4

Course Objective

- **Explore** the basic skills of the students with mathematical methods formatted for their major concepts and train them in basic Differentiation.
- **Analyze** mathematical statements and expressions.
- **Evaluate** the fundamental concepts of differentiation, successive differentiation, and their applications.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Knowledge Level
	On the successful completion of the course, students will be able to	
CO1	Explain the concepts of Calculus.	K1, K2
CO2	Classify the problem models in the respective area.	K3
CO3	Solve various types of problems in the corresponding stream.	K3
CO4	Identify the properties of solutions in the core area.	K3
CO5	Discover the applications of Calculus.	K4

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	2	2	2
CO2	3	2	3	3	3	3	3	3	2	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	2	3	3	2	3	3	2	2	3
CO5	3	2	3	3	2	3	3	3	3	2

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –
“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Successive Differentiation: Introduction (Review of basic concepts) – The n^{th} derivative – Standard results – Fractional expressions – Trigonometrical transformation – Formation of equations involving derivatives – Leibnitz formula for the n^{th} derivative of a product – A complete formal proof by induction.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	Partial Differentiation: Partial derivatives – Successive partial derivatives – Function of a function rule – Total differential coefficient – A special case – Implicit Functions.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	Partial Differentiation (Continued): Homogeneous functions – Partial derivatives of a function of two functions – Maxima and Minima of functions of two variables – Lagrange's method of undetermined multipliers.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	Envelope: Method of finding the envelope – Another definition of envelope – Envelope of family of curves which are quadratic in the parameter – Family of curves will contain two parameters and the two parameters are connected by a relation.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	Curvature: Definition of Curvature – Circle, Radius and Centre of Curvature – Cartesian formula for the radius of curvature – The coordinates of the centre of curvature – Evolutes and Involute – Radius of Curvature when the curve is given in Polar Co-ordinates	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
VI	Self -Study for Enrichment: (Not included for End Semester Examination) Meaning of Derivative : Geometrical interpretation– Feynman's method of differentiation – Taylor's expansion of $f(x,y)$ – p-r equation : pedal equation of a curve.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

Text Book

1. Narayanan.S Manicavachagom Pillay.T.K. (2019). *Calculus Volume-I*. Ananda Book Depot.

Chapters and Sections

UNIT-I	Chapter III	Sections 1.1-1.6, 2.1,2.2
UNIT-II	Chapter VIII	Sections 1.1-1.5
UNIT-III	Chapter VIII	Sections 1.6 ,1.7,4,5
UNIT-IV	Chapter X	Sections 1.1-1.4
UNIT-V	Chapter X	Sections 2.1-2.6

Reference Books

1. Rawat.K.S.(2006). *An Differential Calculus*.1st Edition, Daryaganj, Newdelhi-2:AdhyayanPulishers and distributors, j m d House,Murarlal stre.
2. Arumugam. S and Issac. (2014). *Calculus*. New Gamma Publishing House.
3. Bali. N.P. (2010). *Differential Calculus*. Laxmi Publications (P) Ltd. New Delhi.

Web References

1. <https://www.youtube.com/watch?v=s8hVridQ5IA>
2. <https://freevideolectures.com/course/4224/npTEL-integral-vector-calculus/34>
3. <https://www.youtube.com/watch?v=IQJ0UiM91Z4>
4. <https://www.youtube.com/watch?v=AXqhWeUEtQU>
5. <https://www.youtube.com/watch?v=j5VGo1n8KBY&list=PLpklqhIbn1jrIbgS6UckW39WE04bAFjOS>
6. <https://archive.nptel.ac.in/courses/111/104/111104095/>

Pedagogy

Chalk and Talk, Power point presentation, Group Discussion, Seminar, Assignment and Quiz.

Course Designer

Dr.L.Mahalakshmi

FIRST ALLIED COURSE –I (AC)
MATHEMATICAL STATISTICS
(2023-2024 Onwards)

Semester I	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs/Week	CREDITS
23UMA1AC1	MATHEMATICAL STATISTICS	ALLIED	5	4

Course Objectives

- **Enable** in-depth knowledge of probability.
- **Explore** the concepts of some statistical data.
- **Analyse** the properties of discrete and continuous distributions.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Define the basic concepts in probability, some special distributions, and sampling distributions.	K1
CO2	Explain the properties of probability and the theory of sampling distributions to find solutions of real-life problems.	K2
CO3	Solve problems in probability, some special distributions and sampling distributions.	K3
CO4	Examine the given data and interpret the results	K4
CO5	Analyze probability, and various distributions in the case of solid conclusions about the values of the population parameter.	K4

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	2	2	2
CO2	3	2	3	3	3	3	3	3	2	3
CO3	3	3	2	3	3	3	3	3	3	3
CO4	3	2	3	3	2	3	3	2	2	3
CO5	3	2	3	3	2	3	3	3	3	2

“1”–Slight (Low) Correlation “2” – Moderate (Medium) Correlation

“3”– Substantial (High) Correlation “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Theory of Probability: Introduction – Short History – Definitions of Various Terms – Mathematical or Classical or ‘a Priori’ Probability –Statistical or Empirical Probability –Mathematical Tools: Preliminary Notion of sets–Sets and Elements of Sets – Operations on Sets –Algebra of Sets–Axiomatic approach to Probability–Random Experiment (Sample Space) – Event–Some Illustrations–Algebra of Events–Probability: Mathematical Notion – Probability Function – Laws of Addition of Probabilities–Extension of General Law of Addition of Probabilities– Law of Multiplication or Theorem of Compound Probability–Independent Events– Pair wise Independent Events–Mutually Independent Events– Baye’s theorem.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	Random Variables and Distribution Functions: Random Variable–Distribution Functions – Properties of Distribution Function–Discrete Random Variable –Probability Mass Function – Discrete Distribution Function– Continuous Random Variable –Probability Density Function–Various Measures of Central Tendency, Dispersion, Skewness and Kurtosis for Continuous Probability Distribution – Continuous Distribution Function – Joint Probability Mass Function and Marginal and Conditional Probability Function–Joint Probability Distribution Function–Joint Density Function, Marginal Density Function –The Conditional Distribution Function and Conditional Probability Density Function.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

III	Mathematical Expectation Mathematical Expectation – Addition Theorem of Expectation – Multiplication Theorem of Expectation – Co-variance – Expectation of a Linear Combination of Random Variables – Variance of a Linear Combination of Random Variables – Expectation of a Continuous random variable – Conditional Expectation & Conditional Variance.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	Special Discrete Probability Distributions: Introduction – Discrete uniform Distribution -Bernoulli Distribution : Moments of Bernoulli Distribution-Binomial Distribution: Moments of Binomial Distribution –Recurrence Relation for the Moments of Binomial Distribution – Factorial Moments of Binomial Distribution–Mean Deviation about Mean of Binomial Distribution–Mode of Binomial Distribution – Moment Generating function of Binomial Distribution–Additive Property of Binomial Distribution	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	Special Continuous Probability Distributions: Introduction –Normal Distribution: Normal Distribution as a Limiting Form of Binomial Distribution–Chief Characteristics of the Normal Distribution–Mode of Normal Distribution–Median of Normal Distribution–M.G.F. of Normal Distribution–Cumulant Generating Function (c.g.f.) of Normal Distribution–Moments of Normal Distribution –A Linear Combination of Independent Normal Variates –Fitting of Normal Distribution.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
VI	Self-Study for Enrichment: (Not included for End Semester Examinations) Extension of Multiplication Law of Probability–Independent Random Variables –Generating Functions– Poisson distribution –Exponential Distribution.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

Text Books

1. Gupta.S.C. & Kapoor.V.K (2018), *Elements of Mathematical Statistics*, Sultan Chand & Sons, New Delhi.
2. Gupta. S.C & Kapoor.V.K (2014), *Fundamentals of Mathematical Statistics*, Sultan Chand & Sons, New Delhi.

Chapters and Sections

UNIT-I	Chapter 4: Section 4.1 to 4.8 (omit 4.7.1) [1]
UNIT-II	Chapter 5: Sections 5.1 to 5.5.3, 5.5.5 [1]
UNIT-III	Chapter 6: Sections 6.1 to 6.8 [1]
UNIT-IV	Chapter 8: Sections 8.1 to 8.3, 8.4 (8.4.1 to 8.4.7) [2]
UNIT-V	Chapter 9: Sections 9.1 and 9.2 (9.2.1 to 9.2.8, 9.2.14) [2]

Reference Books

1. Pillai.R.S.N & Bhagavathi (2008) *Statistics, Theory and Practice* , S.Chand & Sons.
2. Bhishma Rao.G.S.S (2011), *Probability and Statistics*, Scitech Publications (India) Pvt Ltd.
3. Veerarajan.T (2010), *Probability, Statistics and Random Processes*, Tata McGraw Hill Education Private Limited.

Web References

1. <https://www.youtube.com/watch?v=ZKkiCC6uCaU&list=PLpEEfNAthorFHzVYKNREgtWJp2R1vTZfi>
2. <https://www.youtube.com/watch?v=jmqZG6roVqU>
3. <https://www.youtube.com/watch?v=gHBL5Zau3NE>
4. <https://www.youtube.com/watch?v=3PWKOiLK41M>
5. <https://www.youtube.com/watch?v=dOr0NKvD31O>
6. <https://www.statisticshowto.com/probability-and-statistics/statistics-definitions/uniform-distribution/>

Pedagogy

Power Point Presentations, Group Discussions, Seminar, Quiz and Assignment.

Course Designers

1. Dr. S. Sasikala
2. Dr. R. Radha

FIRST ALLIED COURSE –II (AP)
PROGRAMMING LANGUAGE USING MATLAB (P)
(2023-2024 Onwards)

Semester I	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs /Week	CREDITS
23UMA1AC2P	Programming Language Using MATLAB (P)	ALLIED	2	2

Course Objective

- **Apply** MATLAB as a simulation tool.
- **Compute** mathematical solutions using MATLAB and develop inter-disciplinary skills.
- **Determine** syntax, semantics, data-types and library functions of numerical computing.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Explain fundamental concepts of MATLAB.	K2
CO2	Illustrate a great numbers of MATLAB commands and how to use them in programming and in many applications of Mathematics.	K2
CO3	Compute simple program for a given problem in MATLAB coding.	K3
CO4	Determine the result and the outcome of any command or script.	K4
CO5	Deduce Mathematical solutions using MATLAB tools.	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	2	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	2	3

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –

“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Listings:

1. Operations using Matrices (Addition, Subtraction, Multiplication, Transpose and Inverse)
2. Basic plotting of variables (Simple and multiple data set).
3. Sorting of given data.
4. Finding the sum of 'n' numbers, sum of square of 'n' numbers, sum of 'n' odd numbers.
5. Finding the roots of a polynomial equation.
6. Solving system of equations using matrices.
7. Finding the Eigen vectors and Eigen values.
8. Generating Fibonacci series.
9. Vector operations.
10. Evaluation of integrals.
11. Finding the derivatives of given order.
12. Operations on sets.
13. Finding rank of a matrix.
14. Solving ordinary differential equations.

Web References

1. <https://www.youtube.com/watch?v=EF4wmV5xBM0>
2. <https://www.youtube.com/watch?v=XsrhAO3r3VY>
3. <https://www.youtube.com/watch?v=aEjeuj5jfLU>
4. <https://www.youtube.com/watch?v=ZBafH5fss1E>
5. <https://www.youtube.com/watch?v=XtiAC4adozQ>
6. <https://www.youtube.com/watch?v=kt8QSkT-M6c>
7. <https://www.youtube.com/watch?v=pi6Dkvs6rP4>
8. <https://www.youtube.com/watch?v=YzEp0jiVvYs>
9. <https://www.youtube.com/watch?v=LFoutvnfP6A>
10. <https://youtu.be/rqWPw21E90A>
11. <https://youtu.be/CUdL4-tJv58>

Pedagogy

Power point presentations, Live Demo, Hands on Training.

Course Designer

Dr. C. Saranya

**CAUVERY COLLEGE FOR WOMEN
(AUTONOMOUS)**

Nationally Accredited with 'A' Grade by NAAC

ISO 9001:2015 Certified

PG AND RESEARCH DEPARTMENT OF MATHEMATICS



**B.Sc., MATHEMATICS
AUTONOMOUS SYLLABUS
(2022-2023 and ONWARDS)**



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)

PG AND RESEARCH DEPARTMENT OF MATHEMATICS

B.Sc MATHEMATICS PROGRAMME STRUCTURE

LEARNING OUTCOME BASED CURRICULUM FRAMEWORK (CBCS-LOCF)

(For the candidates admitted from the Academic year 2022-2023 Onwards)

Semester	Part	Course	Course Title	Course Code	Inst. Hrs. / week	Credits	Exam			Total
							Hrs.	Marks		
								Int	Ext	
III	I	Language Course-III (LC)	காப்பியமும், நாடகமும்	22ULT3	5	3	3	25	75	100
			Hindi Literature & Grammar – III	22ULH3						
			Prose, Textual Grammar and Vakyarachana	22ULS3						
			Intermediate French – I	22ULF3						
	II	English Language Course – II (ELC)	Learning Grammar Through Literature – I	22UE3	6	3	3	25	75	100
	III	Core Course – V (CC)	Analytical Geometry (3D)	22UMA3CC5	4	4	3	25	75	100
		Core Course – VI (CC)	Classical Algebra and Theory of Numbers	22UMA3CC6	5	5	3	25	75	100
		Second Allied Course – I (AC)	Python Programming	22UMA3AC4	5	4	3	25	75	100
		Second Allied Course–II (AP)	Python Programming (P)	22UMA3AC5P	3	2	3	40	60	100
	IV	Generic Elective Course- I (GEC)	Mathematics for Competitive Examinations – I	22UMA3GEC1	2	2	3	25	75	100
			Basic Tamil-I	22ULC3BT1						
			Special Tamil-I	22ULC3ST1						
		Extra Credit Course	SWAYAM	As per UGC Recommendation						
		Total				30	23			

15 Days INTERNSHIP during Semester Holidays

SEMESTER III
CORE COURSE – V (CC)
ANALYTICAL GEOMETRY (3D)
(2022-2023 Onwards)

Semester III	Internal Marks: 25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs /Week	CREDITS
22UMA3CC5	ANALYTICAL GEOMETRY (3D)	CORE COURSE	4	4

Course Objective

- **Understand** the geometrical terminology and idea of the Planes, Straight line, Sphere and Cone.
- **Explain** the properties of four basic three-dimensional shapes.
- **Recognize** three-dimensional shapes in the world around them.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Remember the basic concepts of Straight Line, Plane, the Sphere and the Cone.	K1
CO2	Understand the aspects of Modern Mathematics through Straight Line, Plane, the Sphere and the Cone.	K2
CO3	Relate the Various forms of equation of a plane, Straight line, Sphere and Cone.	K3
CO4	Determine the angle between the plane, the line and infer about coplanar lines and Shortest distance between two lines.	K4
CO5	Evaluate the Problems based on Properties of the Coordinate system of equations.	K5

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	2	2	3
CO2	3	2	3	3	3	3	3	3	2	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	2	3	3	2	3	3	2	2	3
CO5	3	2	3	3	2	3	3	3	3	2

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –

“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Coordinate System: Introduction - Rectangular Cartesian Coordinates - Distance between two Points - Direction Cosines.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Planes: Equation of a Plane – Angle Between two Planes – Angle Bisectors of two Planes.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Straight Lines: Equation of a Straight Line – A Plane and a Line – Equations of Two Skew Lines in a Simple form.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	The Sphere: Introduction – Equation of a Sphere – Tangent Line and Tangent Plane – Section of a Sphere.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Cones : Definition - Equation of a Cone with a conic as Guiding curve - Enveloping Cone of a Sphere.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self Study for Enrichment: (Not included for End Semester Examination) Equations of Two Skew Lines in a Simple Form - The Intersection of Three Planes - Orthogonal Projection on a Plane - Volume of a Tetrahedron - Angle of Intersection of Two Spheres - Quadratic Cones with Vertex at Origin.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Books

1. Arumugam S and Thangapandi Isaac A (2011). *Analytical Geometry 3D and Vector Calculus*. New Gamma Publishing House, Palayamkottai.
2. Shanti Narayanan and Mittal P.K. (2007). *Analytical Solid Geometry*. S. Chand & Company Ltd. New Delhi.

Chapters and Sections

UNIT-I Chapter I: Sections 1.0 - 1.3 [1]

UNIT-II Chapter II: Sections 2.1 - 2.3 [1]

UNIT-III	Chapter III: Sections 3.1 - 3.3 [1]
UNIT- IV	Chapter IV: Sections 4.0 - 4.3 [1]
UNIT- V	Chapter VII: Sections 7.1, 7.1.1, 7.1.2 [2]

Reference Books

1. Duraipandian P, Laxmi Duraipandian and Muhilan D (1984). *Analytical Geometry Three Dimensional*. Emerald Publishers.
2. Pandey H.D, Khan M.Q and Gupta B.N. (2011). *A Text Book of Analytical Geometry and Vector Analysis*. Wisdom Press.
3. Manicavachagom Pillai T.K. and Natarajan T (2009). *A Text book of Analytical Geometry Part II - Three Dimensions*. Viswanathan, S., Printers & Publishers Pvt Ltd.

Web References

1. <https://www.pdfdrive.com/analytical-geometry-of-three-dimensions-e158533348.html>
2. https://sist.sathyabama.ac.in/sist_coursematerial/uploads/SMT1303.pdf
3. <https://school.careers360.com/maths/three-dimensional-geometry-chapter-pge>
4. <https://youtu.be/UXIT-68QvTE>
5. <https://www.youtube.com/watch?v=rbPMX0h2hWQ>

Pedagogy

Power point presentations, Group Discussions, Seminar, Quiz, Assignment.

Course Designer

Dr. P. Sudha

CORE COURSE – VI (CC)
CLASSICAL ALGEBRA AND THEORY OF NUMBERS
(2022-2023 Onwards)

Semester III	Internal Marks: 25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs /Week	CREDITS
22UMA3CC6	CLASSICAL ALGEBRA AND THEORY OF NUMBERS	CORE	5	5

Course Objective

- **Establish** a sound knowledge on theory of equations.
- **Inculcate** the students in applicable algebra.
- **Enable** the students to solve the Problems based on the applications of the theory of numbers.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Remember the relation between roots and co-efficients of Polynomial equations.	K1
CO2	Understand the symmetric functions in solving equations and find sum of r^{th} power of roots.	K2
CO3	Compute transformation of equations and solve Reciprocal equations.	K3
CO4	Determine the inequalities in all manners.	K4
CO5	Evaluate the Problems based on the applications of the theory of numbers	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	2	2	3
CO2	3	2	3	3	3	3	3	3	2	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	2	3	3	2	3	3	2	2	3
CO5	3	2	3	3	2	3	3	3	3	2

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –

“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Relation between the roots and coefficients of Equations – Symmetric function of the roots – Sum of the powers of the roots of an equation.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Newton's theorem on the sum of the power of the roots- Transformations of Equations– Reciprocal equations – To increase or decrease the roots of a given equation by a given quantity.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Form of the quotient and remainder when a polynomial is divided by a binomial – Removal of terms – To form of an equation whose roots are any power of the roots of a given equation – Transformation in general.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Inequalities – Elementary principles – Geometric & Arithmetic means – Weirstrass inequalities – Cauchy inequality.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Theory of Numbers – Prime & Composite numbers – Divisors of a given number N – Euler's function $\phi(N)$ and its value –Integral part of a real number – The highest Power of a prime P contained in $n!$ – Congruences	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self Study for Enrichment: (Not included for End Semester Examination) Descarte's rule of signs– Applications to Maxima & Minima–Fermat's, Wilson's & Lagrange's Theorems.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Books

1. Manicavachagom Pillay.T.K, Natarajan.T, Ganapathy.K.S (2015), *Algebra Volume I* , S.Viswanathan (Printers & Publishers) Private Limited

2. Manicavachagom Pillay.T.K, Natarajan.T, Ganapathy.K.S (2015), *Algebra Volume II*, S.Viswanathan (Printers & Publishers) Private Limited

Chapters and Sections

UNIT-I	Chapter VI: Sections 11 - 13 [1]
UNIT-II	Chapter VI: Sections 14 - 17 [1]
UNIT-III	Chapter VI: Sections 18 - 21 [1]
UNIT- IV	Chapter IV: Sections 1 - 12 [2]
UNIT- V	Chapter V: Sections 1 - 15 [2]

Reference Books

1. Ramakrishna Ghosh, Kantish Chandra Maity (1980). *Higher Algebra (Classical & Modern)*, New Central Book Agency (P0 Ltd.
2. Ivan Niven, Herbert S.Zuckerman, Hugh L. Montgomery (2016). *An Introduction to the Theory of Numbers* , Wiley.
3. Narayanan.S , Hanumantha Rao.R , Manicavachagom Pillay.T.K and P. Kandaswamy (2009). *Ancillary Mathematics*, Viswanathan S. Printers & Publishers Pvt Ltd.

Web References

1. <https://youtu.be/FAPShLAdkto>
2. <https://blog.myrank.co.in/transformation-of-equation/>
3. <https://youtu.be/XJQStun0WnI>
4. https://youtu.be/MNj_e-t9tIs
5. https://artofproblemsolving.com/wiki/index.php/Cauchy-Schwarz_Inequality

Pedagogy

Power point presentations, Group Discussions, Seminar, Quiz, Assignment.

Course Designer

Dr. R.Radha

SECOND ALLIED COURSE – I (AC)
PYTHON PROGRAMMING
(2022-2023 Onwards)

Semester III	Internal Marks: 25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs /Week	CREDITS
22UMA3AC4	PYTHON PROGRAMMING	Allied Course	5	4

Course Objective

- **Understand** the basic principles of Python.
- **Provide** basic idea on functions and concepts of Python programming.
- **Inculcate** the basic techniques of Python programming.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Understand Python's core data types while writing new programs.	K2
CO2	Demonstrate programs using simple Python statements and expressions.	K2
CO3	Interpret the fundamental Python syntax and semantics and be fluent in the use of Python control flow statements.	K2
CO4	Develop algorithmic solutions to simple computational problems.	K3
CO5	Construct Python programs step-wise and Acquire programming skills in core Python.	K3

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	3	3	3	3	3	2	3	3
CO2	3	2	3	3	2	3	3	3	3	2
CO3	3	3	3	2	3	2	3	3	3	3
CO4	3	3	2	3	3	3	3	3	2	3
CO5	2	3	3	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –

“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Basics of Python Programming : Introduction - Python Character Set –Token - Python Core Data Type - The print() Function - Assigning Value to a Variable - Multiple Assignments- Statement in Python – Multiline Statement in Python - Writing Simple Programs in Python - The input() Function - The eval() Function- Formatting Number and Strings - Python Inbuilt Functions.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Operators and Expressions : Introduction - Operators and Expressions - Arithmetic Operators - Membership Operator - Identity Operator - Operator Precedence and Associativity - Changing Precedence and Associativity of Arithmetic Operators - Translating Mathematical Formulae into Equivalent Python Expressions - Bitwise Operator - The Compound Assignment Operator Decision Statements : Introduction - Boolean Type - Boolean Operators - Using Numbers with Boolean Operators - Using String with Boolean Operators - Boolean Expressions and Relational Operators - Decision Making Statements - Conditional Expressions	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Loop Control Statements : - Introduction - The while Loop - The range() Function - The for Loop - Nested Loops - The break Statement - The continue Statement Functions : Introduction - Syntax and Basics of a Function - Use of a Function - Parameters and Arguments in a Function - Variable Length Non-Keyword and Keyword Arguments - The Local and Global Scope of a Variable - The return Statement-	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

	Recursive Functions - The Lambda Function.			
IV	Strings : Introduction - The str class - Basic Inbuilt Python Functions for String - The index[] Operator- Traversing String with for and while Loop - Immutable Strings – The String Operators - String Operations Lists : Introduction - Creating Lists - Accessing the Elements of a List – Negative List Indices - List Slicing [Start : End] - List Slicing with Step Size - Python Inbuilt Functions for Lists - The List Operator – List Comprehensions- List Methods - List and Strings - Splitting a String in List - Passing List to a Function - Returning List from a Function.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Tuples, Sets and Dictionaries - Introduction to Tuples – Sets - Dictionaries Graphics Programming: Drawing with Turtle Graphics : Introduction - Getting Started with the turtle Module - Moving the turtle in any Direction - Moving the turtle to any Location - The Color, Bgcolor, Circle and Speed Method of turtle - Drawing with Colors - Drawing Basic Shapes using Iterations - Changing Color Dynamically Using List - turtles to Create Bar Charts	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self Study for Enrichment: (Not included for End Semester Examination) File Handling – Exception Handling	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Book

Ashok Namdev Kamthane, Amit Ashok Kamthane (2020), *Programming and Problem Solving with PYTHON*, Second Edition, McGraw Hill Education

Chapters and Sections

UNIT-I	Chapter II Sections: 2.1 – 2.14
UNIT-II	Chapter III & IV Sections: 3.1 – 3.10 & 4.1 – 4.8
UNIT-III	Chapter V & VI Sections: 5.1 – 5.7 & 6.1 – 6.9
UNIT- IV	Chapter VII & VIII Sections: 7.1 – 7.8 & 8.1 – 8.14
UNIT- V	Chapter XI & XII Sections: 11.1 – 11.3 & 12.1 – 12.9

Reference Books

1. Jeeva Jose and Sojan Lal P. (2021), *Introduction to Computing and Problem Solving with PYTHON*, Khanna Book Publisng Co. (P) Ltd., New Delhi.
2. Satyanarayana Ch., Radhika Mani M., and Jagadesh B.N. (2018), *Python Programming*, Universities Press, Hyderabad.
3. Dr Nageswara Rao R. (2021), *Core Python Programming*, Dreamtech Press, New Delhi.

Web References

1. <https://www.geeksforgeeks.org>
2. <https://www.python.org>
3. <https://www.tutorialspoint.com>
4. <https://www.pythonforbeginners.com>
5. <https://www.w3schools.com>

Pedagogy

Power point presentations, Group Discussions, Seminar, Quiz, Assignment.

Course Designer

Ms. R. Soundaria

SECOND ALLIED COURSE – II (AP)
PYTHON PROGRAMMING (P)
(2022-2023 Onwards)

Semester III	Internal Marks: 40		External Marks: 60	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs /Week	CREDITS
22UMA3AC5P	PYTHON PROGRAMMING (P)	Allied Course	3	2

Course Objective

- **Explore** python programming language to construct basic programs.
- **Acquire** programming skills in core Python.
- **Analyze** the basics of problem solving.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Understand and apply Python's basic concepts.	K2
CO2	Demonstrate different data types and its usage.	K2
CO3	Build and execute simple Python programs.	K3
CO4	Make use of Python lists, tuples, and dictionaries to represent compound data.	K3
CO5	Develop algorithmic solutions to simple computational problems.	K3

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2	3	3	3	3	3
CO2	3	2	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –

“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

LIST OF PRACTICALS

1. Get inputs from user and display them.
2. Develop a calculator.
3. Implement Decision making and Loop control statements.
4. Create and call an user defined function.
5. Strings and their built-in functions.
6. List and their built-in functions.
7. Working with Tuples.
8. Working with Dictionaries.
9. Bar chart, Pie Chart and Line graph.
10. Plotting 2D and 3D graphs.
11. Create Fibonacci series.
12. Create Pascal Triangle.
13. Performing Matrix operations.
14. Finding roots of an equations.
15. Calculating HCF, LCM and GCD.

Web References

1. <https://www.geeksforgeeks.org>
2. <https://www.python.org>
3. <https://www.tutorialspoint.com>
4. <https://www.pythonforbeginners.com>
5. <https://www.w3schools.com>

Pedagogy

Power point presentations, Group Discussions, Hands on training, Assignment.

Course Designer

Ms. R. Soundaria

GENERIC ELECTIVE COURSE – I (GEC)
ANIMATION TOOLS - I (P)
(2022-2023 Onwards)

Semester III	Internal Marks:40		External Marks: 60	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs/Week	CREDITS
22UCA3GEC1P	Animation Tools - I (P)	GENERIC ELECTIVE COURSE	2	2

Course Objective:

- To impart training on Animation Tools.

Course Outcomes and Cognitive Level Mapping:

Cos	CO STATEMENT	COGNITIVE LEVEL
	On the successful completion of the course, students will be able to	
CO1	Recall pen, and brush tools in Photoshop.	K1
CO2	Apply resolution, grayscale, black and white to an image.	K3
CO3	Using layers, rotation, overlapping of an image.	K3
CO4	Creating custom colours, gradients, grouping of an image.	K5
CO5	Develop an image by applying masks and filters.	K5

Mapping of CO with PSO and PO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	3	2	1	1	3	3	2	3	2
CO2	3	2	3	1	1	3	2	2	3	3
CO3	3	3	3	2	2	3	3	2	3	2
CO4	3	2	3	2	2	3	3	2	3	2
CO5	3	3	3	2	2	3	3	2	2	3

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” indicates there is no correlation.

List of Practicals

1. THE WORKING PLACE (Installing Photoshop & Learning its interface)
2. TOOLS
 - Basic Tools
 - Selection Tools
 - Drawing and Coloring Tools
 - Advanced Tools
 - Text Tools
 - Tools Presets

3. USING BRUSH & PAINT

- Brush Presets, Colors & Shapes
- Create a multicolor real-life image using the brush tool.

4. WORKING WITH SELECTION

- Making Selections with Different Tools
- Modifying an Existing Selection
- Saving and Loading Selections

5. IMAGE SIZE, RESOLUTION, AND COLOR CHANGE

- Changing the size, resolution, and gray scale of an image.
- Convert black and white images into color image.

6. IMAGE MODIFICATION

- Cropping, rotating, overlapping, and superimposing an image.

7. COMMERCIAL BROCHURE

- Develop a commercial brochure with background tints.

8. LAYERS

- Working with layers (creation, deletion, merge).

9. FILTERS AND MASKS

- Applying masks and filtering on images.

10. PLAYING WITH PALETTES

- Arranging Workspace
- Various Palettes

Web References

- <https://helpx.adobe.com/in/photoshop/tutorials.html>
- <https://www.javatpoint.com/photoshop>
- <https://www.photoshopessentials.com/basics/>

Pedagogy

Demonstration, Powerpoint Presentation.

Course Designer

Ms. M. Ellakkiya, Assistant Professor, Department of Computer Applications.

**CAUVERY COLLEGE FOR WOMEN
(AUTONOMOUS)**

Nationally Accredited with 'A' Grade by NAAC

ISO 9001:2015 Certified

PG AND RESEARCH DEPARTMENT OF MATHEMATICS



**B.Sc., MATHEMATICS
AUTONOMOUS SYLLABUS
(2021-2022 and ONWARDS)**



CAUVERY COLLEGE FOR WOMEN(AUTONOMOUS)
PG AND RESEARCH DEPARTMENT OF MATHEMATICS
B.Sc MATHEMATICS COURSE STRUCTURE
(For the candidates admitted in the year 2021-2022)

Sem	Part	Course	Course Title	Course Code	Ins.	Credit	Exam Hours	Marks		Total
					Hrs			Int	Ext.	
V	III	Core Course – VIII (CC)	Abstract Algebra	21UMA5CC8	6	5	3	25	75	100
		Core Course – IX (CC)	Real Analysis	21UMA5CC9	5	5	3	25	75	100
		Core Course – X (CC)	Statics	21UMA5CC10	5	4	3	25	75	100
		Core Course – XI (CC)	Discrete Mathematics	21UMA5CC11	4	3	3	25	75	100
		Major Based Elective- I	Fuzzy Set Theory and its Applications	21UMA5MBE1A	4	3	3	25	75	100
			Astronomy	21UMA5MBE1B						
			Artificial Intelligence	21UMA5MBE1C						
	IV	Skill Based Elective-II	Statistical Tools and Techniques – R Programming (Practical)	19UMA5SBE2AP	2	2	3	40	60	100
			Statistical Tools and Techniques – SPSS (Practical)	19UMA5SBE2BP						
		Skill Based Elective -III	LaTeX (Practical)	21UMA5SBE3AP	2	2	3	40	60	100
			Numerical methods with MATLAB Programming (Practical)	21UMA5SBE3BP						
		UGC Jeevan Kaushal Life Skills	Professional Skills	19UGPS	2	2	3	25	75	100
	V	Extra credit course	Swayam Online Course	To be fixed Later	As per UGC Recommendations					
TOTAL					30	26	-	-	-	800

15 Days INTERNSHIP during Semester Holidays

MAJOR BASED ELECTIVE – I (C)
ARTIFICIAL INTELLIGENCE
2021-2022 Onwards

Semester – V	ARTIFICIAL INTELLIGENCE	Hours/Week -4	
Major Based Elective - I (C)		Credits - 3	
Course Code - 21UMA5MBE1C		Internals 25	Externals 75

Objectives

- To understand the basics of Artificial Intelligence
- To enrich the knowledge on various reasoning technique
- To provide the basics of Logic Programming and Prolog

Course Outcomes

On the successful completion of the course, the students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Define the basic principles, models, and algorithms used in Artificial Intelligence.	K1
CO2	Understand knowledge representation	K2
CO3	Describe knowledge on various reasoning techniques	K2
CO4	Apply AI techniques to predict solution to the real world problems	K3
CO5	Explore the concepts of Logic programming and Prolog	K4

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4	PO5
CO1	S	M	M	M	M
CO2	S	S	M	M	S
CO3	S	S	M	S	M
CO4	S	S	S	S	M
CO5	S	S	M	S	M

S-Strong; M-Medium; L-Low;

MAJOR BASED ELECTIVE – I (C)
ARTIFICIAL INTELLIGENCE
SYLLABUS

UNIT I (12 HOURS)

Introducing Artificial Intelligence: Introduction - The Turing Test - Goals of AI - Roots of AI - Artificial Consciousness - Techniques Used in AI - Sub-fields of AI - Perception, Understanding, and Action - Physical Symbol System Hypothesis - Considerations for Knowledge Representation - Knowledge Representation Using Natural Language.

UNIT II (12 HOURS)

Logic and Reasoning Patterns: Introduction – Argumentation Theory - Role of Knowledge - Propositional Logic - Reasoning Patterns- Proof Methods- Non monotonic Reasoning - Hilbert and the Axiomatic Approach

UNIT III (12 HOURS)

First Order Predicate Logic: Introduction - Representation in Predicate Logic - Syntax and Semantics - Conversion to Clausal Form - Substitutions and Unification - Resolution Principle - Complexity of Resolution Proof - Interpretation and Inferences - Most General Unifiers - Unfounded Sets

UNIT IV (12 HOURS)

Rule Based Reasoning: Introduction – An Overview of RBS – Forward Chaining – Backward Chaining – Forward versus Backward Chaining - Typical RB System – Other Systems of Reasoning.

UNIT V (12 HOURS)

Logic Programming and Prolog: Introduction – Logic Programming – Interpretation of Horn clauses in Rule Chaining – Logic Versus Control – Expressing Control Information – Running Simple Programs – Some Built-in Predicates – Recursive Programming – List Manipulation – Arithmetic Expression – Backtracking, Cuts and Negation – Efficiency Consideration for Prolog Programs.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHER/ EDITION	YEAR OF PUBLICATION
1.	K.R.Chowdhary	Fundamentals of Artificial Intelligence	Springer Nature India Private Limited, New Delhi	2020

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHER/ EDITION	YEAR OF PUBLICATION
1.	Sridhar Seshadri	A first course in Artificial Intelligence and Agent Technology	1 st Edition, LAP LAMBERT Academic Publishing, India	2017
2.	Wolfgang Ertel	Introduction to Artificial Intelligence	Springer International Publishing G, Germany	2017
3.	Kevin Knight, Elaine Rich, Shivashankar B. Nair	Artificial Intelligence	MC Graw Hill Education, India	2017

Web References

1. <https://www.ibm.com/topics/artificial-intelligence>
2. <https://u-next.com/blogs/artificial-intelligence/logic-programming/>
3. <https://www.inf.ed.ac.uk/teaching/courses/aipp/>

Pedagogy

Chalk and Talk, PPT, Discussion, Assignment, Demo, Quiz and Seminar.

Course Designer

Ms. A. Jabeen, Assistant Professor, Department of Computer Applications.

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)
Nationally Accredited with 'A' Grade by NAAC
ISO 9001:2015 Certified
TIRUCHIRAPPALLI

PG AND RESEARCH DEPARTMENT OF MATHEMATICS



M. Sc. MATHEMATICS
AUTONOMOUS SYLLABUS
2023 – 2024 and onwards



Cauvery College for Women (Autonomous), Trichy-18
PG & Research Department of Mathematics
M.Sc Mathematics
Learning Outcome Based Curriculum Framework (CBCS-LOCF)
For the Candidates admitted from the Academic year
2023-2024 onwards

Semester	Course	Course Title	Course Code	Inst. Hrs. / week	Credits	Exam			Total
						Hrs.	Marks		
							Int.	Ext.	
I	Core Course– I (CC)	Algebraic Structures	23PMA1CC1	6	5	3	25	75	100
	Core Course – II (CC)	Real Analysis I	23PMA1CC2	6	5	3	25	75	100
	Core Course –III (CC)	Ordinary Differential Equations	23PMA1CC3	6	5	3	25	75	100
	Core Course - IV (CC)	Probability Theory	23PMA1CC4	6	5	3	25	75	100
	Discipline Specific Elective Course-I (DSE)	A. Number Theory and Cryptography	23PMA1DSE1A	6	3	3	25	75	100
		B. Graph Theory and Applications	23PMA1DSE1B						
		C. Programming in C++ and Numerical Methods	23PMA1DSE1C						
	Total				30	23	-	-	-

Semester I	Internal Marks: 25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs /Week	CREDITS
23PMA1CC1	ALGEBRAIC STRUCTURES	CORE COURSE	6	5

Course Objectives

- **Gain** expertise and confidence in proving theorems to progress in mathematical studies.
- **Acknowledge** the students with experience in axiomatic mathematics while keeping in close touch with the computational aspects of the subject.
- **Enhance** students to understand principles, concepts necessary to formulate, solve and analyze Algebra.

Prerequisite

Basic knowledge of sets, relations and functions.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Apply the Basic Concepts of Counting Principle, Sylow's Theorems, Modules, Linear Transformations and Real Quadratic Forms	K1, K2, K3
CO2	Examine in detail about Direct Products, Canonical Forms Canonical Forms, and Normal Transformations	K3
CO3	Solve problems related to Sylow's theorems, Canonical Forms and Linear Transformations	K4
CO4	Classify the Counting Principle, Linear and Normal Transformation	K4
CO5	Analyze the concepts of Sylow's Theorems, Solvability by Radicals, Canonical Forms, Linear and Normal Transformation.	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	2	2	2
CO2	3	2	3	3	3	3	3	3	2	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	2	3	3	2	3	3	2	2	3
CO5	3	2	3	3	2	3	3	3	3	2

“1” – Slight (Low) Correlation –

“2” – Moderate (Medium) Correlation –

“3” – Substantial (High) Correlation –

“-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Counting Principle - Sylow's theorems	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Direct products - Finite abelian groups – Modules – Solvability by Radicals	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Linear Transformations: Canonical forms : Triangular form - Canonical forms : Nilpotent transformations	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Canonical forms: A Decomposition of V: Jordan form - Canonical forms : Rational canonical form	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Trace and Transpose - Hermitian, Unitary and Normal Transformations - Real Quadratic Forms	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self-Study for Enrichment (Not included for End Semester Examinations) Galois Groups over the Rationals - The Algebra of Linear Transformation – Characteristics Roots-Matrices – Determinants	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Book

I.N. Herstein (2016), *Topics in Algebra (II Edition)*, Wiley Eastern Limited, New Delhi.

Chapters and Sections

UNIT- I	Chapter 2: Sections 2.11 and 2.12
UNIT- II	Chapter 2: Section 2.13 and 2.14 Chapter 4: Section 4.5 Chapter 5 : Section 5.7
UNIT- III	Chapter 6: Sections 6.4 and 6.5
UNIT- IV	Chapter 6 : Sections 6.6 and 6.7
UNIT- V	Chapter 6 : Sections 6.8, 6.10 and 6.11

Reference Books

1. David S. Dummit and Richard M. Foote (2004), *Abstract Algebra*, Wiley and Sons, Third Edition.
2. Joseph A. Gallian, (1999), *Contemporary Abstract Algebra*, Narosa Publishing House, Fourth Edition.
3. M. Artin, (1991), *Algebra*, Prentice Hall of India.
4. P. B. Bhattacharya, S. K. Jain, and S. R. Nagpaul (1997), *Basic Abstract Algebra* (II Edition) Cambridge University Press, Indian Edition

Web References

1. https://www.youtube.com/watch?v=g7L_r6zw4-c
2. <https://www.youtube.com/watch?v=VSB8jjsn9xI>
3. <https://www.youtube.com/watch?v=WwndchnEDS4>
4. <http://mathforum.org>
5. <http://ocw.mit.edu/ocwweb/Mathematics>
6. <http://www.opensource.org>

Pedagogy

Power Point Presentations, Group Discussions, Seminar, Quiz, Assignment.

Course Designer

Dr. K. Kalaiarasi

Semester I	Internal Marks: 25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs /Week	CREDITS
23PMA1CC2	REAL ANALYSIS - I	CORE	6	5

Course Objectives

- **Define** the notion of functions of bounded variation, Riemann – Stieltjes integration, convergence of infinite series, uniform convergence.
- **Explore** the fundamental concepts of Riemann – Stieltjes integration and infinite series.
- **Apply** the idea of construction of infinite series and power series in various fields.

Prerequisite

UG level real analysis concepts

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Explain the concepts of functions of bounded variation, Riemann-Stieltjes integral, infinite series, power series, double sequences and sequence of functions.	K2
CO2	Apply the concepts of functions of bounded variation, Riemann-Stieltjes integral, infinite series, power series, double sequences and sequence of functions and its properties in various fields.	K3
CO3	Classify the concepts of functions of bounded variation, Riemann-Stieltjes integral, infinite series, power series, double sequences and sequence of functions.	K4
CO4	Evaluate Riemann-Stieltjes integral, infinite series, power series, double sequences and sequence of functions.	K5
CO5	Construct various mathematical proofs using the properties of Riemann-Stieltjes integral, infinite series, power series, double sequences and sequence of functions.	K6

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	2	3	3	3
CO2	3	3	3	3	3	2	3	3	2	3
CO3	3	3	3	3	3	2	3	2	3	3
CO4	3	3	3	3	3	3	3	2	2	3
CO5	3	3	3	3	3	3	2	3	3	3

“1” – Slight (Low) Correlation –

“2” – Moderate (Medium) Correlation –

“3” – Substantial (High) Correlation –

“-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Functions of bounded variation: Introduction - Properties of monotonic functions - Functions of bounded variation - Total variation - Additive property of total variation - Total variation on $[a, x]$ as a function of x - Functions of bounded variation expressed as the difference of two increasing functions - Continuous functions of bounded variation. Infinite Series: Infinite Series - Absolute and conditional convergence - Dirichlet's test and Abel's test - Rearrangement of series - Riemann's theorem on conditionally convergent series.	18	CO1, CO2, CO3, CO4, CO5	K2, K3, K4, K5, K6
II	The Riemann - Stieltjes Integral: Introduction - Notation - The definition of the Riemann-Stieltjes integral - Linear Properties - Integration by parts - Change of variable in a Riemann-Stieltjes integral - Reduction to a Riemann Integral – Step functions as integrators – Reduction to a Riemann – Stieltjes integral to a finite sum - Euler's summation formula - Monotonically increasing integrators, Upper and lower integrals - Additive and linearity properties of upper and lower integrals - Riemann's condition - Comparison theorems.	18	CO1, CO2, CO3, CO4, CO5	K2, K3, K4, K5, K6
III	The Riemann-Stieltjes Integral: Integrators of bounded variation - Sufficient conditions for the existence of Riemann-Stieltjes integrals - Necessary conditions for the existence of Riemann-Stieltjes integrals - Mean value theorems for Riemann-Stieltjes integrals – The integral as a function of the interval – Second fundamental theorem of integral calculus - Change of variable in a Riemann integral - Second Mean-Value Theorem for Riemann integrals - Riemann-Stieltjes integrals depending on a parameter - Differentiation under integral sign – Interchanging the order of integration – Lebesgue's criterion for existence of Riemann integrals.	18	CO1, CO2, CO3, CO4, CO5	K2, K3, K4, K5, K6
IV	Infinite Series and infinite Products: Double sequences - Double series - Rearrangement theorem for double series - A sufficient condition for equality of iterated series - Multiplication of series – Cesaro summability - Infinite products. Power Series: Power series - Multiplication of power series - The Taylor's series generated by a function - Bernstein's theorem - Abel's limit theorem - Tauber's theorem.	18	CO1, CO2, CO3, CO4, CO5	K2, K3, K4, K5, K6
V	Sequences of Functions: Pointwise convergence of sequences of functions - Examples of sequences of real-valued functions – Definition of uniform convergence - Uniform convergence and continuity – The Cauchy condition for uniform convergence - Uniform convergence of infinite series of functions - Uniform convergence and Riemann-Stieltjes integration – Nonuniformly convergent sequences that can be integrated term by term - Uniform convergence and differentiation - Sufficient conditions for uniform convergence of a series - Mean convergence.	18	CO1, CO2, CO3, CO4, CO5	K2, K3, K4, K5, K6
VI	Self Study for Enrichment: (Not included for End Semester Examinations) Alternating Series – Complex-valued Riemann-Stieltjes integrals – Euler's product for the Riemann zeta function – A space-filling curve – Uniform convergence and double sequences.	-	CO1, CO2, CO3, CO4, CO5	K2, K3, K4, K5, K6

Text Book

Tom M. Apostol. (2002). *Mathematical Analysis (Second Edition)*. Narosa Publishing House.

Chapters and Sections

UNIT-I	Chapter 6:	Sections 6.1 – 6.8
	Chapter 8:	Sections 8.5, 8.8, 8.15, 8.17, 8.18
UNIT-II	Chapter 7:	Sections 7.1 – 7.14
UNIT-III	Chapter 7:	Sections 7.15 – 7.26
UNIT- IV	Chapter 8:	Sections 8.20 – 8.26
	Chapter 9:	Sections 9.14, 9.15, 9.19, 9.20, 9.22, 9.23
UNIT- V	Chapter 9:	Sections 9.1 – 9.6, 9.8 – 9.11, 9.13

Reference Books

1. Robert G. Bartle and Donald R. Sherbert. (2019). *Introduction to Real Analysis (Fourth Edition)*. Wiley India Pvt. Limited.
2. Walter Rudin. (1986). *Principles of Mathematical Analysis (Third Edition)*. McGraw-Hill Book Company.
3. Royden H.L. (2003). *Real Analysis (Third Edition, Nineth Reprint)*. PHI Learning Private Limited, New Delhi.

Web References

1. <https://youtu.be/SMSzqCV91rQ>
2. <https://youtu.be/qVaFEF1NpLY>
3. <https://tinyurl.com/yu8vrpnt>
4. <https://youtu.be/8FhIY5kjDqE>
5. https://youtu.be/Vx004k9r_YQ
6. <https://tinyurl.com/236r88xp>
7. <https://tinyurl.com/4y3m4daj>

Pedagogy

Power Point Presentations, Group Discussions, Seminar, Quiz, Assignment.

Course Designer

Dr. S. Vidhya

SEMESTER I	INTERNAL MARKS: 25		EXTERNAL MARKS: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS /WEEK	CREDITS
23PMA1CC3	ORDINARY DIFFERENTIAL EQUATIONS	CORE COURSE	6	5

Course Objectives

- **Recognize** certain basic types of second order homogeneous and non-homogeneous ODEs for which exact solutions may be obtained and to apply the corresponding methods of solution.
- **Qualitative Analysis** of Solutions of Initial value problems.
- **Analyze** the concepts of existence and uniqueness of solutions.

Prerequisite

UG level Calculus and Differential Equations

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Define initial value problems, linear dependence and independence, regular singular points, successive approximation of homogeneous and non-homogeneous ordinary differential equations	K1
CO2	Understand the physical phenomena modeled by ordinary differential equations and dynamical systems.	K2
CO3	Examine the solutions of ordinary differential equations using appropriate methods and give examples.	K3
CO4	Discriminate the Qualitative properties of solutions for Initial value problems, convergence of successive approximations of ordinary differential equations.	K4
CO5	Analyse initial value problems, regular singular points, successive approximations of ordinary differential equations and use various theoretical ideas and results.	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	2	2	3	3	3	3	2	3
CO2	3	2	3	3	3	2	3	3	2	3
CO3	3	2	3	3	3	3	3	3	2	3
CO4	3	2	3	3	3	3	3	3	2	3
CO5	3	2	3	3	3	3	3	2	2	3

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –
“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Linear equations with constant coefficients: Introduction- The Second order homogeneous equations-Initial value problems for second order equations-Linear dependence and independence- A formula for the Wronskian- The Non-homogeneous equation of order two.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Linear equations with constant coefficients: The Homogeneous equation of order n –Initial value problems for n-th order equations- Equations with real constants- The non-homogeneous equation of order n - A special method for solving the non-homogeneous equation - Algebra of constant coefficient operators.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Linear equation with variable coefficients: Introduction - Initial value problems for the homogeneous equation - Solutions of the homogeneous equation – The Wronskian and linear independence – Reduction of the order of a homogeneous equation – The non-homogeneous equation – Homogeneous equations with analytic coefficients-The Legendre equation.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Linear equation with Regular singular points: Introduction – The Euler equation – Second order equations with regular singular points - an example – Second order equations with regular singular points – the general case- The Exceptional cases – The Bessel equation- The Bessel equation(continued).	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Existence and uniqueness of solutions to first order equations: Introduction - Equation with variables separated – Exact equations – The method of successive approximations – The Lipschitz condition – Convergence of the successive approximations.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self-Study for Enrichment : (Not included for End Semester Examinations) Justification of the power series method- A convergence proof- Regular singular points at infinity- Non-local existence of solutions- Approximations to, and uniqueness of, solutions.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Book

Earl A. Coddington (2005), A introduction to ordinary differential equations, Prentice-Hall of India Private Ltd., New Delhi.

Chapters and Sections

UNIT- I	Chapter 2:	Sections 1 to 6
UNIT- II	Chapter 2:	Sections 7 to 12
UNIT- III	Chapter 3:	Sections 1 to 8
UNIT- IV	Chapter 4:	Sections 1 to 4 and 6 to 8
UNIT- V	Chapter 5:	Sections 1 to 6

Reference Books

1. George F Simmons (1974), Differential equations with applications and historical notes, Tata McGraw Hill, New Delhi.
2. M.D.Raisinghania (2001), Advanced Differential Equations, S.Chand & Company Ltd. New Delhi .
3. B.Rai, D.P.Choudary and H.I. Freedman (2002), A Course in Ordinary Differential Equations, Narosa Publishing House, New Delhi.

Web References

1. https://youtu.be/xZsniBazjfl?list=PLbwJuBHc3YzUIgPk82CIm-doYjZa_SeKe
2. https://youtu.be/CgNVZCog-64?list=PLbwJuBHc3YzUIgPk82CIm-doYjZa_SeKe
3. <https://youtu.be/dkpeZHeU1xo>
4. https://www.cs.bgu.ac.il/~leonid/ode_bio_files/Ionascu_LectNotes.pdf
5. <https://www.math.iitb.ac.in/~siva/afs07.pdf>
6. https://www.youtube.com/watch?v=IWm6Coa3_bQ
7. <https://www.youtube.com/watch?v=1HUnrokDN0U>

Pedagogy

Power Point Presentations, Group Discussions, Seminar, Quiz, Assignment.

Course Designer

Dr. G. Janaki

Semester I	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs / Week	CREDITS
23PMA1CC4	PROBABILITY THEORY	CORE	6	5

Course Objectives

- **Introduce** axiomatic approach to probability theory.
- **Study** some statistical characteristics, discrete and continuous distribution functions and their properties.
- **Analyze** the characteristic function and basic limit theorems of probability.

Prerequisite

UG level Probability and Statistics.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Acquire the knowledge of basic probability and probability distributions.	K1
CO2	Understand various theorems on probability and their use in solving problems in various diversified situations.	K2
CO3	Calculate moments, Characteristic functions, distribution function, probability generating functions, to solve problems applying characteristic functions	K3
CO4	Illustrate the theory of probability, random variables, probability distribution with suitable examples	K3
CO5	Find solution of real life problems under the concept of probability and probability distributions.	K4

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	SO3	SO4	SO5	O1	O2	O3	O4	O5
CO1	3	3	3	2	3	3	3	2	2	3
CO2	3	2	3	3	3	3	3	3	2	3
CO3	3	3	2	3	3	3	3	3	3	3
CO4	3	2	3	3	2	3	3	2	2	3
CO5	3	2	3	3	2	3	3	3	3	2

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” indicates there is no Correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Random Events and Random Variables: Preliminary remarks - Random events and operations performed on them –The system of axioms of the theory of probability – Application of Combinatorial formulas for computing probabilities – conditional probability – Bayes Theorem – Independent events – The concept of a random variable – Distribution Function – Random variables of the discrete and continuous type - Functions of random variables – Multidimensional random variables – Marginal Distributions – Conditional Distributions.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Parameters of the Distribution of a random variable: Expected values - Moments – The Chebyshev inequality – Absolute moments – Order parameters – Moments of random vectors – Regression of the first type.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Characteristic Functions: Properties of characteristic functions – The characteristic function and moments – semi-invariants – The characteristic function of the sum of independent random variables – Determination of distribution function by the Characteristic function – The characteristic function of multidimensional random vectors.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Some Probability Distributions: One-point and two-point distributions – The Bernoulli scheme. The Binomial distribution – The Poisson scheme. The generalized Binomial distribution – The Polya – Hypergeometric distributions – Poisson (discrete) distribution – Uniform – normal – gamma – Beta distributions.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Limit Theorems : Preliminary remarks – Stochastic convergence – Bernoulli's law of large numbers – The convergence of a sequence of distribution functions – Levy-Cramer Theorem – de Moivre-Laplace Theorem – Lindeberg-Levy Theorem – Lapunov Theroem – Poisson's, Chebyshev's and Khintchin's laws of large numbers.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self-Study for Enrichment: (Not included for End Semester Examinations) Independent random variables – Functions of multidimensional random variables - Regression of the second type - Probability generating functions – Cauchy and Laplace distributions – The Gnedenko Theorem – The strong law of large numbers.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Books

M. Fisz(1963), *Probability Theory and Mathematical Statistics*, John Wiley and Sons, New York.

Chapters and Sections

UNIT-I	Chapter 1: Sections 1.1 to 1.7, Chapter 2 : Sections 2.1 to 2.7.
UNIT-II	Chapter 3 : Sections 3.1 to 3.7.
UNIT-III	Chapter 4 : Sections 4.1 to 4.6.
UNIT- IV	Chapter 5 : Section 5.1 to 5.9.
UNIT- V	Chapter 6 : Sections 6.1 to 6.4, 6.6 to 6.9, 6.11.

Reference Books

1. K.L. Chung(1974). *A course in Probability*, Academic Press, New York.
2. V.K. Rohatgi(1988). *An Introduction to Probability Theory and Mathematical Statistics*, Wiley Eastern Ltd., New Delhi, (3rd Print).
3. B.R. Bhat(1999). *Modern Probability Theory* (3rd Edition), New Age International (P)Ltd, New Delhi.

Web References

1. <http://mathforum.org>
2. <http://ocw.mit.edu/ocwweb/Mathematics>
3. <http://www.opensource.org>
4. <http://www.probability.net>
5. http://onlinecourses.nptel.ac.in/noc22_ma81/preview

Pedagogy

Power Point Presentations, Group Discussions, Seminar, Quiz and Assignment.

Course Designers

1. Dr. S. Premalatha.
2. Dr. E. Litta.

Semester - I	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HOURS / WEEK	CREDITS
23PMA1DSE1A	NUMBER THEORY AND CRYPTOGRAPHY	DISCIPLINE SPECIFIC ELECTIVE	6	3

Course Objectives

- **Explore** fundamental concepts of divisibility, Congruences and primes.
- **Analyze** the quadratic Residues, The Mobius Inversion formula, Diophantine equations and their problems.
- **Apply** the ideas of Pythagorean triangle and The Chinese remainder theorem to solve problems

Prerequisite

- Familiarity in concepts of Theory of Numbers
- Familiarity in concepts of Abstract Algebra.
- Coding, Decoding concepts.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Understand basic concepts of Number theory and Cryptography	K2
CO2	Classify algorithms and formulas based on the concepts of Number theory and Cryptography.	K3
CO3	Ascertain the notions of Number theory and Cryptography.	K4
CO4	Evaluate the concepts of Number theory and Cryptography in problem solving.	K5
CO5	Develop mathematical ideas in Divisibility concepts, Quadratic residues, Arithmetic functions, Diophantine Equations and cryptography.	K6

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	2	3	3
CO4	3	3	3	3	3	3	3	2	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation –

“3” – Substantial (High) Correlation –

“2” – Moderate (Medium) Correlation –

“-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	DIVISIBILITY AND CONGRUENCES: Divisibility – Congruences – Solutions of Congruences - Chinese Remainder Theorem, Primitive Roots and Power Residues.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	QUADRATIC RECIPROCITY AND QUADRATIC FORMS: Quadratic residues – Quadratic reciprocity – The Jacobi symbol - Sum of two squares.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	SOME FUNCTIONS OF NUMBER THEORY: Greatest Integer function-Arithmetic functions – The Mobius Inversion formula.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	SOME DIOPHANTINE EQUATIONS: The equation $ax + by = c$ – Simultaneous linear equations – Pythagorean triangles – Assorted Examples- Fermat's Last Theorem.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Classical Encryption Techniques Symmetric Cipher Model -Cryptography -Cryptanalysis Substitution Techniques- Caesar Cipher – Affine cipher- Monoalphabetic Ciphers -Playfair Cipher -Hill Cipher - Polyalphabetic Ciphers- One-Time Pad -Transposition Techniques Block Ciphers and the Data Encryption Standard Block Cipher Principles -Stream Ciphers and Block Ciphers-The Feistel Cipher-Feistel Cipher Structure- Feistel Decryption Algorithm Public-Key Cryptography and RSA Principles of Public-Key Cryptosystems- Public-Key Cryptosystems -Applications for Public-Key Cryptosystems -Requirements for Public-Key Cryptography -Public-Key Cryptanalysis The RSA Algorithm - Description of the Algorithm- Computational Aspects -The Security of RSA Key Management; Other Public-Key Cryptosystems Key Management - Distribution of Public Keys - Distribution of Secret Keys Using Public-Key Cryptography Diffie-Hellman Key Exchange -The Algorithm- Key Exchange Protocols - Man-in-the-Middle Attack Elliptic Curve Cryptography -Analog of Diffie-Hellman Key Exchange- Elliptic Curve Encryption/Decryption - Security of Elliptic Curve Cryptography	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self Study for Enrichment: (Not included for End Semester Examinations) Primes – Binary quadratic forms – Recurrence functions – Ternary quadratic forms – Elliptic Curve Arithmetic	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Books

1. Ivan Niven, Herbert S. Zuckerman & Hugh L. Montgomery (2016) Reprint, An Introduction to the Theory of Numbers, (Fifth Edition, Reprint 2016). Wiley Publishers
2. William Stallings (2009), Cryptography and Network Security - Principles and Practices, (4th edition), Pearson Education Inc. and Dorling Kindersley Publishing Inc.

Chapters and Sections

UNIT-I	Chapter 1[1]:	Sections 1.2
	Chapter 2[1]:	Sections 2.1-2.3, 2.8.
UNIT-II	Chapter 3[1]:	Sections 3.1-3.3, 3.6
UNIT-III	Chapter 4[1]:	Sections 4.1- 4.3
UNIT-IV	Chapter 5[1]:	Sections 5.1 – 5.3
UNIT-V	Chapter 2 [2]:	Sections 2.1-2.3
	Chapter 3 [2]:	Sections 3.1
	Chapter 9 [2]:	Sections 9.1-9.2
	Chapter 10[2]:	Sections 10.1, 10.2 & 10.4

Reference Books

1. David M. Burton (2012), Elementary Number Theory (Sixth Edition), Tata McGraw Hill Education Private Limited, New Delhi.
2. Telang S. G. (2005), Number Theory (Reprint 2001), Tata McGraw Hill Education Private Limited, New Delhi.
3. Neal Koblitz (1994), A Course in Number theory and Cryptography, (2nd edition), Springer – Verlag Newyork Inc.,

Web References

1. https://www.youtube.com/watch?v=ChG_7jeNRHo
2. <https://www.youtube.com/watch?v=e8DtzQkjOMQ>
3. <https://www.youtube.com/watch?v=3W91U-aNclQ>
4. <https://www.youtube.com/watch?v=bg6CksAkZ-k>
5. <https://www.youtube.com/watch?v=4dVTIX4bwP0>
6. <https://www.youtube.com/watch?v=khfIH1H6iUg>
7. <https://www.youtube.com/watch?v=BC2BdenKsYs>
8. <https://www.tutorialspoint.com/what-is-discrete-logarithmic-problem-in-information-security>
9. <https://www.interviewbit.com/blog/0-1-knapsack-problem/>

Pedagogy

Power point presentations, Group Discussions, Seminar, Quiz, Assignment.

Course Designer

Dr. P.Saranya

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)

Nationally Accredited with 'A' Grade by NAAC

ISO 9001:2015 Certified

TIRUCHIRAPPALLI

PG AND RESEARCH DEPARTMENT OF MATHEMATICS



M. Sc. MATHEMATICS

AUTONOMOUS SYLLABUS

2022 – 2023 and onwards



Cauvery College for Women (Autonomous), Trichy-18
PG & Research Department of Mathematics
M.Sc Mathematics
Learning Outcome Based Curriculum Framework (CBCS-LOCF)
For the Candidates admitted from the Academic year
2022-2023 onwards

Semester	Course	Course Title	Course Code	Inst. Hrs. / week	Credits	Exam			Total
						Hrs.	Marks		
							Int	Ext.	
III	Core Course– (CC)	Topology	22PMA3CC8	6	5	3	25	75	100
	Core Course – IX (CC)	Discrete Mathematics	22PMA3CC9	6	5	3	25	75	100
	Core Course - X (CC)	Measure and Integration	22PMA3CC10	6	5	3	25	75	100
	Core Choice Course– II (CCC)	A. Cyber Security	22PGCS3CCC2A	3(T)+ 2(P)	4	3	25	75	100
		B. Introduction to Coding Theory	22PMA3CCC2B	5					
		C. Mechanics	22PMA3CCC2C						
	Discipline Specific Elective Course-III (DSE)	A. Analytical Skills for Competitive Examinations	22PMA3DSE3A	4	3	2	-	100	100
		B. Stochastic Processes	22PMA3DSE3B			3	25	75	
		C. Fuzzy Sets and their Applications	22PMA3DSE3C						
	Generic Elective Course -I (GEC)	Foundation for Logical Thinking	22PMA3GEC1	3	2	3	25	75	100
	Extra Credit Course	SWAYAM	As per UGC Recommendation						
Total				30	24	-	-	-	600

Semester III	Internal Marks: 25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs /Week	CREDITS
22PMA3CC8	TOPOLOGY	CORE	6	5

Course Objective

- **Define** the notion of topological spaces and characterize the properties of convergence, continuity, connectedness and compactness of the spaces.
- **Explore** the fundamental concepts of Product topology and box topology.
- **Apply** the idea of construction of the continuous real valued functions on normal spaces.

Prerequisite

Basic Knowledge of Real Analysis.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Describe the basic concepts of topological spaces, continuous functions, connectedness, compactness, countability and separation axioms.	K2
CO2	Apply the topological concepts in various fields.	K3
CO3	Ascertain the notions of topological concepts, continuous functions, connectedness, compactness, countability and separation axioms.	K4
CO4	Evaluate the concepts of topological spaces, continuous functions, connectedness, compactness, countability and separation axioms.	K5
CO5	Develop the ideas involving topological spaces, continuous functions, connectedness, compactness, countability and separations axioms in different proofs.	K6

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	2	3	3
CO2	3	3	3	3	3	3	2	2	3	3
CO3	3	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	2	2	3	3
CO5	3	3	3	3	3	3	2	2	3	3

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –

“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Topological Spaces: Topological Spaces - Basis for a Topology - The Order Topology - The Product Topology on $X \times Y$ - The Subspace Topology - Closed Sets and Limit Points.	18	CO1, CO2, CO3, CO4, CO5	K2, K3, K4, K5, K6
II	Continuous Functions: Continuous Functions - The Product Topology - The Metric Topology – The Metric Topology (continued).	18	CO1, CO2, CO3, CO4, CO5	K2, K3, K4, K5, K6
III	Connectedness: Connected Spaces - Connected Subspaces of the Real Line - Components and Local Connectedness.	18	CO1, CO2, CO3, CO4, CO5	K2, K3, K4, K5, K6
IV	Compactness: Compact Spaces - Compact Subspaces of the Real Line - Limit Point Compactness.	18	CO1, CO2, CO3, CO4, CO5	K2, K3, K4, K5, K6
V	Countability and Separation Axioms: The Countability Axioms - The Separation Axioms - Normal Spaces - The Urysohn Lemma - The Urysohn Metrization Theorem - The Tietze Extension Theorem – The Tychonoff Theorem.	18	CO1, CO2, CO3, CO4, CO5	K2, K3, K4, K5, K6
VI	Self Study for Enrichment: (Not included for End Semester Examinations) Topological Groups – The Quotient Topology – Nets - Local Compactness – Imbeddings of Manifolds.	-	CO1, CO2, CO3, CO4, CO5	K2, K3, K4, K5, K6

Text Book

James R. Munkres (2013). *Topology (Second Edition)*. PHI Learning Private Limited, New Delhi.

Chapters and Sections

UNIT-I	Chapter 2:	Sections 12 - 17
UNIT-II	Chapter 2:	Sections 18 - 21
UNIT-III	Chapter 3:	Sections 23 - 25
UNIT- IV	Chapter 3:	Sections 26 - 28

UNIT- V	Chapter 4:	Sections 30 – 35
	Chapter 5:	Section 37

Reference Books

1. Mangesh G. Murdeshwar. (1999). *General Topology (Second Edition)*. New Age International (P) Limited, New Delhi.
2. George F. Simmons. (2016). *Introduction to Topology and Modern Analysis (26th Reprint)*. McGraw Hill Education (India) Private Limited, New Delhi.
3. Stephen Willard. (1998). *General Topology*. Dover Publications, INC, Mineola, New York.

Web References

1. <https://youtu.be/jHQ7qEPkKkw>
2. <https://youtu.be/6-J75PtYC5E>
3. <https://tinyurl.com/yk65k76h>
4. <https://youtu.be/VDifg7aTXzg>
5. <https://youtu.be/bAkevWcBsxs>
6. <https://youtu.be/CGADr19iWSO>
7. <https://tinyurl.com/32cbv45m>

Pedagogy

Power Point Presentations, Group Discussions, Seminar, Quiz, Assignment.

Course Designer

Dr. S. Vidhya

CO4	3	3	3	3	3	3	3	2	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –
“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	COMPUTABILITY AND FORMAL LANGUAGES: Introduction-Russell’s Paradox and Noncomputability- Languages-Phrase Structure Grammars- Types of Grammars and Languages.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	PERMUTATIONS, COMBINATIONS AND DISCRETE PROBABILITY: Introduction- The Rules of Sum and Product – Permutations – Combinations – Generations of Permutations and Combinations - Discrete Probability – Conditional Probability.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	RELATIONS AND FUNCTIONS: Introduction – Relational Model for Data Bases – Properties of Binary Relations – Equivalence Relations and Partitions – Partial Ordering Relations and Lattices – Chains and Antichains- A job - Scheduling Problem.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	FINITE STATE MACHINES: Introduction – Finite State Machines – Finite State Machines as Models of Physical Systems – Equivalent Machines – Finite State Machines as Language Recognizers.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	BOOLEAN ALGEBRAS: Lattices and Algebraic System – Principle of Duality – Basic properties of Algebraic Systems defined by Lattices – Distributive and Complimented Lattices- Boolean Lattices and Boolean Algebras- Uniqueness of Finite Boolean Algebras - Boolean Functions and Boolean Expressions.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self Study for Enrichment: (Not included for End Semester Examinations) Ordered sets - Information and Mutual Information - Functions and the Pigeonhole Principle - Finite State Languages and Type-3 Languages - Propositional Calculus	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Book

C.L.Liu, (2000), *Elements of Discrete Mathematics(Second Edition)*, Tata McGraw-Hill Publishing Company Limited.

Chapters and Sections

UNIT-I Chapter 2: Sections 2.1, 2.2, 2.4-2.6.

UNIT-II	Chapter 3:	Sections 3.1-3.7
UNIT-III	Chapter 4:	Sections 4.1- 4.7
UNIT-IV	Chapter 7:	Sections 7.1 – 7.5
UNIT-V	Chapter 12:	Sections 12.1-12.7

Reference Books

1. J.P.Tremblay, R.Manohar,(2011),*Discrete Mathematical, Structures with Applications to Computer Science*, Tata McGraw Hill.
2. Ralph P. Grimaldi, B. V. Ramana(2006), *Discrete and Combinatorial Mathematics*, Pearson Education,.
3. Kenneth H. Rosen, (2008), *Discrete Mathematics & its Applications with combinatorics and graph theory*, Tata McGraw Hill Company Limited, New Delhi.

Web References

1. <https://gyires.inf.unideb.hu/GyBITT/14/ch02s03.html>
2. <https://www.youtube.com/watch?v=rSBC86Tdkw>
3. <https://www.youtube.com/watch?v=0HiMb-yf-nI>
4. <https://www.youtube.com/watch?v=XJnIdRXUi7A>
5. <https://www.youtube.com/watch?v=wbBY2tTqXDA>
6. https://www.youtube.com/watch?v=Qa6csfkK7_I
7. <https://plato.stanford.edu/entries/russell-paradox/>
8. <https://youtu.be/WW-NPtIzHwk>

Pedagogy

Power point presentations, Group Discussions, Seminar, Quiz, Assignment.

Course Designer

Dr. P. Saranya.

Semester III	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs/Week	CREDITS
22PMA3CC10	MEASURE AND INTEGRATION	CORE	6	5

Course Objectives

- Gain the knowledge to construct Lebesgue measure and its properties.
- Compute Lebesgue integrals by convergence theorems and Fubini's theorem.
- Familiarize the concepts of Measure theory.

Prerequisite

- Basic knowledge in Real Analysis

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Describe fundamental concepts of Measure and Integration through examples.	K2
CO2	Predict the important notions and their connections of Measure theory.	K3
CO3	Ascertain the concepts of Measure in real line, abstract spaces, product spaces, integration of functions of a real variables and convergence	K4
CO4	Evaluate mathematical proofs of results in Measure and Integration.	K5
CO5	Examine the methods of analysis that can be applied to real world problems.	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	3	3	3	3	3	3	2	3
CO2	3	2	3	3	3	3	3	3	3	2
CO3	3	2	3	3	3	3	3	3	2	2
CO4	3	2	2	3	3	3	3	3	3	2
CO5	3	2	3	3	3	3	3	3	2	2

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –

“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Measure On the Real Line : Lebesgue Outer Measure – Measurable Sets – Regularity – Measurable Functions – Borel and Lebesgue Measurability	18	CO1, CO2, CO3, CO4, CO5	K2, K3, K4, K5
II	Integration of Functions of a Real variable : Integration of Non-negative Functions – The General Integral – Riemann and Lebesgue Integrals.	18	CO1, CO2, CO3, CO4, CO5	K2, K3, K4, K5
III	Abstract Measure Spaces : Measures and outer measures – Extension of a Measure – Uniqueness of the Extension – Completion of a Measure	18	CO1, CO2, CO3, CO4, CO5	K2, K3, K4, K5
IV	Inequalities and the L^p spaces : The L^p Spaces – Convex Functions. Convergence : Convergence in Measure – Almost Uniform Convergence.	18	CO1, CO2, CO3, CO4, CO5	K2, K3, K4, K5
V	Signed Measures and their Derivatives : Signed Measures and the Hahn Decomposition – The Jordan decomposition Measure and Integration in a Product Space : Measurability in a Product Space – The product measure and Fubini's theorem.	18	CO1, CO2, CO3, CO4, CO5	K2, K3, K4, K5
VI	Self-Study for Enrichment (Not included for End Semester Examination) Hausdorff Measures on the Real line – Integration of Series – Measure spaces – Integration with respect to a Measure – The Radon-Nikodym theorem – Lebesgue Measure in Euclidean space.	-	CO1, CO2, CO3, CO4, CO5	K2, K3, K4, K5

Text Book

G.De Barra, (2003). Measure Theory and Integration, New Age International (P) Limited.

Chapters and Sections

UNIT-I	Chapter 2:	Sections 2.1 to 2.5
UNIT II	Chapter 3:	Sections 3.1, 3.2 and 3.4

UNIT-III	Chapter 5:	Sections 5.1 to 5.4
UNIT-IV	Chapter 6:	Sections 6.1, 6.2
	Chapter 7:	Sections 7.1, 7.2
UNIT-V	Chapter 8:	Sections 8.1, 8.2
	Chapter 10:	Sections 10.1, 10.2

Reference Books

1. Munroe. M.K. (1971). *Measure and Integration*, Addison - Wesley Publishing Company.
2. Jain, P.K, Gupta, V.P. (2003). *Lebesgue Measure and Integration*, New Age International Pvt Limited Publishers New Delhi.
3. Richard L. Wheeden and Antoni Zygmund (1977). *Measure and Integral: An Introduction to Real Analysis*, Marcel Dekker Inc.
4. Inder, K. Rana (1997). *An Introduction to Measure and Integration*, Narosa Publishing House, New Delhi.

Web References

1. <https://www.youtube.com/watch?v=TG67nsccqeQ>
2. <https://www.youtube.com/watch?v=PGPZ0P1PJfw>
3. <https://www.youtube.com/watch?v=qAYX9Koo87o>
4. https://www.youtube.com/watch?v=eu-6_wpTE-A
5. <https://link.springer.com/book/10.1007/978-3-540-34514-5>
6. <http://www.math.chalmers.se/~borell/MeasureTheory.pdf>

Pedagogy

Assignment, Seminar, Lecture, Quiz, Group discussion, Brain storming, e-content.

Course Designer

Dr. V. Geetha

Semester III	Internal Marks: -		External Marks:100	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs / Week	CREDITS
22PMA3DSE3A	ANALYTICAL SKILLS FOR COMPETITIVE EXAMINATIONS	DISCIPLINE SPECIFIC ELECTIVE	4	3

Course Objectives

- **Analyse** the concepts concerned with linear and algebraic properties that are preserved under continuous deformations of objects.
- **Enhance** the students to develop analytical thinking and the study of continuity and connectivity
- **Motivate** the advance treatment of theory at a fairly understandable level.

Prerequisite

Basic Knowledge of algebra and vector spaces.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO 1	On the successful completion of the course, students will be able to Remember the basic concepts and objective of algebra and vector spaces.	K1
CO 2	Illustrate the properties of algebra and vector spaces to find the solution.	K2
CO 3	Apply different terminologies of algebra and linear algebra	K3
CO 4	Classify the various properties in algebra and transformation	K4
CO 5	Interpret the problems involved in algebra and vector spaces	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	SO3	SO4	SO5	D1	D2	D3	D4	D5
CO1	3	3	3	3	3	3	3	2	2	3
CO2	3	2	3	3	3	3	3	3	2	3
CO3	3	3	2	3	3	3	3	3	3	3
CO4	3	2	3	3	2	3	3	2	2	3
CO5	3	2	3	3	2	3	3	3	3	2

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Permutations – Combinations - Pigeon-hole Principle - Inclusion-Exclusion Principle – Derangements - Fundamental Theorem of Arithmetic - Divisibility in \mathbb{Z} – Congruences - Chinese Remainder Theorem - Euler's ϕ - Function - Primitive Roots.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Vector Spaces – Subspaces – Linear dependence – Basis – Dimension – Algebra of linear transformations.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Algebra of matrices – Rank and Determinant of matrices – Linear equations - Eigenvalues - Eigenvectors – Cayley –Hamilton theorem.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Matrix representation of linear transformations – Change of basis - Canonical forms – Diagonal forms – Triangular forms –Jordan forms.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Inner product spaces – Ortho normal basis – Quadratic forms –Reduction and Classification of Quadratic forms.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self-Study for Enrichment: (Not included for End Semester Examinations) The Double Dual - Lagrange Interpolation – Modules – Direct-Sum Decomposition Theorem – Operators on Inner Product Spaces.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Books

- [1] Joseph A. Gallian, (1999), Contemporary Abstract Algebra, Narosa Publishing House, Fourth Edition.
- [2] David M. Burton (2012), Elementary Number Theory (Sixth Edition), Tata McGraw Hill Education Private Limited, New Delhi.

- [3] Kumaresan.S (2000), Linear Algebra: A Geometric Approach , Prentice hall.
- [4] Seymour Lipschutz (2001), Marc Lipson, Schaum's outlines- Linear Algebra ,Mcgraw Hill Education, Third Edition.
- [5] Krishnamurthy, Mainra V P and Arora JL (1976), Introduction to linear Algebra, East West Press, New Delhi.
- [6] Vasistha. A. R, Linear Algebra (2006), Krishna Prakashan media (P).
- [7] Stephen. H, Friedberg (2004) , Linear Algebra, Prentice Hall of India Pvt Ltd.

Reference Books

- [1] Telang S. G. (2005), Number Theory (Reprint 2001), Tata McGraw Hill Education Private Limited, New Delhi.
- [2] David S. Dummit and Richard M. Foote, (2004), Abstract Algebra, Wiley and Sons, Third Edition.
- [3] Kenneth Hoffman and R. Kunze (1984): Linear Algebra, Phi Learning Private Limited, 2nd Edition.

Web References

1. https://www.google.com/search?q=csir+net+mathematical+science+solved+question+papers&tbm=vid&ei=FeE0ZI7uILqOseMP_oSWyAw&start=10&sa=N&ved=2ahUKEwjOzIv8_aDAhU6R2wGHX6CBckQ8tMDegQIFhAE&biw=1366&bih=600&dpr=1#fpstate=ive&vld=cid:ee12b87c,vid:6iCmTnhgMOY.
2. https://www.google.com/search?q=csir+net+mathematical+science+solved+linear+algebra+question+papers&biw=1366&bih=600&tbm=vid&ei=UeI0ZOmOLuWcseMP_IXwA4&ved=0ahUKEwipS_6DAhVITmwGHfzHBeg4FBDh1QMIDQ&uact=5&oq=csir+net+mathematical+science+solved+linear+algebra+question+papers&gs_lcp=Cg1nd3Mtd2l6LXZpZGVvEAM6BAgAEB46CAgAEIoFEIYDOgYIABAEa06CgghEKABEMMEEAo6CAghEKABEMMEOGQIIRAKULwGWM0tYLY6aABwAHgAgAGAA4gBsheSAQgwLjEyLjluMpgBAKABAcABAQ&scient=gws-wiz-video#fpstate=ive&vld=cid:dffaef48,vid:ItF4GBWtdwQ
3. https://www.google.com/search?q=csir+net+mathematical+science+solved+linear+algebra+question+papers&biw=1366&bih=600&tbm=vid&ei=UeI0ZOmOLuWcseMP_IXwA4&ved=0ahUKEwipS_6DAhVITmwGHfzHBeg4FBDh1QMIDQ&uact=5&oq=csir+net+mathematical+science+solved+linear+algebra+question+papers&gs_lcp=Cg1nd3Mtd2l6LXZpZGVvEAM6BAgAEB46CAgAEIoFEIYDOgYIABAEa06CgghEKABEMMEEAo6CAghEKABEMMEOGQIIRAKULwGWM0tYLY6aABwAHgAgAGAA4gBsheSAQgwLjEyLjluMpgBAKABAcABAQ&scient=gws-wiz-video#fpstate=ive&vld=cid:20257e30,vid:okGkqdNAyuQ
4. <https://www.youtube.com/watch?v=bbQ0uPTLZzo>
5. <https://www.youtube.com/watch?v=3KqG8Mc6C40>
6. <https://www.youtube.com/watch?v=RoYIu6LbSnI>
7. <https://www.youtube.com/watch?v=rgxyxcTwvuo>
8. https://www.youtube.com/watch?v=y_57UcnWHfU
9. <https://www.cuemath.com/numbers/the-fundamental-theorem-of-arithmetic/>
10. <https://www.khanacademy.org/computing/computer-science/cryptography/modern-crypt/v/euler-s-totient-function-phi-function>

Pedagogy

Power Point Presentations, Group Discussions, Seminar, Quiz, Assignments.

Course Designer

Ms. V. ManiMozhi

Semester : III	Internal Marks:40		External Marks:60	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22PCS3GEC1P	DATA ANALYSIS (P)	GENERIC ELECTIVE	3	2

Course Objective

- To provide fundamental concepts of data analysis
- To interpret, summarize and present numerical data using Excel
- To explore, analyse, and visualise data in Python

Prerequisites

Basic Computer Knowledge

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	Recall and understand the different types of data analysis and their use cases	K1, K2
CO2	Apply Exploratory Data Analysis on a real-world dataset	K3
CO3	Analyze the various methods and functions in Excel	K4
CO4	Compare and recommend external libraries in Python for analysing the data	K4, K5
CO5	Create powerful and dynamic Excel dashboard	K6

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO 1	PO 2	PO 3	PO 4	PO 5
CO1	3	2	3	3	2	3	3	2	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	2	2	3	3	2	2	3	2	3	2
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	2

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“-” indicates there is no correlation

Exercises

Using MS-Excel

1. Importing data
2. Demonstrate the usage of essential Functions and methods
3. Publish worksheet as web page with interactivity
4. Using PivotTables and Charts to create dashboards
5. Connect multiple slicers to the pivot tables

Using Python

1. Working with libraries
2. Importing and exporting data
3. Cleaning and preparing data
4. Replacing strings with numbers
5. Exploratory Data Analysis

Web References

1. <https://www.analyticsvidhya.com/blog/2021/11/a-comprehensive-guide-on-microsoft-excel-for-data-analysis/>
2. https://www.academia.edu/34282340/Excel_data_analysis_tutorial
3. <https://www.datacamp.com/courses/data-analysis-in-excel?>
4. <https://www.myexcelonline.com/blog/connect-slicers-to-multiple-excel-pivot-tables/>
5. <https://www.geeksforgeeks.org/data-analysis-with-python/>
6. <https://www.geeksforgeeks.org/data-analysis-with-scipy/?ref=rp>

Pedagogy

Demonstration

Course Designer

Dr.K.Reka

ANNEXURE I

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)

NATIONALLY ACCREDITED (III CYCLE) WITH “A” GRADE BY NAAC

ISO 9001:2015 Certified

TIRUCHIRAPPALLI – 620 018

PG AND RESEARCH DEPARTMENT OF PHYSICS



B.Sc., PHYSICS SYLLABUS

(2023-2024 and Onwards)



Cauvery College for Women (Autonomous)

PG & Research Department of Physics

B.Sc., Physics

LEARNING OUTCOMES BASED CURRICULUM FRAMEWORK (CBCS-LOCF)

(For the Candidates admitted from the Academic year 2023-2024 and onwards)

Semester	Part	Course	Course Title	Course Code	Inst. Hrs. / week	Credits	Exam			Total
							Hrs.	Marks		
								Int	Ext	
I	I	Language Course-I(LC)	பொதுத்தமிழ் – 1	23ULT1	6	3	3	25	75	100
			Hindi ka Samanya Gyan aur Nibandh	23ULH1						
			Poetry, Grammar and History of Sanskrit Literature	23ULS1						
			Foundation Course: Paper I- French I	23ULF1						
	II	English Language Course- I(ELC)	General English -I	23UE1	6	3	3	25	75	100
	III	Core Course – I(CC)	Properties of Matter and Acoustics	23UPH1CC1	5	5	3	25	75	100
		Core Practical - I (CP)	Physics Practical 1	23UPH1CC1P	3	3	3	25	75	100
		First Allied Course- I (AC)	Calculus and Fourier Series	22UPH1AC1	4	3	3	25	75	100
		First Allied Course- II (AC)	Algebra, Analytical Geometry of 3D & Trigonometry	22UPH1AC2	4	3	3	25	75	100
	IV	Ability Enhancement Compulsory Course-I (AECC)	Value Education	23UGVE	2	2	-	100	-	100
	Total				30	22				700

THEORY	
Attendance	3
Library	3
Seminar/Quiz/ Assignment	4
CIA - I	7.5
CIA – II	7.5
Total	25

PRACTICAL	
Observation	5
Record	5
Continuous Performance in Practical	5
Model Practical	10
Total	25

Semester I	Internal Marks: 25			External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS	
23UPH1CC1	PROPERTIES OF MATTER AND ACOUSTICS	CC-I	5	5	

Course Objectives

- To build the elastic behavior in terms of three moduli of elasticity and working of torsion pendulum.
- To apply the concept of bending of beams and analyze the expression, quantify, and understand nature of materials.
- To study the concept of surface tension and viscosity of fluids and learn about an analogous solution to many engineering problems
- To analyze simple harmonic motions mathematically and understand the concept of resonance and set up experiment to evaluate frequency of vibration.
- To understand the concepts of acoustics and the significance of building construction. Able to apply ultrasonic knowledge in real life.

Pre-requisites

- Knowledge about the concepts of elasticity and bending moment
- Fundamental knowledge of capillarity, viscosity of various liquids
- Develop the idea of formula, frequency of vibration and factors affecting the architectural acoustics

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the Course, the Student will be able to	Cognitive Level
CO 1	Understand the basic ideas of Physical properties of different states of matter and sound	K1, K2
CO 2	Analyze the characteristics of elasticity, viscosity, surface tension and the requisites of good acoustics	K3
CO 3	Evaluate the ideas of elasticity and excess pressure of surface tension in fluids and analyze the capillarity nature in liquids	K4
CO 4	Apply the concepts of moduli of elasticity, surface tension, viscosity, waves and acoustics	K3, K5
CO 5	Develop the idea of bending of beams, empirical relations between surface tension and temperature, stokes formula, frequency of vibration of strings and factors affecting the architectural acoustics	K4

Mapping of CO with PO and PSO

Cos	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	3	3	3	2	1	3	2	3	2	1
CO 2	3	3	2	3	1	3	2	3	2	2
CO 3	3	3	2	1	1	3	3	2	2	1
CO 4	3	3	3	2	2	3	3	2	3	1
CO 5	3	3	3	2	1	3	3	2	2	1

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” – indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	ELASTICITY Hooke's law-stress-strain diagram- Elastic constants- Poisson 's ratio -relation between elastic constants and Poisson 's ratio -Work done in stretching and twisting a wire-twisting couple on a cylinder-rigidity modulus by static torsion-torsional pendulum (with and without masses)	10	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	BENDING OF BEAMS Cantilever -Expression for bending moment-expression for depression at the loaded end of the cantilever -oscillations of a cantilever-expression for time period-experiment to find Young 's modulus-non-uniform bending-experiment to determine young's modulus by Koenig 's method-uniform bending-expression for elevation-experiment to determine Young's modulus using microscope	13	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	FLUID DYNAMICS: <i>Surface Tension:</i> definition-molecular forces-Excess pressure over curved surface-application to spherical and cylindrical drops and bubbles-determination of surface tension - Jaeger's method-variation of surface tension with temperature <i>Viscosity:</i> Definition- Streamline and turbulent flow- Rate of flow of liquid in a capillary tube -Poiseuille's formula-corrections-terminal velocity and stoke's formula-variation of viscosity with temperature	22	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	WAVES AND OSCILLATIONS Simple Harmonic Motion (SHM)-differential equation of SHM-graphical representation of SHM-Composition of two S.H.M in a straight line and at right angles-Lissajous's figures-Free, Damped, Forced vibrations - Resonance and sharpness of resonance Laws of transverse vibration in strings - Determination of AC frequency using sonometer - Determination of frequency using Melde's string apparatus	10	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	ACOUSTICS OF BUILDINGS AND ULTRASONICS: Intensity of sound-Decibel-Loudness of sound-Reverberation- Sabine's reverberation formula-acoustic intensity-factors affecting the acoustics of buildings <i>Ultrasonic waves:</i> -Production of ultrasonic waves-Piezoelectric crystal method-Magnetostriction effect-application of ultrasonic waves	20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

VI	SELF STUDY FOR ENRICHMENT: (Not to be included for External Examination) Rigidity modulus of different materials - I- shaped griders and its uses - surface tension of soap bubble - sonic waves and its types – application of acoustics.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
----	---	---	-------------------------------------	--------------------------------

Text Books

1. Murugesan, R., (2012). *Properties of Matter and Acoustics*. (3rd edition) S.Chand& Co, New Delhi.
2. Mathur, D.S., (2010). *Elements of Properties of Matter*. (1st edition) S. Chand & Company, New Delhi.
3. Khanna, D.R., & Bedi, R.S., (1969). *Textbook of Sound*. (7th edition) Atmaram and sons, New Delhi.
4. Subrahmanyam, N., & BrijLal., (2015). *Textbook of Sound*. (2nd edition) Vikas Publishing House, Chennai.

Reference Books

1. Smith, C.J., (1960). *General Properties of Matter and Acoustics*. Orient Longman Publishers, Hyderabad.
2. Gulati, H.R., (1977). *Fundamentals of General Properties of Matter*. (5th edition) R. Chand& Co, New Delhi.
3. French, AP., (1973). *Vibration and waves*. (2nd edition), MIT Introductory Physics, Arnold-Heinmann, India.

Web References

1. <https://www.biolinscientific.com/blog/what-are-surfactants-and-how-do-they-work>
2. <http://hyperphysics.phy-astr.gsu.edu/hbase/permot2.html>
3. <https://www.youtube.com/watch?v=gT8Nth9NWPM>
4. <https://www.youtube.com/watch?v=m4u-SuaSu1s&t=3s>
5. <https://www.biolinscientific.com/blog/what-are-surfactants-and-how-do-they-work>
6. <https://learningtechnologyofficial.com/category/fluid-mechanics-lab/>
7. <http://www.sound-physics.com/>
8. <http://nptel.ac.in/courses/112104026/>

Pedagogy

Chalk and Talk, Assignment, Group discussion and quiz

Course Designer

Dr.S.Gowri

Semester I	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
23UPH1CC1P	PHYSICS PRACTICAL 1	CP-I	3	3

Course Objectives

- To help students to enhance their experimental skills.
- To gain hands-on experience with a variety of techniques.
- To learn the basic principles and procedures of laboratory work.

Pre-requisites

- Basic knowledge on usage of scientific apparatus.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the Course, the Student will be able to	
CO 1	Select the equipment and get the necessary accessories.	K1
CO 2	Demonstrate the use of equipment for various measures.	K2
CO 3	Construct the experiment by arranging and assembling the equipment.	K3
CO 4	Solve the physical quantity using the relevant formula after gathering accurate data through observations. Keep a detailed record of all laboratory activities.	K3
CO 5	Apply experimental approaches to correlate with physics theory to develop practical understanding.	K3

Mapping of CO with PO and PSO

COs	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	1	1	1	2	1	3	2	1	2	1
CO 2	2	3	2	2	2	3	3	1	2	1
CO 3	1	1	2	3	1	3	2	1	3	1
CO 4	2	3	3	3	2	1	3	1	3	2
CO 5	3	2	3	3	3	1	3	2	3	2

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” indicates there is no correlation

Syllabus

LIST OF EXPERIMENTS (Any 8)

1. Determination of rigidity modulus without mass using Torsional pendulum.
2. Determination of rigidity modulus with masses using Torsional pendulum.
3. Determination of Young's modulus by uniform bending – load depression graph.
4. Determination of Young's modulus by non-uniform bending – scale & telescope
5. Determination of Young's modulus by cantilever – load depression graph.
6. Determination of rigidity modulus by static torsion.
7. Determination of surface tension & interfacial surface tension by drop weight method.
8. Determination of co-efficient of viscosity by Stokes' method – terminal velocity.
9. Determination of viscosity by Poiseuille's flow method.
10. Determination of g using compound pendulum.

Text Book

1. Ouseph, C.C., Rao, U.J., Vijayendran, V., (2016). *Practical Physics and Electronics*. S.Viswanathan, Printers & Publishers Pvt Ltd., Chennai.

Reference Book

1. Prof.Namboodirippad, M.N., Prof..Daniel, P.A., (1982). *B.Sc., Practical Physics*. G.B.C. Publications, Cochin.

Web References

1. <https://vlab.amrita.edu/?sub=1&brch=280&sim=550&cnt=1>
2. <https://vlab.amrita.edu/index.php?sub=1&brch=280&sim=1518&cnt=4>
3. <https://vlab.amrita.edu/?sub=1&brch=280&sim=602&cnt=2>
4. <https://vlab.amrita.edu/?sub=1&brch=280&sim=210&cnt=2>

Pedagogy

Demonstration, practical sessions, and viva voce

Course Designer

Dr.N.Manopradha

FIRST ALLIED COURSE-I (AC)
CALCULUS AND FOURIER SERIES

(For B.Sc Physics & Chemistry)

(2022-2023 and Onwards)

Semester I	Internal Marks: 25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs / Week	CREDITS
22UPH1AC1/ 22UCH1AC1	CALCULUS AND FOURIER SERIES	ALLIED	4	3

Course Objective

- Explore the students with mathematical methods formatted for their major concepts and train them in basic Integrations.
- Analyze mathematical statements and expressions.
- Evaluate the fundamental concepts of Differentiation and Integration.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Explain the concepts of Calculus and Fourier series	K1,K2
CO2	Classify the problem models in the respective area.	K3
CO3	Solve various types of problems in the corresponding stream.	K3
CO4	Identify the properties of solutions in the core area.	K3
CO5	Discover the applications of Calculus and Fourier series.	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	2	2	2	3	2	2	2	2
CO2	3	2	2	2	2	3	2	2	2	2
CO3	3	2	2	2	2	3	2	2	2	2
CO4	3	2	2	2	2	3	2	2	2	2
CO5	3	2	2	2	2	3	2	2	2	2

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –

“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Successive Differentiation: The n^{th} derivative – Standard results – Method of splitting the fractional expressions into partial fractions - Trigonometrical transformation – Formation of equations involving derivatives – Leibnitz formula for the n^{th} derivative of a product (proof not needed) – A complete formal proof by induction (proof not needed) - Curvature- Circle, radius and center of curvature - Cartesian formula for the radius of curvature–Simple problems in all these.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	Evaluation of integrals: Integration of Rational algebraic functions– Rule (a) – Rule (b) Integration of the form $\int \frac{lx+m}{ax^2+bx+c} dx$ – Rule (c)- Integration of Irrational functions : Integration of the form $\int \frac{px+q}{\sqrt{ax^2+bx+c}} dx$ – Integration of the form $\int \frac{dx}{(x+p)\sqrt{ax^2+bx+c}}$ - Integration of the form $\int \frac{dx}{a+b \cos x}$.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	Reduction Formula: Properties of definite integrals –Reduction formula (when n is a positive integer) for 1] $\int e^{ax} x^n dx$ 2] $\int x^n \cos ax dx$ 3] $\int \sin^n x dx$ 4] $\int_0^{\frac{\pi}{2}} \sin^n x \cos^m x dx$ (without proof) and illustrations.	13	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	Double and Triple Integrals: Definition of the double integral-Evaluation of Double integral (Problems Only)- Change of order and evaluation of the double integral (Problems only).	10	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	Fourier Series: Definition of Fourier Series – Finding the Fourier Coefficients for a given periodic function with period 2π - Even and Odd functions –Half range Fourier series.	10	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

VI	<p>Self-Study for Enrichment : (Not to be included for External examination)</p> <p>Radius of curvature when the curve is in Polar co-ordinates - (i) $\int \frac{dx}{ax^2 + bx + c}$ (ii) $\int \frac{dx}{\sqrt{ax^2 + bx + c}}$ - (1)</p> <p>$\int \cos^n x dx$ (2) $\int_0^{\frac{\pi}{2}} \cos^n x dx$ -Triple Integrals in simple cases(Problems Only)- Development in cosine series - Development in sine series.</p>	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
----	--	---	-------------------------	----------------

Text Books

1. Narayanan, S & Manichavasagam Pillai, T.K. (2015). *Calculus Volume I*. S. Viswanathan Pvt Limited.
2. Narayanan, S & Manichavasagam Pillai, T.K. (2015). *Calculus Volume II*. S. Viswanathan Pvt Limited.
3. Narayanan, S & Manichavasagam Pillai, T.K. (2015). *Calculus Volume III*. S. Viswanathan Pvt Limited.

UNIT-I	Chapter 3:Sections 1.1 to 1.6,2.1,2.2[1]
	Chapter 10:Sections 2.1 to 2.3 [1]
UNIT-II	Chapter 1:Sections 7.1,7.3,7.4,8(CASE II, CASE V), 9 [2]
UNIT-III	Chapter 1:Sections 11,13.1 to 13.5 [2]
UNIT-IV	Chapter 5:Sections 2.1,2.2,4 [2]
UNIT-V	Chapter 6:Sections 1to 4[3]

Reference Books

1. Sankarappan, S. Arulmozhi,G. (2006). *Vector Calculus, Fourier series and Fourier Transforms*. Vijay Nicole Imprints Private Limited.
2. Vittal, P.R.(2014). *Allied Mathematics*. Margham Publications.
3. Singaravelu, A.(2003). *Differential Calculus and Trigonometry*. R Publication.

Web Links

1. <https://www.youtube.com/watch?v=tBtF3Lr-VLk&t=64s>
2. <https://www.youtube.com/watch?v=Z4oSGuAZrZM>
3. https://www.youtube.com/watch?v=w6llnAQX_f8
4. <https://www.youtube.com/watch?v=LMcj8o0ERNE>
5. <https://www.youtube.com/watch?v=GAwQGCyWy0>
6. <https://www.youtube.com/watch?v=9X3ggehCFII>

Pedagogy

Power point presentations, Group Discussions, Seminar, Quiz, Assignment.

Course Designers

1. Dr. P. Saranya
2. Ms.L.Mahalakshmi
3. Ms.P.Geethanjali

FIRST ALLIED COURSE-II (AC)
ALGEBRA, ANALYTICAL GEOMETRY OF 3D & TRIGONOMETRY
 (For B.Sc Physics & Chemistry)
(2022-2023 and Onwards)

Semester I	Internal Marks: 25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs / Week	CREDITS
22UPH1AC2/ 22UCH1AC2	ALGEBRA, ANALYTICAL GEOMETRY OF 3D & TRIGONOMETRY	ALLIED	4	3

Course Objective

- Analyze the mathematical methods formatted for their major concepts.
- Evaluate the problems in Algebra and Trigonometry.
- Explain the basics of Three-Dimensional geometry.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Explain various notions in Algebra, Analytical Geometry of 3D & Trigonometry.	K1,K2
CO2	Identify the problem models.	K3
CO3	Apply the concepts of Algebra, Analytical Geometry of 3D & Trigonometry.	K3
CO4	Solve the given problems in the respective stream.	K3
CO5	Analyze the applications of the core area.	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	2	2	3	2	3	2	2	2	2
CO2	2	2	2	3	2	3	2	2	2	2
CO3	2	2	2	3	2	3	2	2	2	2
CO4	2	2	2	3	2	3	2	2	2	2
CO5	2	2	2	3	2	3	2	2	2	2

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –

“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Series Expansion: Application of Binomial Theorem to summation of series – Approximate values – Summation of series by Exponential series - Summation of series by Logarithmic series (Formulae only).	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4.
II	Matrices: Matrix-Special types of Matrices –Scalar multiplication of a matrix-Equality of matrices-Addition of matrices-Subtraction of matrices- Symmetric matrix-Skew symmetric matrix-Hermitian and Skew Hermitian matrix –Multiplication of matrix – Inverse matrix-Inner product-Solution of simultaneous equations-Rank of a matrix-Elementary transformation of a matrix-A system of m homogeneous linear equations in n unknowns-Linear dependence and independence of vectors-System of non-homogeneous linear equations - Eigen values and Eigenvectors.(Applications only)	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4.
III	Three Dimensional Geometry: The Sphere – Definition- The equation of a sphere when the center and radius are given-The equation of a sphere to find its center and radius- The length of the Tangent Plane from a point to the sphere – The Plane Section of a sphere – Equation of a circle on a sphere – Intersection of two spheres in a circle.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4.
IV	Expansion of Trigonometric functions: Expansions of $\cos n\theta$ and $\sin n\theta$ - Expansion of $\tan(A + B + C + \dots)$ (omitting examples on formation of equations) –Powers of sines and cosines of θ in terms of functions of multiples of θ – Expansions of $\cos^n \theta$ when n is a positive integer – Expansions of $\sin^n \theta$ when n is a positive integer – Expansions of $\sin \theta$ and $\cos \theta$ in a series of ascending powers of θ - The expansions of $\sin \theta$ and $\cos \theta$ to find the limits of certain expressions.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4.
V	Hyperbolic functions:	12	CO1,	K1,

	Hyperbolic functions – Relation between hyperbolic functions – Relations between hyperbolic functions and circular functions - Inverse hyperbolic functions.		CO2, CO3, CO4, CO5	K2, K3, K4.
VI	Self-Study for Enrichment : (Not to be included for External examination) Series which can be summed up by the Logarithmic series - Simple applications of Matrices- The equation of the tangent plane to the sphere at a point. (Only problems) - Expansion of $\tan \theta$ in terms of powers of θ - Separation of real and imaginary parts of $\tanh(x+iy)$.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4.

Text Books

1. Manichavasagam Pillai, T.K. Natarajan,T.& Ganapathy, K.S.(2015). *Algebra, Volume I*. S. Viswanathan Pvt Limited.
2. Manichavasagam Pillai, T.K. (2015). *Algebra, Volume II*. S.Viswanathan Pvt Limited.
3. Manichavasagam Pillai, T.K. & Natarajan,T. (2016). *A Text book of Analytical Geometry Part-II 3D*. New Gamma Publishers.
4. Manichavasagam Pillai, T.K. & Narayanan,S.(2013). *Trigonometry*. S. Viswanathan Pvt Limited.

UNIT-I Chapter 3:Sections 10,14[1]

Chapter 4:Sections 3,7,9 [1]

UNIT-II Chapter 2:Sections 1 to 16 [2]

UNIT-III Chapter 4:Sections 1-5,6,6.1,7,8 [3]

UNIT-IV Chapter 3:Sections 1 to 4, 4.1,5,5.1[4]

UNIT-V Chapter 4:Sections 1,2,2.1 to 2.3[4]

Reference Books

1. Arumugam,s.Issac,A. (2017). Analytical Geometry 3D and Vector calculus. New Gamma Publishing house.
2. Pandey, H.D. Khan, M.Q. & Gupta, B.N.(2011). A Text Book of Analytical Geometry and Vector Analysis. Wisdom Press.
3. Singaravelu, A. (2003). Differential Calculus and Trigonometry. R Publication.

Web Links

1. <https://www.youtube.com/watch?v=JayFh5EJHcU>
2. <https://www.youtube.com/watch?v=h5urBuE4Xhg>
3. <https://www.youtube.com/watch?v=59z6eBynJuw>
4. <https://www.youtube.com/watch?v=9DyPyJb2N9g>
5. <https://www.youtube.com/watch?v=HOk2XLeFPDk>
6. <https://www.youtube.com/watch?v=G1C1Z5aTZSQ>

Pedagogy

Power point presentations, Group Discussions, Seminar, Quiz, Assignment.

Course Designers

1. Dr. P. Saranya
2. Dr.L.Mahalakshmi
3. Ms.P.Geethanjali

Course Code	Course Name	Category	L	T	P	S	Cr edi ts	Inst. Hrs	Marks		
									CIA	Exte rnal	Total
23UGVE	VALUE EDUCATION	Ability Enhancement Compulsory Course-I (AECC	30	-	-	-	2	2	100	-	100
Year		I									
Semester		I									
Prerequisites		Basic Understanding of Values									
Learning Objectives											
1	To enrich the knowledge about ethics and values.										
2	To instil Moral and Social Values and Loyalty and to appreciate the rights of others.										
3	To explain the role of ethics in the operation of human conduct										
4	To promote an understanding and framework for students to achieve value based positive and purposeful lives for themselves and their communities.										
5	To build excellent citizens and leaders for the country										

Course Outcomes and Cognitive Level Mapping

On the successful completion of the course, the students will be able to

CO NUMBER	CO STATEMENT	COGNITIVE LEVEL
CO1	To understand the importance of values and ethical issues at micro, mezzo and macro level of the society and the workplace.	K1, K2
CO2	To apply values and ethics in the daily life.	K3
CO3	To exhibit Ethical Leadership in the workplace and in the society.	K4
CO4	To think logically and reasonably and to handle moral issues with greater clarity	K5
CO5	To Engage in ethical debate and formulate ethical justification.	K6

Syllabus

UNIT	CONTENT	HOURS
I	Value education: Meaning, Definition, purpose and significance in the present world. Human Values For Life: Truth, commitment, honesty and integrity, humility, forgiveness, love, empathy, ability to sacrifice, care, unity, inclusiveness, Self esteem, self-confidence, punctuality – Time, task and resource management.	6
II	Ethics: The Essence of Ethics, Determinants and Consequences of Ethics in Human Interaction. Dimensions of Ethics. Ethics in private and public relationships. Role of family, society and educational institutions in inculcating moral and ethical values	6
III	Theory & Approaches in Ethics: Kohlberg's theory, Gilligan's theory, Damon's View of Moral Identity, & Deontology. The Utilitarian Approach, The Rights Approach, The Fairness or Justice Approach, The Common-Good Approach, The Virtue Approach & Ethical Problem Solving Approach.	6
IV	Moral Thinkers & Philosophical Schools of Thought and their contribution: Socrates, Plato, Aristotle, Epicurus, Stoicism. Thomas Aquinas , Contractarianism, Thomas Hobbes, John Locke, Jean-Jacques Rousseau, John Rawls, John Stuart Mill, Emanuel Kant and Hegel, Mother Teresa, Chanakya, Kautilya, Sarojini Naidu, Thiruvalluvar, Rabindranath Tagore, Mahatma Gandhi, Dr. Ambedkar, Bharathiyar and Bharathidasan.	6
V	Values and Ethics in Public administration: ethical concerns and dilemmas in government and private institutions; laws, rules, regulations and conscience as sources of ethical guidance; accountability and ethical governance; ethical issues in international relations and funding; corporate governance. Information sharing and transparency in government, Codes of Ethics, Codes of Conduct, Citizen's Charters, Quality of service delivery, Utilization of public funds, challenges of corruption.	6
VI	Self Study for Enrichment Learners need to list ways of practicing human Values. Group Discussion needs to be conducted on strategies to promote human values at various levels – family, community, society, nation and global.	-

Text Books:

1. ETHICS, INTEGRITY & APTITUDE (Prabhat Prakashan). (2021). (n.p.): Prabhat Prakashan.
2. Political Parties and Administrative Reforms in India: At the Centre, in the States and in the Local Bodies. (2019). (n.p.): Notion Press.
3. Sharma, P. D. (2015). Ethics, Integrity and Aptitude: Foundational Values for Civil Service in India. India: Rawat Publications.
4. Vozzola, E. C. (2014). Moral Development: Theory and Applications. United Kingdom: Taylor & Francis.
5. Thinkers and Theories in Ethics. (2011). Ukraine: Britannica Educational Pub..

Reference Books:

1. Bandiste, D.D.: Humanist Values: A Source Book, B.R. Publishing Corporation, Delhi, 1999
2. Ethics in Governance. (2021). (n.p.): K.K. Publications.
3. Maheshwari, S. (2002). Administrative Reforms in India. Germany: Macmillan India.
4. Bandiste, D.D.: Humanist Values: A Source Book, B.R. Publishing Corporation, Delhi, 1999.
5. Saxena, N. C. (2019). What Ails the IAS and Why It Fails to Deliver: An Insider's View. India: SAGE Publications.
6. Xavier Alphonse S.J (2008) We Shall Overcome – A Textbook on life coping skills ICRDCE Publication, Chennai

Web References

1. <https://publicintegrity.org>
2. <https://www.ethicssage.com>
3. <https://darpg.gov.in>
4. <https://www.ethics.org>
5. <https://ethicsunwrapped.utexas.edu/glossary/integrity>

Pedagogy

Chalk& Talk, Seminar, PPT Presentation, Group Discussion, Blended Method, and Case Study.

**ABILITY ENHANCEMENT COMPULSORY COURSE (AECC) I : VALUE EDUCATION
(23UGVE)**

Assessment Rubrics for 100 Marks

1. Designing Posters / video making / preparation of Album – **20 marks**
2. Case study presentation / Narration of stories / Writing stories – **20 Marks**
3. Writing essay based on the individual life experience following human values –personal, family and society level (minimum 10 pages) – **20 Marks**
4. **VIVA VOCE - 40 Marks**

S. N O	RUBRICS FOR VIVA VOCE	MARKS
1.	Theoretical Knowledge	20
2.	Values Practiced	10
3.	Attitude & Commitment	10
Total		40

Course Designer

Dr.G.Mettilda Buvaneswari

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)

NATIONALLY ACCREDITED (III CYCLE) WITH “A” GRADE BY NAAC

ISO 9001:2015 Certified

TIRUCHIRAPPALLI – 620 018

PG AND RESEARCH DEPARTMENT OF PHYSICS



B.Sc., PHYSICS SYLLABUS

(2022-2023 and Onwards)



Cauvery College for Women (Autonomous)
PG & Research Department of Physics
B.Sc., Physics

LEARNING OUTCOMES BASED CURRICULUM FRAMEWORK (CBCS-LOCF)
(For the Candidates admitted from the Academic year 2022-2023 and onwards)

Semester	Part	Course	Course Title	Course Code	Inst. Hrs. / week	Credits	Exam			Total
							Hrs.	Marks		
								Int	Ext	
III	I	Language Course-III (LC)	காப்பியமும் நாடகமும்	22ULT3	5	3	3	25	75	100
			Hindi Literature & Grammar -III	22ULH3						
			Prose, Textual Grammar and Vakyarachana	22ULS3						
			Intermediate French-I	22ULF3						
	II	English Language Course-III(ELC)	Learning Grammar Through Literature – I	22UE3	6	3	3	25	75	100
	III	Core Course– IV (CC)	Thermal Physics and Statistical Mechanics	22UPH3CC4	6	6	3	25	75	100
		Core Practical – III (CP)	Thermal Physics (P)	22UPH3CC3P	3	3	3	40	60	100
		Second Allied Course-I (AC)	Chemistry – I	22UPH3AC4	4	3	3	25	75	100
		Second Allied Course- II (AP)	Chemistry-I (P)	22UPH3AC5P	4	3	3	40	60	100
	IV	Generic Elective Course-I (GEC)	Physics in Everyday Life	22UPH3GEC1	2	2	3	25	75	100
			Basic Tamil – I	22ULC3BT1						
			Special Tamil – I	22ULC3ST1						
	Extra Credit Course	SWAYAM	As per UGC Recommendation							
Total					30	23				700

15 Days INTERNSHIP during Semester Holidays

The Internal and external marks for theory and practical papers are as follows:

Subject	Internal Marks	External Marks
Theory	25	75
Practical	40	60

For Theory:

- a) The passing minimum for CIA shall be 40% out of 25 marks (i.e. 10 marks)
- b) The passing minimum for End Semester Examinations shall be 40% out of 75 marks (i.e.,30 marks)

For Practical:

- a) The passing minimum for CIA shall be 40% out of 40 marks (i.e. 16 marks)
- b) The passing minimum for End Semester Examinations shall be 40% out of 60 marks (i.e.24 marks)

Internal Component (Theory)

Component	Marks
Library	5
Assignment	5
Seminar	5
CIA I &II	10
	25

Internal Component (Practical)

Component	Marks
Observation	5
Record	10
Continuous Performance in Practical	10
Model	15
	40

Internship Component

Internal Component	Marks	External Component	Marks
Communication Skill	5	Regularity	10
Presentation Skill	10	Problem Solving	10
		Participation and Hands-on training	20
Report Evaluation	10	Professional Attitude	15
		Report Writing	20
	25		75

Semester III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22UPH3CC4	THERMAL PHYSICS AND STATISTICAL MECHANICS	CC- IV	6	6

Course Objectives

- To gain knowledge in heat transfer, entropy, production of low temperature and liquefaction of gases, thermal radiation and statistical thermodynamics.
- To solve the function of Internal combustion engine and Carnot's engine
- To analyze the behavior of gases under very high pressure.
- To apply probability in statistical thermodynamics.

Pre-requisites

- Strong Foundation of Thermodynamics and its Applications
- Learn the basic principles of elasticity and the elastic nature of materials.
- Understand realistic cycles for internal combustion engines, steam engines, and low-temperature refrigeration systems.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO 1	Learn the basic concepts of thermodynamics, radiation, and statistical mechanics, as well as their significance.	K1
CO 2	Understand the experimental procedures for producing low temperatures, measuring high temperatures, and determining the specific heats of solids, liquids, and gases.	K2
CO 3	Apply the theories related to low temperature, radiation and specific heat of solid, liquid and gas.	K3
CO 4	Examine the energy distribution in the black body spectrum, the system of bosons and fermions, and the temperature change of solids and gases' specific heats.	K4
CO 5	Solve the specific heat capacity of solid, liquid and gas theoretically.	K5

Mapping of CO with PO and PSO

Cos	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	3	3	2	2	2	3	2	2	3	2
CO 2	2	3	3	2	3	3	2	3	3	2
CO 3	2	3	3	2	3	3	2	3	3	2
CO 4	3	3	3	3	3	3	3	3	3	2
CO 5	2	2	3	3	3	2	3	3	3	3

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” – indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	THERMODYNAMICS Thermodynamic system - Zeroth law of thermodynamics - internal energy- First law of thermodynamics - reversible and irreversible process - Carnot's cycle - Otto and diesel engine - second law of thermodynamics - Entropy - change in entropy during reversible and irreversible process - T- dS equation- second law of thermodynamics - third law of thermodynamics- Clausius's Claypeyron's latent heat equations.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	LOW TEMPERATURE Joule Thomson effect - Production of low temperature - Theory of Porous plug experiment - Liquefaction of gases - Linde's air liquefier - Adiabatic expansion process - adiabatic demagnetization - Liquefaction of Helium and Hydrogen - Practical application of low temperature - Refrigeration machine - Air conditioning machines.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	RADIATION Coefficient of thermal conductivity - Lee's method for bad conductors and liquids - convection and its applications - Stefan's Boltzmann law - Experimental determination of Stefan's constant - Blackbody radiation - Rayleigh Jean's law - Wien's Displacement Law - Planck's law derivation - Solar constant - temperature of the Sun -Angstrom's Pyrheliometer	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	SPECIFIC HEAT Specific heat of solids - Dulong and Petit's law - Einstein's theory of specific heat - Debye's theory - Specific heat of gases - Mayer's Relation- Determination of C_p by Ragnault's method - Newton's law of cooling	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	STATISTICAL THERMODYNAMICS Phase space – Statistical equilibrium - Microstates and Macrostates – Maxwell-Boltzmann distribution - Ideal gas - Fermi-Dirac distribution - Electron gas - Bose-Einstein distribution – Photon gas	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	SELF-STUDY FOR ENRICHMENT (Not included for End Semester Examinations) Internal combustion engine (ICE) - Electrolux refrigerator- Bolometer- Variation of specific heat of diatomic gases with temperature- Probability theorem in statistical thermodynamics.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Books

1. Brijlal Subrahmanyam N, Hemne P S, (2021), *Heat and Thermodynamics and Statistical Physics*, S. Chand & Co., Pvt. Ltd., Revised edition
2. Sathya Prakash and Agarwal J P, (2019), *Statistical Mechanics*, Kedarnath Ramnath & Co., Meerut.

Reference Books

1. Mathur D S, (2008), *Heat and Thermodynamics*, S. Chand and Co., New Delhi.
2. Halliday D, Resnick R and Walker J, (2018), *Fundamentals of Physics*, John Wiley & Sons- 11th Edition.

Web References

1. https://onlinecourses.nptel.ac.in/noc20_ce27/preview
2. https://onlinecourses.swayam2.ac.in/nou21_me01/preview
3. <https://web.stanford.edu/~peastman/statmech/thermodynamics.html>
4. <https://www.youtube.com/watch?v=6QXtnmB1vqk>

Pedagogy

Chalk and Talk, Seminar, Assignment, Power point Presentation, Group discussion and Quiz

Course Designer

Dr.R.Gayathri

Semester III	Internal Marks: 40		External Marks: 60	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22UPH3CC3P	THERMAL PHYSICS (P)	CP-III	3	3

Course Objectives

- To make the students to develop their experimental skills.
- To acquire hands-on experience.
- To enhance the laboratory skills.

Pre-requisites

- Basic knowledge on usage of scientific apparatus.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the Course, the Student will be able to	Cognitive Level
CO 1	Apply the physics principle involved in the various instruments;also relate the principles to new application.	K1
CO 2	Understand the theoretical concepts of transmission of heat withthe experimental knowledge	K2
CO 3	Use the theoretical ideas of spectrometer	K3
CO 4	Expand the creative skills that are essential for industrial applications	K3
CO 5	Analyze experimental approaches to correlate with physics theory to develop practical understanding.	K4

Mapping of CO with PO and PSO

COs	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	1	1	1	2	1	3	2	1	2	1
CO 2	2	3	2	2	2	3	3	1	2	1
CO 3	1	1	2	3	1	3	2	1	3	1
CO 4	2	3	3	3	2	1	3	1	3	2
CO 5	3	2	3	3	3	1	3	2	3	2

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” indicates there is no correlation

Syllabus

LIST OF EXPERIMENTS (Any 8)

1. Specific heat capacity of a liquid – Newton's law of cooling.
2. Emissive power of a surface – Spherical calorimeter
3. Thermal conductivity of a bad conductor – Lee's disc.
4. Joule's Calorimeter - Specific heat capacity
5. Thermo Couple-Seebeck Effect
6. Black Body Radiation: Determination of Stefan's Constant
7. Specific heat by method of mixtures
8. Verification of Stefan-Boltzmann law
9. Latent heat of steam/ice
10. Verification of Boyle's law
11. Mechanical equivalent of heat
12. Thermal conductivity of a good conductor - Searle's method
13. Heat Transfer by Radiation
14. Heat transfer by Conduction
15. Heat Transfer by Natural Convection

Text Book

1. Ouseph, C.C., Rao, U.J., Vijayendran, V., (2016). *Practical Physics and Electronics*. S.Viswanathan, Printers & Publishers Pvt Ltd., Chennai.

Reference Book

1. Prof. Namboodirippad, M.N., Prof. Daniel, P.A., (1982). *B.Sc., Practical Physics*. G.B.C. Publications, Cochin.

Web References

1. <https://vlab.amrita.edu/index.php?sub=1&brch=194>
2. <https://vlab.amrita.edu/index.php?sub=1&brch=194&sim=802&cnt=1>
3. <https://vlab.amrita.edu/index.php?sub=1&brch=194&sim=354&cnt=1>
4. <https://vlab.amrita.edu/index.php?sub=1&brch=194&sim=353&cnt=1>

Pedagogy

Demonstration, practical sessions and viva voce

Course Designer

Dr.R.Meenakshi

Semester III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs. / Week	CREDITS
22UPH3AC4	CHEMISTRY - I	ALLIED	4	3

Course Objectives

- To understand the bonding nature in chemical compounds, nuclear reactions and reaction mechanisms in chemistry.
- To know the materials used in industrial chemistry and the separation of chemical compounds.
- To acquire the knowledge of basic principles of thermodynamics, phase equilibria and analytical techniques.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Define the terms involved in nuclear, analytical and industrial chemistry, organic reaction, thermodynamics and phase equilibria.	K1
CO2	Understand the magnetic properties, compounds used in industries, organic, thermal reactions and principle of analytical techniques.	K2
CO3	Illustrates the bonding nature, mechanisms, phase diagram, instrumentation of analytical techniques.	K3
CO4	Describe the molecular orbital diagrams, fuel gases, fertilizers, hybridization and applications of analytical techniques.	K4
CO5	Predict bond order, mechanism, phase rule, separation of compounds and its uses in industries.	K5

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	3	3	3	2	3	2	3
CO2	3	3	3	3	3	3	3	3	2	3
CO3	3	3	3	3	3	3	3	3	3	2
CO4	3	3	3	3	3	3	3	2	3	2
CO5	3	3	2	3	3	3	2	3	2	2

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” Indicates there is No Correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Chemical Bonding and Nuclear Chemistry: Chemical Bonding: Molecular orbital theory - bonding, antibonding and non-bonding orbitals. Molecular orbital diagrams (H_2 , O_2 , N_2 , CO and CN) - bond order and magnetic properties. Nuclear Chemistry: Fundamental particles - isotopes - isobars - isotones and isomers - differences between chemical reactions and nuclear reactions. Nuclear binding energy - mass defect - calculations - nuclear stability - applications of nuclear fission and nuclear fusion. Group displacement law - radioactive series - applications of radioisotopes.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

II	Industrial Chemistry: Fuels: Natural gas - water gas - semi water gas - carbureted water gas - producer gas - CNG - LPG and oil gas. Silicones: Synthesis - properties - uses of silicones. Fertilizers: Urea - ammonium sulphate - potassium nitrate - NPK fertilizer - superphosphate.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Fundamental Concept in Organic Chemistry: Hybridization: Orbital overlap - hybridization and geometry of CH ₄ , C ₂ H ₄ , C ₂ H ₂ and C ₆ H ₆ . Electronic effects: Inductive effect - relative strength of aliphatic monocarboxylic acid and aliphatic amines. Hyperconjugation - heat of hydrogenation - bond length - dipole moment and steric effect. Reaction mechanisms: Types of reactions - aromaticity (Huckel's rule) - aromatic electrophilic substitution; nitration - halogenation - Friedel Craft's alkylation- Heterocyclic compounds: Preparation - properties of furan - thiophene - pyrrole and pyridine.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Thermodynamics and Phase Equilibria: Thermodynamics: Types of systems processes - state and path functions - statements of first law and second law of thermodynamics - Carnot's cycle - efficiency of heat engine. Entropy - significance - relationship between Gibbs free energy and entropy. Phase Equilibria: Phase rule - terms - reduced phase rule and its application to a simple eutectic system water system - Two-component system - (Pb - Ag).	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

V	Analytical Chemistry: Introduction to qualitative and quantitative analysis - principles of volumetric analysis. separation - purification techniques - extraction, distillation - crystallization. Chromatography: principle and application of column, paper and thin layer chromatography.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self-Study for Enrichment: (Not to be included for External Examination) Triple superphosphate - Electromeric and mesomeric effects - Friedel craft's acylation - Free energy change and its importance - entropy and Gibbs free energy.	-	CO1, CO2, CO3, CO4	K1, K2, K3. K4

Text Books

1. Puri, B. R., Sharma, L. R., & Kalia, K. K. (2018). Principles of Inorganic Chemistry. 33rd edition. Shoban Lal Nagin Chand & Co., New Delhi.
2. Bahl, B. S., & Bahl, A. (2010). Advanced Organic Chemistry. (12th edition), New Delhi, Sultan Chand & Co.
3. Puri, B. R., Sharma, L. R., & Pathania, M. S. (2022). Principles of Physical Chemistry. 48th edition. Shoban Lal Nagin Chand & Co, New Delhi.
4. Sharma, B. K. (2013). Industrial Chemistry. Goel Publishing House.
5. Gopalan, R., Subramanian, P. S., & Rengarajan, K. (2003). Elements of Analytical Chemistry. 2nd edition, Sultan Chand & Sons.

Reference Books

1. Madan, R. D. (2000). Modern Inorganic Chemistry. S. Chand and Company. New Delhi.
2. Chatwal, G. R., & Anand, S. K. (2005). Instrumental methods of chemical analysis. Himalaya publishing house.
3. Morrison, R. T., Boyd, R. N., & Bhattacharjee, S. K. (2011). Organic Chemistry. (7th edition), Pearson India, (2011).

Web References

1. <https://www.youtube.com/watch?v=QMb-pmf7PKA>.
2. [https://chem.libretexts.org/Bookshelves/Physical_and_Theoretical_Chemistry_Textbook_Maps/Supplemental_Modules_\(Physical_and_Theoretical_Chemistry\)/Physical_Properties_of_Matter/States_of_Matter/Phase_Transitions/Phase_Diagrams](https://chem.libretexts.org/Bookshelves/Physical_and_Theoretical_Chemistry_Textbook_Maps/Supplemental_Modules_(Physical_and_Theoretical_Chemistry)/Physical_Properties_of_Matter/States_of_Matter/Phase_Transitions/Phase_Diagrams).
3. <https://byjus.com/biology/fertilizers/>.
4. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5206469/>.
5. <https://www.vedantu.com/chemistry/hybridization>.

Pedagogy

Chalk and talk, PPT, Discussion, Assignment, Demo, Quiz, Seminar.

Course Designer

- Dr. S. Devi

Semester III	Internal Marks: 40		External Marks: 60	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs. / Week	CREDITS
22UPH3AC4P	CHEMISTRY (P)	ALLIED	4	3

Course Objectives

- To gain knowledge about the basics of preparation of solutions.
- To impart skills on the quantitative estimation of compounds through volumetric analyses.
- To develop skills for qualitative analysis of organic compounds.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statements	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Remember the basic principles involved in quantitative and qualitative analyses.	K1
CO2	Outline the preparation of solutions and basic organic reactions involved in organic functional group analyses.	K2
CO3	Apply tests for the identification of functional groups and titration for quantitative analysis.	K3
CO4	Analyze compounds by qualitative and quantitative methods.	K4
CO5	Predict a suitable way to analysis compounds through qualitative and quantitative methods.	K5

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	2	2	3	3	2	3	2
CO2	3	3	2	2	2	3	3	2	3	1
CO3	3	3	2	2	2	3	3	2	2	1
CO4	3	3	3	2	2	3	3	2	2	2
CO5	3	3	2	2	2	3	3	2	2	2

“1”– Slight (Low) Correlation

“2”– Moderate (Medium) Correlation

“3”– Substantial (High) Correlation

“-” Indicates there is No Correlation.

SYLLABUS

I. Volumetric Analysis:

1. Estimation of HCl using NaOH as a link and standard oxalic acid solution.
2. Estimation of NaOH using HCl as a link and standard sodium carbonate.
3. Estimation of oxalic acid using NaOH as a link and standard oxalic acid solution.
4. Estimation of ferrous sulphate using KMnO_4 as a link and standard Mohr's salt.
5. Estimation of KMnO_4 using sodium thiosulphate as a link and standard $\text{K}_2\text{Cr}_2\text{O}_7$ solution.
6. Estimation of Mg (II) using EDTA solution as a link and standard MgSO_4 solution.
7. Estimation of ferrous ion using $\text{K}_2\text{Cr}_2\text{O}_7$ as a link and standard ferrous ammonium sulphate.

II. Organic Analysis:

1. Detection of elements.
2. To distinguish - aliphatic and aromatic; saturated and unsaturated compounds.
3. Detection of functional group - monosaccharides, aldehyde, ketone, acid, diamide, aromatic amine.

Text Books

1. Venkateswaran, V., Veeraswamy, R., & Kuandaivelu. (1997). Basic Principles of Practical Chemistry. 2nd edition. New Delhi, Sultan Chand & Sons.
2. Bassett, J. (1985). Text Book of Quantitative Inorganic Analysis. 4th edition. ELBS Longman.

Reference Book

Vogel, A. I. (2000) Textbook of quantitative inorganic analysis. The English language book society.

Web References

1. <https://www.youtube.com/watch?v=uOzniLNNxAE>.
2. https://www.brainkart.com/article/Estimation-of-sodium-hydroxide_38685/.
3. https://www2.chem21labs.com/labfiles/UofC_GOB01A_Lab.pdf.
4. <https://byjus.com/chemistry/volumetric-analysis/>.

Pedagogy

Demonstration and Practical Sessions.

Course Designer

Dr. S. Devi

Semester III	Internal Mark:40		External Mark: 60	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs/Week	CREDITS
22UCA3GEC1P	Animation Tools - I (P)	GEC	2	2

Course Objective

- To impart training on Animation Tools

Course Outcomes and Cognitive Level Mapping

COs	CO STATEMENTS On the successful completion of the course, students will be able to	COGNITIVE LEVEL
CO1	Recall pen, and brush tools in Photoshop	K1
CO2	Apply resolution, grayscale, black and white to an image	K3
CO3	Using layers, rotation, overlapping of an image	K3
CO4	Creating custom colours, gradients, grouping of an image	K5
CO5	Develop an image by applying masks and filters	K5

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	3	2	1	1	3	3	2	3	2
CO2	3	2	3	1	1	3	2	2	3	3
CO3	3	3	3	2	2	3	3	2	3	2
CO4	3	2	3	2	2	3	3	2	3	2
CO5	3	3	3	2	2	3	3	2	2	3

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” indicates there is no correlation.

List of Practical

1. THE WORKING PLACE (Installing Photoshop & Learning its interface)
2. TOOLS
 - Basic Tools
 - Selection Tools
 - Drawing and Coloring Tools
 - Advanced Tools
 - Text Tools
 - Tools Presets
3. USING BRUSH & PAINT
 - Brush Presets, Colors & Shapes
 - Create a multicolor real-life image using the brush tool.

4. WORKING WITH SELECTION

- Making Selections with Different Tools
- Modifying an Existing Selection
- Saving and Loading Selections

5. IMAGE SIZE, RESOLUTION, AND COLOR CHANGE

- Changing the size, resolution, and gray scale of an image.
- Convert black and white images into color image.

6. IMAGE MODIFICATION

- Cropping, rotating, overlapping, and superimposing an image.

7. COMMERCIAL BROCHURE

- Develop a commercial brochure with background tints.

8. LAYERS

- Working with layers (creation, deletion, merge).

9. FILTERS AND MASKS

- Applying masks and filtering on images.

10. PLAYING WITH PALETTES

- Arranging Workspace
- Various Palettes

Web References

- <https://helpx.adobe.com/in/photoshop/tutorials.html>
- <https://www.javatpoint.com/photoshop>
- <https://www.photoshopessentials.com/basics/>

Pedagogy

Demonstration, Powerpoint Presentation

Course Designer

Ms. M. Ellakkiya, Assistant Professor, Department of Computer Applications.

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)
NATIONALLY ACCREDITED (III CYCLE) WITH “A” GRADE BY NAAC
ISO 9001:2015 Certified
TIRUCHIRAPPALLI – 18

PG AND RESEARCH DEPARTMENT OF PHYSICS



B.Sc., PHYSICS SYLLABUS
(2020-2021 and Onwards)

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)
B.Sc., PHYSICS PROGRAMME STRUCTURE
UNDER CHOICE BASED CREDIT SYSTEM
(For the candidates admitted from the academic year 2020-2021 and onwards)

Sem	Part	Course	Title	Course code	Inst Hrs/ week	Credit	Exam Hrs	Marks		
								Int	Ext	Total
V	III	Core Course-V (CC)	Optics	19UPH5CC5	5	5	3	25	75	100
		Core Course-VI (CC)	Atomic and Nuclear Physics	19UPH5CC6	5	5	3	25	75	100
		Core Course-VII (CC)	Analog Electronics	19UPH5CC7	6	5	3	25	75	100
		Core Practical- V (CP)	Physics Practical-V	19UPH5CC5P	3	3	3	40	60	100
		Major Based Elective-I	Materials Science	19UPH5MBE1A	5	5	3	25	75	100
			Laser Physics	19UPH5MBE1B						
	IV	Skill Based Elective-II	Physics concepts through Animation -Practical	20UPH5SBE2AP	2	2	3	40	60	100
			Household Appliances Servicing - Practical	20UPH5SBE2BP						
		Skill Based Elective-III	Web Designing - Practical	20UPH5SBE3AP	2	2	3	40	60	100
			Electrical Wiring - Practical	20UPH5SBE3BP						
		UGC Jeevan Kaushal LifeSkills	Professional Skills	19UGPS	2	2	3	25	75	100
	V	Extra Credit Course	Swayam Online Course	To be fixed later	As per UGC Recommendation					
	Total				30	29				800
VI	III	Core Course-VIII (CC)	Digital Electronics and Microprocessor Fundamentals	19UPH6CC8	5	4	3	25	75	100
		Core Course-IX(CC)	Classical and Quantum Physics	19UPH6CC9	6	5	3	25	75	100
		Core Practical- VI (CP)	Physics Practical – VI	19UPH6CC6P	3	3	3	40	60	100
		Major Based Elective-II	Communication Physics	19UPH6MBE2A	5	5	3	25	75	100
			Computational Physics	19UPH6MBE2B						
		Major Based Elective-III	Medical Physics	19UPH6MBE3A	5	4	3	25	75	100
			Astrophysics and Cosmology	19UPH6MBE3B						
		Project	Project Work	19UPH6PW	5	4	-	-	-	100
	V	Gender studies	Gender Studies	19UGGS	1	1	3	25	75	100
		Extension Activities	Extension Activities	19UGEA	-	1	-	-	-	-
Total					30	27				700
Grand Total					180	140				4200

Project: 100 Marks

- i. Internal Component - Nil
- ii. External Components - 100 Marks
 - Review-I- 20 Marks
 - Review-II- 20 Marks
 - Report Valuation - 40 Marks
 - Viva -Voce - 20 Marks

Core Papers : 09

Core Practical: 06

List of Allied Courses:

Allied Course I - Mathematics

Allied Course II - Chemistry

List of Skill Based Electives:

Skill Based Elective I – Biomedical Instrumentation/ Photography and Videography

Skill Based Elective II – Physics concepts through simulation/ Cell Phone Servicing

Skill Based Elective III – Web Designing/ Electrical Wiring

List of Major Based Electives:

MBE I - Material Science/Laser Physics

MBE II - Communication Physics/Computational Physics

MBE III - Medical Physics/Astrophysics and Cosmology

Swayam Online Course: Extra Credit Course

Semester-V	OPTICS	Hours/Week-5	
Core Course – V		Credits-5	
Course Code-19UPH5CC5		Internal 25	External 75

Objectives

- To understand the basic ideas of geometric optics
- To gain knowledge of the working of optical instruments.

Course Outcomes

On the successful completion of the course, students will be able to:

CO Number	CO Statement	Knowledge Level
CO 1	Outline the behaviour of light.	K2
CO 2	Explain the various types of aberration.	K2
CO 3	Demonstrate basic optical phenomena like interference, diffraction and polarization.	K2
CO 4	Predict optical elements and set-up basic experiments.	K3
CO 5	Apply the concepts of light.	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	L	S
CO2	S	M	M	S
CO3	S	S	M	S
CO4	M	M	M	S
CO5	S	S	S	S

S – Strong; M – Medium; L – Low

CORE COURSE – V
OPTICS

Syllabus

UNIT -I : Geometrical Optics

18 hrs

Matrix method in ray optics - Effect of translation, refraction - Thick and thin lens formulae Unit planes-Nodal planes-System of two thin lenses.

Lens aberrations - Spherical aberrations of a single surface -Astigmatism - Curvature of field-Distortion -Abbe's sine condition - Chromatic aberrations.

UNIT- II : Interference

12 hrs

Fresnel's biprism, Fresnel's mirrors and Lloyd's single mirror experiments Achromatic fringes- Interference in thin films(from reflected and transmitted light) -Fringes in wedge shaped films - Reflective and antireflective coatings - Michelson's interferometer - Determination of wavelength and refractive index.

UNIT- III : Diffraction

15 hrs

Rectilinear propagation of light - Zone plate - Fresnel diffraction - Diffraction at circular aperture, circular disc and a straight edge - Fraunhofer diffraction - Diffraction at a single and double slit - Missing orders in double slit - Theory of diffraction grating - Determination of wavelength - Dispersive power - Rayleigh's criterion and resolving power of a prism, grating, telescope and microscope

UNIT- IV: Polarization

15 hrs

Plane of polarization -Polarization by reflection - Brewster's law -Pile of plates- Polarization by refraction - Malu's law -Double refraction - Nicol prism - Huygen's explanation of double refraction - Elliptically and circularly polarized light -Quarter and half wave plates - Production and determination of plane, elliptically and circularly polarized light - Optical activity - Fresnel's theory-Specific rotation-Laurent's half shade polarimeter

UNIT – V: Optical Instruments

15 hrs

Microscopes – Simple Microscope (Magnifying glass) – Compound Microscope – Ultra-Microscope – Eyepieces - Huygen's Eyepiece - Ramsden's Eyepiese — Comparison of Eyepieces – Telescope – Refracting astronomical telescope – Abbe Refractometer – Pulfrich refractometer -Photographic Camera – Prism binoculars.

Textbooks

S.No.	Author name	Title of the book	Publishers	Year of Publication	Edition
1.	Ajoy Ghatak	Optics	Tata McGraw Hill Co. (For Matrix methods)	2010	6 th Edition
2.	Dr. N. Subramaniam, Brijlal and Dr.M.N. Avathanulu	Optics	S. Chand & Co. Pvt.Ltd., New Delhi	2016 (Reprint)	25 th Revised Edition

Reference books

S.No.	Author name	Title of the book	Publishers	Year of Publication	Edition
1	S.L.Kakani, K.C. Bhandari	A Text Book of Optics	S.Chand and Sons, New Delhi.	2002	2 nd Edition

Pedagogy

Lecture, Seminar, Interaction, Assignment, Debate, power point presentation.

Course Designer

Ms.D.Devi

Semester-V	ATOMIC AND NUCLEAR PHYSICS	Hours/Week-5	
Core Course - VI		Credits-5	
Course Code-19UPH5CC6		Internal 25	External 75

Objectives

- To acquire the knowledge of Atomic Physics.
- To familiarize the concepts of nuclear Physics

Course Outcome

On the successful completion of the course, students will be able to:

Co Number	CO statement	Knowledge level
CO 1	Outline the knowledge of basic properties of Cathode rays and Tue rays. Calculate the values of e/m and Critical potential.	K2
CO 2	Extend the concept of vector atom model to draw the electronic configuration of atoms and the Periodic classification.	K2
CO 3	Apply the Quantum mechanical principles in Spectral transitions (Lande's g factor)	K3
CO 4	Utilize the interaction of particle and matter to Solve the problem in nuclear physics.	K3
CO 5	Analyze nuclear radio activities and Apply the concepts of radio isotopes in general field.	K4

Mapping with programme outcome

CO's	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	M	M
CO2	S	S	M	M	M
CO3	S	S	M	M	M
CO4	S	S	M	M	M
CO5	S	S	M	M	S

S–Strong; **M**–Medium; **L**–Low

CORE COURSE – VI
ATOMIC AND NUCLEAR PHYSICS

Syllabus

Unit -I: Cathode Rays and Tue Rays.

15 hrs

Cathode rays – properties – e/m of cathode rays – Milliken's oil drop method – Positive rays – Properties – e/m of Positive rays: Thomson's parabola method – Aston's Bain's bridge - Determination of critical Potential – Franck and Hertz's experiment - Davi's and Goucher method.

Unit- II: Vector Atom model

15 hrs

Various quantum numbers, L-S and j-j Couplings – Pauli's exclusion principle – electronic configuration of elements and periodic classification – magnetic dipole moment of electron due to orbital and spin motion – Bohr magnet ion stern and Gerlach experiment.

Unit - III: Fine structure of special lines

15 hrs

Special terms and notations – selection rules- intensity rule and internal rule – Fine structure of sodium D lines – Alkali spectra – Fine structure in Alkali spectra – spectrum of Helium –Zeeman effect - Larmor's theorem – Debye's quantum mechanical explanation of the normal Zeeman effect – Anamolous Zeeman effect – theoretical explanation - Lande's 'g' factor and explanation of splitting of D1 and D2 lines of sodium.

Unit - IV: Structure of Nuclei and Radioactivity

15 hrs

Basic properties of nuclei- Composition – Charge – Size - Rutherford's experiment for estimation of nuclear size- density of nucleus- Mass defect and Binding energy- Packing fraction- BE/A vs A plot, stability of nuclei (N Vs Z plot) and problems. Radioactive disintegration concept of natural and artificial radioactivity- Properties of α , β , γ -rays laws of radioactive decay-half-life- mean life (derivation not required)- units of radioactivity-successive disintegration and equilibriums - radioisotopes.

Unit - V: Particle accelerators and detectors

15 hrs

Linear accelerators- Cyclotron - Betatron - GM counter - Ionisation chamber

Nuclear Reactions: Types of Reactions and Conservation Laws - Concept of Compound and Direct Reaction - Q value equation and solution of the Q equation – problems - Fusion and fission definitions and qualitative discussion with examples.

Text Books

S.No.	Authors	Title of the book	Publishers	Year of Publication	Edition
1	N.Subrahmanyam and Brijlal and seshan.	Atomic and nuclear Physics	S.Chand	2007	Revised edition
2	R.Murugesan Kiruthiga Sivaprasath	Modern Physics	S.Chand	2011	Revised edition
3	Beiser. Shobhit mahajan S.Rai Choudhury	Perspectives of Modern Physics	Tata McGraw Hill	2009	6 th edition

Reference Books

S.No.	Authors	Title of the book	Publishers	Year of Publication	Edition
1	S.N. Ghosal	Atomic physics	S.chand	2007	Revised edition
2	S.N. Ghosal	Nuclear physics	S.chand	2008	Reprint

Pedagogy

Lecture with Discussion, Power point presentation, Group discussion and Seminars.

Course designer

Ms.S.Priya

Semester-V	ANALOG ELECTRONICS	Hours/Week-6	
Core Course - VII		Credits-5	
Course Code-19UPH5CC7		Internal 25	External 75

Objectives

- To acquire a diversified knowledge on semiconductors and diodes
- To impart the knowledge about the transistor characteristics in different configurations and different types of biasing
- To grasp the basic ideas of feedback and its application in amplifiers and oscillators

Course Outcome

On the successful completion of the course, the students will be able to:

CO number	CO statement	Knowledge level
CO1	Explain semiconductors, Rectifiers, and different types of diodes	K2
CO2	Outline the idea of field effect transistors and special semiconductor diodes	K2
CO3	Identify the operation of transistor and its characteristics	K3
CO5	Construct the various mathematical operations of operational amplifier	K3
CO4	Analyze the amplitude and frequency response characteristics of common amplification circuits.	K4

Mapping with Program Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	M	S	S	S
CO3	S	M	S	S	S
CO4	S	M	S	S	S
CO5	S	S	S	S	S

S-Strong; M-Medium; L-Low

CORE COURSE – VII
ANALOG ELECTRONICS

Syllabus

UNIT-I Semiconductors and Diodes

16hrs

Intrinsic and Extrinsic semiconductor-n-type semiconductor-p-type semiconductor-pn junction diode-Biasing of pn junction-Volt Ampere characteristics of pn junction -Rectifier-Half wave rectifier- full wave rectifier and full wave bridge rectifier-Zener diode-Characteristics of zener diode-Zener as a voltage stabiliser-Light Emitting Diode (LED)-Photo diode-LED-Tunnel diode-Varactor diode.

UNIT-II Transistors

16hrs

Circuit Analysis: Kirchoff's Current law (KCL)-Kirchoff's Voltage law (KVL)-Thevenin's theorem- Norton's theorem.

Transistor-Naming the transistor terminals-Transistor Action-Transistor Connections-Common Base connection- Common Emitter connection-Transistor load line analysis- Operating point-Faithful amplification-Transistor Biasing- stabilization-stability factor-Methods of transistor biasing- Base resistor method-Voltage divider bias method.

UNIT-III Amplifiers, Oscillators and Multivibrators

22hrs

Single stage Transistor amplifier-Practical Circuit of transistor Amplifier- D.C and A.C Equivalent circuits-Power amplifiers-Classification of Power Amplifiers-Expression for Collector Efficiency-Efficiency of Class A and Class B amplifiers- Push- pull amplifiers

Feedback-Negative voltage feedback in amplifier-Principle-Gain-Emitter Follower-Sinusoidal Oscillator-Types-Oscillatory Circuit- Positive feedback amplifier-Essentials-Barkhausen criterion-Colpitt's oscillator- Hartley oscillator -Phase shift oscillator-Wein bridge oscillator.

Multivibrators-Types of Multivibrators-Astable multivibrator-Monostable multivibrator- bistable multivibrator.

UNIT-IV Special Semiconductor devices

18hrs

Types of Field Effect Transistor-Junction Field Effect Transistor (JFET)-Difference between JFET and Bipolar Transistor-Metal Oxide Semiconductor FET (MOSFET)-Types of MOSFET-Silicon Controlled Rectifier (SCR)-V-I Characteristics of SCR-SCR as a switch-Triac-Diac-Unijunction Transistor (UJT)-UJT relaxation oscillator.

UNIT-V Operational Amplifiers

18hrs

Op-amp characteristics-Common mode rejection ratio (CMRR)-Inverting and Non inverting amplifier-Adder, Subtractor, Integrator, Differentiator-Voltage follower-Op-amp comparator-Log & antilog amplifier- Filters-low, high pass and band pass filters.

Text Books

S.No	Authors	Title of the book	Publishers	Year of Publication	Edition
1.	V.K. Mehta & Rohit Mehta	Principles of Electronics	S.Chand.	2012	11 th edition
2.	D.Chattopadhyay, P.C. Raxshit, B. Sara and Purkait	Foundations of electronics	New Age International	2006	7 th edition
3.	V. Vijayendran	Introduction to Integrated Electronics	S. Viswanathan	2010	6 th edition
4.	S. Salivahanan N. Suresh Kumar	Electronic Devices and Circuits	McGraw Hill Education	2011	2 nd edition

Reference Books

S.No	Authors	Title of the book	Publishers	Year of Publication	Edition
1.	Theraja. B.L	Basic electronics solid state	S.Chand	2012	Reprint (2012)
2.	Millman and Halkias	Integrated Electronics	Tata Mc	2008	48 th Reprint

Pedagogy

Lecture, Lecture with discussion, Technical quiz, Assignment

Course Designer

Ms. J. Aarthi

Semester-V	PHYSICS PRACTICAL - V	Hours/Week-3	
Core Practical –V		Credits-3	
Course Code-19UPH5CC5P		Internal 40	External 60

Objectives

- To apply the theoretical knowledge of spectral, electrical and physical aspects of materials through hands on learning experience.
- To impart the creative skills among the industrial applications

Course Outcomes

On the successful completion of the course, students will be able to:

Co Number	CO statement	Knowledge level
CO 1	Verify the Optical and Spectral Properties of prism and Grating	K1
CO 2	Apply the fundamental laws to determine the properties of the given material	K1
CO 3	Construct and Apply the principles of semiconductor Devices as vibrators, Amplifiers and Oscillators	K2,k3

Mapping With Programme Outcomes

CO's	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	S	M
CO2	S	S	M	S	M
CO3	S	S	M	S	S

S-Strong; **M**–Medium; **L**–Low

Syllabus

List of Experiments:

1. Spectrometer – Grating - dispersive power.
2. Spectrometer - Cauchy's constants.
3. Field along the axis of a coil – determination of M.
4. Koenig's method – Uniform bending.
5. M and H - Absolute determination using deflection and vibration magnetometer.
6. Regulated power supply using Zener diode - Percentage of regulation.
7. Single stage - RC coupled amplifier – Transistor.
8. FET Characteristics.
9. Emitter follower .
10. Astable Multivibrator.
11. AND, OR and NOT gates using discrete components
12. Op - Amp -Adder and Subtractor.

Text Books

S.No.	Authors	Title of the book	Year of Publication	Publishers	Edition
1	Dr. S. Somasundaram,	Practical Physics,	2012	Apsara publications, Tiruchirapalli	Reprint
2	Department of Physics	Practical Physics, (B.Sc. Physics Main),	1998	St.Joseph's College, Tiruchirapalli	Reprint

Reference Books

:

S.No.	Authors	Title of the book	Year of Publication	Publishers	Edition
1	S. Srinivasan,	A Text Book of Practical physics	2005	S. Sultan Chand	Reprint
2	R. Sasikumar	Practical Physics	2011	PHI Learning Pvt. Ltd New Delhi,	Reprint

Pedagogy

Demonstration and practical sessions

Course Designers

1. Ms.S.Priya
2. Ms.A.Mary Girija

Semester-V	MATERIALS SCIENCE	Hours/Week-5	
Major Based Elective –I		Credits-5	
Course Code-19UPH5MBE1A		Internal 25	External 75

Objectives

- To develop the knowledge in material science and to understand the chemical structure and bonding between the molecules
- To gain cognition on the defects in materials
- To acquire the knowledge about the materials and its mechanical properties

Course Outcomes

On the successful completion of the course, students will be able to:

CO Number	CO statement	Knowledge level
CO1	Define the different types of crystal structure and bonding in solids, and the physical ramifications of these differences. Give a type of bond, be able to explain its physical origin as well as strength	K1
CO2	Explain out the different kinds of technological properties of materials	K2
CO3	Classify the new materials in the material engineering and to understand their role in materials behavior	K2
CO4	Identify the materials defects and given a simple set on explaining the non – destructive testing in materials	K3
CO5	Explain the nuclear materials and uses of the materials in the space	K4

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	M	S	S	M	S
CO2	M	S	S	M	M
CO3	M	M	S	S	S
CO4	S	M	S	M	M
CO5	M	S	S	M	M

S – Strong; **M** – Medium; **L** – Low

Major Based Elective –I A
MATERIALS SCIENCE

Syllabus

UNIT – I: Crystal Structure and Chemical Bonds

15 hrs

Introduction to crystals – Classification of crystal system – Introduction to Bravais lattice – Lattice planes and Miller indices – Interplanar spacing in a cubic lattice – Cubic lattice – SC – BCC – FCC – Sodium chloride and Diamond crystal structure – Bonding of solids (Ionic, Covalent, Metallic, Hydrogen and Vander Waal)

UNIT – II: Technological Properties

14 hrs

Introduction to material science – Classification of engineering materials – Structure – Property relationships in materials - Stability and metastability – Selection of materials – Weldability – Machineability – Formability – Castability .

UNIT – III: New Materials and Phase Transformation in Materials

11 hrs

Metallic glass – Fiber reinforced materials – Metal matrix composites – SAW materials – Biomaterials – Ceramics.

Nucleation and Growth - solidification - Allotropic transformation- isothermal transformation - martensitic transformation - phase transformation in alloy steels.

UNIT –IV: Mechanical Properties and Non Destructive Testing

20 hrs

Fundamental Properties – Fatigue – Creep – Testing technique – Tensile – Compression – Hardness - Stress – Rupture – Elastic deformation – Fracture – Plastic deformation slip – Critical shear stress - Metals forming process – Deformation of crystals and polycrystalline materials.

Surface defect detection by NDT – Equipments using in NDT – Metallurgical microscope – Electron microscope – Scanning Electron Microscope(SEM) – Tunneling Electron Microscope (TEM) – Coolidge X-RAY tube – Production of ultrasonic waves – Magnetostriction ultrasonic generator – Piezo electric ultrasonic generator.

UNIT –V Materials for Nuclear and Space Applications

15 hrs

Nuclear fuels - fuel cladding- moderators, control materials -coolants - shielding materials - Space programme - structural material and their properties - system requirements - extreme high temperature materials - materials for thermal protection - pressure vessels - lubrication.

Text Books

S.No	Authors	Title of the Book	Publishers	Year of publication	Edition
1.	M.Arumugam	Material Science	Anuradha agencies, Kombakonam	2009	1 st edition
2.	V.Raghavan	Material Science and Engineering	Prentice Hall	1993	5 th edition
3.	S.K. Hayra Choudhury	Materials Science and Processes	Indian Book Distributing Co	1991	1 st edition

Reference Books

S.No	Authors	Title of the Book	Publishers	Year of publication	Edition
1.	S.O.Pillai	Solid State Physics	New Age International Private Limited	2005	6 th edition

Pedagogy

Chalk and talk, power point presentation, assignment, seminar, interaction, problem solving

Course Designer:

Ms.T.Noorunnisha

Semester-V	LASER PHYSICS	Hours/Week-5	
Major Based Elective –I		Credits-5	
Course Code-19UPH5MBE1B		Internal 25	External 75

Objectives

- To gain knowledge in the basic of lasers, enhance comprehension in the principles of lasers
- To familiarize with the diverse applications of lasers.

Course Outcomes

On the completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Define the interaction of radiation with matter	K1
CO2	Explain the basic principle of laser	K2
CO3	Characterize the different types of laser	K2
CO4	Summarize Properties of laser	K2
CO5	Apply the laser principle in various field	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	M	M
CO2	S	M	M	M
CO3	S	M	M	M
CO4	S	M	M	M
CO5	S	M	L	S

S – Strong; **M** – Medium; **L** - Low

Major Based Elective -IB LASER PHYSICS

Syllabus

UNIT I: Interaction of Radiation with Matter

15hrs

Introduction to electromagnetic radiation- wavelength- wave number- frequency- interaction of light with atoms and molecules-absorption- emission-kinetics of optical absorption-stimulated and spontaneous emission- intensity of spectral lines- line broadening mechanism.

UNIT II: Basic Principles of Laser

15hrs

Principle of lasers- population inversion-conditions of lasing action, characteristics of a laser coherence-monochromaticity- divergence- intensity- Einstein's co-efficients-laser pumping- two and three level laser systems.

UNIT III: Types of Lasers

15hrs

Solid state lasers-Ruby laser- Nd: YAG Laser- Semiconductor lasers- features of semiconductor lasers- diode lasers - Gas laser: He-Ne laser- CO₂ laser -liquid lasers: dye lasers and chemical lasers.

UNIT IV: Control of Laser Properties and Production

15hrs

Laser pumping-resonators- vibrational modes of resonators- number of modes per unit volume- open resonators-control resonators- Q factor-losses in the cavity-threshold condition-quantum yield-mode locking (active and passive).

UNIT V: Applications of Lasers

15hrs

Laser cutting – Welding – Drilling – Hologram – Recording and reconstruction of hologram- Lasers in Surgery – Lasers in ophthalmology – Lasers in cancer treatment -Optic fibre communication – Total internal reflection – Block diagram of fibre optic communication system – Advantages of fibre optic communication.

Text Books

S.No.	Authors	Title of the book	Year of Publication	Publisher name	Edition
1	B.B.Laud	Laser and Nonlinear Optics	2011	New Age Interational	3 rd Edition
2	K.Thyagarajan and A.K.Ghatak	Lasers Theory and Applications	1986	Plenum Press	2 nd Edition

Reference books

S. No.	Author name	Title of the book	Year of Publication	Publisher	Edition
1	Seigman	Lasers	1986	Oxford University Press	3 rd Edition
2	O.Seelto	Principles of Laser	2010	Springer Publication	5 th Edition

Pedagogy

Chalk and talk, Power Point Presentation, Group discussion and Seminars, Animation video and Quiz

Course Designer:

Dr.R.Gayathri

Semester-V	PHYSICS CONCEPTS THROUGH ANIMATION - PRACTICAL	Hours/Week-2	
Skill Based Elective - II		Credits-2	
Course Code-20UPH5SBE2AP		Internal 40	External 60

Objective

- To provide a basic skills in Simulation and Photoshop
- To Create a physics oriented animations using Flash package
- To expose the Photoshop tools to prepare physics oriented objects

Course Outcomes

On the successful completion of the course, the students will be able to:

CO Number	CO statement	Knowledge level
CO1	Develop the skills to simulate physics concepts	K3
CO2	Construct the animation of physics oriented objects using flash	K3
CO3	Construct the basic circuit diagram of physics using photoshop	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	M	S	S	S
CO3	S	M	M	S	S

S-Strong; **M**-Medium; **L**-Low

Skill Based Elective – II A
PHYSICS CONCEPTS THROUGH ANIMATION

Syllabus

List of Practicals (Any 8)

1. Create and animate Shape Tween
2. Create an animation for bouncing a ball
3. Create an animation of Simple Pendulum
4. Create an animation of Atomic Model
5. Create an animation of Dispersion of Light
6. Create an animation of Projectile Motion
7. Create an animation of Law of Gravitation
8. Create an animation of Newton's Law
9. Create an animation of Kepler's law of ellipses
10. Draw a simple Physics Circuit

Text Books

S.No	Authors	Title of the book	Publishers	Year of Publication	Edition
1.	Kogent Learning Solutions	Flash CS6 in simple Steps	Dreamtech Press	2013	Revised Edition
2.	DT Editorial Services	Photoshop CS6 in Simple Steps	Dreamtech Press	2018	New Edition

Reference Book

S.No	Authors	Title of the book	Publishers	Year of Publication	Edition
1.	Daven Brown and et.al.,	Web Development for the Designer	Macmillan	1997	First Edition

Web References

1. <https://www.udemy.com/course/animation-in-flash/>
2. <http://www.floobynooby.com/flashcourseA.html>

Pedagogy

Practical demonstration, Power Point Presentation

Course Designer

Ms. J. Aarthi

Semester-V	HOUSEHOLD APPLIANCES SERVICING - PRACTICAL	Hours/Week-2	
Skill Based Elective - II		Credits-2	
Course Code- 20UPH5SBE2BP		Internal 40	External 60

Objective

- To create knowledge about the basic safety practices.
- To provide basic knowledge about household appliances and its maintenance.

Course Outcomes

On the successful completion of the course, the students will be able to:

CO Number	CO Statement	Knowledge Level
CO1	Understand the working function of each household appliances	K2
CO2	Analyse the capacity power consumption for each appliance	K3
CO3	Identify the problems arises in household appliances	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	M	M	S	S
CO2	S	M	M	S	M
CO3	S	M	S	M	S

S-Strong; **M**-Medium; **L**-Low

Skill Based Elective – II B
HOUSEHOLD APPLIANCES SERVICING - PRACTICAL

Syllabus

List of Practicals (Any 8)

1. Troubleshooting of Electric Short Circuits.
2. Repairing and maintenance of Tube Light.
3. Identification of problems in Ceiling Fan.
4. Troubleshooting of Iron Box.
5. TV Repair for beginners.
6. Rectifying problems in Induction Plate.
7. Troubleshooting of Geyser.
8. Repairing and maintenance of Air Conditioner.
9. Troubleshooting of Automatic Electric Dryer.
10. Rectifying problems in Smart Watches.

Text Books

S. No	Authors	Title of the book	Publishers	Year of Publication	Edition
1.	Eric Kleinert	Troubleshooting and Repairing Major Appliances	McGraw-Hill	2013	-
2.	Homer L. Davidson	Consumer Electronics Troubleshooting & Repair Handbook	McGraw-Hill	1999	-

Reference Book

S. No	Authors	Title of the book	Publishers	Year of Publication	Edition
1.	H. Brooke Stauffer and John E. Traister	Electrician's Troubleshooting and Testing Pocket Guide	McGraw-Hill	2007	Third Edition

Web Reference

<https://www.galvinpower.org/how-to-fix-short-circuits/>

Pedagogy

Demonstration and Practical Sessions

Course Designer

Ms. R. Mekala

Semester-V	WEB DESIGNING - PRACTICAL	Hours/Week-2	
Skill Based Elective - III		Credits-2	
Course Code- 20UPH5SBE3AP		Internal 40	External 60

Objectives

- To understand the basic concepts in web designing.
- To create and develop a web page.

Course Outcome

On the successful completion of the course, the students will be able to:

CO Number	CO statement	Knowledge Level
CO1	Discuss the basic ideas for create the web page	K2
CO2	Demonstrate the structure and working in a website programme	K2
CO3	Utilize the website	K3
CO4	Develop and design the web pages	K3
CO5	Illustrate formatting and linking website pages	K3

Mapping with Program Outcomes

Cos	PO1	PO2	PO3	PO4	PO5
CO1	M	S	M	M	S
CO2	M	S	M	S	S
CO3	M	M	S	M	S
CO4	M	S	M	S	S
CO5	S	M	M	M	S

S-Strong; **M**-Medium; **L**-Low

SKILL BASED ELECTIVE-III A WEB DESIGNING -PRACTICAL

Syllabus

List of experiments (Any 8)

1. Create a web page to demonstrate font variations.
2. Create a web page illustrating text formatting tags.
3. Prepare a sample code to illustrate three lists in HTML.
4. Create a HTML page with 7 separate lines in different colors. State color of each line in its text.
5. Write the HTML code to form a table.
6. Create a web page using form elements.
7. Create your personal website.
8. Construct a HTML code to design your own Curriculum Vitae.
9. Create a website to explain the physics experiments.
10. Design a webpage using HTML for a scientific supplier.

Text Books

S.No	Authors	Title of the book	Publishers	Year of Publication	Edition
1.	Weixel, Fulton, Barkslade, Morse	Multimedia Basics	Eswar Press	2004	-

Reference Books

S.No	Authors	Title of the book	Publishers	Year of Publication	Edition
1.	R. N. Srivastava	Web Technology	Global Academic Publishers & Distributors	2011	First edition
2.	Daniel Gray	Web Design Fundamentals Hand Book	Sun Rise Printers Shahdara, Delhi	2000	First edition

Web References

<https://www.w3schools.com/html>

Pedagogy

Power Point presentation, Practical demonstration

Course Designer

Dr. B. Anitha

Semester-V	ELECTRICAL WIRING- PRACTICAL	Hours/Week-2	
Skill Based Elective - III		Credits-2	
Course Code- 20UPH5SBE3BP		Internal 40	External 60

Objective

- To acquire an experience to handle basic electrical equipment.
- To impart knowledge on electrical wiring practically.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the fundamental concepts involving electrical wiring	K1
CO2	Recognize basic electrical equipments.	K1
CO3	Explain domestic wiring procedures practically	K2
CO4	Construct different wiring system	K3
CO5	Build hands on experience to fabricate simple electrical appliance at home.	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	L	S	S	M	M
CO2	M	S	S	M	M
CO3	S	M	S	S	M
CO4	M	S	S	S	S
CO5	M	M	S	S	M

S – Strong; **M** – Medium; **L** - Low

Skill Based Elective – III B
ELECTRICAL WIRING- PRACTICAL

Syllabus

List of experiments (Any 8)

1. Replacement of a Fuse wire at home, Fitting of lamp in a lamp holder, Three pin plug connection.
2. Wire up a circuit in conduit system one lamp controlled by one switch .
3. Wire up a circuit in conduit system two lamps (in series) with one switch.
4. Wire up a circuit in conduit system two lamps (in parallel) with one switch.
5. Stair case lighting system using two-way switch.
6. Fluorescent Lamp Wiring.
7. Corridor wiring
8. Decorative serial LED light connection at home
9. Fabrication of Extension Board (One Switch & One Socket)
10. Residential house wiring using Switches, Fuse, Indicator, Lamp and Energy meter.

Text Books

S.No.	Authors	Title of the book	Publishers	Year of Publication	Edition
1.	Bawa H.S	Workshop Practice	Tata McGraw – Hill Publishing Company Limited,	2007	-
2.	Jeyachandran K.Natarajan S. & Balasubramanian S	A Primer on Engineering Practices Laboratory	Anuradha Publications	2007	-
3.	Del Toro	Electrical Engineering Fundamentals	Pearson Education, New Delhi, .	1989	Second edition

Reference Book

S.No.	Authors	Title of the book	Publishers	Year of Publication	Edition
1.	Jeyapoovan T., Saravanapandian M. & Pranitha S	Engineering Practices Lab Manual	Vikas Publishing House Pvt.Ltd	2006	-
2.	Kannaiah P. & Narayana K.L	Manual on Workshop Practice	Scitech Publications	1999	-

Web References

1. <https://www.instructables.com/Serial-LED-Light-Using-Multi-Color-LEDs/>
2. <https://www.instructables.com/Make-Your-Own-Extension-Board/>

Pedagogy

Demonstration and Practical sessions

Course Designer

Dr.T.Noorunnisha

Semester-VI	DIGITAL ELECTRONICS AND MICROPROCESSOR FUNDAMENTALS	Hours/Week-5	
Core Course – VIII		Credits-4	
Course Code-19UPH6CC8		Internal 25	External 75

Objectives

- To acquire knowledge of the basic Logic gates and its combinational circuits.
- To understand the fundamentals of microprocessor programs.

Course Outcomes

On the successful completion of the course, students will be able to:

CO Number	CO Statement	Knowledge Level
CO1	Classify different number system	K2
CO2	Analyze different methods used for simplification of Boolean expressions.	K3
CO3	Develop Combinational logic circuits.	K3
CO4	Develop synchronous and asynchronous sequential circuits.	K3
CO5	Utilize the knowledge of programming concepts of 8085 for various applications.	K4

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	L
CO2	S	S	S	S	S
CO3	S	S	M	S	S
CO4	S	S	S	S	S
CO5	S	S	S	M	L

S-Strong; **M**-Medium; **L**-Low

CORE COURSE – VIII

DIGITAL ELECTRONICS AND MICROPROCESSOR FUNDAMENTALS

Unit-I: Digital Electronics Fundamentals

20 hrs

Number Systems – Binary, Decimal, Hexa Decimal -Conversion from one number system to another - BCD code - Logic gates - AND, OR, NOT gates and its truth tables-NAND and NOR gates - Universal building blocks - Binary addition-subtraction-multiplication and division-complement- subtraction by 1's and 2's complement forms.

Unit-II: Simplification of Logic Circuits

15hrs

Rules and laws of Boolean algebra - Demorgan's Theorems – Standard sum of product and product of sum forms –Min term and Max terms - Simplification of Boolean Expressions using Boolean Rules -Minimization Techniques for Boolean Expressions using Karnaugh Map(2,3 and 4 variables).

Unit-III: Combinational Circuits:

15 hrs

Half adder- full adder- Half subtractor - Full subtractor - 4-bit adder/subtractor- Decoder - Encoder Multiplexer - Demultiplexer - A/D conversion – Successive approximation method – D/A conversion – R-2R ladder network.

Unit-IV: Sequential Logic Circuits

20hrs

Flip Flops: Introduction to Sequential Circuits -Flip Flops – RS Flip Flop – Clocked RS Flip Flop D Flip Flop – JK Flip Flop – T Flip Flop – Triggering of Flip Flops – Master Slave Flip Flop

Shift Registers: Introduction to shift registers-Basic Shift Register Operations-Types of shift registers - SISO – SIPO – PIPO – PISO- Applications of Registers.

Counters: Introduction to counters -Types of Counters-Asynchronous and synchronous counters –Ring counter-Johnson's counter –Ripple counter-4 Bit Binary Up/Down counter-BCD counter-Applications of counters.

Unit-V: Microprocessor (INTEL 8085)

20 hrs

Introduction to microprocessor and microcomputer – Architecture of Intel 8085 – Address bus – Data bus – Control bus – Pin configuration – Flags – Instruction format – Types of instructions – Addressing modes – Assembly language programming – Programmes for addition, subtraction, complement- Largest and smallest from the given list- Ascending and Descending Order.

Textbooks

S.No	Authors	Title of the book	Publishers	Year of Publication	Edition
1.	Donald P Leach, Albert Paul Malvino and Goutam Saha	Digital principles and applications	McGraw-Hill Inc, US	1995	7 th Edition
2.	V. Vijayendran	Digital fundamentals	S. Viswanathan Printers and Publishers Pvt. Ltd	2003	1 st Edition
3.	Virendra Kumar	Digital electronics Theory and Experiments	New Age International Publishers	2007	2 nd Edition
4.	B.Ram	Fundamentals of Microprocessor and Microcomputers	Dhanpat Rai Publications, New Delhi	1986	5 th Edition

Reference books

S.No	Authors	Title of the book	Publishers	Year of Publication	Edition
1.	Jacob Millman and Christo Halkias, Chetan D Parikh	Integrated Electronics	Mc. Graw Hill	2001	2 nd Edition
2.	Herbert Taub and Donald Schilling	Digital integrated electronics	Mc. Graw Hill	1977	2 nd Edition
3.	Ramesh S.Gaonkar	Microprocessor Architecture Programming, And Applications with the 8085.	Pearson Education	1984	5 th Edition

Pedagogy

Chalk and talk, Group Discussion, Seminar, Assignment, Power Point Presentation.

Course Designer

Ms.D.Devi

Semester-VI	CLASSICAL AND QUANTUM PHYSICS	Hours/Week-6	
Core Course – IX		Credits-5	
Course Code-19UPH6CC9		Internal 25	External 75

Objectives

- To expose the students to the fundamentals of Theoretical Physics
- To provide the students with knowledge of the applications of Quantum Physics

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

CO Number	CO Statement	Knowledge Level
CO 1	Define the concepts of Conservation Laws for a single particle, D'Alembert's Principle, Lagrange's equation and its applications.	K1
CO 2	Relate the different concepts of Hamilton's equation of motion.	K2
CO 3	Classify the types of classical concepts and explain the De Broglie's matter waves.	K2
CO 4	Identify the basic postulates of quantum mechanics.	K3
CO 5	Develop the knowledge about solvable quantum states.	K3

Mapping with Programme outcomes

Cos	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	M	M
CO2	S	S	M	M	M
CO3	S	S	S	M	M
CO4	S	M	M	M	M
CO5	S	S	M	M	M

S – Strong; **M** – Medium; **L** – Low

CORE COURSE – IX

CLASSICAL AND QUANTUM PHYSICS

Unit – I: Elementary Principles of Classical Mechanics

18 hrs

Newtonian mechanics: Conservation laws for a single particle and a system of particles – Types of constraints – Generalized coordinates – D'Alembert's principle and Lagrange's equation of motion – Applications to : (a) Motion of one particle, (b) Atwood's machine and (c) bead sliding on rotating wire.

Unit – II: Hamiltonian Formalism

18 hrs

Variational principle and derivation of Hamilton's equation of motion – Principle of least action – Phase space – cyclic coordinates – conservation theorems: generalized momenta and energy.

Unit – III: Genesis of quantum transition

20 hrs

Inadequacy of classical concepts: Black body radiation - Planck's hypothesis – Photoelectric effect – Compton effect – de Broglie's hypothesis – matter waves – wave length, wave velocity and group velocity – Experimental evidences for de Broglie's matter waves: Davison and Germer experiment – G.P. Thomson's experiment – Heisenberg's uncertainty Principle.

Unit – IV: Basic formalism of quantum mechanics

18 hrs

Setting of Schrodinger wave equation – Plane wave solution - Probability interpretation of ψ and conditions on wave equation – Eigenfunctions and eigenvalues – Expectation values Linear and hermitian operators and their properties - Postulates of quantum mechanics - Ehrenfest's theorem.

Unit – V: Exactly solvable systems

16 hrs

Free particle - Linear harmonic oscillator – Particle in a box – Rectangular barrier potential and tunnel effect – Rigid rotator – Hydrogen atom.

Text books

S. No.	Authors	Title of the book	Publishers	Year of Publication	Edition
1.	S.L. Gupta, V. Kumar and H.V.Sharma	Classical Mechanics	S.Chand & Company Ltd	2012	Revised
2.	R. Murughesan	Modern Physics	S. Chand & Company Ltd, New Delhi	2016	Revised
3.	G. Aruldas	Classical Mechanics	PHI Publisher	2008	Revised

Reference books

S. No.	Authors	Title of the book	Publishers	Year of Publication	Edition
1	Ajoy Ghotak and S. Loganathan	Quantum Mechanics: Theory and Applications	Mc.Graw Hill	1999	6 th
2	H.Goldstein	Classical Mechanics	Narosa Book distributors, New Delhi	1980	Revised
3	N.C.Rana and P.S.Joag	Classical Mechanics	Tata Mc. Graw Hill, New Delhi	1991	Revised
4	P M. Mathews and K. Venkatesan	A Text Book of Quantum Mechanics	Tata Mc.Graw Hill, New Delhi	1987	Revised

Pedagogy

Lecture, Seminar, Interaction, Assignment, Power Point Presentation.

Course Designer

Dr. M. Kavimani

Semester – VI	PHYSICS PRACTICAL - VI	Hours/Week - 3	
Core Practical – VI		Credit - 3	
Course Code - 19UPH6CC6P		Internal 40	External 60

Objectives

- To apply the theoretical knowledge of Digital electronics and Microprocessor through hands on learning experience.
- To enhance the problem solving skills in Digital electronics and Microprocessor

Course Outcomes

On the successful completion of the course, students will be able to:

CO Number	CO statement	Knowledge level
CO 1	Apply the Microprocessor concept mathematical to obtain quantitative results for arithmetic progression	K1
CO 2	Demonstrate the Basic and the Universal gates	K2
CO 3	Construct and analyses the concepts of multiplexers, shift registers and counters.	K3
CO 4	Apply the concepts of digital electronics and verify the results	K3

Mapping with Programme Outcomes

CO's	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	S	M
CO2	S	S	M	S	M
CO3	S	S	M	S	M
CO4	S	S	M	S	S

S–Strong; **M**–Medium; **L**–Low

CORE PRACTICAL – VI

PHYSICS PRACTICAL –VI

List of Experiments: Any Twelve

Section- A – Digital Electronics

1. AND, OR and NOT gates using IC's.
2. NAND as universal gate.
3. NOR as universal gate.
4. Half Adder and Full adder circuits using logic gates.
5. Half Subtractor and Full Subtractor circuits using logic gates.
6. Flip flops using gates.
7. Demorgan's theorem.
8. BCD to 7 segment decoder- 7segment Led display.
9. Digital to analog converter.
10. Analog to digital converter.

Section - B Microprocessor 8085.

1. 8-bit addition and 8-bit subtraction.
2. 8-bit multiplication and 8-bit division.
3. Conversion from decimal to hexadecimal system.
4. Conversion from hexadecimal to decimal system.

Text Books

S.No.	Authors	Title of the book	Publishers	Year of Publication	Edition
1	Dr.S.Somasundaram	Practical Physics,	Apsara publications Tiruchirapalli	2012.	Reprint
2	Department of Physics	Practical Physics	(B.Sc Physics Main), St. Joseph's College, Tiruchirapalli.	1998	Reprint

Reference Books

S.No.	Authors	Title of the book	Publishers	Year of Publication	Edition
1	S.Srinivasan, S.Sultan	A Text Book of Practical physics	Chand publications	2005	Reprint
2	R. Sasikumar	Practical Physics	PHI Learning Pvt. Ltd	2011	Reprint

Pedagogy

Demonstration and practical sessions

Course Designers

1. Ms. S.Priya
2. Ms. A.Mary Girija

Semester-VI	COMMUNICATION PHYSICS	Hours/Week-5	
Major Based Elective – II		Credits – 5	
Course Code- 19UPH6MBE2A		Internal 25	External 75

Objectives

- To acquire knowledge in basic concepts of communication systems.
- To learn about function of various communication systems.

Course Outcomes

On the successful completion of the course, the students will be able to:

CO Number	CO statement	Knowledge level
CO1	Outline the basic concepts of modulation and demodulation	K1
CO2	Critique the ideas of radar system and its applications	K3
CO3	Predict the parameters such as total internal reflection, acceptance angle and numerical aperture in order to formulate the optical sensor	K3
CO4	Utilization of GSM, Cell, FAX, Modem and Wi-Fi in mobile communication system	K3
CO5	Design and analysis of satellite communication systems	K4

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4	PO5
CO1	M	M	S	S	M
CO2	M	S	S	M	M
CO3	S	S	S	M	M
CO4	S	S	S	S	S
CO5	M	M	S	M	M

S–Strong; **M**–Medium; **L**–Low

MAJOR BASED ELECTIVE – II A
COMMUNICATION PHYSICS

UNIT- I: Radio Communication

16 hrs

Modulation – Need for modulation – Types of modulation – Modulation factor – Limitations of amplitude modulation – Frequency modulation – Comparison of AM and FM modulation – Demodulation – Essentials in demodulation – AM and FM radio receivers – Difference between FM and AM receivers.

UNIT-II: Radar Communication

13 hrs

Basic radar system – Radar range – Antenna scanning – Pulsed radar system – A-scope – Plan position indicator – Tracking radar – Moving target indicator – Doppler effect – MTI Principle – CW doppler radar – Frequency modulator CW Radar.

UNIT-III: Optical Fiber Communication

16 hrs

Structure of optical fiber – Principal and propagation of light in optical fiber – Total internal reflection – Acceptance angle – Numerical aperture – Types of optical fibers based on material – Number of modes – Refractive index profile – Fiber optical communication system – Fiber optic sensors.

UNIT- IV: Wireless Communication

15 hrs

GSM – Mobile services– Concept of cell – System architecture – Radio interface – Logical channels and frame hierarchy – Protocols – Localization and calling – Handover– Facsimile (FAX) – Application – VSAT (very small aperture terminals) – Modem – IPTV (internet protocol television) – Wi-Fi – 3G.

UNIT-V: Satellite Communication

15 hrs

Introduction to satellite communication system – Satellite orbits – Classification of satellites – Basic components of satellite communication – Constructional features of satellites – Satellite foot points – Satellite communication in India.

Text Books

S.No	Author name	Title of the book	Publisher name	Year of Publication	Edition
1.	Metha V.K	Principles of Electronics	S.Chand	2013	Reprint
2.	Anokh Singh and Chopra A.K	Principles of communication Engineering	S.Chand	2013	Reprint
3.	Mani I. P	A text book of Engineering Physics	Dhanam Publications	2014	Revised

Reference Books

S.No	Author name	Title of the book	Publisher name	Year of Publication	Edition
1.	Dennis Roddy, John Coolen	Electronic Communication	PHI	1990	3 rd Edition
2.	Gerd Keiser	Optical fiber communications	McGrw Hill	2000	Reprint
3.	William C.Y. lee	Cellular telecommunication	Tata Mcgraw hill	1991	2 nd Edition

Pedagogy

Lecture with Discussion, Power point presentation, Seminar, Assignment.

Course Designer

Dr. B. Anitha

Semester-VI	COMPUTATIONAL PHYSICS	Hours/Week-5	
Major Based Elective – II B		Credits – 5	
Course Code- 19UPH6MBE2B		Internal 25	External 75

Objectives

- To solve the problems in physics using computational methods using MAT Lab.
- To Learn Scientific Word Processing using programming tools for preparing articles, papers etc. which include mathematical equations, picture and tables.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To understand the basic programming techniques in MATLAB.	K1
CO2	To address analytically intractable problem errors	K2
CO3	Create a user-interface graphics objects in MAT LAB	K2
CO4	To understand various numerical techniques	K2
CO5	To show how physics can be applied in a much broader context than discussed in traditional curriculum	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	M	M	M
CO2	S	M	M	M
CO3	S	M	M	M
CO4	S	M	M	M
CO5	S	M	M	M

S – Strong; **M** – Medium; **L** – Low

MAJOR BASED ELECTIVE-II B COMPUTATIONAL PHYSICS

UNIT I: Need of Computational Tools

10hrs

Example of problems in physics requiring computational approach- Basic computer architecture and latest advancements - Introduction to MATLAB - MATLAB Features -Desktop windows- MATLAB help and demos - MATLAB Functions-operators and Commands-saving and Loading data.

UNIT – II: Error Analysis

15hrs

Need for error analysis-Definition of error - Absolute error - Relative error - Precision - Addition - Subtraction -Multiplication - Division - Error in numerical methods - Truncation error - Round off Errors - Error propagation in arithmetic operations - Error propagation in iterated algorithms - Methods for reducing error - Mean - Median - Mode - Standard deviation -Variance - Correlation.

UNIT – III: Matlab and Data Visualization

15hrs

Creation of arrays and matrices - Arithmetic Operations– Saving and Restoring- - Solution of simultaneous equations- MATLAB plot module – Import export data - Plotting graphs-1D plot – 2D plot – mesh – surf – 3D plots.

UNIT – IV: Numerical Methods using MAT Lab

15hrs

Roots of algebraic and transcendental equations – bisection method, Newton Raphson method- solution of simultaneous linear equations by Gauss elimination methods- Interpolation – Lagrangian interpolation-Newton's interpolation-Numerical Integration: Trapezoidal, Simpson's method

UNIT –V: - Applications in Physics using MAT Lab

20hrs

Calculate time period using Simple Pendulum -Verify Hooke's Law - Falling object in one dimension - Two dimensional motion- Projectile motion - V-I Characteristics of Junction and Zener diode .

Text Books

S.No.	Authors	Title of the book	Year of Publication	Publisher name	Edition
1	Amos Gilat	MATLAB An introduction with Applications	2007	John Wiley & Sons	4 th Edition
2	Kincaid D. and Chenney W	Numerical Analysis: Mathematics of Scientific Computing	2009	AMS, University Press, Hyderabad	1 st Edition
3	Rizwann Butt	Introduction to Numerical Analysis using MATLAB	2008	Jones and Bartlett Publishers	1 st Edition
4	Sastry S.S	Introductory Methods of Numerical Analysis	2005	Prentice Hall of India	4 th Edition
5	V.K.Mittal, R.C.Verma & S.C.Gupta	Computational Physics	2009	ANE Books	1 st Edition

Reference Books

S.No.	Author name	Title of the book	Year of Publication	Publisher	Edition
1	Joel Franklin	Computational Methods for Physics	2018	Cambridge University Press	1 st Edition
2	Gupta, Agarwal and Varshney	Design And Analysis of Algorithms	2008	PHI Learning	2 nd Edition

Pedagogy

Chalk and talk, Group discussion and Seminars and Quiz

Course Designer:

Dr.R.Gayathri

Semester-VI	MEDICAL PHYSICS	Hours/Week-5	
Major Based Elective – III		Credits – 4	
Course Code- 19UPH6MBE3A		Internal 25	External 75

Objectives

- To gain knowledge in general concepts of human body mechanism.
- To understand the principles, features and applications of ECG, EMG and EEG

Course Outcomes

On the successful completion of the course, students will be able to:

CO number	CO statement	Knowledge level
CO1	List out the importance of physics in medicine.	K1
CO2	Explain the concept of mechanics of a human body.	K2
CO3	Compare the principles of ECG EMG and EEG.	K2
CO4	Explain the production, types and application of lasers in medicine.	K2
CO5	Summarize the ultrasound imaging method and its application in medical field.	K2
CO6	Make use of medical imaging techniques in day today life.	K3

Mapping with Programme Outcomes

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	M	S
CO2	S	M	S	M	M
CO3	M	S	S	S	M
CO4	S	M	M	S	M
CO5	S	M	M	S	S
CO6	M	S	S	S	S

S-Strong; **M**-Medium; **L**-Low

MAJOR BASED ELECTIVE – III A

MEDICAL PHYSICS

UNIT - I: Mechanics of Human Body

15 hrs

Static, Dynamic and Frictional forces in the Body –Composition, properties and functions of Bone – Heat and Temperature – Temperature scales –Clinical thermometer –thermography – Heat therapy – Cryogenics in medicine– Heat losses from body – Pressure in the Body – Pressure in skull, Eye and Urinary Bladder.

UNIT- II: Medical Instrumentation

15 hrs

Measurements of Non electrical parameters-Respiration-heart rate-temperature-blood Pressure - Electrical activity of the heart-effect of electrified on cardiac muscles stimulation laws-Arhythmias its detection- principles of Electro cardiography, Electromyography-Electroencephalography- measurement and displaying and recording of ECG- features of EMG &EEG and their applications.

UNIT - III: Lasers in Medicine

15 hrs

Introduction to laser-principle and production of laser- effects of laser radiation on tissues, Different types of lasers- photo thermal effects, photochemical effects –photodynamic therapy, Laser applications in therapy and diagnosis-opthalmology,Fibreoptic endoscopy and dentistry. Laser as a beautician's tool-laser hazards-biological effects,

UNIT- IV: Medical Imaging Techniques

15 hrs

X-ray imaging-properties of X -rays- Production of X-rays-Planar X-ray imaging-instrumentation- γ -ray imaging-principle and working of single crystal scintillation camera (gamma camera) Magnetic resonance imaging-Introduction-ideas of NMR-Advantages- Clinical MRI, MRI instrumentation-Biological effect of NMR.

UNIT- V: Ultrasound Imaging

15 hrs

Ultrasound imaging- generation and detection of ultrasound - Properties -reflection - Transmission - attenuation - Ultrasound Transducers, Ultrasound instrumentation Mechanical and electronic probes-probes for external and internal use-Principles of A-mode-B-mode-M-mode-Scanning. Hazards and safety of ultrasound.

Textbooks

S.No	Authors	Title of the book	Publishers	Year of Publication	Edition
1.	J.R.Cameron and J.G.Skofonick	Medical Physics	John Wiley & Sons	1978	1 st Edition
2.	R .W Wayanant	Lasers in Medicine	Plenum	2001	1 st Edition
3.	S .Webb	The physics of medical imaging	Hilger	1988	2 nd Edition
4.	R. S Khandpur	Handbook of Biomedical Instrumentation	Tata McGraw-Hill	1997	3 rd Edition
5.	S.Atheena Milagi Pandian	Biomedical Engineering	Amazon	2019	1 st Edition
6.	W.Mark Saltzman	Biomedical Engineering	Cambridge University Press	2009	1 st Edition

Reference books

S.No.	Authors	Title of the book	Publishers	Year of Publication	Edition
1.	O.Glasser	Medical Physics Volume 1-3	Chicago	1946	2 nd Edition
2.	Leslie Cromwell	Biomedical Instrumentation and measurement	Prentice hall of India	1999	2 nd Edition
3.	John Webster G.	Medical Instrumentation Application and Design	John Wiley and sons	1998	3 rd Edition

Pedagogy

Chalk and talk, Group Discussion, Seminar, Assignment, PPT.

Course Designer

Ms.A.Mary Girija

Semester-VI	ASTROPHYSICS AND COSMOLOGY	Hours/Week-5	
Major Based Elective – III		Credits – 4	
Course Code- 19UPH6MBE3B		Internal 25	External 75

Objectives

- To provide students with the basic knowledge about the theory and techniques of observational astronomy and physics of the astrophysical phenomenon.
- To Learn the the large scale structure of the Universe and its history

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Define the major constituents of the universe and planets	K1
CO2	Explain the stellar astronomy	K2
CO3	Analyse the milky way galaxy	K2
CO4	Analyse the clusters in galaxy	K2
CO5	Derive the Big bang theory	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	M	M
CO2	S	M	M	M
CO3	S	M	M	M
CO4	S	M	M	M
CO5	S	M	L	S

S – Strong; M – Medium; L - Low

MAJOR BASED ELECTIVE-III B ASTROPHYSICS AND COSMOLOGY

UNIT I: Introductory astronomy

15hrs

History of Astronomy-Overview of the major constituents of the universe- Solar System-Planets
- laws of motion of planets-inner planets- outer planets- Extra solar planets- Methods of
detection of extra solar planets- Black body radiation-specific intensity- luminosity

UNIT II: Stellar astronomy

20hrs

Measurement of stellar Parameters: Stars-general Distances to stars - trigonometric parallax;
Stellar brightness – luminosity- flux-apparent magnitude- magnitude system- distance
modulus- colour index- extinction- colour temperature- effective temperature- spectral
classification of stars.

Stellar structure: Equation of Hydrostatic equilibrium - Bounds on Pressure and temperature oin
stars. Basics of radiative transfer emission coefficient- absorption coefficient-source function.

UNIT III: Evolution of stars

15hrs

Stellar Evolition: General idea of Main sequence. Quanlitative discussion on evolution away
from Main sequence.

End Stage of Stars: White Dwarfs, Neutron stars- Estimating their Mass radii relation.

Binary stars : - visual binary, eclipsing binary - spectroscopic binary

UNIT IV: Galactic and Extragalactic astronomy

15hrs

Milky way- Hubble classification of galaxies-Spiral galaxies-Elliptical galaxies-Irregular
galaxies- Dwarf galaxies-Masses of galaxies-Rotation curves of galaxies-Dark matter. Groups
and clusters of galaxies- Interacting galaxies-

UNIT V: Cosmology

10hrs

Standard Candles (Cepheids and SNe Type1a), Cosmic Distance Ladder, Olbers Paradox,
Hubble Expansion, Cosmological Principle, Newtonian Cosmology

Text Books

S.No.	Authors	Title of the book	Year of Publication	Publisher name	Edition
1	Shu F	The physical universe,	1982	Univ Science Book	1 st Edition
2	Bradley W. Carroll & Dale A. Ostlie	An introduction to Modern Astrophysics	2006	Pearson	2 nd Edition
3	IGNOU	Basics of Astronomy - IGNOU course book PHE-15 Astronomy and Astrophysics	2006	Neeraj Publications	1 st Edition

Reference Books

S.No	Author name	Title of the book	Year of Publication	Publisher	Edition
1	Harwit M.	Astrophysical concepts	2000	Springer	2 nd Edition
2	G. B. Rybicki & Lightman A. P.	Radiative processes in Astrophysics	1986	Wiley-VCH	2 nd Edition

Pedagogy:

Chalk and talk, Power Point Presentation, Group discussion and Seminars, Quiz

Course Designer:

Dr.R.Gayathri

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)
NATIONALLY ACCREDITED (III CYCLE) WITH “A” GRADE BY NAAC
ISO 9001:2015 Certified
TIRUCHIRAPPALLI – 18

PG & RESEARCH DEPARTMENT OF PHYSICS



M.Sc., PHYSICS SYLLABUS
2023-2024 and Onwards



Cauvery College for Women (Autonomous)

PG & Research Department of Physics

M.Sc., Physics

LEARNING OUTCOMES BASED CURRICULUM FRAMEWORK (CBCS – LOCF)

(For the Candidates admitted from the Academic year 2023-2024 onwards)

Semester	Course	Course Title	Course Code	Inst. Hrs. / week	Credits	Exam			Total
						Hrs.	Marks		
							Int.	Ext.	
I	Core Course– I (CC)	Mathematical Physics	23PPH1CC1	6	5	3	25	75	100
	Core Course – II (CC)	Classical Mechanics and Relativity	23PPH1CC2	6	5	3	25	75	100
	Core Course –III (CC)	Linear and Digital ICs and Applications	23PPH1CC3	6	5	3	25	75	100
	Core Practical - I (CP)	Practical I	23PPH1CC1P	6	5	3	40	60	100
	Discipline Specific Elective Course-I (DSE)	Physics of Nano Science and Technology	23PPH1DSE1A	6	3	3	25	75	100
		Energy Physics	23PPH1DSE1B						
		Digital Communication	23PPH1DSE1C						
	Total				30	23	-	-	-

INTERNSHIP will be carried out during the first semester holidays and the internship report will be evaluated and included in the second semester mark statement.

THEORY	
Attendance	3
Library	3
Seminar/Quiz/ Assignment	4
CIA - I	7.5
CIA - II	7.5
Total	25

PRACTICAL	
Observation	5
Record	5
Continuous Performance in Practical	5
Model Practical	10
Total	25

SEMESTER -I	INTERNAL MARKS: 25		EXTERNAL MARKS: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
23PPH1CC1	MATHEMATICAL PHYSICS	CC - I	6	5

Course Objectives

- To equip students with the mathematical techniques needed for understanding theoretical treatment in different courses taught in their program
- To extend their manipulative skills to apply mathematical techniques in their field.
- To help students apply Mathematics in solving problems of Physics
- To enhance problem solving skills and to give the ability to formulate, interpret and draw inferences from the mathematical solutions.

Pre-requisites

- Strong Foundation of vector Analysis.
- Understand and appreciate the properties of complex variable.
- Commendable knowledge of special functions to apply Physics Problems.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Remember and Understand the various mathematical concepts used in physics.	K1,K2
CO2	Apply mathematical tools like vector, matrix, complex integration, Fourier and Laplace series, special function will prepare the student to solve ODE; PDE's which model physical phenomena.	K3
CO3	Analyse the vector, linear, simultaneous and differential equations which will be necessary to pursue other areas in physics.	K4
CO4	Evaluate the Laplace transform and the Fourier transformations of different function, grasp how these transformations can speed up analysis and correlate their importance in technology	K5
CO5	Solve the physical problems using mathematical techniques.	K6

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	2	2	1	3	3	2	2	2
CO2	3	2	1	2	1	3	1	2	2	2
CO3	3	2	1	2	1	3	3	1	2	2
CO4	3	1	3	2	1	1	3	2	2	2
CO5	3	1	2	2	1	3	3	2	3	1

“1” - Slight (Low) Correlation

“2” - Moderate (Medium) Correlation;

“3” - Substantial (High) Correlation

“-” - indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	LINEAR VECTOR SPACE: Basic concepts – Definitions-examples of vector space – Linear independence - Scalar product-Orthogonality – Gram-Schmidt orthogonalization procedure – linear operators – Dual space- ket and bra notation – orthogonal basis – change of basis – Isomorphism of vector space – projection operator –Eigen values and Eigen functions – Direct sum and invariant subspace – orthogonal transformations and Rotation	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	COMPLEX ANALYSIS: Review of Complex Numbers -de Moivre's theorem-Functions of a Complex Variable-Differentiability -Analytic functions- Harmonic Functions-Complex Integration- Contour Integration, Cauchy – Riemann conditions – Singular points – Cauchy's Integral Theorem and integral Formula -Taylor's Series - Laurent's Expansion- Zeros and poles – Residue theorem and its Application: Potential theory - (1) Electrostatic fields and complex potentials - Parallel plates - Heat problems - Parallel plates and coaxial cylinders	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	MATRICES: Types of Matrices and their properties, Rank of a Matrix -Conjugate of a matrix - Adjoint of a matrix - Inverse of a matrix - Hermitian and Unitary Matrices -Trace of a matrix-Transformation of matrices - Characteristic equation - Eigen values and Eigen vectors - Cayley-Hamilton theorem – Diagonalization	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	FOURIER TRANSFORMS & LAPLACE TRANSFORMS: Definitions -Fourier transform and its inverse - Transform of Gaussian function and Dirac delta function -Fourier transform of derivatives - Cosine and sine transforms - Convolution theorem. Application: Diffusion equation: Flow of heat in an infinite and in a semi - infinite medium - Laplace transform and its inverse - Transforms of derivatives and integrals – Differentiation and integration of transforms - Dirac delta functions - Application - Laplace equation: Potential problem in a semi - infinite strip.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

V	DIFFERENTIAL EQUATIONS: Second order differential equation- Sturm-Liouville's theory - Series solution with simple examples - Hermite polynomials - Generating function - Orthogonality properties - Recurrence relations – Legendre polynomials - Generating function - Rodrigue formula – Orthogonality properties - Dirac delta function- One dimensional Green's function and Reciprocity theorem -Sturm-Liouville's type equation in one dimension &their Green's function.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	<u>SELF - STUDY FOR ENRICHMENT:</u> <u>(Not included for End Semester Examinations)</u> Potential theory in coaxial cylinders and an annular region– Wave equation: Vibration of an infinite string and of a semi - infinite string- Simple applications of Fourier Transforms– Bessel and Laguerre differential equation .	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Books

1. George Arfken and Hans J Weber, (2012), *Mathematical Methods for Physicists – A Comprehensive Guide* (7th edition), Academic press.
2. Chattopadhyay P K, (2013), *Mathematical Physics* (2nd edition), New Age, New Delhi
3. Joshi.A.W., (2017). *Matrices and Tensors in Physics*. (4thEdition)New Age, New delhi.
4. Gupta.B.D., (2015). *Mathematical Physics*. (2ndEdition)Vikas Publishing House, Mumbai.
5. DassH.K., &RamaVerma., (2018).*Mathematical Physics*.(1st Edition) S.Chand & Co, New Delhi.
6. Satya Prakash., (2014). *Mathematical Physics*.(1st Edition) Sultan chand & sons, New delhi.
7. Balakrishnan.V., (2018). *Mathematical Physics with Applications*. Indian Academy of Science, Bangalore.

Reference Books

1. Kreyszig E, (1983), *Advanced Engineering Mathematics*, Wiley Eastern, New Delhi,
2. ZillD G and M. R. Cullen, (2006), *Advanced Engineering Mathematics*, 3rd Ed. Narosa, New Delhi.
3. Lipschutz S, (1987), *Linear Algebra, Schaum's Series*, McGraw - Hill, New York 3. E. Butkov,
1968, *Mathematical Physics* Addison - Wesley, Reading, Massachusetts.
4. P. R. Halmos, (1965), *Finite Dimensional Vector Spaces*, Affiliated East West, New Delhi.2nd Edition.
5. C. R. Wylie and L. C. Barrett,(1995), *Advanced Engineering Mathematics*, International Edition,
McGraw-Hill, New York, 6 th Edition.

Web References

1. <https://www.khanacademy.org/>
2. https://www.youtube.com/watch?v=LZnRIOA1_2I
3. <http://hyperphysics.phy-astr.gsu.edu/hbase/hmat.html#hmath>
4. https://www.youtube.com/watch?v=_2jymuM7OUU&list=PLhkiT_RYTEU27vS_SIED56gNjVJGO2qaZ
5. <https://archive.nptel.ac.in/courses/115/106/115106086/>

Pedagogy

Chalk and Talk, Seminar, Assignment, Power point Presentation, Group discussion and Quiz

Course Designer

Dr.R.Gayathri

SEMESTER - I	INTERNAL MARKS: 25		EXTERNAL MARKS: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
23PPH1CC2	CLASSICAL MECHANICS AND RELATIVITY	CC - II	6	5

Course Objective

- To understand fundamentals of classical mechanics.
- To understand Lagrangian formulation of mechanics and apply it to solve equation of motion.
- To understand Hamiltonian formulation of mechanics and apply it to solve equation of motion.
- To discuss the theory of small oscillations of a system.
- To learn the relativistic formulation of mechanics of a system.

Pre-requisites

- Fundamentals of mechanics,
- Foundation in mathematical methods.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the Course, the Student will be able to	Cognitive Level
CO 1	Understand the fundamentals of classical mechanics.	K2
CO 2	Apply the principles of Lagrangian and Hamiltonian mechanics to solve the equations of motion of physical systems.	K3
CO 3	Apply the principles of Lagrangian and Hamiltonian mechanics to solve the equations of motion of physical systems.	K3 K5
CO 4	Analyze the small oscillations in systems and determine their normal modes of oscillations.	K4,K5
CO 5	Understand and apply the principles of relativistic kinematics to the mechanical systems.	K2,K3

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO 1	2	3	3	3	2	2	2	3	2	2
CO 2	2	3	3	3	2	2	2	3	2	2
CO 3	2	3	3	3	2	2	2	3	2	2
CO 4	2	3	3	3	2	2	2	3	2	2
CO 5	2	3	3	3	2	2	2	3	2	2

“1” - Slight (Low) Correlation

“2” - Moderate (Medium) Correlation;

“3” - Substantial (High) Correlation

“-” - indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	PRINCIPLES OF CLASSICAL MECHANICS: Mechanics of a single particle – mechanics of a system of particles – conservation laws for a system of particles – constraints – holonomic & non-holonomic constraints – generalized coordinates – configuration space – transformation equations – principle of virtual work.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	LAGRANGIAN FORMULATION: D'Alembert's principle – Lagrangian equations of motion for conservative systems – applications: (i) simple pendulum (ii) Spherical pendulum (iii) compound pendulum (iv) Atwood's machine (v) projectile motion – conservation theorems and symmetry properties.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	HAMILTONIAN FORMULATION: Phase space – cyclic coordinates – conjugate momentum – Hamiltonian function – Hamilton's canonical equations of motion – applications: (i) simple pendulum (ii) one dimensional simple harmonic oscillator (iii) motion of particle in a central force field – Poisson's brackets - Liouville's theorem.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	SMALL OSCILLATIONS: Formulation of the problem – transformation to normal coordinates – frequencies of normal modes – linear triatomic molecule – Josephson Junction.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	RELATIVITY: Basic postulates of special relativity - Inertial and non-inertial frames – Lorentz transformation equations – length contraction and time dilation – relativistic addition of velocities – Einstein's mass-energy relation – Minkowski's space – four vectors – position, velocity, momentum, acceleration and force in vector notation and their transformations– Conservation of four momentum.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

VI	<u>SELF-STUDY FOR ENRICHMENT</u> <u>(Not included for End Semester Examinations)</u> Expert Lectures, Online Seminars - Webinars on Industrial Interactions/Visits, Competitive Examinations, Employable and Communication Skill Enhancement, Social Accountability and Patriotism	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
----	---	---	-------------------------------------	--------------------------------

Text Books

1. H. Goldstein, 2002, *Classical Mechanics*, 3rd Edition, Pearson Edu.
2. J. C. Upadhyaya, *Classical Mechanics*, Himalaya Publishing. Co. New Delhi.
3. R. Resnick, 1968, *Introduction to Special Theory of Relativity*, Wiley Eastern, New Delhi.
4. R. G. Takwala and P.S. Puranik, *Introduction to Classical Mechanics* –Tata – McGraw Hill, New Delhi, 1980.
5. N. C. Rana and P.S. Joag, *Classical Mechanics* - Tata McGraw Hill, 2001.

Reference Books

1. K. R. Symon, 1971, *Mechanics*, Addison Wesley, London.
2. S. N. Biswas, 1999, *Classical Mechanics*, Books & Allied, Kolkata.
3. Gupta and Kumar, *Classical Mechanics*, KedarNath.
4. T.W.B. Kibble, *Classical Mechanics*, ELBS.
5. Greenwood, *Classical Dynamics*, PHI, New Delhi.

Web References

1. http://poincare.matf.bg.ac.rs/~zarkom/Book_Mechanics_Goldstein_Classical_Mechanics_optimized.pdf
2. <https://pdfcoffee.com/classical-mechanics-j-c-upadhyay-2014-editionpdf-pdf-free.html>
3. <https://nptel.ac.in/courses/122/106/122106027/>
4. <https://ocw.mit.edu/courses/physics/8-09-classical-mechanics-iii-fall-2014/lecture-notes/>
5. <https://www.britannica.com/science/relativistic-mechanics>

Pedagogy

Chalk and Talk, Power point presentation, Assignment, Group discussion and quiz

Course Designer

Dr. M. Kavimani

SEMESTER-I	INTERNAL MARKS:25		EXTERNAL MARKS:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
23PPH1CC3	LINEAR AND DIGITAL ICs AND APPLICATIONS	CC-3	6	5

Course Objective

- To introduce the basic building blocks of linear integrated circuits.
- To teach the linear and non-linear applications of operational amplifiers.
- To introduce the theory and applications of PLL.
- To introduce the concepts of wave form generation and introduce one special function ICs.
- To exposure to digital IC's.

Pre-requisites

- Knowledge of semiconductor devices.
- Basic concepts of digital and analog electronics.
- Grasping Power in the concepts of OP-AMP.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Remember and understand the concepts of linear integrated circuits.	K1, K2
CO2	Analyze the linear and non-linear applications of operational amplifiers.	K3
CO3	Evaluate the basic concepts of operational amplifier, oscillator circuits and IC's.	K4
CO4	Apply the Principles and Concepts of wave form generation.	K5
CO5	Recommend projects in electronics relevant to industrial and R&D needs.	K5

Mapping of CO with PO and PSO

Cos	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO1	PO2	PO 3	PO4	PO5
CO 1	3	3	3	2	1	3	3	2	2	2
CO 2	3	3	2	2	2	3	1	2	2	2
CO 3	2	3	3	2	2	3	3	1	2	2
CO 4	3	3	2	2	2	1	2	2	2	2
CO 5	3	2	2	2	1	3	3	2	3	1

“1”-Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation,

“-“indicates there is no correlation.

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	INTEGRATED CIRCUITS AND OPERATIONAL AMPLIFIER Introduction, Classification of IC's, basic information of Op-Amp 741 and its features, the ideal Operational amplifier, Op-Amp internal circuit and Op-Amp. Characteristics.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	APPLICATIONS OF OP-AMP LINEAR APPLICATIONS OF OP-AMP: Solution to simultaneous equations and differential equations, Instrumentation amplifiers, V to I and I to V converters. NON-LINEAR APPLICATIONS OF OP-AMP: Sample and Hold circuit, Log and Antilog amplifier, multiplier and divider, Comparators, Schmitt trigger, Multivibrators, Triangular and Square waveform generators.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	ACTIVE FILTERS & TIMER AND PHASE LOCKED LOOPS ACTIVE FILTERS: Introduction, Butterworth filters – 1st order, 2nd order low pass and high pass filters, band pass, band reject and all pass filters. TIMER AND PHASE LOCKED LOOPS: Introduction to IC 555 timer, description of functional diagram, monostable and astable operations and applications, Schmitt trigger, PLL - introduction, basic principle, phase detector/comparator, voltage-controlled oscillator (IC 566), low pass filter, monolithic PLL and applications of PLL	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

IV	<p>VOLTAGE REGULATOR: Introduction, Series Op-Amp regulator, IC Voltage Regulators, IC 723 general purpose regulators, Switching Regulator.</p> <p>D to A AND A to D CONVERTERS: Introduction, basic DAC techniques -weighted resistor DAC, R-2R ladder DAC, inverted R-2R DAC, A to D converters - parallel comparator type ADC, counter type ADC, successive approximation ADC and dual slope ADC, DAC and ADC Specifications.</p>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	<p>CMOS LOGIC, COMBINATIONAL CIRCUITS USING TTL 74XX ICs & SEQUENTIAL CIRCUITS USING TTL 74XX ICs</p> <p>CMOS LOGIC: CMOS logic levels, MOS transistors, Basic CMOS Inverter, NAND and NOR gates, CMOS AND-OR-INVERT and OR-AND-INVERT gates, implementation of any function using CMOS logic.</p> <p>COMBINATIONAL CIRCUITS USING TTL 74XX ICs: Study of logic gates using 74XX ICs, Four-bit parallel adder (IC 7483), Comparator (IC 7485), Decoder (IC 74138, IC 74154), BCD to 7-segment decoder (IC7447), Encoder (IC74147), Multiplexer (IC74151), Demultiplexer (IC 74154).</p> <p>SEQUENTIAL CIRCUITS USING TTL 74XX ICs: Flip Flops (IC 7474, IC 7473), Shift Registers, Universal Shift Register (IC 74194), 4-bit asynchronous binary counter (IC 7493).</p>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	<p><u>SELF STUDY FOR ENRICHMENT:</u> <u>(Not to be included for External Examination)</u></p> <p>Basic information of Op-Amp and features of the ideal Operational amplifier, Digital multivibrators, phase detector and amplifier, AD converters, Multiplexer and Demultiplexer.</p>	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,

Text Books

1. Roy Choudhury. D, Shail B. Jain (2012), *Linear Integrated Circuit*, 4th edition, New Age International Pvt. Ltd., New Delhi, India
2. Ramakant A. Gayakwad, (2012), *OP-AMP and Linear Integrated Circuits*, 4th edition, Prentice Hall / Pearson Education, New Delhi.
3. Theraja . B.L and Theraja A.K, 2004, *A Textbook of Electrical technology*, S. Chand & Co.
4. Mehta V.K and Rohit Mehta, 2008, *Principles of Electronics*, S. Chand & Co, 12th Edition.
5. Vijayendran . V, 2008, *Introduction to Integrated electronics (Digital & Analog)*, S. Viswanathan Printers & Publishers Private Ltd, Reprint. V.

Reference Books

1. Sergio Franco (1997), *Design with operational amplifiers and analog integrated circuits*, McGraw Hill, New Delhi.
2. Gray, Meyer (1995), *Analysis and Design of Analog Integrated Circuits*, Wiley International, New Delhi.
3. Malvino and Leach (2005), *Digital Principles and Applications* 5th Edition, Tata McGraw Hill, New Delhi
4. Floyd, Jain (2009), *Digital Fundamentals*, 8th edition, Pearson Education, New Delhi.
5. Millman & Halkias, *Integrated Electronics*, Tata McGraw Hill, 17th Reprint (2000)

Web References

1. [https://nptel.ac.in/course.html/digital circuits/](https://nptel.ac.in/course.html/digital%20circuits/)
2. [https://nptel.ac.in/course.html/electronics/operational amplifier/](https://nptel.ac.in/course.html/electronics/operational%20amplifier/)
3. <https://www.allaboutcircuits.com/textbook/semiconductors/chpt-7/field-effect-controlled-thyristors/>
4. <https://www.electrical4u.com/applications-of-op-amp/>
5. <https://www.geeksforgeeks.org/digital-electronics-logic-design-tutorials/>

Pedagogy

Chalk and Talk, Seminar, Assignment, Power point Presentation, Group discussion and Quiz

Course Designer

Dr.K.Kannagi

SEMESTER I	INTERNAL MARKS: 25		EXTERNAL MARKS: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
23PPH1CC1P	PRACTICAL I	CP-I	6	5

Course Objectives

- To acquire knowledge of spectrometry and to find optical constants
- To understand the concept of thermal behavior of the materials.
- Explain the operation about arithmetic and combinational logic circuits using IC's
- To acquire knowledge about combinational Logic circuits and sequential logic circuits
- To analyze the various parameters related to operational amplifiers.

Pre-requisites

Fundamental knowledge and hands on experience of general and electronics experiments of Physics

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the Course, the Student will be able to	
CO 1	Explain the basic concepts of experimental physics.	K2
CO 2	understand knowledge the principles of magnetism through the experiments	K2
CO 3	Explore the concepts of spectrometry involved in the optic processes.	K3
CO 4	Verify experimentally the concepts about combinational Logic circuits	K4
CO 5	Develop the skill in handling instruments in the construction of circuits	K6

Mapping of CO with PO and PSO

COs	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	1	2	1	2	2	2	2	1	2	1
CO 2	1	2	2	2	2	2	2	2	2	1
CO 3	1	2	2	2	2	2	2	2	1	1
CO 4	2	2	2	2	3	2	2	2	1	1
CO 5	2	2	2	2	3	2	2	2	1	1

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” - indicates there is no correlation

LIST OF EXPERIMENTS (GENERAL AND ELECTRONICS) :

(ANY TWELVE EXPERIMENTS)

1. Determination of Rydberg's constant - Hydrogen Spectrum
2. Measurement of Band gap energy- Thermistor.
3. Determination of Compressibility of a liquid using Ultrasonics
4. Determination of wavelength, separation of wavelengths - Michelson Interferometer
5. Measurement of Conductivity - Four probe method.
6. Construction of relaxation oscillator using UJT
7. FET CS amplifier- Frequency response, input impedance, output impedance
8. Study of important electrical characteristics of IC741
9. Study of attenuation characteristics of Wien's bridge network and design of Wein's bridge oscillator using Op-Amp
10. Study of attenuation characteristics of Phase shift network and design of Phase shift oscillator using Op-Amp
11. Construction of Op-Amp- 4 bit Digital to Analog converter (Binary Weighted and R/2R ladder type)
12. Study of R-S, clocked R-S and D-Flip flop using NAND gates
13. Study of J-K, D and T flip flops using IC 7476/7473
14. Study of Arithmetic logic unit using IC 74181
15. Construction of Encoder and Decoder circuits using ICs.

Text Book

1. Ouseph C.C., Rao, U.J., & Vijayendran, V. (2009), *Practical Physics and Electronics*, S. Viswanathan, Printers & Publishers Pvt Ltd
2. Dr. Somasundaram S, (2012), *Practical Physics*, Apsara Publications
3. S. Poornachandra *Electronic Laboratory Primer a design approach*, B. Sasikala, Wheeler Publishing, New Delhi.
4. Navas K A *Electronic lab manual Vol I*, , Rajath Publishing

Reference Book

1. Jones, B.K., (1986). *Electronics for Experimentation and Research*. Prentice-Hall.
2. Zbar, P.B., Malvino, A.P., & Miller, M.A., (1994). *Basic Electronics: A Text-Lab Manual*. Tata Mc-Graw Hill, New Delhi.
3. S.P Singh, Pragati Prakasan *Advanced Practical Physics*,.
4. D. Chattopadhyay, C.R Rakshit, *An advanced course in Practical Physics*, New Central Book Agency Pvt. Ltd
5. Ramakanth A Gaykwad *Op-Amp and linear integrated circuit*, , Eastern Economy Edition.

Web References

1. <https://www.msuniv.ac.in/Download/Pdf/b2efcbdbc4be452>
2. <https://www.studocu.com/in/document/reva-institute-of-technology-and-management/bachelors/mscelectronics-lab-student-copy/17586392>
3. <https://www.vlab.co.in/broad-area-physical-sciences>

Pedagogy

Demonstration, practical sessions and viva voce

Course Designer

Dr.S.Gowri

SEMESTER- I	INTERNAL MARKS: 25		EXTERNAL MARKS: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
23PPH1DSE1A	PHYSICS OF NANOSCIENCE AND TECHNOLOGY	DSE - I	6	3

Course Objectives

- To understand the material physics on the Nano scale and the application aspects of Nanoscience and technology
- To provide the basic knowledge about Nanoscience and technology.
- To learn the structures and properties of Nanomaterials.
- To acquire the knowledge about synthesis methods and characterization techniques and its applications.
- Physics of Nanoscience and Technology is concerned with the characterization study, creation, manipulation and applications at nanometer scale.

Pre-Requisites

- Basic knowledge in Solid State Physics.
- Physics of Nanoscience and Technology is concerned with the study, creation, manipulation and applications at nanometer scale.
- Understand the material physics on the Nano scale.
- Understand the application aspects of Nanoscience and technology.
-

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the Course the Student will be able to,	Cognitive Level
CO 1	Understand the basic of Nanoscience and explore the different types of Nanomaterials and should comprehend the surface effects of the Nanomaterials.	K1, K2
CO 2	To learn the structures and properties of Nanomaterials.	K2
CO 3	Apply the process and mechanism of synthesis and fabrication of Nanomaterials.	K3
CO 4	Analyze the various characterizations of Nano-products through diffraction, spectroscopic, microscopic and other techniques.	K4
CO 5	Evaluate and apply the concepts of Nanoscience and technology in the field of sensors, robotics, purification of air and water and in the energy devices.	K5, K6

Mapping of CO with PO and PSO

COs	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	2	3	3	3	3	3	3	2	2	3
CO 2	2	3	3	3	3	3	3	2	2	3
CO 3	2	3	3	3	3	3	3	2	3	3
CO 4	2	3	3	2	3	3	2	2	2	3
CO 5	2	3	3	2	3	3	2	2	2	3

“1” - Slight (Low) Correlation

“2” - Moderate (Medium) Correlation

“3” - Substantial (High) Correlation

“-” - indicates there is no correlation.

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	FUNDAMENTALS OF NANOSCIENCE AND TECHNOLOGY Fundamentals of NANO–Historical Perspective on Nanomaterial and Nanotechnology-Classification of Nanomaterials–Metal and Semiconductor Nanomaterials-2D, 1D, 0D nano structured materials- Preparation of quantum nanostructures-Size and dimensionality effects - Quantum dots–Quantum wires –Quantum wells-Surface effects of nanomaterials-Applications: Infrared detectors-Quantum dot lasers - Superconductivity.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	PROPERTIES OF NANOMATERIALS Physical properties of Nanomaterials: Melting points, specific heat capacity, and lattice constant - Mechanical behavior: Elastic properties – strength - ductility - superplastic behavior - Optical properties: - Surface Plasmon Resonance – Quantum size effects - Electrical properties - Conductivity, Ferroelectrics and dielectrics - Magnetic properties – super para magnetism – Diluted magnetic semiconductor (DMS).	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	SYNTHESIS AND FABRICATION Physical vapour deposition - Chemical vapour deposition - sol-gel – Solvo thermal synthesis-Hydrothermal Synthesis – Sono chemical Synthesis-Microwave Synthesis - Co-Precipitation-Wet deposition techniques - electrochemical deposition method – Plasma arching – Electro spinning method - ball milling technique - pulsed laser deposition - Nanolithography: photolithography –Nano manipulator.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	CHARACTERIZATION TECHNIQUES Powder X-ray diffraction – phase identification, Scherrer formula, strain and grain size determination - X-ray photoelectron spectroscopy (XPS) - UV-visible spectroscopy – Photoluminescence – Raman	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

	Spectroscopy-Scanning electron microscopy (SEM) - Energy dispersive Xray analysis (EDX) - Transmission electron microscopy (TEM) - Scanning probe microscopy (SPM) - Scanning tunneling microscopy (STM) – Vibrating sample Magnetometer.			
V	APPLICATIONS OF NANOMATERIALS Sensors: Nanosensors based on optical and physical properties - Electrochemical sensors –Nano-biosensors. Nano Electronics: Nanobots - display screens - GMR read/write heads - Carbon Nanotube Emitters – Photocatalytic application: Air purification, water purification -Medicine: Imaging of cancer cells – biological tags - drug delivery - photodynamic therapy - Energy: fuel cells - rechargeable batteries –super capacitors - photovoltaics.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	SELF STUDY FOR ENRICHMENT (Not to be included for External Examination) Preparation of Nano materials-Using natural nano particles-Metal nano clusters-Micro Electro Mechanical systems (MEMs)–Nano Electro Mechanical systems (NEMs)- Fabrication-Nano devices and Nano machines- Molecular and Supra molecular switches.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Books

1. Pradeep T, (2012), *A textbook of Nanoscience and Nanotechnology*, Tata McGraw-Hill Publishing Co.
2. Shah M A, Tokeer Ahmad,(2010), *Principles of Nanoscience and Nanotechnology*, Narosa PublishingHouse Pvt Ltd.,
3. Chattopadhyay K K and Banerjee A N, (2012), *Introduction to Nanoscience and Nanotechnology*, PHI Learning Pvt. Ltd., New Delhi.
4. Hari Singh Nalwa, (2002), *Nanostructured Materials and Nanotechnology*, Academic Press.
5. Kothari D P, Velmurugan V and Rajit Ram Singh, (2018), *Nanotechnology and Nanoelectronics*, Narosa Publishing House Pvt. Ltd, New Delhi.
6. Poole C P and Ownes F J, (2003), *Introduction to Nanotechnology*, Wiley Reprint (2014).

Reference Books

1. Huozhong Gao, (2004), *Nanostructures and Nanomaterials*, Imperial College Press.
2. Richard Booker and Earl Boysen, (2005), *Nanotechnology*, Wiley Publishing Inc. USA
3. Fendler John Wiley and Sons. J H, (2007), *Nano particles and Nano structured films*; Preparation, Characterization and Applications.
4. Murty B S, et al., (2012), *Textbook of Nanoscience and Nanotechnology*, Universities Press.
5. Dr. Parag Diwan and Ashish Bharadwaj, (2005), *The Nano scope (Encyclopedia of Nanoscience and Nanotechnology)*, Vol. IV-Nanoelectronics Pentagon Press, New Delhi.

Web References

1. www.its.caltec.edu/feyman/plenty.html
2. <http://www.library.ualberta.ca/subject/nanoscience/guide/index.cfm>
3. <http://www.understandingnano.com>
4. <http://www.nano.gov>
5. <http://www.nanotechnology.com>

Pedagogy

Chalk and Talk, Seminars on Industrial Interactions, Power Point Presentation, Quiz, Assignment and Group discussion.

Course Designer

Dr. R. Mekala

SEMESTER- I	INTERNAL MARKS: 25		EXTERNAL MARKS: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
23PPH1DSE1B	ENERGY PHYSICS	CCC-I	6	3

Course Objectives

- To learn about various renewable energy sources.
- To know the ways of effectively utilizing the oceanic energy.
- To study the method of harnessing wind energy and its advantages.
- To learn the techniques useful for the conversion of biomass into useful energy.
- To know about utilization of solar energy.

Pre-requisites

- Knowledge of conventional energy resources.
- Basics of Tidal Energy and Bio gas Energy.
- Understandings of Wind Energy.
- Basic Idea on Solar Energy.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the Course, the Student will be able to	Cognitive Level
CO 1	To identify various forms of renewable and non-renewable energy sources	K1
CO 2	Understand the principle of utilizing the oceanic energy and apply it for practical applications.	K2
CO 3	Discuss the working of a windmill and analyze the advantages of wind energy.	K3
CO 4	Distinguish aerobic digestion process from anaerobic digestion.	K3,K4
CO 5	Understand the components of solar radiation, their measurement and apply them to utilize solar energy.	K2,K5

Mapping of CO with PO and PSO

COs	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	2	2	2	1	2	2	3	3	2	2
CO 2	2	2	2	1	2	3	3	3	2	2
CO 3	2	2	2	1	2	3	3	3	2	2
CO 4	2	2	2	1	2	3	3	3	2	2
CO 5	2	2	2	1	2	3	3	3	2	2

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” indicates there is no correlation

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	INTRODUCTION TO ENERGY SOURCES Various forms of energy – renewable and non renewable energy system – Coal, oil and natural gas– merits and demerits-Conventional and non-conventional energy sources and their availability– prospects of Renewable energy sources– Energy from other sources–chemical energy–Nuclear energy– Energy storage and distribution.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5.
II	ENERGY FROM THE OCEANS Energy from waves and tides– Basic ideas, nature, application, merits & demerits - Energy utilization–Energy from tides–Basic principle of tidal power–utilization of tidal energy – Principle of ocean thermal energy conversion systems.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5.
III	WIND ENERGY SOURCES Basic principles of wind energy conversion–power in the wind–forces in the Blades– Wind energy conversion–Advantages and disadvantages of wind energy conversion systems (WECS) – Wind Energy Collectors-Horizontal Axial Machines- Energy storage–Applications of wind energy.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5.
IV	ENERGY FROM BIOMASS Biomass conversion Technologies– wet and dry process– Photosynthesis -Biogas Generation: Introduction–basic process: Aerobic and anaerobic digestion – Advantages of anaerobic digestion–factors affecting bio digestion and generation of gas-Classification of Biogas Plants- bio gas from waste fuel– properties of biogas- utilization of biogas.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5.

V	SOLAR ENERGY SOURCES Solar radiation and its measurements–solar cells: Solar cells for direct conversion of solar energy to electric powers–solar cell parameter–solar cell electrical characteristics– Efficiency–solar water Heater –solar distillation-Solar Pumping – Solar Furnace – solar cooking–solar greenhouse – Solar pond and its applications.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5.
VI	SELF STUDY FOR ENRICHMENT Additional alternate Energy sources and Improved Energy Utilization (Not to be included for External Examination)		CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,

Text Books

1. G.D. Rai, 1996, *Non – Conventional Energy sources*, 4th edition, Khanna publishers, New Delhi.
2. S. Rao and Dr. Paru Lekar, *Energy technology*.
3. M.P. Agarwal, *Solar Energy*, S. Chand and Co., New Delhi (1983).
4. S. P. Sukhatme, *Solar energy, principles of thermal collection and storage*, 2nd edition, Tata McGraw-Hill Publishing Co. Lt., New Delhi (1997).
5. S. Rao and Dr. Parulekar, *Energy Technology*

Reference Books

1. John Twidell and Tonyweir, *Renewable energy resources*, Taylor and Francis group, London and New York.
2. A. B. Meinel and A. P. Meinal *Applied solar energy*,
3. John Twidell and Tony Weir, *Renewable energy resources*, Taylor and Francis group, London and New York.
4. C.S. Solanki, *Renewal Energy Technologies: A Practical Guide for Beginners* ,PHI Learning
5. Raja et. al., *Introduction to Non-Conventional Energy Resources* Sci. Tech Publications

Web References

1. <https://www.open.edu/openlearn/ocw/mod/oucontent/view.php?id=2411&printable=1>
2. <https://www.nationalgeographic.org/encyclopedia/tidal-energy/>
3. <https://www.ge.com/renewableenergy/wind-energy/what-is-wind-energy>
4. <https://www.reenergyholdings.com/renewable-energy/what-is-biomass/>
5. <https://www.acciona.com/renewable-energy/solar-energy/>

Pedagogy

Chalk and Talk, Power Point Presentation, Seminar, Quiz, Assignment and Group discussion.

Course Designer

Dr. T.Noorunnisha

Semester- I	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
23PPH1DSE1C	DIGITAL COMMUNICATION	CCC-I	6	3

Course Objectives

- To understand the use of Fourier, transform in analyzing the signals
- To learn about the quanta of transmission of information
- To make students familiar with different types of pulse modulation
- To have an in-depth knowledge about the various methods of error controlling codes
- To acquire knowledge about spread spectrum techniques in getting secured communication

Pre-requisites

- Exposure to Fourier transform, multiplexing.
- Basics knowledge on Pulse Modulation.
- Understanding of coding.
- Knowledge on noises in communication signals.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the Course, the Student will be able to	Cognitive Level
CO 1	Apply the techniques of Fourier transform, convolution and sampling theorems in signal processing	K1, K3
CO 2	Apply different information theories in the process of study of coding of information, storage and communication	K3
CO 3	Explain and compare the various methods of pulse modulation Techniques	K4
CO 4	Apply the error control coding techniques in detecting and correcting errors- able to discuss, analyze and compare the different error control coding	K3, K4
CO 5	Apply, discuss and compare the spread spectrum techniques for secure Communications	K3, k5

Mapping of CO with PO and PSO

COs	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	3	2	3	1	2	3	3	2	1	3
CO 2	2	2	2	1	2	3	3	2	2	3
CO 3	3	3	2	1	2	2	2	2	1	2
CO 4	3	2	2	1	3	3	2	2	1	3
CO 5	2	2	2	1	3	3	2	2	1	3

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” indicates there is no correlation

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	SIGNAL ANALYSIS Fourier transforms of gate functions, delta functions at the origin – Two delta function and periodic delta function – Properties of Fourier transform – Frequency shifting –Time shifting - Convolution –Graphical representation – Convolution theorem - Parseval's Theorem- Time Convolution theorem –Frequency Convolution theorem –Sampling theorem.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5.
II	INFORMATION THEORY Communication system – Measurement of information – Common sense of Measure of information – Engineering Measure of information - Coding – Baudot Code CCITT Code –Hartley Law – Noise in an information Carrying Channel- Effects of noise- Capacity of noise in a channel – Shannon Hartley theorem –Redundancy.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5.
III	PULSE MODULATION Types - Pulse amplitude modulation - natural sampling – Instantaneous sampling - Transmission of PAM Signals - Pulse width modulation – Time division multiplexing – Band width requirements for PAM Signals. Pulse Code Modulation –Principles of PCM –Quantizing noise – Generation and demodulation of PCM -Effects of noise – Companding – Advantages and application – Telegraph – Telemetry.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5.
IV	ERROR CONTROL CODING Introduction to Linear Block Codes, Hamming Codes, Systematic code- Decoding- Cyclic codes – Burst -Error Detecting and Correcting codes - BCH Coding, RS Coding, Convolutional Coding, Coding Grain Viterbi Coding	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5.

V	SPREAD SPECTRUM SYSTEMS Pseudo Noise sequences, generation and Correlation properties, direct sequence spread spectrum systems, Detection, Signal Spectra, frequency HOP Systems, processing gain, anti-jam and multipath performance- Applications spread Spectrum.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5.
VI	SELF STUDY FOR ENRICHMENT (Not to be included for External Examination) Numerical computation of Fourier Transform: The DFT- Network and Control Considerations-Random Process		CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,

Text Books

1. B.P. Lathi, *Communication system*, Wiley Eastern.
2. George Kennedy, *Electronic Communication Systems*, 3rd Edition, McGraw Hill.
3. Simon Haykin, *Communication System*, 3rd Edition, John Wiley & Sons.
4. George Kennedy and Davis, 1988, *Electronic Communication System*, Tata McGraw Hill 4th Edition.
5. Taub and Schilling, 1991, “*Principles of Communication System*”, Second edition Tata McGraw Hill.

Reference Books

1. John Proakis, 1995, *Digital Communication*, 3rd Edition, McGraw Hill, Malaysia.
2. M. K. Simen, 1999, *Digital Communication Techniques, Signal Design and Detection*, Prentice Hall of India.
3. Dennis Roddy and Coolen, 1995, *Electronics communications*, Prentice Hall of India IV Edition.
4. Wave Tomasi, 1998, “*Advanced Electronics communication System*” 4th Edition Prentice Hall, Inc.
5. M.Kulkarni, 1988, “*Microwave and Radar Engineering*”, Umesh Publications.

Web References

1. <http://nptel.iitm.ac.in/>
2. <http://web.ewu.edu/>
3. <http://www.ece.umd.edu/class/enee630.F2012.html>
4. <http://www.atcourses.com/Advanced%20Topics%20in%20Digital%20Signals>
5. <http://nptel.iitm.ac.in/courses/117101051.html>

Pedagogy

Chalk and Talk, Power Point Presentation, Seminar, Quiz, Assignment and Group discussion.

Course Designer

Dr. T. Noorunnisha.

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)
NATIONALLY ACCREDITED (IHCYCLE) WITH “A” GRADE BY NAAC
ISO 9001:2015 Certified
TIRUCHIRAPPALLI

PG & RESEARCH DEPARTMENT OF PHYSICS



M.Sc., PHYSICS SYLLABUS

2022-2023 and Onwards



Cauvery College for Women (Autonomous)

PG & Research Department of Physics

M.Sc., Physics

LEARNING OUT COMES BASED CURRICULUM FRAMEWORK (CBCS–LOCF)

(For the Candidates admitted from the Academic year 2022-2023 onwards)

Semester	Course	Course Title	Course Code	Inst. Hrs./week	Credits	Exam			Total
						Hrs	Marks		
							Int.	Ext.	
III	Core Course–VI(CC)	Statistical Mechanics	22PPH3CC6	6	5	3	25	75	100
	Core Course – VII(CC)	Solid State Physics	22PPH3CC7	5	5	3	25	75	100
	Core Choice Course– II(CCC)	Cyber Security	22PGCS3CCC2A	3T + 2P	4	3	25	75	100
		Communication Electronics	22PPH3CCC2B	5					
		Physics of Semiconductor Devices	22PPH3CCC2C						
	Core Practical-III(CP)	General Physics and Electronics-II(P)	22PPH3CC3P	6	5	3	40	60	100
	Discipline Specific Elective Course-III(DSE)	Physics for Competitive Examinations	22PPH3DSE3A	5	3	2	-	100	100
		Crystal Growth and Thin Film Physics	22PPH3DSE3B			3	25	75	
		Weather Forecasting	22PPH3DSE3C			3	25	75	
	Generic Elective Course –I (GEC)	Science of Materials	22PPH3GEC1	3	2	3	25	75	100
	Extra Credit Course	SWAYAM	As per UGC Recommendation						
	Total				30	24	-	-	-

Internal Component (Theory)

Component	Marks
Library	5
Assignment	5
Seminar	5
CIA I&II	10
	25

Internal Component (Practical)

Component	Marks
Observation	5
Record	10
Continuous Performance in Practical	10
Model	15
	40

INTERNSHIP COMPONENTS

Internal components	Marks	External Component s	Marks
Communication skill	5	Regularity	10
Presentation skill	10	Problem solving	10
		Participation and Hands-on training	20
Report evaluation	10	Professional attitude	15
		Report writing	20
Total	25		75

SEMESTER- III	INTERNAL MARKS : 25	EXTERNAL MARKS : 75		
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22PPH3CC6	STATISTICAL MECHANICS	CC-VI	6	5

Course Objectives

- To understand the concepts of statistical thermodynamics
- To analyse the kinetic theory and Transport phenomena
- To impart the significance of classical statistical mechanics
- To gain the basic knowledge of phase transition and partition function
- To impart the application of quantum statistical mechanics

Pre-requisites

- A thorough understanding of thermodynamics
- Knowledge of thermodynamical relations.
- Commendable knowledge of three types of statistics.

Course Outcomes and Cognitive Levels Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Differentiate between canonical and grand canonical ensembles and interpret the relation between thermodynamical quantities and partition Function	K1,K2
CO2	Justify the connection between thermodynamic quantities and classical statistical mechanics	K3, K4
CO3	Recall and apply the different statistical concepts to analyse the behaviour of ideal Fermi gas and ideal Bose gas and also to compare and distinguish between the three types of statistics.	K4, K5
CO4	Analyse the kinetic theory and Transport phenomena	K5
CO5	Examine and elaborate the effect of changes in thermodynamic quantities on the states of matter during phase transition	K5

MAPPING WITH PROGRAM OUTCOMES:

Cos	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5
CO1	3	3	3	1	1	2	3	1	1	3
CO2	3	3	3	1	1	2	3	1	1	3
CO3	3	3	3	1	1	2	3	2	1	3
CO4	3	3	3	1	1	2	3	2	1	3
CO5	3	3	3	1	1	2	3	1	1	3

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation;

“3” – Substantial (High) Correlation

“-” – Indicates there is no correlation.

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Kinetic Theory: Binary collisions -Boltzmann transport equation and its validity - Boltzmann's H-theorem - Relation between H-function and entropy - Maxwell-Boltzmann distribution of velocities - Mean free path - Conservation laws - Zero order approximation - First order approximation-Transport phenomena - Thermal conductivity - Diffusion process - Viscosity - Brownian motion.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Classical Statistical Mechanics: Foundations of statistical mechanics - Specification of states of a system - Micro canonical ensemble - Phase space - Entropy - Connection between statistics and thermodynamics - Entropy of an ideal gas using the micro canonical ensemble - Entropy of mixing and Gibb's paradox.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Methods of Ensembles: Partition Functions: Introduction- Micro Canonical Ensemble -Entropy in Statistical Mechanics- Perfect gas in microcanonical ensemble -Partition Functions- Partition Function and thermodynamical quantities - Entropy of a perfect gas (Gibb's Paradox) -Gibb's canonical ensemble – Perfect mono atomic gas in Canonical ensemble -Equipartition theorem – Grand canonical ensemble -Perfect gas in Grand canonical ensemble – Comparison various ensembles	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Quantum Statistical Mechanics: Basic postulates of quantum statistical mechanics - Microcanonical ensemble - Canonical ensemble - Grand canonical ensemble - Bose - Einstein and Fermi Dirac grand partition functions - Bose - Einstein distribution - Fermi Dirac distribution-Maxwell Boltzmann distribution - Bose -Einstein gas - Fermi gas - Bose - Einstein condensation.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Phase transition: Triple point -Vander Waal's Equation and Phase transition-First and second order phase transitions - Ehrenfest equations- Critical exponent - Ising model - one dimensional Ising model -Yang and Lee theory of phase transitions - Landau theoryof Phase transitions	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

VI	Self-Study for Enrichment (Not included for End Semester Examinations) The basic equations connecting the translational, rotational, vibrational, and electronic properties of isolated (i.e. gas-phase) molecules to their thermodynamics-The most elementary models for describing cooperative behavior and phase transitions in gas-surface and liquid-liquid systems-The contributions of intermolecular forces to the thermodynamics of gases.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
----	---	---	-------------------------------------	--------------------------------

TEXT BOOKS.

1. Satyaprakash, 2003, *Statistical Mechanics*, Kedarnath and Ramnath Publishers.
2. Huang K., 2002, *Statistical Mechanics*, Taylor and Francis, London
3. Reif F, 1965, *Fundamentals of Statistical and Thermal Physics*, McGraw -Hill, New York.
4. Saxena A.K., 2016, *Introduction to thermodynamic and statistical Mechanics*, Narosa Publishers
5. Sinha K., 1990, *Statistical Mechanics*, Tata McGraw Hill, New Delhi.

REFERENCE BOOKS

1. Pathria R.K., 1996, *Statistical Mechanics*, 2nd edition, Butter Worth Heinemann, New Delhi.
2. Landau L.D. and Lifshitz E.M., 1969, *Statistical Physics*, Pergamon Press, Oxford.
3. Greiner W., Neise L. and Stoecker H., *Thermodynamics and Statistical Mechanics*, Springer Verlag, New York.

WEB SOURCES

1. <https://web.stanford.edu/~peastman/statmech/thermodynamics.html>
2. https://en.wikiversity.org/wiki/Statistical_mechanics_and_thermodynamics
3. https://en.wikipedia.org/wiki/Grand_canonical_ensemble
4. <https://simons.hec.utah.edu/ITCSecondEdition/chapter7.pdf>

Pedagogy

Lecture, Seminar, Assignment and power point presentation

Course Designer

Dr.R.MEENAKSHI

SEMESTER – III	INTERNAL MARKS : 25	EXTERNAL MARKS : 75		
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22PPH3CC7	SOLID STATE PHYSICS	CC - VII	5	5

Course Objectives

- To understand the basic structure of crystals by crystal diffraction method
- To expose the students to the fundamentals of lattice vibrations
- To acquire the knowledge about dielectric and ferroelectric crystals
- To study the different types of magnetic materials
- To gain the basic idea on superconductors and its applications

Pre-requisites

- Basic ideas about crystal structure
- Knowledge about types of materials
- Knowledge about bonding between the molecules

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of course, the student will be able to	Cognitive Level
CO 1	Remember and understand the fundamental principles and crystal structure of the solid materials	K1,K2
CO 2	Analyze the mode of vibrations in the atoms	K3
CO 3	Able to differentiate between dielectrics, ferroelectric and anti-ferroelectrics	K4
CO 4	Develop and synthesize new materials for a requirement	K5 & K6
CO 5	Elaborate the concepts of superconductors materials	K6

Mapping of CO with PO and PSO

Cos	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	3	3	3	1	3	3	3	3	2	2
CO 2	3	3	3	1	2	3	3	2	2	2
CO 3	3	3	2	1	3	2	2	2	2	2
CO 4	3	3	2	1	2	2	2	3	2	2
CO 5	3	3	2	1	3	3	3	2	2	2

“1”-Slight (Low) Correlation
“3”- Substantial (High) Correlation

“2”-Moderate (Medium) Correlation
“-“-indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Crystal structure Basics of crystal systems - Bravais lattice - simple - body centered and face centered - cubic lattices primitive cell - Wigner Seitz cell - crystal structures and lattice with basis hexagonal close packed - diamond structure - point groups - space groups - Miller indices - reciprocal lattice - atomic scattering factor - structure factor - Bragg's law of XRD - XRD technique - Laue - powder and rotating crystal methods.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	Lattice Vibrations and Thermal Properties Bloch theorem - Kronig - Penney model - vibrational modes of one dimensional line of atoms - linear diatomic lattice - acoustic and optical modes - quantization of lattice vibrations - phonon momentum - inelastic scattering of neutrons - classical theory of lattice heat capacity - Einstein and Debye theories - lattice thermal conductivity - electrical conductivity - thermal conductivity of metals - Wiedemann-Franz law.	14	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	Dielectrics and Ferroelectrics Polarization - macroscopic electric field - local electric field at an atom - measurement of dielectric constant of a solid - Clausius-Mosotti relation - ferroelectric crystals - classification of ferroelectric crystals - displacive transitions - Landau theory of the phase transition - antiferroelectricity - ferroelectric domains - piezoelectricity.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	Magnetic Properties Types of magnetism - Langevin's theory of diamagnetism and paramagnetism - quantum theory of paramagnetism - Hund's rule - origin of permanent magnetic moment - Weiss theory of ferromagnetism - the Bloch wall - ferromagnetic domains and hysteresis - ferrimagnetism.	14	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	Superconductivity Occurrence of superconductivity - properties of superconductors - effect of magnetic field - Meissner effect - Type I and type II superconductors - isotope effect - entropy - heat capacity and thermal conductivity. Energy gap - microwave and infrared absorption - theoretical explanations: London's equations - penetration depth - coherence length, Cooper pairs - BCS theory - AC and DC Josephson effects - high temperature superconductors (basic concepts).	20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

VI	Self-Study for Enrichment (Not included for End Semester Examinations) Cubic zinc sulphide structure – CeF_3 crystal structure – thermal conductivity of Quasi crystalline materials – ferroelectric applications in memory devices – recent developments in bio magnetism – SQUID.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
----	---	---	-------------------------------------	---------------------------------------

Text Books

1. Deckker A. J., (2000) *Solid State Physics*, Macmillan, 1st Edition, India.
2. Kittel.C, (2004) *Introduction to Solid State Physics*, John Wiley & Sons, Hoboken, New Jersey, U.S.
3. Puri.R.K & Babbar.V.K.,(2008) *Solid State Physics and Electronics*, S.Chand & Company, 1stEdition, New Delhi
4. Singhal R. L., (2003) *Solid State Physics*, Kedar Nath Ram Nath, 7 revised Edition,Uttar Pradesh, India.
5. Gupta Kumar, (2013) *Solid State Physics*, K Nath & Co, 9th edition, Meerut.
6. Pillai S. O., (2006) *Solid State Physics*, New Ag International (P) Ltd. Publishers, Revised Edition,New Delhi.

Reference Books

1. Ali Omar .M. S., (1975) *Elementary Solid State Physics*, Addison Wesley, 2nd Edition, U.S.
2. Azoroff L. V. (1993) *Introduction to solids*, TMH Publishing, 1st Edition, Chennai.
3. Ashcroft N. W. and Mermin Holt N. D., (1987) *Solid State Physics*, Cenegage Learning, 1st Edition ,U.S.

Web Resources

1. <https://www.britannica.com/science/crystal>
2. <https://www.britannica.com/science/lattice-vibration>
3. https://www.youtube.com/watch?v=H6w24ZVo_W8
4. <https://iopscience.iop.org/article/10.1088/0034-4885/61/9/002/pdf>
5. <https://collegedunia.com/exams/diamagnetism-physics-articleid-8133>
6. <https://easyelectronics.co.in/superconductivity/>
7. <https://testbook.com/physics/superconductor-materials>

Pedagogy

Lecture, Seminar, Assignment and power point presentation

Course Designer

Ms. A. MARY GIRIJA

Semester : III	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22PGCS3CCC2A	CYBER SECURITY	CORE CHOICE	3(T) + 2(P)	4

Course Objective

- To develop skills in students that can help them plan, implement, and monitor cyber security mechanisms to ensure the protection of information technology assets.
- To expose students to governance, regulatory, legal, economic, environmental, social, and ethical contexts of cyber security.
- To expose students to the responsible use of online social media networks.
- To systematically educate the necessity to understand the impact of cyber-crimes and threats with solutions in a global and societal context.
- To select suitable ethical principles, commit to professional responsibilities and human values, and contribute value and wealth for the benefit of society

Prerequisites

Basic Knowledge of Cyber Security

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	Understand the cyber security threat landscape	K1,K2
CO2	Develop a deeper understanding and familiarity with various types, cyber crimes, vulnerabilities, and remedies thereto.	K2, K3
CO3	Analyse and evaluate existing legal frameworks and laws on cyber security.	K4, k5
CO4	Analyse and evaluate the digital payment system security and remedial measures.	K4, K5
CO5	Analyse and evaluate the cyber security risks, plan suitable security controls	K4, k5

Mapping of CO with PO and PSO

COs	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	2	3	3	3	3	2
CO4	3	3	3	3	2	3	3	3	3	2
CO5	3	3	3	3	2	3	3	3	3	2

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“-” indicates there is no correlation

**Syllabus
Theory:**

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Overview of Cyber Security: Cyber security increasing threat landscape, -Cyberspace, attack, attack vector, attack surface, threat, risk, vulnerability, exploit, exploitation, hacker., Non-state actors, Cyber terrorism, Protection of end user machine, Critical IT and National Critical Infrastructure, Cyber warfare, Case Studies.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Cyber Crimes: Cyber Crimes targeting Computer systems and Mobiles- data diddling attacks, spyware, logic bombs, DoS, DDoS, APTs, virus, Trojans, ransomware, data breach., Online scams and frauds- email scams, Phishing, Vishing, Smishing, Online job fraud, Online sextortion, Debit/credit card fraud, Online payment fraud, Cyberbullying, website defacement, Cyber-squatting, Pharming, Cyber espionage, Cryptojacking, Darknet-illegal trades, drug trafficking, human trafficking., Social Media Scams & Frauds- impersonation, identity theft, job scams, misinformation, fake news cyber crime against persons –cyber grooming, child pornography, cyber stalking., Social Engineering attacks, Cyber Police stations, Crime reporting procedure, Case studies.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Cyber Law: Cyber Crime and legal landscape around the world, IT Act, 2000 and its amendments. Limitations of IT Act, 2000. Cyber Crime and punishments, Cyber Laws and Legal and ethical aspects related to new technologies-AI/ML, IoT, Blockchain, Darknet and Social media, Cyber Laws of other countries, Case Studies.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Data Privacy and Data Security: Defining data, meta-data, big data, non-personal data. Data protection, Data privacy and data security, Personal Data Protection Bill and its compliance, Data protection principles, Big data security issues and challenges, Data protection regulations of other countries- General Data Protection Regulations (GDPR),2016 Personal Information Protection and Electronic Documents Act (PIPEDA). Social media-data privacy and security issues.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Cyber security Management, Compliance and Governance: Cyber security Plan-cyber security policy, cyber crises management plan., Business continuity, Risk assessment, Types of security controls and their goals, Cyber security audit and compliance, National cyber security policy and strategy.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

VI	Self Study for Enrichment (Not included for End Semester Examinations) Case Studies: Largest Cyber Attacks : Yahoo Data Breach, Equifax Data Breach, WannaCry Malware Attack, Simple Locker.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
----	---	---	-------------------------------------	--------------------------------

Reference Books

1. Vivek Sood, (2017). *Cyber Law Simplified*. McGraw Hill Education
2. Sumit Belapure and Nina Godbole, (2011). *Computer Forensics and Legal Perspectives*. Wiley India Pvt. Ltd.
3. Dorothy F. Denning, (1998). *Information Warfare and Security*. Addison Wesley.
4. Henry A. Oliver, (2015). *Security in the Digital Age: Social Media Security Threats and Vulnerabilities*. Create Space Independent Publishing Platform.
5. Natraj Venkataramanan and Ashwin Shriram, (2016). *Data Privacy Principles and Practice*. 1st Edition, CRC Press.
6. W.Krag Brothy, (2008). *Information Security Governance, Guidance for Information Security Managers*. 1st Edition, Wiley Publication.
7. Martin Weiss, Michael G.Solomon, (2015). *Auditing IT Infrastructures for Compliance*. 2nd Edition, Jones & Bartlett Learning.

Web References

1. <https://www.tutorialspoint.com/principles-of-information-system-security>
2. <https://www.geeksforgeeks.org/principle-or-information-system-security/>
3. <https://www.techtarget.com/searchsecurity/definition/cybersecurity>
4. <https://www.ukessays.com/essays/computer-science/analysis-of-the-yahoo-data-breaches.php>
5. <https://www.csoonline.com/article/34444488/equifax-data-breach-faq-what-happened-who-was-affected-what-was-the-impact.html>
6. <https://www.techtarget.com/searchsecurity/definition/WannaCry-ransomware>
7. <https://www.cloudflare.com/learning/ddos/syn-flood-ddos-attack/>

Practicals:

List of Exercises: (Not included for End Semester Examinations)

1. Platforms for reporting cyber crimes.
2. Checklist for reporting cyber crimes online
3. Setting privacy settings on social media platforms.
4. Do's and Don'ts for posting content on Social media platforms.
5. Registering complaints on a Social media platform.
6. Prepare password policy for computer and mobile device.
7. List out security controls for computer and implement technical security controls in the personal computer.
8. List out security controls for mobile phone and implement technical security controls in the personal mobile phone.
9. Log into computer system as an administrator and check the security policies in the system.

Web References

1. <https://cybercrime.gov.in/>
2. https://cybercrime.gov.in/webform/crime_onlinesafetytips.aspx
3. <https://www.digitalvidya.com/blog/social-media-dos-and-donts/>
4. <https://www.medianama.com/2023/02/223-platform-grievance-appellate-committees-social-media/>
5. <https://www.ibm.com/topics/security-controls>
6. <https://docs.oracle.com/cd/E19683-01/817-0365/concept-2/index.html>

Pedagogy

Chalk and Talk, Group discussion, Seminar & Assignment.

Course Designer

From UGC SYLLABUS

COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	EDITS
22PPH3CCC2B	COMMUNICATION ELECTRONICS	CCC-II	5	4

Course Objectives

- To comprehend the transmission of electromagnetic waves through different types of antenna
- To acquire knowledge about the propagation of waves through earth's atmosphere and along the surface of the earth
- To gain knowledge in the generation and propagation of microwaves
- To acquire knowledge about radar systems and its applications and also the working principle of colour television
- To understand the general theory and operation of satellite communication systems

Pre-requisites

- Knowledge of Regions of electromagnetic spectrum and its characteristics.
- Learn the working principle of fiber optics and its use in telecommunication
- Understand the elements of Display mechanism.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO 1	Recall and Understand the propagation of electromagnetic waves through sky and on earth's surface	K1, K2
CO 2	Apply the principle of radar in detecting locating, tracking, and recognizing objects of various kinds at considerable distances	K3
CO 3	Analyze the methods of generation of microwaves analyze the propagation of microwaves through wave guides	K4
CO 4	Compare the different types of optical fiber and also to justify the need of it-discover the use of optical fiber as wave guide	K5
CO 5	Show the importance of satellite communication and various principle display techniques.	K6

Mapping of CO with PO and PSO

Cos	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	2	2	2	2	1	3	3	2	2	2
CO 2	2	2	1	2	1	3	1	2	2	2
CO 3	3	2	2	2	1	3	3	1	2	2
CO 4	3	1	3	2	1	1	3	2	2	2
CO 5	3	1	2	2	1	3	3	2	3	1

“1” - Slight (Low) Correlation
“3” - Substantial (High) Correlation

“2” - Moderate (Medium) Correlation;
“-” - indicates there is no correlation.

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	MODULATION AND MICROWAVES Modulation: Theory of amplitude modulation – Frequency modulation – Phase modulation-Noise - Internal noise-External noise-noise calculation –noise figure-noise temperature. Microwaves: Microwave generation—Multi cavity Klystron-reflex klystron-magnetron travelling wave tubes (TWT) and other microwave tubes- MASER-Gunn diode-wave guides	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	ANTENNAS AND TELEVISION Antenna equivalent circuits-coordinate system-radiation fields – Polarization- Power gain of Antenna-Hertzian dipole-Half wave dipole-Vertical antenna-Loop ferrite rod antenna-non-resonant antenna-driven array. Television: Colour TV transmission and reception-colour mixing principle-colour picture tubes- Delta gun picture tube.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	RADAR AND SATELLITE COMMUNICATION Elements of a radar system and its equation-Performance Factors - radar transmitting systems-radar antennas- duplexers- radar receivers and indicators Satellite: Geo-stationary orbits - Power systems - Attitude control - satellite system link models-satellite system parameters	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	OPTICAL FIBER COMMUNICATION Propagation of light in an optical fibre-acceptance angle-numerical aperture-step and graded index fibres-optical fibres as a cylindrical wave guide-wave guide equations in step index fibres - fibre losses and dispersion-applications.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	DISPLAY TYPES Inorganic Phosphors- Cathode Ray Tubes (CRTs)- Vacuum Florescent Displays- Filed Emission Displays-Plasma Display Panels - LED Display Panels- Inorganic Electroluminescent Displays	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	SELF-STUDY FOR ENRICHMENT (Not included for End Semester Examinations) Signal Broadcasting Techniques- CCTV Principle- Synthetic Aperture Radar(SAR)- Splicing techniques- Organic Electroluminescent Displays (OLEDs)	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Books

1. Gupta and Kumar,(2008), *Handbook of Electronics*, Pragati Prakashan., 1st edition.
2. George Kennedy and Davis,(1988), *Electronic communication systems*,Tata McGraw Hill., 4th edition.
3. Taub and Schilling,(1991) *Principles of communication systems*, Tata Mc Graw Hill., second edition.
4. Kulkarani M, (1988) , *Microwave and radar engineering*, Umesh Publications, New Delhi., Third Edition.
5. Ghulathi R R,(2005), *Mono Chrome and colour television*, New Age International Publisher., Revised Edition.
6. Janglin Chen, Wayne Cranton, Mark Fihn(2016) , “*Handbook of Visual Display Technology*”, Springer Publication.

Reference Books

1. Dennis Roddyand Coolen, (1995), *Electronics communications*, *Prentice Hall of India.*, 4th Edition.
2. Wayne Tomasi,(1998), *Electronics communication System*, Prentice Hall of India., 4th edition.
3. Salivahanan S, Suersh Kumar N and Vallavaraj A, (2009), *Electronic Devices and Circuits*, Tata McGraw-Hill Publishing Company Limited, New Delhi., Second Edition.

Web References

1. <https://www.geeksforgeeks.org/digital-electronics-logic-design-tutorials/>
2. <https://www.polytechnichub.com/difference-analog-instruments-digital-instruments/>
3. https://www.youtube.com/watch?v=3Tlx_t4D11o
4. <https://www.digimat.in/nptel/courses/video/117105131/L01.html>
5. <https://archive.nptel.ac.in/courses/108/101/108101092/>

Pedagogy

Chalk and Talk, Seminar, Assignment, Power point Presentation, Group discussion and Quiz

Course Designer

Dr. R. Gayathri

Semester -III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22PPH3CCC2C	PHYSICS OF SEMICONDUCTOR DEVICES	CCC-II	5	4

Course Objectives

- To understand the fundamentals of semiconductor physics that will enable subsequent study of semiconductor devices
- To gain knowledge in semiconductor junction.
- To comprehend the various circuit configurations of transistor and diodes
- To acquire knowledge about Power electronic devices.
- To learn the latest technological changes in display devices.

Pre-requisites

- Knowledge on fundamental theory of semiconductors.
- Basic understanding of bipolar transistors
- Fundamental ideas on semiconductor devices

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Describe and outline the structure of semiconducting materials.	K1,K2
CO2	Apply the knowledge of basic semiconductor material physics and understand fabrication processes.	K3
CO3	Examine the semiconducting devices and circuits, explain the working characteristics and use these principles in the complex circuits.	K4
CO4	Assess the electronic device problems and recommend the solutions.	K5
CO5	Design new materials for semiconductor devices	K5

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	1	1	2	3	2	2	2	3
CO2	3	3	1	1	3	3	2	2	2	3
CO3	3	3	1	1	3	3	3	3	2	3
C O4	3	3	3	1	3	3	3	2	2	3
C O5	3	3	2	1	3	3	3	3	2	3

“1”-Slight (Low) Correlation
“3”- Substantial (High) Correlation

“2”- Moderate (Medium) Correlation
“-”- indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	ENERGY BANDS AND CARRIER CONCENTRATION Introduction to Semiconductor Devices- Semiconductor Materials - Basic Crystal Structures - Energy Bands - Intrinsic Carrier Concentration - Donors and acceptors	10	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	CHARGE TRANSPORT IN MATERIALS Carrier Drift -Carrier Diffusion- Generation and Recombination Processes -Continuity Equation - Thermionic Emission Process - Tunneling Process - Space-Charge Effect -High field effect	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	P-N JUNCTION AND TRANSISTOR ACTION Thermal Equilibrium Condition -Depletion Region - Depletion Capacitance - Charge Storage and Transient Behavior -Junction Breakdown – Hetero junction- Transistor Action - Static Characteristics of Bipolar Transistors - Frequency Response and Switching of Bipolar Transistor	17	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	MICROWAVE DIODES; QUANTUM-EFFECT AND HOT-ELECTRON DEVICES Microwave Frequency Bands - Tunnel Diode - IMPATT Diode - Static and Dynamic characteristics - Transferred-Electron Devices - Quantum-Effect Devices - Resonant Tunneling Diode - Hot- Electron Devices	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	LIGHT EMITTING DIODES, LASERS AND SOLAR CELLS Radiative Transitions and Optical Absorption Light- Emitting Diodes - Liquid crystal display- Plasma display - Semiconductor Lasers - Photodetectors - Solar Cells-Silicon and Compound- Semiconductor Solar Cells - Third-Generation Solar Cells - Optical Concentration	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	SELF-STUDY FOR ENRICHMENT (Not included for End Semester Examinations) Energy band gap for different materials - Electric current flow through a given medium - Thyristors and related power devices - Microwave materials for wireless applications - Applications of modern semiconducting devices -CCD - OLED	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Books

1. Umesh K. Mishra, Jasprit Singh., (2008). “*Semiconductor Device Physics and Design*”, Springer.
2. Simon M.Sze & Ming -Kwei Lee.,(2010)”*Semiconductor Devices : Physics and Technology*” (3rd Edition), John Wiley & Sons, Inc.

Reference Books

1. Simon M.Sze and Kwok K. Ng., (2007). “*Physics of Semiconductor Devices*”, A John Wiley & Sons, Inc., Publication.
2. Marius Grundmann., (2016) “*The Physics of Semiconductors*”, (3rd Edition), Springer International Publishing.
3. Donald A Neamen, (2007) “*Semiconductor Physics and Devices*”, (4th Edition) , McGraw-Hill, New York.

Web References

1. <https://archive.nptel.ac.in/courses/108/108/108108122/>
2. https://www.electronics-tutorials.ws/diode/diode_1.html
3. <https://physics.info/semiconductors/>
4. <http://www.fulviofrisone.com/attachments/article/403/The%20Physics%20of%20Semiconductors.pdf>
5. <https://www.elprocus.com/3-different-types-displays-available/>

Pedagogy

Chalk and Talk, Seminar, Assignment, Power point Presentation, Group discussion and Quiz

Course Designer

Dr.D. DEVI

SEMESTER-III	INTERNAL MARKS: 40	EXTERNAL MARKS: 60		
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
23PPH3CC3P	GENERAL PHYSICS AND ELECTRONICS – II (P)	CP-III	6	5

Course Objectives

- To determine elastic constants of materials using appropriate experimental setup.
- To verify the characteristics of semiconductor materials.
- To understand the application of operational amplifiers.
- To understand the concepts involved in arithmetic and logical circuits using IC's.

Pre-requisites

- Basic knowledge on usage of scientific apparatus.
- Hands on experience of simple general and electronics experiments.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO 1	Explain the aim of the study and the numerous inputs to the method for calculating a material's physical properties.	K2
CO 2	Construct and run the experiment.	K3
CO 3	Make use of the correct formula to compute the physical quantity, after writing a list of your observations and repeating the experiment.	K3
CO 4	Examine and evaluate the results acquired, and sketch variations as needed.	K4, K5
CO 5	Create and design electronic and electrical circuits for use in project work.	K6

Mapping of CO with PO and PSO

COs	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	3	3	2	1	3	2	2	1	1	3
CO 2	2	2	2	1	3	2	2	1	1	2
CO 3	3	3	2	1	3	3	2	1	1	2
CO 4	3	3	3	1	3	3	3	1	1	2
CO 5	3	3	3	1	3	3	3	1	1	3

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” – indicates there is no correlation.

SYLLABUS

LIST OF EXPERIMENTS (Any 10)

1. Determination of L by Anderson method.
2. Polarizabilities of liquids by finding the refractive indices at different wavelength.
3. Magnetic susceptibility by Quincke's method.
4. Determination of specific rotatory power of liquid using Polarimeter.
5. Four probe method-determination band gap energy of a semiconductor.
6. Determination of Planck Constant – LED Method
7. Study of Arithmetic Logic Unit.
8. Op-Amp 741 – Solving Simultaneous Equations.
9. Voltage Controlled Oscillator Using IC 555.
10. Four bit binary Up and Down Counter using IC7476.
11. Differential amplifier using Op-Amp.
12. Simplification of Boolean expression by Karnaugh map.
13. Construction of Current to Voltage and Voltage to Current Conversion using IC 741.
14. Study the functional groups of material using FTIR spectrometer.
15. Determine the Redox Potential of a material using Cyclic Voltammetry.

Text Books

1. Ouseph, C.C., Rao, U.J., & Vijayendran, V., (2009). *Practical Physics and Electronics*. S.Viswanathan, Printers & Publishers Pvt Ltd.
2. Dr.Somasundaram, S., (2012). *Practical Physics*. Apsara Publications.

Reference Books

1. Dunlap, R.A., (1988). *Experimental Physics: Modern Methods*. Oxford University Press, New Delhi.
2. Jones, B.K., (1986). *Electronics for Experimentation and Research*. Prentice-Hall.
3. Zbar, P.B., Malvino, A.P., & Miller, M.A., (1994). *Basic Electronics: A Text-Lab Manual*. Tata Mc-Graw Hill, New Delhi.

Web References

1. <https://vlab.amrita.edu/?sub=1&brch=192&sim=854&cnt=1>
2. <https://cds-iiith.vlabs.ac.in/exp/rotation-of-sugar/theory.html>
3. <http://vlabs.iitkgp.ac.in/coa/exp8/index.html>
4. <http://vlabs.iitkgp.ac.in/coa/exp13/index.html>

Pedagogy

Demonstration, practical sessions and viva voce

Course Designer

Dr.N. MANOPRADHA

SEMESTER-III	INTERNAL MARKS :25	EXTERNAL MARKS :75		
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22PPH3DSE3A	PHYSICS FOR COMPETITIVE EXAMINATIONS	DSE-III	5	3

Course Objectives

- To understand the fundamental concepts of physical sciences
- To gain the knowledge of experimental methods.
- To impart the concepts of the atomic & molecular physics.
- To focus on their principles of detectors.
- To acquire the knowledge in Spectroscopy.

Pre-requisites

- Fundamentals and Foundation of the physics for competitive examination.
- Learn the basic principles of Lattices.
- Understanding of the various application of Spectroscopy

Course Outcome and Cognitive Level Mapping

On the completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Explain the digital techniques and applications	K1, K2
CO2	Discuss the atomic & molecular physics	K2
CO3	Explain the measurement methods	K3
CO4	Evaluate the error analysis	K4
CO5	Distinguish the different spectroscopies	K5

Mapping of CO with PO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO 1	2	3	3	3	2	2	2	3	2	2
CO 2	2	3	3	3	2	2	2	3	2	2
CO 3	2	3	3	3	2	2	2	3	2	2
CO 4	2	3	3	3	2	2	2	3	2	2
CO 5	2	3	3	3	2	2	2	3	2	2

“1” – Slight (Low) Correlation
“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation;
“-” indicates there is no correlation

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	ELECTRONICS: Digital techniques and applications – Impedance matching– amplification and noise reduction – Lock in detector –Box-Car integrator – Modulation techniques	10	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	CONDENSED MATTER PHYSICS : Bravais lattices, Reciprocal lattice – Diffraction and the structure factor – Bonding of solids – Elastic properties, phonons, lattice specific heat – Free electron theory and electronic specific heat. Response and relaxation phenomena – Drude model of electrical and thermal conductivity – Hall effect and thermoelectric power – Electron motion in a periodic potential, band theory of solids : metals, insulators and semi-conductors.	20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	MEASUREMENT METHODS Linear curve fitting – Nonlinear curve fitting - chi square fitting – Transducers and its type - Particle detectors – Measurement systems.	10	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	ATOMIC PHYSICS Quantum states of an electron in an atom. Electron spin. Spectrum of helium and alkali atom. Relativistic corrections for energy levels of hydrogen atom, hyperfine structure and isotopic shift, width of spectrum lines, LS & JJ couplings. Zeeman, Paschen-Bach & Stark effects.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	INFRARED & RAMAN SPECTROSCOPY Vibrating diatomic molecule - Diatomic vibrating rotator - Linear and symmetric top molecules - Pure rotational Raman spectra - Linear molecules - Symmetric top molecules – Vibration of IR and Raman spectra - Surface Enhanced Raman spectroscopy. NMR: Basic principles - Shielding and de shielding effects - Chemical shift - Spin lattice and spin-spin relaxation - Coupling Constants	20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

VI	<u>SELF-STUDY FOR ENRICHMENT</u> (Not included for End Semester Examinations) High-frequency devices (including generators and detectors) –Applications of Band theory – Merits of curve fitting - Spin-orbit coupling, fine structure - Applications of IR, Raman, NMR and SER spectroscopy.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
----	---	---	-------------------------------------	--------------------------------

Text Books

1. Malemnganba Chenglei.W, *UGC-CSIRNET (JRF&LS)Physical Science*, Arihant, 2016, Thirddedition.
2. Surekha Tomar, *CSIR-UGCNET/JRF/SET*, Physical Sciences, Upkar Prakashan,Recent edition.
3. Ghosal.S.N, *Atomic Physics*, S.Chand, 2007, Revised Edition.
4. Banwell. C.N, *Fundamentals of Molecular Spectroscopy*, McGraw Hill, 1981, 4th Edition.
5. Aruldas.G, *Molecular Structure and Spectroscopy*, Prentice Hall, 2006, 2nd Edition.
6. Sathyanarayana. D.N, *Vibrational Spectroscopy*, New Age Inter-national, 2015, 3rd Edition

Reference Books

1. Nageshwara Rao. R, *CSIR-UGC*
2. *NET/SET (JRF&LS) PHYSICALSCIENCES*, Khanna Publishers,2019, Revised Edition
3. Sathyanarayana. D.N, *Vibrational Spectroscopy*, New Age Inter-national, 2015, 3rd Edition.

Web Resources

1. <https://pravegaa.com/free-study-material/>
2. <https://testbook.com/csir-net/physical-science-study-material>
3. https://toppersnotes.com/product/csirnetphyscience/?utm_source=GPMAX&utm_medium=CSIRNET
4. <https://careerendeavour.com/net-physics-study-materials/>
5. <https://www.googleadservices.com/pagead/aclk?>

Pedagogy

Chalk and Talk, Power point presentation, Assignment, Seminar and Quiz.

Course Designer

Dr. M. Kavimani

SEMESTER- III	INTERNAL MARKS : 25	EXTERNAL MARKS : 75		
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEKS	CREDITS
22PPH3DSE3B	CRYSTAL GROWTH AND THIN FILM PHYSICS	DSE -III	5	3

Course Objectives

- To understand the nucleation phenomena
- To develop the knowledge of experimental methods of crystal growth techniques
- To gain the growth aspects of thin film ideas.
- To acquire the Knowledge of Structural aspects.
- To develop the Knowledge about the applications of grown materials.

Pre-Requisites

- Basic knowledge in Solid State Physics.
- Basic Knowledge of kinematics.
- Understanding of the various application of Materials.

Course Outcome and Cognitive Level Mapping

On the successful completion of the course, the students will be able to:

CO Number	CO statement	Knowledge Level
CO1	Outline the basic knowledge of growth phenomena and discuss the theoretical aspects of nucleation , Growth, Structural and Application.	K1,K2
CO2	Apply the experimental ideas of low temperature solution growth mechanism and Melt Growth.	K3,K4
CO3	Analyze the concepts on vapour growth techniques	K3,K4
CO4	Explain the process of thin films sample preparation method.	K4,K5
CO5	Formulate the latest developments in characterization techniques and analyze the usage of materials.	K4,K5

Course Outcome and Cognitive Level Mapping

Cos	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5
CO“1	3	2	2	2	3	2	2	2	2	2
CO 2	3	2	2	2	3	3	3	3	3	3
CO 3	3	2	2	2	3	3	3	3	3	3
CO 4	3	2	2	2	3	3	3	3	3	3
CO 5	3	2	2	2	3	3	3	3	3	3

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation;

“-” - indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	CRYSTAL GROWTH PHENOMENA: Nucleation - Homogeneous nucleation -Heterogeneous nucleation - Formation of nucleation - spherical nucleation - cylindrical nucleation - Growth kinetics - Singular and rough surface - Gibbs – Thomson equation - Growth from vapour – solutions - Classical theory of nucleation - Kossel, Stranski, Volmer (KSV) Theory - Burton, Cabrera and Frank (BCF) theory.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	GROWTH OF SINGLE CRYSTAL: Solution Growth : Selection of solvents and solubility – Meir’s solubility diagram – Saturation and supersaturation - Growth by restricted evaporation of solvent - slow cooling of solution and temperature gradient methods Vapour Growth: Physical Vapour Deposition (PVD) - Chemical Vapour Deposition (CVD). Melt Growth Techniques : Czochralski pulling method – Bridgeman technique	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	THIN FILM STRUCTURE Thin film growth stage – Deposition technique – physical method – Resistive heating – Electron beam gun – Laser gun evaporation – Flash evaporation – Sputtering – reactive sputtering - radio frequency sputtering - chemical method – Electro deposition –Electroless plating – deposition by chemical reaction- Properties – Dielectric property – Optical property.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	STRUCTURAL ANALYSIS X-Ray diffraction studies (XRD) - Powder XRD equipment- Single XRD equipment -Examination of typical XRD pattern. Fourier transform infrared Analysis (FTIR) - Raman Spectroscopy - Elemental analysis – EDAX – SEM – TEM.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

V	CHARACTERIZATION TECHNIQUE: Micro Hardness Test - Vickers Hardness - Brinell Hardness - Knoop Hardness- Thermal analysis - Thermal gravimetric analysis (TGA) - Differential Thermal Analysis (DTA) - Refractive index – Pulsed Laser – Florescence Studies - Photo-sensitivity - Thermal properties- melting point (TGA) – Differential Scanning Calorimetry (DSC) – Optical test – Pulsed laser – florescence.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	<u>SELF-STUDY FOR ENRICHMENT</u> (Not included for End Semester Examinations) Gibbs Thomson Equation – growth from melt - Chemical Vapour Transport – Preparation of TiO films.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,

Text Books:

1. Santhanaragavan P.& P.Ramasamy (2001) *Crystal growth process &Methods* First edition KRU Publications, Kumbakonam
2. BriceJ.C. (1986) *Crystal Growth Processes* First edition John Wiley, New York.
3. Pamplin B.R. (1981) *Crystal Growth* First edition Pergamon Press, Oxford.
4. Goswami A. (2008) *Thin film fundamentals* First edition New Age, New Delhi
5. Yang Leng (2013) *Materials Characterization: Introduction to Microscopic & Spectroscopic Methods* First edition Wiley & Sons.

Reference Books

1. Orhring M. (2002) *Materials Science of Thinfilms* second edition Academic Press, Boston.
2. Sam Zhang, Lin Liand Ashok Kumar (2008) *Materials Characterization Techniques* first edition CRC Press.

Web References

1. <https://www.worldscientific.com/worldscibooks/10.1142/10127#t=aboutBook>
2. <https://pubs.rsc.org/en/content/articlelanding/2017/cp/c7cp01112a>
3. <https://www.alineason.com/en/knowhow/crystal-growth/>
4. https://www.nasa.gov/mission_pages/station/research/station-science

Pedagogy:

Lecture with Power point presentation, Group discussion, Online Assignment

Course Designer

Dr .S.Priya

Semester - III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22PPH3DSE3C	WEATHER FORECASTING	DSE - III	5	3

Course Objectives

- To provide awareness regarding the causes of different weather phenomenon
- To understand effects of different weather phenomenon
- To know the basic forecasting techniques
- To study the classification of Global wind
- To know the basic idea of weather forecasting

Pre-requisites

- Basic knowledge on different weather phenomenon

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the Course, the Student will be able to	Cognitive Level
CO 1	Describe the basic concepts and physical parameters related to Atmosphere	K1, K2
CO 2	Examine the techniques of weather measurements	K3
CO 3	Explain the ideas and utilization of weather forecast monitoring	K4
CO 4	Estimate the various steps, causes of global warming	K5
CO 5	Make the awareness of various natural disorders	K6

Mapping of CO with PO and PSO

Cos	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	3	3	2	2	2	2	2	3	2	2
CO 2	3	3	2	2	3	3	3	3	2	2
CO 3	2	3	2	2	3	3	3	3	2	2
CO 4	2	3	2	2	3	3	3	3	3	3
CO 5	3	3	2	2	2	3	3	3	3	2

“1” – Slight (Low) Correlation
“3” – Substantial (High) Correlation

“2” – Moderate (Medium) correlation
“-” indicates there is no correlation

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	INTRODUCTION TO ATMOSPHERE Elementary idea of atmosphere: physical structure and composition - Compositional layering of the atmosphere - Variation of pressure with height - Variation of pressure with air - Atmospheric pressure: its measurement - Requirements to measure air temperature - Temperature sensors: types - Cyclones and anticyclones: its characteristics.	17	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	INSTRUMENT AND MEASUREMENT OF WEATHER Measurement of temperature: Thermometer - Measurement of pressure: Mercury barometer- Measurement of humidity: Hygrometer - Measurement of precipitation: Rain gauges - Measurement of wind velocity: Anemometer - Measurement of clouds: Weather satellite.	16	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	WEATHER SYSTEMS Global wind systems and its components - Classification - Wind: speed, direction - Thunderstorms - Jet streams - Tropical cyclones - Tornadoes - Hurricanes.	13	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	CLIMATE AND CLIMATE CHANGE Climate: Classification of climate change - Causes of climate change - Global warming - Air pollution - Aerosols - Ozone depletion - Acid rain - Environmental issues related to climate.	14	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	BASICS OF WEATHER FORECASTING Need of measuring weather - Types of weather forecasting - Weather forecasting methods - Criteria of choosing weather station - Satellites observations in weather forecasting - Weather maps - Uncertainty and predictability - Probability forecasts.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	SELF-STUDY FOR ENRICHMENT (Not included for End Semester Examinations) Weather Forecasting Applications: Air traffic - Severe Weather Alerts - Marine - Agriculture - Military application.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Books

1. I.C. Joshi (2010). *Aviation Meteorology*. (3rd Edition), Himalayan Books, New Delhi.
2. Nicole Molders & Gerhard Kramm, (2014). *Lectures in Meteorology*. (1st edition) Springer International Publishing, Switzerland.
3. S.R. Ghadekar, (2001). *Meteorology*. Agromet Publishers, Nagpur.
4. Stephen Burt, (2012). *The weather observers Hand book*. (1st Edition) Cambridge University Press.

Reference Books

1. S.R. Ghadekar, (2005). *Text Book of Agrometeorology*. Agromet publishers, Nagpur.
2. John G. Harvey, (1995). *Atmosphere and Ocean*. The Artemis Press.

Web References

1. [Meteorology - I.C.Joshi | sai ram - Academia.edu](#)
2. [Causes and Effects of Climate Change | United Nations](#)
3. [Climate Change and Associated Issues - INSIGHTSIAS \(insightsonindia.com\)](#)
4. [Global warming - Greenhouse Effect and Fossil Fuels | Britannica](#)
5. [Weather forecasting - Meteorology, Synoptic Weather Map, and International Meteorological Organization | Britannica](#)

Pedagogy

Chalk and Talk, Power point presentation, Assignment, Seminar and Quiz.

Course Designer

Dr. B. ANITHA

Semester III	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs/Week	CREDITS
22PCH3GEC1	NANO SCIENCE AND NANOTECHNOLOGY	GEC – I	3	2

Course Objectives

- To understand the concept of nanomaterials and nanotechnology.
- To understand the various types of nanomaterials and their properties.
- To understand the applications of synthetically important nanomaterials.
- To correlate the characteristics of various nanomaterials synthesized by new technologies.
- To design synthetic routes for synthetically used new nanomaterials.

Prerequisites

Basic knowledge of crystallography and material science

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course students will be able to	
CO1	Explain methods of fabricating nano structures	K1&K2
CO2	To relate the unique properties of nanomaterials to reduce dimensionality of the material.	K1, K2 &K3
CO3	To describe tools for properties of nanostructures.	K3
CO4	To discuss applications of nanomaterials.	K4
CO5	To Perceive the health and safety related to nanomaterial.	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	2	3	3	3	3	1	1	3
CO2	2	2	1	2	2	3	3	2	2	2
CO3	3	3	2	3	3	2	3	2	2	2
CO4	2	3	2	2	2	3	2	2	2	2
CO5	3	3	2	2	3	3	3	2	3	3

“1”–Slight (Low) Correlation

“3”–Substantial (High) Correlation

“2”–Moderate(Medium)Correlation

“-” - indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Basics of Nanomaterials: Introduction of nanomaterials and nanotechnologies – role of size – classification – 0D, 1D, 2D and 3D – Nano powder - Nano powders - Features of nanostructure - Background of nanostructures- Techniques of synthesis of nanomaterials - Tools of the nanoscience - Applications of nanomaterials and technologies.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	Bonding, structure and properties of nanomaterial: Predicting the type of Bonding in a substance crystal structure - Metallic nanoparticles - Surfaces of materials, Nanoparticle size and Properties - mechanical properties of materials- thermal properties – electrical properties – conductivity and resistivity - magnetic properties- semiconductor material – Synthesis of Nanoparticles: gold and silver, metal oxides: silica, iron oxide and alumina.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	Synthesis: Top down and Bottom-up approach Limitations -Physical and chemical methods - inert gas condensation, arc discharge, laser ablation, sol-gel, solvothermal and hydrothermal-CVD-types, metallo organic, plasma enhanced, and low-pressure CVD. Microwave assisted and electrochemical synthesis	9	CO2, CO3, CO4	K1, K2, K3, K4

IV	Characterization Techniques: SEM , TEM and AFM– Surface plasmon resonance spectroscopy - principle, instrumentation and applications – Spectroscopic analysis- Dynamic light scattering - Zeta potential – Inductively coupled plasma mass Spectrometry – Matrix assisted Laser Desorption.	9	CO1 CO2 CO3	K1, K2, K3 K4, K5
V	Nano photonics- Foundation for nano photonics– free-space propagation - confinement of photons and electrons - propagation through a classically Forbidden zone - localization under a periodic potential - nanoscale optical interactions - near field-optics - theoretical modeling of near-field nanoscopic interactions - photonic crystals - basic concepts - theoretical modeling of photonic crystals.	9	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
	Self-Study for Enrichment (Not to be included for External Examination) Nanofabrication - functional nanoparticles and nanomaterials,- Microwave assisted and electrochemical synthesis.- FESEM principle, instrumentation and applications- thermal and semi conducting properties of nanomaterials- Electrochemical sensors for food analysis and contaminant detection.	-	CO1, CO2	K2, K3

Text Books

1. Mohan,S. and Arjunan, V.(2016). Principles of Materials Science. MJP Publishers
2. Arumugam,(2007).Materials Science, Anuradha Publications.
3. Giacavazzo et. al.,(2010).Fundamentals of Crystallography. International Union of
4. Crystallography. Oxford Science Publications,
5. Woolfson, (2012) . An Introduction to Crystallography, Cambridge University Press.
6. James, F. Shackelford, and Madanapalli, Muralidhara, K. (2007). Introduction to Materials Science for Engineers. 6thed., PEARSON Press.

Reference Books

1. Klabunde,K.J.(2009).Nanoscale Materials in Chemistry; 2nd Ed.,Wiley-Interscience.New York.
2. Fujita,H.(2003)MicromachinesasToolsinNanotechnologySpringer-Verlag.Berlin.

Web References

1. <http://xrayweb.chem.ou.edu/notes/symmetry.html>.
2. <http://www.uptti.ac.in/classroom-content/data/unit%20cell.pdf>.

Pedagogy

Chalk and talk, PPT, Discussion, Assignment, Demo, Quiz, Seminar

Course Designers:

Dr.G.Sivasankari

ANNEXURE J



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)

PG DEPARTMENT OF CHEMISTRY

B.Sc. CHEMISTRY

(For the Candidates admitted from the Academic year 2023 - 2024 and onwards)

Semester	Part	Course	Course Title	Course Code	Inst. Hrs. / Week	Credits	Exam			Total
							Hrs.	Marks		
								Int.	Ext.	
I	I	Language Course - I (LC)	Pothutamil – I	23ULT1	6	3	3	25	75	100
			Hindi ka Samanya Gyan aur Nibandh	23ULH1						
			Poetry, Grammar and History of Sanskrit Literature	23ULS1						
			Foundation Course: Paper I – French I	23ULF1						
	II	English Language Course - I (ELC)	General English – I	23UE1	6	3	3	25	75	100
	III	Core Course - I (CC)	General Chemistry – I	23UCH1CC1	5	5	3	25	75	100
		Core Practical - I (CP)	Quantitative Inorganic Estimation (Titrimetry) and Inorganic Preparations (P)	23UCH1CC1P	3	3	3	25	75	100
		First Allied Course - I (AC)	Calculus and Fourier Series	22UCH1AC1A	4	3	3	25	75	100
			Biology -I	23UCH1AC1B						
		First Allied Course - II (AC)	Algebra, Analytical Geometry of 3D and Trigonometry	22UCH1AC2A	4	3	3	25	75	100
			Biology (P)	23UCH1AC2BP						
	IV	Ability Enhancement Compulsory Course - I (AECC)	Value Education	23UGVE	2	2	-	100	-	100
	Total				30	22				700

Semester I	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs. / Week	CREDITS
23UCH1CC1	GENERAL CHEMISTRY – I	CORE	5	5

Course Objectives

- The course reviews the structure of the atom, which is a necessary pre-requisite in understanding the nature of chemical bonding in compounds.
- It discusses the periodicity in properties with reference to the s and p block, which is necessary in understanding their group chemistry.
- It provides basic knowledge about ionic, covalent, metallic bonding and reactive intermediates.
- To understand the basics of organic chemistry and the theoretical aspects of volumetric and qualitative inorganic analysis.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Recognize and report the fundamental principles of various field of chemistry.	K1
CO2	Explain the concepts of atomic structure, chemical bonding, reactive intermediates and different types of titrations.	K2
CO3	Illustrate the knowledge on atomic structure, bonding, MO theory, isomerism, reaction intermediates, solid state and analytical techniques.	K3
CO4	Categorize the quantum numbers, elements, hybridization, stability of intermediates, titrations and acid radicals.	K4
CO5	Interpret the periodic properties, geometry of molecules, bond order and electronic displacement effects.	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	2	2	3	2	1	3	2
CO2	3	2	1	2	2	3	3	1	1	2
CO3	3	2	2	3	3	3	3	2	2	3
CO4	3	1	2	3	2	3	3	2	1	2
CO5	3	1	2	3	2	3	3	2	1	2

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” Indicates there is No Correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Atomic Structure and Periodic Properties: Bohr's model of atom - Photoelectric effect - Compton effect - Dual nature of Matter - De Broglie wavelength - Davisson and Germer's experiment - Heisenberg's Uncertainty Principle - Schrodinger equation. Atomic orbital - quantum numbers - Principal, azimuthal, magnetic and spin quantum numbers - significance. Principles governing the occupancy of electrons in various quantum levels - Pauli's exclusion - principle, Hund's rule, Aufbau Principle, (n+l) rule, stability of half -filled and fully filled orbitals. Modern periodic table - classification of elements - Trends of periodic properties along the period and group - Electronegativity scale - applications.	17	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Chemical Bonding - I: Introduction- types - ionic bond - Born Haber cycle - lattice energy - Madelung constant - Fajan's rule - covalent bond - polar and non -polar covalent bonds partial ionic character of covalent bond - percentage of ionic character -coordinate bond - Bond parameters - Factors influencing bond parameters - metallic bond -Electron Sea model - Band theory - Van der Waals force - Hydrogen bonding – types-	13	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

	properties and effects.			
III	Chemical bonding - II: VB theory - postulates - limitation - different types of hybridization - VSEPR theory - shapes of different types of molecules - limitation - MO theory - bonding, antibonding and non - bonding orbitals, bond order, MO diagrams of H ₂ , He ₂ , C ₂ , O ₂ , O ²⁺ , O ²⁻ , O ₂ ²⁻ , N ₂ , NO, HF and CO - magnetic characteristics - comparison of VB and MO theories.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Basics of Organic Compounds: IUPAC nomenclature of compounds - classification - isomerism - types - structural and stereo isomerism - cleavage of bonds: homolytic and heterolytic cleavages reagents and substrates; types of reagents - electrophiles - nucleophiles. Reaction intermediates - generation - properties - structure and stability of carbocation, carbanion, free radicals, carbenes and nitrenes - Electronic effects: Inductive - electromeric - mesomeric (resonance) - hyperconjugation and steric effects - Dipole moment.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Analytical Methods - I: Storage and handling of chemicals - handling of acids, ethers, toxic and poisonous chemicals and first aid procedure. Volumetric analysis - methods of expressing concentration - Primary and Secondary standards- Different types of titrations - Acid - Base Titrations, Titrimetric method,	15	CO1, CO2, CO3, CO4	K1, K2, K3, K4

	Iodimetry method - Iodometry Method, Complexometric Titration and Precipitation Titration. Qualitative Inorganic Analysis - Dry Test - Flame Test - Interfering acid radicals - Eliminating of Interfering acid radicals.			
VI	Self-Study for Enrichment (Not to be included for External Examination) Electronic configuration of polyelectronic atoms, Calculation of screening constant and effective nuclear charge - Lewis electron dot structure - Oxidation State and valency of element - Difference between ionic and covalent compounds - Do and Don't in the Science Lab	-	CO1, CO2, CO3, CO4	K1, K2, K3, K4

Text Books

1. Puri, B. R., Sharma, L. R., & Kalia, K. K. (2018). Principles of Inorganic Chemistry. 33rd edition. Shoban Lal Nagin Chand & Co., New Delhi.
2. Madan, R.D.. & Sathya Prakash. (2003). Modern Inorganic Chemistry. 2nd ed.; S. Chand and Company. New Delhi.
3. Madan, R.D. (2019). Modern Inorganic Chemistry. 3rd edition. S. Chand & Company Ltd.
4. Bahl, B. S., & Arun Bahl. (2021). Text book of Organic Chemistry. 22nd revised edition. Chand & Company Ltd.
5. Puri, B. R., Sharma, L. R., & Pathania, M. S. (2022). Principles of Physical Chemistry. 48th edition. Shoban Lal Nagin Chand & Co, New Delhi.
6. Gopalan, R., Subramanian, P. S., & Rengarajan, K. (2003). Elements of Analytical Chemistry. 2nd edition. Sultan Chand & Sons.

Reference Books

1. Soni, P. L., & Mohan Katyal. (2017). Textbook of Inorganic Chemistry. 25th revised edition. Sultan Chand & Sons.
2. Huheey, J. E. (1993). Inorganic Chemistry: Principles of Structure and Reactivity, 4th ed .;

Addison, Wesley Publishing Company: India.

3. Vogel, A. I. (2000). Text Book of Quantitative Inorganic analysis including Elementary Instrumental Analysis. The English Language Book Society.

Web References

1. <https://www.thoughtco.com/definition-of-quantum-number-604629>.
2. https://www.chemie-biologie.uni-siegen.de/ac/lehre/part1_solid_state.pdf.
3. <https://testbook.com/learn/chemistry-vsepr-theory/>.

Pedagogy

Chalk and talk, PPT, Discussion, Assignment, Demo, Quiz, Seminar.

Course Designers

- Dr. P. Pungayee Alias Amirtham
- Dr. P. Thamizhini

Semester I	Internal Marks: 25	External Marks: 75		
COURSE CODE	COURSE TITLE	CATEGORY	Hrs./ Week	CREDITS
23UCH1CC1P	QUANTITATIVE INORGANIC ESTIMATION (TITRIMETRY) AND INORGANIC PREPARATIONS (P)	CORE	3	3

Course Objectives

- To learn the techniques of titrimetric analyses.
- To know the estimation of several cations and anions and to know the estimation of total hardness of water.
- To learn the preparations of inorganic compounds.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statements On the successful completion of the course, students will be able to	Cognitive Level
CO1	Describe the basic principles involved in volumetric analysis and inorganic preparations.	K1
CO2	Demonstrate the experimental methods of volumetric analysis and estimate the chlorine content in bleaching powder and copper in brass.	K2
CO3	Determine the hardness of water and saponification value of oil.	K3
CO4	Apply volumetric analysis for the estimation of compounds.	K4
CO5	Predict the amount of chemical compounds in a given sample.	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	3	3	3	-	2	3	3	2
CO2	2	2	2	3	2	3	3	3	3	2
CO3	2	3	3	1	2	2	3	3	2	1
CO4	2	3	2	1	2	2	3	2	2	1
CO5	2	2	2	3	2	2	2	3	2	2

“1”– Slight (Low) Correlation

“2”– Moderate (Medium) Correlation

“3”– Substantial (High) Correlation

“-” Indicates there is No Correlation.

SYLLABUS

I. Titrimetric Quantitative Analysis:

Calculation of equivalent weight and Preparation of standard solution.

1. Estimation of HCl using NaOH as link and standard oxalic acid solution.
2. Estimation of Na_2CO_3 using HCl as link and standard Na_2CO_3 solution.
3. Estimation of Iron (II) sulphate using KMnO_4 as link and standard Mohr's salt solution. (Permanganometric titration).
4. Estimation of oxalic acid using KMnO_4 as link and standard oxalic acid solution.
5. Estimation of KMnO_4 using thio as link and standard $\text{K}_2\text{Cr}_2\text{O}_7$ solution.
6. Estimation of copper (II) sulphate using $\text{K}_2\text{Cr}_2\text{O}_7$ solution. (Dichrometric titration)
7. Estimation of Mg (II) ions by EDTA solution. (Complexometric Titration)
8. Estimation of chloride ion in barium chloride solution using standard standard sodium chloride. (Argentometric titration)

II. Applied Experiments:

1. Estimation of total hardness of water.
2. Estimation of chlorine in bleaching powder.
3. Estimation of acid value of an oil.
4. Estimation of copper in brass.

III. Preparation of Inorganic Compounds:

1. Potash alum.
2. Tetraammine copper(II) sulphate.
3. Mohr's salt

Text Books

1. Venkateswaran, V., Veeraswamy R., and Kuandaivelu. (1997). Basic Principles of Practical Chemistry. 2nd edition. New Delhi, Sultan Chand & Sons.
2. Bassett, J. (1985). Text Book of Quantitative Inorganic Analysis. 4th edition. ELBS Longman.

Reference Book

Vogel A. I. (2000) Text book of quantitative inorganic analysis. The English language book society.

Web References

1. <https://chemlab.truman.edu/files/2015/07/edta.pdf>.
2. <https://www.youtube.com/watch?v=wh6-cYjNNiA>
3. <https://www.slideshare.net/mithilfaldesai/estimation-of-feii-ions-by-titrating-against-k2-cr2o7-using-internal-indicator>.
4. <https://www.youtube.com/watch?v=qmVQs6Q7tso>.
5. <https://byjus.com/chemistry/titration-of-oxalic-acid-with-kmno4/>.
6. <http://www.titrations.info/EDTA-titration-calcium>.

Pedagogy

Demonstration and Practical Sessions.

Course Designers

- Dr. C. Rajarajeswari
- Dr. S. Devi

FIRST ALLIED COURSE-I (AC) CALCULUS AND FOURIER SERIES

(For B.Sc Physics & Chemistry) (2022-2023 and Onwards)

Semester I	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs / Week	CREDITS
22UPH1AC1/ 22UCH1AC1A	CALCULUS AND FOURIER SERIES	ALLIED	4	3

Course Objective

- Explore the students with mathematical methods formatted for their major concepts and train them in basic Integrations.
- Analyze mathematical statements and expressions.
- Evaluate the fundamental concepts of Differentiation and Integration.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Explain the concepts of Calculus and Fourier series	K1, K2
CO2	Classify the problem models in the respective area.	K3
CO3	Solve various types of problems in the corresponding stream.	K3
CO4	Identify the properties of solutions in the core area.	K3
CO5	Discover the applications of Calculus and Fourier series.	K4

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	2	2	2	3	2	2	2	2
CO2	3	2	2	2	2	3	2	2	2	2
CO3	3	2	2	2	2	3	2	2	2	2
CO4	3	2	2	2	2	3	2	2	2	2
CO5	3	2	2	2	2	3	2	2	2	2

“1” – Slight (Low) Correlation □ “2” – Moderate (Medium) Correlation □

“3” – Substantial (High) Correlation □ “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Successive Differentiation: The n^{th} derivative – Standard results – Method of splitting the fractional expressions into partial fractions - Trigonometrical transformation – Formation of equations involving derivatives – Leibnitz formula for the n^{th} derivative of a product (proof not needed) – A complete formal proof by induction (proof not needed) - Curvature- Circle, radius and center of curvature - Cartesian formula for the radius of curvature–Simple problems in all these.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	Evaluation of integrals: Integration of Rational algebraic functions– Rule (a)– Rule (b) Integration of the form $\int \frac{lx+m}{ax^2+bx+c} dx$ – Rule (c)- Integration of Irrational functions : Integration of the form $\int \frac{\sqrt{px+q}}{ax^2+bx+c} dx$ –Integration of the form $\int \frac{dx}{(x+p)\sqrt{ax^2+bx+c}}$ - Integration of the form $\int \frac{dx}{a+b\cos x}$	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	Reduction Formula: Properties of definite integrals –Reduction formula (when n is a positive integer) for 1] $\int_0^1 e^{ax} x^n dx$ 2] $\int_0^1 x^n \cos ax dx$ 3] $\int_0^1 \sin^n x dx$ 4] $\int_0^1 \sin^n x \cos^m x dx$ (without proof) and illustrations.	13	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

IV	Double and Triple Integrals: Definition of the double integral-Evaluation of Double integral(Problems Only)-Change of order and evaluation of the double integral (Problems only).	10	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	Fourier Series: Definition of Fourier Series – Finding the Fourier Coefficients for a given periodic function with period 2π - Even and Odd functions–Half range Fourier series.	10	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
VI	Self-Study for Enrichment : (Not to be included for External examination) Radius of curvature when the curve is in Polar coordinates - (i) $\frac{dx}{ax^2 + bx + c}$ (ii) $\frac{dx}{ax^2 + bx + c}$ - (1) $\frac{1}{2}$ $\int_0^{\theta} \cos^n x dx$ (2) $\int \cos^n x dx$ -Triple Integrals in simple cases(Problems Only)- Development in cosine series - Development in sine series.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

Text Books

- 1.Narayanan, S & Manichavasagam Pillai, T.K. (2015). *Calculus Volume I.S. Viswanathan Pvt Limited.*
- 2.Narayanan, S & Manichavasagam Pillai, T.K. (2015). *Calculus Volume II. . Viswanathan Pvt Limited.*
- 3.Narayanan, S & Manichavasagam Pillai, T.K. (2015). *Calculus Volume III. S. Viswanathan Pvt Limited.*

UNIT–I Chapter 3:Sections 1.1 to 1.6,2.1,2.2[1]

Chapter 10:Sections 2.1 to 2.3 [1]

UNIT-II Chapter 1:Sections 7.1,7.3,7.4,8(CASE II, CASE V), 9 [2]

UNIT-III Chapter 1:Sections 11,13.1 to 13.5 [2]

UNIT-IV Chapter :Sections 2.1,2.2,4 [2]

UNIT-V Chapter 6:Sections 1to 4[3]

Reference Books

1. Sankarappan, S. Arulmozhi,G. (2006). Vector Calculus, Fourier series and Fourier Transforms. VijayNicole Imprints Private Limited.
2. Vittal, P.R.(2014). Allied Mathematics. Margham Publications.
3. Singaravelu, A.(2003). Differential Calculus and Trigonometry. R Publication.

Web Links

1. <https://www.youtube.com/watch?v=tBtF3Lr-VLk&t=64s>
2. <https://www.youtube.com/watch?v=Z4oSGuAZrZM>
3. https://www.youtube.com/watch?v=w6llnAOX_f8
4. <https://www.youtube.com/watch?v=LMcj8o0ERNE>
5. https://www.youtube.com/watch?v=_GAwOGCyWv0
6. <https://www.youtube.com/watch?v=9X3ggehCFII>

Pedagogy

Power point presentations, Group Discussions, Seminar, Quiz, Assignment.

Course Designers

1. Dr. P. Saranya
2. Ms. L. Mahalakshmi
3. Ms. P. Geethanjali

Semester – I	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HOURS/ WEEK	CREDITS
23UCH1AC1B	BIOLOGY - I (FOR CHEMISTRY STUDENTS)	ALLIED	4	3

Course Objectives

- To learn about the classification of plants and general characteristics of plants, fungi and algae.
- To acquire more knowledge about the general characters of bryophytes, gymnosperms and angiosperms with examples.
- To understand the organ structure and function.
- To gain basic knowledge about plant and animal biology

Course Outcome and Cognitive Level Mapping

Upon the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Recall and infer the factual and conceptual information required for understanding of Microbes, Plants and Animals.	K1, K2
CO2	Illustrate morphological, anatomical and reproduction of various organisms and appreciate their adaptive strategies.	K2
CO3	Identify and analyse the characteristics and basic needs of living organisms.	K3, K4
CO4	Compare and interpret the relationship between organisms and environment.	K4, K5
CO5	Explain the characteristics of major taxa and compare and contrast their anatomical and physiological characteristics	K4, K5

Mapping of CO with PO and PSOs

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	2	2	3	2	2	2	1
CO2	3	3	2	3	2	3	2	2	2	1
CO3	3	3	2	2	2	3	2	2	2	2
CO4	3	3	3	2	2	2	2	2	2	2
CO5	3	3	3	2	3	1	3	2	3	2

“1” – Slight (Low) Correlation, “2” – Moderate (Medium) Correlation,

“3” – Substantial (High) Correlation, “-” indicates there is no correlation.

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	Basis of Classification – Bentham and Artificial, Natural Classification of plants. Morphology, Structure and reproduction: Algae - <i>Sargassum</i> as an example and its economic importance; Fungi – Yeasts as an example and its economic importance.	11	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	Bryophytes – General characters – <i>Funaria</i> as an example- alternation of generation. Pteridophytes – General characters – <i>Selaginella</i> . Gymnosperm – General Characters – <i>Pinus</i> – Economic uses of gymnosperms. Angiosperms – Monocot flower – <i>Allium cepa</i> . Dicot flower – <i>Nerium oleander</i> .	13	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	Organization, movement and secretions of gastrointestinal tract, Respiration – respiratory organs in mammals – morphology –respiratory pigments. Blood and circulation – composition of blood– General organization of circulatory systems.	13	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	Excretion – excretory organs – general organization in man – muscular system – ultra structure of voluntary muscle.	10	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	Nervous system – CNS – Autonomic nervous system – Endocrine glands in man	13	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self - Study for Enrichment (Not included for End Semester Examination) Blue Green Algae, Penicillium, Lichens	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Books

1. Singh, V., Pande, P.C., Jain, D.K. (2021). *A Text Book of Botany*. Rastogi Publications. Meerut.
2. Veer, B. R. (2021). *Parker and Haswell Textbook of Zoology Vertebrates*. 8th edition. Medtech Science Press.
3. Agarwal, V. K. (2018). *Zoology for Degree Students B. Sc. First Year*. S. Chand Publishing.
4. Vashishta, P.C. (2014). *Botany for Degree Students Gymnosperms*. Chand & Company Ltd, Delhi.

5. Chatterjee, C.C. (2004), *Human Physiology Volume I. Medical Allied*. New Central Agency, Kolkata
6. Chatterjee C.C (2004), *Human Physiology Volume II, Medical Allied*. New Central Agency, Kolkata

Reference Books

1. Parihar, N.S. (2012). *An introduction to Embryophyta – Pteridophytes*. Surjeet Publications, Delhi.
2. Alexopoulos, C.J. (2013). *Introduction to Mycology*. Willey Eastern Pvt. Ltd.
3. Coulter, M. J. (2014). *Morphology of Gymnosperms*. Surjeet Publications, Delhi.
4. Pandey, B.P. (1986), *Text Book of Botany (College Botany) Vol I &II*. S. Chand and Co. New Delhi.
5. Best and Taylor. (1992). *The Physiological Basis for Medical Practice*. Saunders Company.
6. Chaudhri, K. (1993). *Concise Medical Physiology*. New Central Book Agency (Parental) Ltd., Calcutta.

Web References

1. <https://www.kobo.com/us/en/ebook/the-algae-world>
2. [http://www.freebookcentre.net/biology-books-download/Fungi-\(PDF-15P\).html](http://www.freebookcentre.net/biology-books-download/Fungi-(PDF-15P).html)
3. <http://scitec.uwichill.edu.bb/bcs/bl14apl/bryo1.htm>
4. <https://www.toppr.com/guides/biology/plant-kingdom/pteridophytes/>
5. <https://arboretum.harvard.edu/wp-content/uploads/2013-70-4-beyond-pine-cones-an-introduction-to-gymnosperms.pdf>
6. <https://www.us.elsevierhealth.com/medicine/cell-biology>
7. <https://www.us.elsevierhealth.com/medicine/genetics>
8. <https://www.kobo.com/us/en/ebook/plant-biotechnology-1>

E-Books

1. <https://www.pdfdrive.com/bsc-botany-d34484852.html>
2. <https://www.pdfdrive.com/pteridophytes-gymnosperms-palaeobotany-d56995666.html>
3. <https://www.pdfdrive.com/biology-botany-textbooks-online-e8895584.html>
4. <https://www.pdfdrive.com/biology-botany-higher-secondary-first-year-text-books-online-e2009127.html>
5. <https://www.pdfdrive.com/a-text-book-of-botany-and-pharmacognosy-e158788414.html>
6. <https://www.pdfdrive.com/a-text-book-of-botany-e57877390.html>
7. <https://www.pdfdrive.com/the-basics-of-biology-e107180613.html>

Pedagogy

Power point presentation, Group Discussion, Seminar, Assignment, Animations

Course Designers

1. Dr. R. UMA MAHESWARI
2. Dr. M. KEERTHIGA

FIRST ALLIED COURSE-II (AC)

ALGEBRA, ANALYTICAL GEOMETRY OF 3D & TRIGONOMETRY

(For B.Sc Physics & Chemistry) (2022-2023 and Onwards)

Semester I	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs / Week	CREDITS
22UPH1AC2/ 22UCH1AC2A	ALGEBRA, ANALYTICAL GEOMETRY OF 3D & TRIGONOMETRYs	ALLIED	4	3

Course Objective

- Analyze the mathematical methods formatted for their major concepts.
- Evaluate the problems in Algebra and Trigonometry.
- Explain the basics of Three-Dimensional geometry.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Explain various notions in Algebra, Analytical Geometry of 3D& Trigonometry.	K1,K2
CO2	Identify the problem models.	K3
CO3	Apply the concepts of Algebra, Analytical Geometry of 3D& Trigonometry.	K3
CO4	Solve the given problems in the respective stream.	K3
CO5	Analyze the applications of the core area.	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	2	2	3	2	3	2	2	2	2
CO2	2	2	2	3	2	3	2	2	2	2
CO3	2	2	2	3	2	3	2	2	2	2
CO4	2	2	2	3	2	3	2	2	2	2
CO5	2	2	2	3	2	3	2	2	2	2

“1” – Slight (Low) Correlation □ “2” – Moderate (Medium) Correlation □

“3” – Substantial (High) Correlation □ “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Series Expansion: Application of Binomial Theorem to summation of series – Approximate values – Summation of series by Exponential series - Summation of series by Logarithmic series (Formulae only).	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4.
II	Matrices: Matrix-Special types of Matrices –Scalar multiplication of a matrix-Equality of matrices-Addition of matrices-Subtraction of matrices- Symmetric matrix-Skew symmetric matrix-Hermitian and Skew Hermitian matrix –Multiplication of matrix – Inverse matrix-Inner product-Solution of simultaneous equations-Rank of a matrix-Elementary transformation of a matrix-A system of m homogeneous linear equations in n unknowns-Linear dependence and independence of vectors-System of non-homogeneous linear equations - Eigen values and Eigenvectors.(Applications only)	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4.
III	Three Dimensional Geometry: The Sphere – Definition- The equation of a sphere when the center and radius are given-The equation of a sphere to find its center and radius- The length of the Tangent Plane from a point to the sphere – The Plane Section of a sphere – Equation of a circle on a sphere – Intersection of two spheres in a circle.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4.

IV	Expansion of Trigonometric functions: Expansions of $\cos n\theta$ and $\sin n\theta$ - Expansion of $\tan(A \pm B \pm C \pm \dots)$ (omitting examples on formation of equations) – Powers of sines and cosines of θ in terms of functions of multiples of θ – Expansions of $\cos^n \theta$ when n is a positive integer – Expansions of $\sin^n \theta$ when n is a positive integer – Expansions of $\sin \theta$ and $\cos \theta$ in a series of ascending powers of θ - The expansions of $\sin \theta$ and $\cos \theta$ to find the limits of certain expressions.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4.
V	Hyperbolic functions: Hyperbolic functions – Relation between hyperbolic functions – Relations between hyperbolic functions and circular functions - Inverse hyperbolic functions.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4.
VI	Self-Study for Enrichment : (Not to be included for External examination) Series which can be summed up by the Logarithmic series - Simple applications of Matrices- The equation of the tangent plane to the sphere at a point. (Only problems) - Expansion of $\tan \theta$ in terms of powers of θ - Separation of real and imaginary parts of $\tanh(x+iy)$.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4.

Text Books

1. Manichavasagam Pillai, T.K. Natarajan, T. & Ganapathy, K.S. (2015). *Algebra, Volume I*. S. Viswanathan Pvt Limited.
2. Manichavasagam Pillai, T.K. (2015). *Algebra, Volume II*. S. Viswanathan Pvt Limited.
3. Manichavasagam Pillai, T.K. & Natarajan, T. (2016). *A Text book of Analytical Geometry Part-II 3D*. New Gamma Publishers.
4. Manichavasagam Pillai, T.K. & Narayanan, S. (2013). *Trigonometry*. S. Viswanathan Pvt Limited.

UNIT–I Chapter 3: Sections 10, 14 [1]

Chapter 4: Sections 3, 7, 9 [1]

UNIT-II	Chapter 2:Sections 1 to 16 [2]
UNIT-III	Chapter 4:Sections 1-5,6,6.1,7,8 [3]
UNIT-IV	Chapter 3:Sections 1 to 4, 4.1,5,5.1[4]
UNIT-V	Chapter 4:Sections 1,2,2.1 to 2.3[4]

Reference Books

1. Arumugam,S. Issac,A. (2017). Analytical Geometry 3D and Vector calculus. New GammaPublishing house.
2. Pandey, H.D. Khan, M.Q. & Gupta, B.N.(2011). A Text Book of Analytical Geometry and VectorAnalysis. Wisdom Press.
3. Singaravelu, A. (2003). Differential Calculus and Trigonometry. R Publication.

Web Links

1. <https://www.youtube.com/watch?v=JavFh5EJHcU>
2. <https://www.youtube.com/watch?v=h5urBuE4Xhg>
3. <https://www.youtube.com/watch?v=59z6eBynJuw>
4. <https://www.youtube.com/watch?v=9DyPyJb2N9g>
5. <https://www.youtube.com/watch?v=HOk2XLeFPDk>
6. <https://www.youtube.com/watch?v=G1C1Z5aTZSO>

Pedagogy

Power point presentations, Group Discussions, Seminar, Quiz, Assignment.

Course Designers

1. Dr. P. Saranya
2. Dr. L. Mahalakshmi
3. Ms. P. Geethanjali

Semester – I	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HOURS/ WEEK	CREDITS
23UCH1AC2BP	BIOLOGY (P) (FOR CHEMISTRY STUDENTS)	ALLIED	4	3

Course Objectives

- To perform experiments using microscope.
- To study about cells and their morphology by appropriate technique.
- To gain knowledge in morphological identification of plant parts.
- To perform experiments on human blood cells.

Course Outcome and Cognitive Level Mapping

Upon the successful completion of the course, students will be able to

CO Number	CO Statement	Cognitive Level
CO 1	Define and outline the basic instruments involved in Biology	K1, K2
CO 2	Identify and explain the morphology of various parts of plants and animals.	K2, K3
CO 3	Dissect and list the different types of vascular tissues.	K4
CO 4	Compare and contrast the monocot and dicot flower based of T.S section.	K4, K5
CO 5	Determine the various types of cells in living organisms.	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2	3	2	3	3	1
CO2	3	3	3	3	2	3	2	3	3	1
CO3	3	2	3	3	2	3	2	3	3	1
CO4	3	3	3	3	2	3	2	3	3	3
CO5	3	3	3	3	2	3	3	3	3	2

“1” – Slight (Low) Correlation, “2” – Moderate (Medium) Correlation,
“3”–Substantial (High) Correlation, “-” indicates there is no Correlation.

Syllabus

1. Epidermal peel of onion.
2. Squamous epithelium from human cheek cells.
3. Epidermal peel of leaf to observe stomata
4. Xylem and phloem from Cucurbita stem.
5. Identification of Striated muscle fibers (Cockroach).
6. Study of morphological modification of plant parts – Root, stem and leaf.
7. To dissect a dicot flower, construct floral diagram and write floral formula.
8. To dissect a dicot flower, construct floral diagram and write floral formula.
9. Observation of human blood cells.

Reference Books

1. Christopher, G., Krista, C., Delores, B. (2021). *General Biology Laboratory Manual*. 2nd edition. Kendall/Hunt Publishing Co, U.S.
2. Chiyedza, S. (2018). *General Biology Laboratory Manual*. 3rd edition. Kendall/Hunt Publishing Co, U.S.
3. Leslie, A. K. (2018). *Integrating Lecture and Lab: A General Biology Laboratory Manual*. 3rd edition. Cognella, Inc.
4. David, M., James, P., Joy, B. P. (2006). *Laboratory Manual-General Biology*. 5th edition. Brooks/Cole;
5. Subramaniam, N.S. (1996). *Laboratory Manual of Plant Taxonomy*. Vikas Publishing House Pvt. Ltd., New Delhi.
6. Noggle, G.R., Fritz, G.J. (2002). *Introductory Plant Physiology*. Prentice Hall of India, New Delhi.

E-Books

1. <https://www.pdfdrive.com/a-textbook-of-practical-botany-d57965065.html>
2. <https://www.pdfdrive.com/a-text-book-of-practical-botany-2-d156822597.html>
3. <https://www.pdfdrive.com/practical-botany-ii-d46799996.html>
4. <https://www.pdfdrive.com/practical-botany-d158065762.html>

5. <https://www.pdfdrive.com/botanical-illustration-d176078869.html>
6. <https://www.pdfdrive.com/practical-botany-for-advanced-level-and-intermediate-students-d157593255.html>

Web References

1. <https://www.amazon.in/Practical-Manual-Pteridophyta-Rajan-Sundara/dp/8126106883>
2. <https://www.google.co.in/books/edition/Gymnosperms/3YrT5E3Erm8C?hl=en&gbpv=1&dq=gymnosperms&printsec=frontcover>
3. <https://www.amazon.in/Computational-Phytochemistry-Satyajit-Dey-Sarker-ebook/dp/B07CV96NZJ>
4. <https://medlineplus.gov/genetocs/understanding/basics/cell/>
5. <https://apan.net/meetings/apan45/files/17/17-01-01-01.pdf>
6. http://www.cuteri.eu/microbiologia/manuale_microbiologia_pratica.pdf
7. <https://www.amazon.in/Manual-Practical-Bryophyta-Suresh-Kumar/dp/B0072GNFX4>

Pedagogy

Practical Observation and Demo

Course Designers

1. Dr. R. UMA MAHESWARI
2. Dr. M. KEERTHIGA

,



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)

PG DEPARTMENT OF CHEMISTRY

B.Sc. CHEMISTRY

(For the Candidates admitted from the Academic year 2022 - 2023 and onwards)

Semester	Part	Course	Course Title	Course Code	Inst. Hrs. / Week	Credits	Exam			Total	
							Hrs.	Marks			
								Int.	Ext.		
III	I	Language Course - III (LC)	Kappiyamum Nadagamum	22ULT3	5	3	3	25	75	100	
			Hindi Literature & Grammar – III	22ULH3							
			Poetry Textual Grammar and Vakyarchana	22ULS3							
			Intermediate French – I	22ULF3							
	II	English Language Course - III (ELC)	Learning Grammar through Literature – I	22UE3	6	3	3	25	75	100	
	III	Core Course - IV (CC)	Organic and Analytical Chemistry	22UCH3CC4	6	6	3	25	75	100	
		Core Practical - III(CP)	Analysis and Preparation of Organic Compounds (P)	22UCH3CC3P	3	3	3	40	60	100	
		Second Allied Course - I (AC)	Physics – I	22UCH3AC4	4	3	3	25	75	100	
		Second Allied Course - II (AP)	Physics (P)	22UCH3AC4P	4	3	3	40	60	100	
		IV	Generic Elective Course - I (GEC)	Chemistry in Everyday life	22UCH3GEC1	2	2	3	25	75	100
				Basic Tamil	22ULC3BT1						
				Special Tamil	22ULC3ST1						
		Extra Credit Course	SWAYAM		As per UGC Recommendation						
	Total					30	23				700

Semester III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs. / Week	CREDITS
22UCH3CC4	ORGANIC AND ANALYTICAL CHEMISTRY	CORE	6	6

Course Objectives

- To understand the basics of alkanes and cycloalkanes.
- To learn about the chemistry of alkenes and alkynes.
- To learn about concept of aromaticity and reactivity of benzene.
- To understand the aspects of data analyses.
- To learn the techniques of thermoanalytical methods.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	Recall and understand the fundamental concepts of organic compounds and analytical techniques.	K1
CO2	Describe the nature of hydrocarbons, errors and different thermo analytical methods.	K2
CO3	Interpret the chemical reactions of hydrocarbons and thermogram.	K3
CO4	Analysis different reactions of organic molecules and analytical data.	K4
CO5	Explain the stability of organic molecules and application of thermograms.	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	2	2	3	2	1	3	2
CO2	3	2	2	2	2	3	3	2	2	2
CO3	3	2	1	2	2	3	3	1	1	2
CO4	3	2	2	3	3	3	3	2	2	3
CO5	3	1	2	3	2	3	3	2	1	2

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” Indicates there is No Correlation.

SYLLABUS

UNIT	CONTENT	HOURS	Cos	COGNITIVE LEVEL
I	Alkanes and cycloalkanes: Introduction - preparation - catalytic hydrogenation of alkenes and alkynes from haloalkanes, carbonyl compounds and sodium salts of carboxylic acids - physical properties and chemical properties - halogenation, nitration, sulfonation, chlorosulfonation, oxidation reaction. Cycloalkanes - strain in ring compounds: Baeyer's Strain theory - preparation of cycloalkanes - chemical properties of cycloalkanes.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Alkenes and Alkynes: Introduction - preparation of alkenes - reduction of alkynes - elimination reaction - physical properties - chemical properties - stability of alkenes, electrophilic addition reactions, free radical addition reactions - oxidation reactions, allylic substitution reactions, polymerization reactions. Alkynes - Introduction - preparation of alkynes - physical properties - addition of hydrogen, electrophilic and nucleophilic addition reactions - oxidation reactions - isomerization - polymerization reactions.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Concept of aromaticity and benzene: Introduction - structure of benzene - Kekule structure - resonance structure - orbital picture of benzene - resonance energy, stability of benzene - Huckels rule and aromaticity - aromaticity in benzene - preparation and chemical properties of benzene - Electrophilic substitution reactions of	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

	benzene - halogenation, nitration, alkylation, acylation and sulfonation and their mechanism - orientation and reactivity in monosubstituted and disubstituted benzene.			
IV	Data Analysis: Definition for analytical chemistry and chemical analysis - qualitative and quantitative analysis - classification of chemical analysis - error - definition - classification of errors - accuracy and precision - minimization of errors - limiting of reduction - significant figure - mean - median - standard deviation - distribution of random errors - reliability of results (Q-test) - confidence interval limit - comparison of results - students t-test - F-test.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Thermoanalytical Methods: Introduction - various techniques of thermal analysis - thermal gravimetric analysis - principle, thermogram, factors affecting thermogram, instrumentation and applications. Differential thermal analysis - factors affecting DTA curve - instrumentation - application of DTA - Differential scanning calorimetry - instrumentation for DSC - factors affecting DSC curves - application of DSC - comparison of DSC with DTA - Thermometric titration - theory - instrumentation - applications.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self-Study for Enrichment: (Not to be included for External Examination) IUPAC name of organic molecules, distinguish electrophile and nucleophile - types of cleavages - types of hybridization - resonance - exothermic and endothermic reaction.	-	CO1, CO2, CO3	K1, K2, K3, K4

Text Books

1. Bhupinder, M., & Manju, M. (2015). Organic chemistry. (2nd edition), Delhi, PHI Learning Private Limited.
2. Bahl, B.S., & Bahl, A. (2010) Advanced Organic Chemistry. (12th edition), New Delhi, Sultan Chand & Co.
3. Soni, P.L., & Chawla, H. M. (1983) Textbook of Organic chemistry. Sultan Chand & Sons.
4. Gopalan, R., Subramanian, P. S., & Rengarajan, K. (2003). Elements of Analytical Chemistry. 2nd edition, Sultan Chand & Sons.
5. Chatwal, G. R., & Anand, S. K. (2005). Instrumental methods of chemical analysis. Himalaya publishing house.

Reference Books

1. Finar, I. L. (1996) Organic Chemistry. Vol 1 & 2, (6th edition) England, Addison Wesley Longman Ltd.
2. Morrison, R.T., Boyd, R. N., & Bhattacharjee, S. K. (2011) Organic Chemistry (7th edition), Pearson India.
3. Vogel A. I. (1978). Text Book of Quantitative Inorganic analysis, The English Language Book Society, Fourth edition.
4. Skoog, D. A., West, D. M., & Holler, F. J. (1995). Fundamentals of Analytical chemistry, 7th edition, Harcourt College Publishers.

Web References

1. <https://www.khanacademy.org/science/organic-chemistry/bond-line-structures>.
2. <https://kpu.pressbooks.pub/organicchemistry/chapter/1-3-resonance-structures>.
3. https://chem.libretexts.org/Bookshelves/Organic_Chemistry/Supplemental_Modules.
4. <https://chemistryhall.com/basic-organic-chemistry-> .
5. <https://ams.uokerbala.edu.iq/wp/wp-content/uploads/2017/11/analytical-chemistry-2.pdf>.
6. <https://www.tutorialsduniya.com/notes/basic-analytical-chemistry-notes/>.
7. <https://www.studocu.com/in/document/mgm-institute-of-health-sciences/analytical-chemistry/analytical-chemistry-lecture-notes/23655112>.
8. <https://pdfs.semanticscholar.org/4297/626dad995612a5bec4cbd9c41d2a2f6f0146.pdf>.
9. <https://soe.unipune.ac.in/studymaterial/ashwiniWadegaonkarSelf/621%20Unit%202.pdf>.
10. https://www.brainkart.com/article/Thermoanalytical-Analysis_30855/.

Pedagogy

Chalk and talk, PPT, Discussion, Assignment, Demo, Quiz, Seminar.

Course Designer

Dr. C. Rajarajeswari

Semester III	Internal Marks: 40	External Marks: 60		
COURSE CODE	COURSE TITLE	CATEGORY	Hrs. / Week	CREDITS
22UCH3CC3P	ANALYSIS AND PREPARATION OF ORGANIC COMPOUNDS (P)	CORE	3	3

Course Objectives

- To learn the techniques of methods of different organic compounds through functional group identification with elemental analysis.
- To exhibit the derivative for functional group.
- To prepare organic compounds using various reactions.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	Observe the physical state, odour, colour and solubility of the given organic compounds.	K1
CO2	Detect the presence of special elements in an unknown organic compound performing a systematic analysis.	K2
CO3	Identify the presence of various functional groups in the given organic compounds.	K3
CO4	Exhibit the solid derivative with respect to the identified functional group.	K4
CO5	Prepare organic compounds and exhibit their crude and recrystallized sample.	K5

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	1	3	2	3	1	1	1	3
CO2	3	2	1	3	2	2	3	1	1	2
CO3	3	3	1	1	2	3	2	2	2	3
CO4	3	3	2	2	2	2	2	2	2	2
CO5	3	2	1	1	2	3	2	2	1	2

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” Indicates there is No Correlation.

SYLLABUS

I. ANALYSIS OF SIMPLE ORGANIC COMPOUNDS

- Identification of acidic, basic, phenolic and neutral organic compounds.
- Test for aliphatic/aromatic nature of the compound.
- Test for saturation / unsaturation.
- Detection of element present.
- Identification of functional groups.
- Confirmation by preparation of solid derivatives / characteristic color reactions,

Note: Mono –functional compounds are given for analysis. (Carboxylic acid, phenols, carbohydrates, amides, amines, aldehydes, ketones and esters).

II. PREPARATION OF ORGANIC COMPOUNDS (SINGLE STAGE)

1. Salicylic acid from methyl salicylate (Hydrolysis).
2. Acetanilide from aniline (acetylation).
3. m-Dinitrobenzene from Nitrobenzene (Nitration).
4. Benzoic acid from Benzaldehyde (Oxidation).
5. 2, 4, 6, tribromoaniline from aniline (Bromination)

Text Books

1. Venkateswaran, V., Veerasamy, R., & Kulandaivelu, A. R. (1997). Basic principles of Practical Chemistry. 2nd edition, New Delhi, Sultan Chand & Sons.
2. Ganapragasam, N.S., & Ramamurthy, G. (1998). Organic Chemistry Lab Manual. Viswanathan Co. Pvt. Ltd.

Reference book

Gurtur, J. R., & Kapoor, R. (1997). Advanced Experimental Chemistry. S. Chand and Co. Ltd. New Delhi.

Web References

1. https://iscnagpur.ac.in/study_material/dept_chemistry/3.1_MIS_and_NJS_Manual_for_Organic_Qualitative_Analysis.pdf.
2. <https://www.vedantu.com/iit-jee/qualitative-analysis-of-organic-compounds>.
3. <http://amrita.olabs.edu.in/?sub=73&brch=8&sim=116&cnt=2>.
4. [http://home.miracosta.edu/dlr/211exp3.htm#:~:text=Methyl%20salicylate%20\(an%20ester\)%20can,which%20is%20released%20by%20hydrolysis](http://home.miracosta.edu/dlr/211exp3.htm#:~:text=Methyl%20salicylate%20(an%20ester)%20can,which%20is%20released%20by%20hydrolysis).

5. <https://www.youtube.com/watch?v=wsXFYgCWzvg>.

Pedagogy

Demonstration and Practical Sessions.

Course Designer

- Dr. C. Rajarajeswari

Semester- III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22UCH3AC4	PHYSICS-I	SECOND ALLIED COURSE-I (AC)	4	3

Course Objectives

- To understand the behavior of matter in everyday life.
- To know the basic concepts of properties of matter.
- To acquire the knowledge in thermodynamics and heat conduction.
- To impart the ideas of semiconductors.

Pre-Requisites

- Get depth knowledge of physics in day today life
- Understand the fundamentals of elasticity and elastic nature of materials.
- Knowledge about the concepts of viscosity.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the Course, the Student will be able to,	Cognitive Level
CO 1	Recall the basic concepts of elasticity, viscosity and surface tension to solve problems encountered in everyday life.	K1
CO 2	Understand the concepts of the centre of gravity, states of equilibrium of rigid bodies and also stability of floating bodies.	K2
CO 3	Apply the behavior of the laws of thermodynamics, thermal conductivity and black body radiation.	K3
CO 4	Analyse the theories and experiments on interference and diffraction using air wedge, Newton's ring.	K4
CO 5	Evaluate the formation, characteristics and applications of diodes and transistor.	K5, K6

Mapping of CO with PO and PSO

COs	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	2	3	3	3	3	3	3	3	2	3
CO 2	2	3	3	3	3	3	3	2	2	3
CO 3	2	3	3	3	3	3	3	3	2	3
CO 4	2	3	3	2	3	3	3	3	3	3
CO 5	2	3	3	2	3	3	3	3	3	3

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” – indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	PROPERTIES OF MATTER Introduction - Stress – Strain – Young’s modulus- Rigidity modulus – Bulk modulus – Relations between elastic constants & Poisson’s Ratio (definition alone). Viscosity: Viscous force – Co-efficient of Viscosity – Streamline flow and Turbulent flow – critical velocity - Poiseuille’s formula for co-efficient of viscosity of a liquid (Stoke’s Method)	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	MECHANICS Basic concepts– Centre of Gravity- solid hemisphere – Hollow hemisphere. States of Equilibrium: Equilibrium of a rigid body – Stable, unstable and neutral equilibrium – Example. Stability of Floating bodies – Metacentre – Determination of Metacentric height of a ship.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	THERMAL PHYSICS Thermodynamics: Definitions - Significance and limitations of thermodynamic - Processes such as reversible and irreversible, adiabatic, isothermal, isobaric, isochoric and cyclic process - Laws of thermodynamics - enthalpy, entropy and heat capacity. Relationship between Cp and Cv - Joule – Thomson effect.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	OPTICS Interference: Introduction – Superposition of waves – Principle of interference-Air wedge – Newton’s rings. Polarization: Nicol Prism – Nicol Prism as Polarizer and Analyzer – Laurent’s half Shade Polari meter.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	ELECTRONICS Semiconductors: Classification of materials based on energy band (Conductors, semiconductors and insulators) - Intrinsic and extrinsic semiconductor. Diodes : PN Junction diode – Biasing of PN junction- V-I characteristics of junction diode –Zener diode – Characteristics of Zener diode.	11	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	SELF STUDY FOR ENRICHMENT (Not to be included for External Examination) Applications of Elasticity-Low Viscous silicon liquid immersed transformers-Rigid body systems-Kinetic theory of matter-Properties of optical materials- Characteristics, Working and Applications of LED.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Books

1. Murugesan R, (2017), *Properties of matter*, S. Chand & Co. Pvt. Ltd., Revised Edition
2. Narayanamoorthy and Nagarathinam N, (2005), *Mechanics Part II*, The National Publishing Company, Chennai.
3. BrijLal, Subrahmanyam N, Hemne P S, (2021), *Heat and Thermodynamics and Statistical Physics*, S. Chand & Co. Pvt. Ltd., Revised edition
4. Dr. Subramaniyam N, Brijlal and Dr. Avathanulu M N, (2015), *Optics*, S. Chand & Co. Pvt. Ltd. – 5th Edition, New Delhi.
5. Mehta V K and Rohit Mehta, (2015), *Principles of Electronics*, S. Chand and company Ltd

Reference Books

1. Brijlal and Subramaniyan, (2005), *Properties of Matter*, S. Chand & Co. Pvt. Ltd.
2. Mathur D S, (2006), *Mechanics*, S. Chand & Co. Reprint Edition.
3. Brijlal and Subramaniyan, (2001), *Thermal Physics*, S. Chand & Co.
4. Murugesan R and Kiruthiga Sivaprasath, (2014), *A Text Book of Optics*, S. Chand & Co. Pvt. Ltd.- 9th revised edition Ramnagar, New Delhi.
5. Vijayendran V, Viswanathan S, (2004), *Digital Fundamentals*, Printers & Publishers Private Ltd, Chennai.

Web References

1. <https://byjus.com>
2. <https://digitalcommons.unl.edu/cgi/viewcontent>
3. <https://sciencing.com>
4. <https://nptel.ac.in/courses/122106025>

Pedagogy

Chalk and Talk, Seminars, Power Point Presentation, Quiz, Assignment and Group discussion.

Course Designer

Dr.R.Mekala

Semester III	Internal Marks: 40		External Marks: 60	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22UCH3AC4P	PHYSICS (P)	SECOND ALLIED COURSE- II (AP)	4	3

Course Objectives

- To acquire basic knowledge about the experimental setup
- To help students to enhance their experimental skills.
- To gain hands-on experience with a variety of techniques.
- To learn the basic principles and procedures of laboratory work.

Pre-requisites

- Basic knowledge on usage of scientific apparatus.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the Course, the Student will be able to	Cognitive Level
CO 1	Find applications of physics experiments in real world appliances	K1
CO 2	Construct the experiment by arranging and assembling the equipment.	K2
CO 3	Build practical hands-on experience by various techniques.	K3
CO 4	Compare the experimental values with standard values.	K3
CO 5	Apply the physics theory to design basic electrical circuits and develop practical understanding	K3

Mapping of CO with PO and PSO

COs	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	1	1	1	2	1	3	2	1	2	1
CO 2	2	2	2	2	2	3	3	1	2	1
CO 3	1	3	2	3	1	3	2	1	3	1
CO 4	2	1	3	3	2	1	3	1	3	2
CO 5	3	2	3	3	3	1	3	2	3	2

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” indicates there is no correlation

Syllabus

LIST OF EXPERIMENTS (Any 8)

1. Young's modulus – Uniform bending (Pin and Microscope).
2. Acceleration due to gravity- Compound Pendulum.
3. Viscosity of liquid – Stoke's method.
4. Surface Tension and Interfacial Surface Tension – Drop weight method.
5. Specific Heat Capacity of liquid – Newton's law of Cooling.
6. Air wedge – thickness of thin wire.
7. Meter Bridge – Specific Resistance of a coil.
8. Carey Foster's Bridge - Specific Resistance of a coil.
9. Post office Box- Determination of Temperature Coefficient.
10. Potentiometer – Low range voltmeter Calibration.
11. Characteristics of Junction diode.
12. Characteristics of Zener diode.
13. Basic Logic gates
14. Comparison of EMF between Leclanche and Daniel cells.
15. Internal resistance of the Leclanche using Potentiometer.

Text Books

1. Somasundaram. S, (2012). *Practical Physics*, Apsara Publications, Tiruchirappalli.
2. Sasikumar. R, (2011), *A Book for Practical Physics*. PHI Learning Pvt. Ltd, New Delhi

Reference Books

1. Srinivasan.S, (2011) *A Text Book of Practical physics*, Sultans and publications, New Delhi.
2. Prof. Namboodiri pad, M.N., Prof.Daniel, P.A., (1982). *B.Sc., Practical Physics*. G.B.C. Publications, Cochin.

Web References

1. <https://vlab.amrita.edu/?sub=1&brch=280&sim=550&cnt=1>
2. <https://vlab.amrita.edu/index.php?sub=1&brch=280&sim=1518&cnt=4>
3. <http://amrita.olabs.edu.in/?sub=1&brch=5&sim=225&cnt=4>

Pedagogy

Demonstration, practical sessions, and viva voce

Course Designer

Dr. K. Kannagi

SEMESTER III	INTERNAL MARKS :25		EXTERNAL MARKS :75	
COURSE CODE	COURSE TITLE	CATEGORY	HOURS / WEEK	CREDIT
22UND3GEC1	BASICS IN NUTRITION	GENERIC ELECTIVE	2	2

Course Objectives

- To gain basic knowledge on classification of nutrients
- To get insight into the role of nutrients in maintaining health
- To understand importance of nutrition education

Course Outcomes

CO Number	CO statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Define nutrition and Recommended Dietary Allowances	K1
CO2	Explain classification of nutrients and objectives of nutritional programmes	K2
CO3	Illustrate the sources, requirement, functions, deficiency and excess effect of nutrients	K2
CO4	Predict the methods of nutritional assessment	K3
CO5	Ascertain techniques involved in nutrition education	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	2	-	3	3	-	3	3
CO2	3	3	2	2	-	3	3	-	3	3
CO3	3	3	2	2	-	3	3	-	3	3
CO4	3	3	2	2	-	3	3	-	3	3
CO5	3	3	2	2	-	3	3	-	3	3

“1” – Slight (Low) Correlation “2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation “-” indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	<p>a) Nutrition and Health- Definition of Nutrition and Health, Importance of nutrition for health, Basic five food group, My plate and the functions of food.</p> <p>b) Nutrients and RDA-Definition and classifications of nutrients, RDA, factors affecting RDA.</p>	4	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	<p>a) Carbohydrates – Nutritional classification, functions, requirement, excess and deficiency effects. Role of dietary fibre in human nutrition,</p> <p>b) Protein – Nutritional classification, functions, sources, requirement, excess and deficiency disorders. Amino acids- Classification and functions.</p> <p>c) Lipids – Classification, functions, sources, requirement, excess and deficiency effects. Fatty acids – Classification and functions.</p>	8	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	<p>a) Vitamins – Fat soluble vitamins -A, D, E and K - functions, sources, requirements excess and deficiency disorders, Water soluble vitamins – Vitamin C and B vitamins (Thiamine, Riboflavin, Niacin, Pyridoxin, Folic acid, B12) - functions, sources, requirement, excess and deficiency disorders.</p> <p>b) Minerals – Calcium, Phosphorus, Sodium, Potassium, Iron, Iodine, Fluorine - functions, sources, requirement, excess and deficiency disorders.</p>	8	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	<p>a) Basics of assessing nutritional status :Direct method -Anthropometric measurements (BMI, WHR, Broca's Index), Biochemical and Clinical assessment.</p> <p>b) Indirect method - Dietary Survey (24-hour dietary recall, food frequency questionnaire, diet history, dietary record), Vital statistics.</p>	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

V	<p>a) Nutrition education –Definition, tools, steps, importance of nutrition education. Nutrition education for prevention of underweight, obesity, anaemia.</p> <p>b) Nutrition intervention programmes in India - Nutritional Anaemia Prophylaxis Programme, National Prophylaxis Programme against Vitamin A Deficiency Diseases, National Goitre Control Programme, Integrated Child Development Services (ICDS).</p>	4	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
VI	<p>SELF STUDY FOR ENRICHMENT (Not to be included for External Examination)</p> <p>Food pyramid, Sources of energy, Functions of water in human body and water balance, Importance of assessment of nutritional status, PEM-Types and symptoms.</p>	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

Text Books

- 1.Srilakshmi B.(2021). *Nutrition Science*.(7th ed) New Age International Publishers. New Delhi.
- 2.Swaminathan.M. (2018). *Hand book of Food and Nutrition*.Bangalore Printing and Publishing Co Ltd. Bangalore
- 3.Raheena Begum.M. (2019).*A Text Book of Foods. Nutrition and Dietetics*.(3rd revised ed). Sterling Publishers Private Limited.

Reference Books

1. Gajalakshmi R. (2018). *Nutrition Science*.(2nd ed). CBS Publishers and distributors Pvt Ltd. New Delhi, India.
2. IndraniT.K. (2017).*Nursing Manual of Nutrition and Therapeutic Diet*.(2nd ed). Jaypee Brothers Medical publishers (P) Ltd, New Delhi.
3. SunetraRoday. (2018).*Food Science and Nutrition*(3rd ed).Oxford University press, New Delhi, India.

Web links

- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3995129/>
- <http://www.tuscany-diet.net/carbohydrates/classification-functions/>
- <https://www.nia.nih.gov/health/vitamins-and-minerals>

Journals

1. Journal of the Korean Society of Food Science and Nutrition, Korean Society of Food Science and Nutrition, South Korea.
2. Food and Agricultural Immunology, Taylor & Francis, England.
3. Nutrition and Food Science, Emerald Group Publishing Ltd, United Kingdom.

Pedagogy

E-content, Lecture, Power Point Presentation, Seminar, Assignment

Course Designers

Ms.E.AGALYA

Ms.R.ARTHY

Semester I	Internal Marks: 25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs /Week	CREDITS
23PCH1CC1	ORGANIC REACTION MECHANISM-I	CORE	6	5

Course Objective

- To learn the basic concepts of aromaticity and stereochemistry of various organic molecules
- To understand the feasibility and the mechanism of various organic reactions.
- To comprehend the techniques in the determination of reaction mechanisms.
- To understand the concept of stereochemistry involved in organic compounds.
- To correlate and appreciate the differences involved in the various types of organic reaction Mechanisms.

Prerequisites

Aromaticity, oxidation, reduction and symmetry

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Recall and summarize the fundamentals of reaction intermediates, electrophilic and nucleophilic substitution reactions, aromaticity, and stereochemistry.	K1, K2
CO2	Interpret the concept to Huckels theory, thermodynamic and kinetic requirements of reactions: conformation analysis and substitution reactions	K3
CO3	Categorize the determination of intermediates, aromaticity, configuration and reactivity of aliphatic and aromatic compounds towards substitution reaction.	K4
CO4	Evaluate aromatic character, stereo analysis, pathway of reaction mechanism.	K5
CO5	Predict the intermediate, conditions and product of substitution mechanism.	K6

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	1	3	2	3	1	1	1	3
CO2	3	2	1	3	2	2	3	1	1	2
CO3	3	3	1	1	2	3	2	2	2	3
CO4	3	3	2	2	3	3	2	1	2	3
CO5	3	3	2	3	3	3	3	2	1	2

“1”– Slight (Low) Correlation

“2”–Moderate (Medium)Correlation

“3”–Substantial (High) Correlation

“-”indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	CONGNITIVE LEVEL
I	Methods of Determination of Reaction Mechanism: Reaction intermediates-transition state-energy profile diagrams - Thermodynamic and kinetic requirements of reactions – Hammond's postulate - Methods of determining mechanism: non-kinetic methods - product analysis - determination of intermediates – isolation - detection and trapping. Cross-over experiments - isotopic labelling - isotope effects and stereo chemical evidences. Kinetic methods - relation of rate and mechanism- Effect of structure on reactivity- Hammett and Taft equations - Linear free energy relationship - partial rate factor- substituent and reaction constants.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	Aromaticity: Aromatic character: Huckel's theory of aromaticity - three, four, five, six, seven and eight membered rings– other systems with aromatic sextet- concept of homo aromaticity and anti-aromaticity- Craig's rule – applications - consequences of aromaticity non-alteration in bond length - Huckel's MO calculation - Electron occupancy in -NMR concept of aromaticity and anti-aromaticity.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	Stereochemistry and Conformational Analysis: Stereoisomerism–optical activity and chirality – types of molecules exhibiting optical activity – R, S and E, Z configuration -	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

	absolute configuration – chirality in molecules with non-carbon stereo centers (N, S and P) – molecules with more than one chiral centre. Biphenyls, allenes, spiranes and analogues- Atropisomerism- Helicity and chirality- Resolution–methods of resolution - Conformations of mono and di substituted cyclohexane system and decalin.Quantitative correlation between conformation and reactivity.			
IV	Aromatic and Aliphatic Electrophilic Substitution: Aromatic electrophilic substitution: Orientation and reactivity of di- and polysubstituted phenol, nitrobenzene and halobenzene. Reactions involving nitrogen electrophiles: nitration, nitrosation and diazonium coupling; Sulphur electrophiles: sulphonation - Halogen electrophiles: chlorination and bromination- Carbon electrophiles: Friedel- Crafts alkylation, acylation and arylation reactions- Aliphatic electrophilic substitution Mechanisms: S _E 1, S _E 2 and S _E i-Mechanism and evidences.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	Aromatic and Aliphatic Nucleophilic Substitution: Aromatic nucleophilic substitution: Mechanisms - S _N Ar, S _N 1 and Benzyne mechanisms - Evidences - reactivity Effect of structure - leaving group and attacking nucleophile. Reactions: Oxygen and Sulphur-nucleophiles -Bucherer and	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

	Rosenmund reactions, von Richter, Sommelet-Hauser and Smiles rearrangements - S_N1 , ion pair, S_N2 mechanisms and evidences. Aliphatic nucleophilic substitutions at an allylic carbon, aliphatic trigonal carbon and vinyl carbon. S_N1 , S_N2 , S_{Ni} , and S_E1 mechanism and evidences - Swain- Scott, Grunwald- Winstein relationship - Ambident nucleophiles			
VI	Self-Study for Enrichment: (Not to be included for External Examination) Rules of resonance–tautomerism -steric effects- Enantiomers and diastereomers- Bredt's rule- neighbouring group participation.	-	CO1, CO2 CO3	K1, K2, K3, K4

Text Books

1. Mukherji, S. M. Singh, S. P. (2015). Reaction Mechanism in Organic Chemistry (Revised Edition): Trinity; New Delhi.
2. Kalsi, P. S. (1993). Stereochemistry. Wiley eastern limited; New Delhi.
3. Jagdambasingh. (2016). Organic synthesis: Pragati Prakashan.
4. Bansal, R. K. (1975). Organic Reaction Mechanisms. Tata McGraw Hill.

Reference Books

1. March and Smith, M. B. March's Advance Organic Chemistry Reactions, Mechanisms and Structure, 7th Edition. (2013), Wiley, New York.
2. Finar, I. R., Organic Chemistry Vol. II 7th edition. (2009), Pearson, New Delhi.
3. Nasipuri, D., Stereo chemistry of organic compounds Principles, 2nd Edition. (2002), New Age International and applications.
4. Lowry, T. H. E and Richardson, K. S, Mechanism and Theory in Organic

chemistry, 3rd edition.(1997),Benjamin Cummings Publishing, USA.

5. Carey.F. Aand Sundberg.R.J,Advanced Organic chemistry Part A and B,5th edition.(2007),Springer,Germany.

WebReferences

1. <https://openstax.org/books/chemistry-2e/pages/12-6-reaction-mechanisms>.
2. http://courses.washington.edu/medch562/pdf/MEDCH400_Stereochem.pdf
3. <https://byjus.com/chemistry/substitution-reaction/>
4. https://iscnagpur.ac.in/study_material/dept_chemistry/5.1_RRT_ARSN.pdf.

Pedagogy

Chalk and talk,PPT, Discussion,Assignment, Demo,Quiz, Seminar

Course Designers

Dr.C. Rajarajeswari

Semester I	Internal marks : 25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRs/ WEEKS	CREDITS
23PCH1CC2	STRUCTURE AND BONDING IN INORGANIC COMPOUNDS	CORE	6	5

Course Objective

- To articulate the learning of solid state in chemistry
- The subject lays a foundation to clusters and organometallic compounds

Prerequisites

Clusters, Solid state, organometallic compounds, Band theory

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course students will be able to	Cognitive Level
CO1	Predict the geometry of main group compounds and clusters.	K2, K3
CO2	Explain about the packing of ions in crystals and solid state.	K2, K3
CO3	Understand the various types of ionic crystal systems and analyze their structural features.	K3, K4
CO4	Explain the types of crystal growth methods and structures of organometallic compounds.	K4, K5
CO5	To understand the principles of band theory and solid state theory	K4, K5

Mapping with Programme Out comes

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	2	3	2	3	3	3	2	2
CO2	2	3	2	2	1	3	2	3	3	3
CO3	3	2	2	3	3	3	3	3	2	2
CO4	3	3	2	1	2	3	2	3	3	2
CO5	3	2	3	2	2	3	3	2	3	2

“1” – Slight or No Correlation

“2” –(Moderate(/Medium) correlation

“3” – Substantial(High) Correlation

“-” – indicates No Correlation

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Structure of main group compounds and clusters: VB theory – Effect of lone pair and electronegativity of atoms (Bent's rule) on the geometry of the molecules; Structure of silicates - applications of Pauling's rule of electrovalence - isomorphous replacements in silicates – ortho, meta and pyro silicates – one dimensional, two dimensional and three-dimensional silicates. Structure of silicones, Structural and bonding in B-N (Boron nitride, Borazine) S-N (S_4N_4 , S_2N_2 , $(SN)_x$), P-N (Di and Triphosphazenes,), Poly acids – types, examples and structures- Borane cluster: Structural features of closo, nido, arachano and klado; carboranes, hetero and metallocboranes; Wade's rule to predict the structure of borane cluster.	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
II	Organo metallic Compounds : Hapticity of ligands- 18 Electron rule and its limitation-Classification of organometallic compounds – structure of methyl lithium, Zeise's salt and Ferrocene- Metal carbonyls – EAN rule – Mono and poly nuclear carbonyls – preparation, reactions and structure ($Ni(CO)_4$, $Fe(CO)_5$, $Cr(CO)_6$, $Mn_2(CO)_{10}$, $Co_2(CO)_8$ and $Fe_2(CO)_9$ –	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6

	Bonding in metal Carbonyls – Metal-ethylenic complexes – methods of formation –bonding – chemical properties.			
III	Solid state Chemistry – I Ionic crystals: Packing of ions in simple, hexagonal and cubic close packing, voids in crystal lattice, Radius ratio, Crystal systems and Bravis lattices, Symmetry operations in crystals, glide planes and screw axis; point group and space group; Solid state energetics: Lattice energy – Born-Lande equation - Kapustinski equation, Madelung constant.	18	C01 C02 C03 C04 C05	K1 K2 K3 K4 K5 K6
IV	Solid state Chemistry – II Structural features of the crystal systems: Rock salt, zinc blende & wurtzite, fluorite and anti-fluorite, rutile and anatase, cadmium iodide and nickel arsenide; Spinel -normal and inverse types and perovskite structures. Crystal Growth methods: From melt and solution (hydrothermal, sol-gel methods) – principles and examples.	18	C01 C02 C03 C04 C05	K1 K2 K3 K4 K5 K6
V	Band theory and defects in solids Band theory – features and its application of conductors, insulators and semiconductors, Intrinsic and extrinsic semiconductors; Defects in crystals – point defects (Schottky, Frenkel, metal excess and metal deficient) and their effect on the electrical and optical property, laser and phosphors; Linear defects and its effects	18	C01 C02 C03 C04 C05	K1 K2 K3 K4 K5 K6

	due to dislocations.			
VI	Self-Study for Enrichment (Not to be included for External Examination) High-valent metal Clusters and halide Clusters-Bragg's law, powder diffraction pattern. X-ray diffraction and Electron diffraction comparison		CO1 CO2	K2, K3

Text Books

1. Greenwood. (1996). Chemistry of the Elements, United Kingdom, Elsevier Science & Technology Books.
2. Kaesz, H., Adams, R., Shriver, D., Kaesz, H., Adams, R., Shriver, D. (1990). The Chemistry of Metal Cluster Complexes.
3. Sharma, L. R., Puri, B. R., Sharma, L. R., Puri, B. R. (1976). Principles of Inorganic Chemistry: For B.Sc. and B.Sc.(Hons.) Classes of Indian Universities. India: S. Nagin.
4. Cotton, F. A., Wilkinson, G., Cotton, F. A., Wilkinson. (2007). Advanced Inorganic Chemistry, 6th Edition, India: Wiley India Pvt. Limited.
5. Keiter, E. A. (2006). Inorganic Chemistry: Principles of Structure and Reactivity. India: Pearson Education.
6. Arthur, W. Adamson Paul, D. (1975). Fleischauer, Concepts of Inorganic Photochemistry. United Kingdom: Wiley.
7. West, A. R., (2014). Solid state Chemistry and its applications, 2nd Edition (Students Edition), John Wiley & Sons Ltd.,.
8. Bhagi, A. K., Chatwal, G. R. (2001). A textbook of inorganic polymers, Himalaya Publishing House.
9. Smart, L., Moore E. (2012). Solid State Chemistry – An Introduction, 4th Edition, CRC Press.
10. Purcell, K. F., Kotz, J. C. (1977). Inorganic Chemistry; W. B. Saunders company: Philadelphia.
11. Huheey, J. E., Keiter, E. A., Keiter R. L. (1983). Inorganic Chemistry; 4th ed.; Harper and Row: New York.

Reference Books

1. Lee, J.D., (2008). Concise Inorganic Chemistry, 5th Edition. (2008). India: Wiley India Pvt. Limited.
2. Gurdeep Raj, (2020). Advanced Inorganic Chemistry Vol-1, Krishna Prakashan.
3. Ferraudi, G. J., Ferraudi, G. J. (1988). Elements of Inorganic Photochemistry. United Kingdom: Wiley.
4. Pearson, R. G., Basolo, F., Pearson, R. G., Basolo, F. (1967). Mechanisms of Inorganic Reactions: A Study of Metal Complexes in Solution. United Kingdom: Wiley.
5. Sharma, R.K., Sharma, R. K. (2007). Inorganic Reaction mechanisms. India: Discovery Publishing House.
6. Douglas, D. E., McDaniel, D.H., Alexander, J. J. (1994). Concepts and Models in Inorganic Chemistry, 3rd Ed, John Wiley & Sons, Inc., New York.
7. Tilley, R. J. D., (2013). Understanding Solids - The Science of Materials, 2nd edition, Wiley Publication.
8. Rao, C. N. R., Gopalakrishnan, J., (1997). New Directions in Solid State Chemistry, 2nd Edition, Cambridge University Press.

Web References

1. https://www2.chemistry.msu.edu/courses/cem151/chap24lect_2019.pdf
2. <http://www.vpscience.org/materials/Unit%203%20B%20Coordination%20chemistry.pdf>
3. https://www.usb.ac.ir/FileStaff/2896_2019-4-18-0-9-32.pdf
4. <https://www.uou.ac.in/sites/default/files/slm/BSCCH-101.pdf>
5. <https://www.chem.uci.edu/~lawm/11-16.pdf>
6. https://www.usb.ac.ir/FileStaff/5269_2018-9-18-10-21-39.pdf

Pedagogy

Chalk and talk, PPT, Discussion, Assignment, Demo, Quiz, Seminar

Course Designers

Dr. K. Shenbagam

Semester I	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs /Week	CREDITS
23PCH1CC3	MOLECULAR SPECTROSCOPY	CORE	6	5

Course Objective

- To understand, rotational and vibrational level transition in polyatomic molecules.
- To know the significance of Franck-Condon principle to interpret the selection rule, intensity and types of electronic transitions
- To interpret first and second order splitting pattern NMR signals of the molecules using correlation techniques such as COSY, HETCOR, NOESY.
- To learn the principle of ESR, EPR and Raman spectroscopy.
- To understand fragmentation pattern of molecules in Mass spectroscopy.
- To predict the structure of molecules using various spectral data.

Prerequisites

Electromagnetic radiation, molecular energy level, non-Rigid rotor, selection rules for spectroscopy

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Understand principle of various spectral techniques involving molecular absorption and emission of electromagnetic radiations.	K1, K2
CO2	Apply NMR and MS spectroscopic techniques in solving structure of organic molecules.	K3
CO3	Explain the principle, rules to analyses, compare and identify the structure of organic molecules using various spectral techniques.	K4
CO4	Discriminate structural and stereoisomers of compound using NMR,ESR and mass spectral techniques.	K5
CO5	Evaluate energy of rotational levels, isotopic mass of the elements.	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	1	3	2	3	1	1	1	3
CO2	3	2	1	3	2	2	3	1	1	2
CO3	3	3	1	1	2	3	2	2	2	3
CO4	3	3	2	2	3	3	2	1	2	3
CO5	3	3	2	3	3	3	3	2	1	3

“1”–Slight (Low)Correlation

“3”–Substantial (High)Correlation

“2”–Moderate(Medium)Correlation

“-”indicates there is no correlation

SYLLABUS

UNIT	CONTENT	HOURS	COs	CONGNITIVE LEVEL
I	Rotational and Raman Spectroscopy: Rotational spectra of diatomic and polyatomic molecules- intensities of rotational spectral lines - isotopic substitution effect - non-rigid rotators Raman effect - pure rotational Raman spectra of linear and asymmetric top molecules - stokes and anti-Stokes lines- Vibrational Raman spectra - rule of mutual exclusion- rotational fine structure O and S branches - Polarization of Raman scattered photons.	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
II	Vibrational Spectroscopy: Vibrations of molecules - harmonic and anharmonic oscillators - energy expression - vibrational wave functions – symmetry - selection rules - energies of spectral lines - hot bands - effect of isotopic substitution - Diatomic vibrating rotor vibrational - rotational spectra of polyatomic molecules - symmetry properties - overtone - combination frequencies- P, Q and R branches - parallel and perpendicular vibrations of linear and symmetric top molecules.	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
III	Electronic spectroscopy: Electronic spectroscopy of diatomic molecules Frank-Condon principle - dissociation and predissociation spectra- $\pi \rightarrow \pi^*$, $n \rightarrow \pi^*$ transitions and their selection rules - Photoelectron Spectroscopy: Principle - photoelectron spectra of simple molecules - X-ray photoelectron spectroscopy (XPS) - Lasers: Laser action population inversion - properties of laser radiation examples of simple laser systems.	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5

IV	NMR and Mass spectrometry: NMR spectroscopy - Principle -Chemical shift, Factors influencing δ - shielding and deshielding. spin-spin interactions- spin decoupling- Nuclear Overhauser effect (NOE)- Factors influencing coupling constants- 2D NMR – COSY, NOESY Mass Spectrometry: Ionization techniques isotope abundance- molecular ion -base peak meta stable ions -fragmentation processes of organic molecules- deduction of structure through mass spectral fragmentation.	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
V	ESR and Mossbauer Spectroscopy: ESR- principle- selection rule- g value-hyperfine coupling parameter (A) –zero field splitting - Kramer’s degeneracy – isotropy and anisotropy in g value- application of ESR to organic and inorganic system (H, CH ₃ , p-benzosemiquinone and bis (salicylaldehyde) copper (II) complex)- Principle of Mossbauer spectroscopy: Doppler shift - recoil energy. Isomer shift, quadrupole splitting - magnetic interactions - applications: high and low spin Fe and Sn compounds.	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
VI	Self-study: (Not for final examination) Problems based on joint application, PMR, CMR, and Mass. (Including reaction sequences), DEPT, INTEPT, Chemical spin decoupling of rapidly exchangeable protons (OH, SH, COOH, NH, NH ₂).	-	CO1 CO2	K1 K2

Text Books

1. Banwell C.N (2017), Fundamentals of molecular Spectroscopy, 4th edition, McGraw Hill, New Delhi.
2. Silverstein.P.M and Western.F.X (2014), Spectroscopic Identification of Organic compounds, 8th edition, John Wiley, New York
3. Kalsi.P.S (2016), Spectroscopy of Organic Compounds, 7th edition, New Age International Publishers, New Delhi
4. William Kemp (2019), Organic spectroscopy, 3rd edition, Macmillan publisher Pvt, Bangalore.
5. Williams D.H and Fleming I, Spectroscopic Methods in Organic Chemistry, 4th Ed., Tata McGraw-Hill Publishing Company, New Delhi, 1988.

6. Drago R.S , Physical Methods in Chemistry; Saunders: Philadelphia, 1992

Reference Books

1. Drago R.S (2012), Physical Methods in Inorganic Chemistry; Affiliated East-West press Pvt. Ltd, New Delhi.
2. Kaur.K, (2014), Spectroscopy, 16th edition, PragatiPrakashan Educational Publisher.
3. Sharma Y. R (2016), Elementary organic spectroscopy, revised 4th edition, S. Chand &Co Ltd, New delhi.
4. Atkins P.W and de Paula J, Physical Chemistry, 7th Ed., Oxford University Press, Oxford, 2002.
5. Rahman A, Nuclear Magnetic Resonance-Basic Principles, Springer-Verlag, New York, 1986.
6. Levine N.I, Molecular Spectroscopy, John Wiley & Sons, New York, 1974.

Web References

<http://www.organic-chemistry.org/>
<http://www.organicworldwide.net/>
<http://www.ccdc.cam.ac.uk/products/csd/>
<http://www.nou.ac.in/econtent/Msc%20Chemistry%20Paper%20IX/MSc%20Chemistry%20Paper-IX%20Unit-5.pdf>
<http://www.rcsb.org/pdb/home/home.do>
https://onlinecourses.nptel.ac.in/noc20_cy08/preview
<https://www.digimat.in/nptel/courses/video/104106122/L14.html>

Pedagogy

Chalk and talk, PPT, E-content, Discussion, Assignment, Demo, Quiz, Seminar

Course Designers

Dr.V.Sangu.

Semester I	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs / Week	CREDITS
23PCH1CC1P	ORGANIC CHEMISTRY-I (P)	CORE	6	5

Course Objectives

- To understand the concept of separation, qualitative analysis and preparation of organic compounds.
- To develop analytical skill in the handling of chemical reagents for separation of binary and Ternary organic mixtures.
- To analyze the separated organic components systematically and derivative them suitably.
- To construct suitable experimental setup for the organic preparations involving two stages.
- To experiment different purification and drying techniques for the compound processing

Pre requisites

Separation of components, Qualitative analysis

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Apply the principles of separation in organic mixtures.	K1
CO2	Prepare the organic compounds by single stage method.	K2
CO3	Identify various functional group in organic compounds.	K3
CO4	Develop skills in separating techniques estimations and preparations.	K3
CO5	Analyze the nature of organic mixture containing two components.	K4

Mapping of CO with PO and PSO

CCOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO 1	3	2	2	2	2	2	1	3	2	1
CO2	2	3	2	2	2	3	2	1	3	2
CO3	2	3	3	2	3	1	1	1	2	1
CO4	3	2	2	3	2	2	3	2	3	2
CO5	2	3	3	3	2	1	2	2	2	2

“1” – Slight (Low) Correlation –

“3” – Substantial (High) Correlation –

“2” – Moderate (Medium) Correlation –

“-” indicates there is no correlation.

SYLLABUS

I. Separation and analysis

1. Two component mixtures.
2. Three component mixtures.

II. Estimations

1. Estimation of Phenol (bromination)
2. Estimation of Glucose (redox)
3. Estimation of Aromatic nitro groups (reduction)
4. Estimation of Glycine (acidimetry)
5. Estimation of Acetyl group in ester (alkalimetry)
6. Estimation of Hydroxyl group (acetylation)

III. Two stage preparations

1. p-Nitroaniline from acetanilide
2. 1,3,5-Tribromobenzene from aniline
3. Acetyl salicylic acid from methyl salicylate
4. m-Nitrobenzoic acid from methyl benzoate
5. Benzilic acid from benzoin

Text Books

1. A R West, Solid state Chemistry and its applications, 2nd Edition (Students Edition), John Wiley & Sons Ltd., 2014.
2. A K Bhagi and G R Chatwal, A textbook of inorganic polymers, Himalaya Publishing House, 2001.
3. L Smart, E Moore, Solid State Chemistry – An Introduction, 4th Edition, CRC Press, 2012.

Reference Books

1. D. E. Douglas, D.H. McDaniel and J. J. Alexander, Concepts and Models in Inorganic Chemistry, 3rd Ed, 1994.
2. R J D Tilley, Understanding Solids - The Science of Materials, 2nd edition, Wiley Publication, 2013.

3. C N R Rao and J Gopalakrishnan, New Directions in Solid State Chemistry, 2nd Edition, Cambridge University Press, 199.

Web References

[https://ocw.mit.edu/courses/3-091-introduction-to-solid-state-chemistry-fall-2018/video_galleries/lecture-videos.](https://ocw.mit.edu/courses/3-091-introduction-to-solid-state-chemistry-fall-2018/video_galleries/lecture-videos)

Pedagogy

Demonstration and practical sessions

Course Designer

Dr.K.UmaSivakami

Semester I	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs / Week	CREDITS
23PCH1DSE1AP	ANALYTICAL INSTRUMENTATION TECHNIQUE (P)	DISCIPLINE SPECIFIC ELECTIVE	6	3

Course Objectives

- To design chromatographic methods for identification of species.
- To analyze different constituents through instrumental methods of analysis.
- To evaluate different contaminants in materials using turbidimetry and conductivity measurements.
- To analyze constituents in organic materials using emission and absorptionspectral techniques.

Pre requisites

Chromatography, qualitative analysis and spectroscopy

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Become familiar with fundamental concepts of electrical and instrumentation techniques.	K1
CO2	Observe the application of Instrumentation Techniques	K2
CO3	Interpretation and identification of the given spectra of various organic compounds arrived at from spectral instruments.	K4
CO4	Develop the core skills to parse existing chromatographic protocols and identify the key factors influencing a chromatography and calorimetric experiment	K5
CO5	To develop students' ability and skill to acquire expertise in calibration techniques and Interpretation of various compounds.	K5

Mapping of CO with PO and PSO

CCOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO 1	3	2	2	2	2	2	1	3	2	1
CO2	2	3	2	2	2	3	2	1	3	2
CO3	2	3	3	2	3	1	1	1	2	1
CO4	3	2	2	3	2	2	3	2	3	2
CO5	2	3	3	3	2	1	2	2	2	2

“1” – Slight (Low) Correlation –

“2” – Moderate (Medium) Correlation –

“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

SYLLABUS

I. Electrical Experiments:

1. Determination of the equivalent conductance of a weak acid at different concentrations and verifying Ostwald dilution law. Calculation of the dissociation constant of the acid.
2. Conductometric titration of a mixture of HCl and CH₃COOH Vs NaOH.
3. Potentiometric titration of a mixture of HCl and CH₃COOH Vs NaOH
4. Potentiometric titration of FAS Vs K₂Cr₂O₇
5. Potentiometric titration of a mixture of Chloride and Iodide Vs AgNO₃.
6. Determination of the pH of buffer solution by EMF method using Quinhydrone and Calomel Electrode.
7. Potentiometric titration of KI Vs KMnO₄.
8. Analysis of soil
 - i) Determination of pH of soil.
 - ii) Determination of total soluble salts by conductometry

II. Analytical experiments

1. Determining the concentration of citric acid in soft drink using titration.
2. Determination of ascorbic acid in lime juice by titration.
3. Estimation of aspirin from tablet using titration method.
4. Measurement of pH of different solutions like aerated drinks, fruit juices, shampoos and soaps (use dilute solutions of soaps and shampoos to prevent damage to the glass electrode using pH-meter).
5. Separation of monosaccharide and metal ions present in a given mixture by paper chromatography.
6. Determination of chlorine in water using Colorimetry.
7. Separation of mixture of Azo dyes by TLC chromatography.
8. Estimation of chlorophyll in leaves and phosphate in waste water by colorimetry.
9. Estimation of Fe(II) by 1,10 phenanthroline using spectrophotometry.

III. Spectroscopic Techniques

Interpretation and identification of the given spectra of various organic compounds arrived at from the following instruments

1. UV-Visible
2. IR
3. NMR
4. ESR

Text Books

1. Vogel's Text book of Practical Organic Chemistry, 5th Ed, ELBS/Longman, England, 2003.
2. G. H. Jeffery, J. Bassett, J. Mendham and R. C. Denney, *Vogel's Textbook of Quantitative Chemical Analysis*; 6th ed., ELBS, 1989.
3. J. D. Woollins, *Inorganic Experiments*; VCH: Weinheim, 1995.
4. B. Viswanathan and P.S.Raghavan, *Practical Physical Chemistry*, Viva Books, New Delhi, 2009.

Reference Books

1. N. S. Gnanapragasam and G. Ramamurthy, Organic Chemistry – Labmanual, S. Viswanathan Co. Pvt. Ltd, 2009.
2. J. N. Gurtu and R. Kapoor, Advanced Experimental Chemistry, S. Chand and Co., 2011.
3. J. B. Yadav, Advanced Practical Physical Chemistry, Goel Publishing House, 2001.
4. G.W. Garland, J.W. Nibler, D.P. Shoemaker, Experiments in Physical Chemistry, 8th edition, McGraw Hill, 2009.
5. J. N. Gurthu and R. Kapoor, Advanced Experimental Chemistry, S. Chand and Co., 1987.

Web References

1. <https://bit.ly/3QESF7t>
2. <https://bit.ly/3QANOnX>

Pedagogy

Demonstration and practical sessions

Course Designer

Dr.K.Uma Sivakami

Semester I	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs / Week	CREDITS
22PCH1DSE1BP	NANOSCIENCE AND NANOTECHNOLOGY (P)	DISCIPLINE SPECIFIC ELECTIVE	6	3

Course Objectives

- Covers the whole spectrum of nanomaterials ranging from overview, synthesis, properties, and characterization of nano phase materials to application including some new developments in various aspects.
- Provides an introduction to the theory and practice on Nanomaterials and various techniques used for the fabrication and characterization of nanostructures.

Prerequisites

Precipitation, reduction and absorption methods.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	To foundational knowledge of the Nanoscience and related fields	K1
CO2	Understand in broad outline of Nanoscience and Nanotechnology.	K2
CO3	Acquire an understanding the Nanoscience and Applications	K3
CO4	Apply principles of basic science concepts in understanding, analysis and prediction of matter at Nano scale.	K3
CO5	Understand the synthesis of nanomaterials and their application and the impact of nanomaterials on environment	K2 & K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	2	2	2	2	1	3	2	2
CO2	2	3	2	3	2	3	2	1	3	2
CO3	2	3	3	2	3	1	1	2	2	1
CO4	3	2	2	3	2	2	3	2	2	2
CO5	2	3	3	3	2	1	2	2	2	2

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –
“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

SYLLABUS

1. Synthesis of CuO nano particles by sonochemical method.
2. Synthesis of ZnO nano particles by sonochemical method
3. Synthesis of Carbon nano particles by Microwave Irradiation Method.
4. Characterization of nanoparticles by UV- Visible Spectrophotometer.
5. Synthesis of Silver Nanoparticles by Chemical reduction method and their UV-VIS absorption studies.
6. Synthesis of Iron Oxide Nanoparticles by Polyol method and their UV-VIS absorption studies.
7. Synthesis of ZnO Nanoparticles by Co-Precipitation Method.
8. Preparation of thiolated silver nanoparticles
9. Synthesis of Nanoparticles from plant materials by Sono chemical Method.

TextBooks

1. Edelstein, A.S., Cammaratra, R.C. (2017). Nanomaterials: Synthesis, Properties and Applications, Second Edition. United Kingdom: Taylor & Francis.
2. Wiederrecht, G. (2010). Handbook of Nanofabrication. Italy: Elsevier Science.
3. Altavilla, C., Ciliberto E. (2017). Inorganic Nanoparticles: Synthesis, Applications, and Perspectives. United Kingdom: CRC Press.

ReferenceBooks

1. Fritzsche, W., Köhler, M., Fritzsche, W., Köhler, M. (2008). Nanotechnology: An Introduction to Nanostructuring Techniques. Germany: Wiley.
2. Muller, A., A.K., Cheetham., Rao C.N.R. (2006). The Chemistry of Nanomaterials: Synthesis, Properties and Applications. Germany: Wiley.

Web References

1. https://www.researchgate.net/publication/229419482_Sonochemical_synthesis_size_controlling_and_gas_sensing_properties_of_NiO_nanoparticles
2. <https://www.sciencedirect.com/science/article/pii/S1569441018301445>

3. <https://pubs.rsc.org/en/content/articlelanding/2019/nj/c9nj01360a>
4. <https://www.researchgate.net/publication/231240704> UreaMelt Assisted Synthesis of NiNi O Nanoparticles Exhibiting Structural Disorder and Exchange Bias

Pedagogy

Table Work

CourseDesigners

1. Dr. G. Sivasankari
2. Dr. R. Subha

Semester I	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs/Week	CREDITS
22PCH1DSE1CP	BIOCHEMISTRY(P)	DISCIPLINE SPECIFIC ELECTIVE	6	3

Course Objectives

- To expertise the student to identify and isolate various biomolecules.
- To acquire training to estimate the quantity of biomolecules present by applying biochemical techniques.

Prerequisites

Chromatographic techniques, biomolecules and plant pigments.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Recall and understand the techniques involved in isolation, separation and estimation of various biomolecules	K1 & K2
CO2	Develop and apply the skills in handling various chromatographic and colorimetric techniques	K3
CO3	Qualitatively and quantitatively analyze the biomolecules	K4
CO4	Exemplify in handling various chromatographic techniques of biomolecules.	K5
CO5	Interpret the importance of technical analysis required for various biomolecules	K6

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	3	2	3	2	2	3	2	2	3
CO2	3	3	2	3	3	3	3	2	2	3
CO3	3	3	3	3	3	3	3	3	2	3
CO4	3	3	2	3	3	3	3	2	2	3
CO5	3	3	3	3	3	2	3	3	3	3

“1”–Slight (Low) Correlation

“3”–Substantial (High) Correlation

“2”–Moderate (Medium) Correlation

“-”indicates there is no correlation.

Syllabus

I EXTRACTION OF BIOMOLECULES

1. Starch from potato.
2. Casein from milk.
3. Oil from oil seeds.
4. Cellulose from plant material.

II BIOCHEMICAL TECHNIQUES

1. Identification of amino acid by circular and ascending paper chromatography.
2. Separation of amino acids and carbohydrates in a mixture by paper chromatography.
3. Separation of lipids by thin layer chromatography.
4. Separation of a mixture of proteins and salt by column chromatography.
5. Separation of plant pigments using Chromatography techniques - TLC, Paper chromatography.

III QUALITATIVE ANALYSIS OF BIOMOLECULES

1. Carbohydrate—Glucose, Fructose, Sucrose, Lactose and Starch.
2. Proteins – Precipitation reactions of proteins, Colour reactions of proteins, colour reactions of amino acids like tryptophan, tyrosine, cysteine, methionine, arginine, proline and histidine.
3. Lipids—solubility, acrolein test, Salkowski test, Lieberman-Burchard test.
4. Qualitative tests for nucleic acid.

IV COLORIMETRIC ESTIMATION

1. Glucose by DNS method.
2. Protein by Biuret/Bradford and Lowry's method.
3. Uric acid.
4. Urea by DAM method.
5. Creatinine by Jaffe's method.
6. Phosphorous by Fiske and Subbarow's method.

Text Books

1. Rajan, S. & Selvi Christy, R. (2018). Experimental Procedures in Life Sciences. CBS Publishers & Distributors.
2. Wilson, K. & Walker, J. (2000). Principles and Techniques of Practical Biochemistry. Fifth edition. Cambridge University Press.
3. Upadhyay & Upadhyay Nath (2016). Biophysical Chemistry: Principles and Techniques. Himalaya Publishing House.

Reference Books

1. Hofmann, A. & Clokie, S. (2018). Wilson and Walker's Principles and Techniques of Biochemistry and Molecular Biology. 8th edition. Cambridge University Press.
2. Wood, W. B. (1981). Biochemistry - A problem Approach. Addison Wesley.

Web References

1. http://nec.edu.np/Publications/Chemistry_LAB_Manual/Experiment%204.pdf
2. https://www.mlsu.ac.in/econtents/1616_Biochemical%20Tests%20of%20Carbohydrate,%20protein,%20lipids%20and%20salivary%20amylase.pdf
3. https://webstor.srmist.edu.in/web_assets/srm_mainsite/files/files/2%20ESTIMATION%20OF%20PROTEIN%20BY%20LOWRY.pdf
4. <https://orbitbiotech.com/estimation-of-reducing-sugars-by-dnsa-method/>
5. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8575183/>
6. <http://atlas-medical.com/upload/productFiles/208011/Creatinine%20Package%20Insert.pdf>

Pedagogy

Demonstration and practical sessions

Course Designers

Dr. P. Pungayee Alias Amirtham



Cauvery College for Women (Autonomous), Trichy-18

**PG Department of Chemistry
M.Sc., Chemistry**

(For the Candidates admitted from the Academic year 2022-2023 onwards)

Semester	Course	Course Title	Course Code	Inst. Hrs. / week	Credits	Exam			Total
						Hrs.	Marks		
							Int.	Ext.	
III	Core Course– V (CC)	Physical Chemistry- II	22PCH3CC5	6	5	3	25	75	100
	Core Practical – IV (CP)	Inorganic Chemistry –II (P)	22PCH3CC4P	6	5	6	40	60	100
	Core Choice Course– II (CCC)	A. Cyber Security	22PGCS3CCC2A	5	4	3	25	75	100
		B. Photochemistry and Advanced Chemical Kinetics	22PCH3CCC2B						
		C. Electro Chemistry	22PCH3CCC2C						
	Core Practical - V (CP)	Physical Chemistry – I (P)	22PCH3CC5P	6	5	6	40	60	100
	Discipline Specific Elective Course-III (DSE)	A. Chemistry for Competitive Examinations	22PCH3DSE3A	4	3	2	-	100	100
		B. Bioorganic Chemistry	22PCH3DSE3B	4	3	3	25	75	
		C. Pharmaceutical Chemistry	22PCH3DSE3C						
	Generic Elective Course -I (GEC)	Nanoscience and Nanotechnology	22PCH3GEC1	3	2	3	25	75	100
Extra Credit Course	SWAYAM	As per UGC Recommendation							
	Total			30	24				600

Semester III	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs/ Week	CREDITS
22PCH3CC5	PHYSICAL CHEMISTRY-II	CORE COURSE	6	5

Course Objective

- To recall the fundamentals of thermodynamics and the composition of partial molar quantities.
- To apply the quantum mechanics to hydrogen and polyelectronic systems.
- To familiarize the symmetry in molecules and predict the point groups.
- To predict the vibrational modes, hybridization using the concepts of group theory

Prerequisites

Thermodynamics, chemical equilibrium, electrolytes, wave function, Schrodinger wave equation, Eigen values, Eigen functions, Hermitian properties of operators.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Understand principle of classical and irreversible thermodynamics, interfaces of electrolytes, variation and approximation methods for wave functions.	K1,K2
CO2	Compare and correlate the thermodynamic concepts to study the kinetics of chemical reactions, variation and Perturbation method, theories of electrolytic double layer.	K3
CO3	Analyses thermodynamic concepts, variation theorem, perturbation method and electro-capillary phenomenon.	K4
CO4	Discriminate various concepts of reversible and irreversible thermodynamics and theories of quantum mechanics	K5
CO5	Apply the concept of TDs to study the kinetics of chemical reactions, VB and perturbation theorem to construct trial wave function for hydrogen like molecules and Slater determinant for conjugated system to determine energy and bond order.	K5

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2	3	3	3	1	3
CO2	3	2	2	3	2	2	3	3	3	2
CO3	3	3	3	1	2	3	2	2	2	3
CO4	3	3	3	2	3	3	2	1	2	3
CO5	3	3	2	3	3	3	3	2	3	3

“1”–Slight (Low) Correlation

“2”–Moderate (Medium) Correlation

“3”–Substantial (High) Correlation

“-” indicates there is no Correlation

SYLLABUS

UNIT	CONTENT	HOURS	Cos	COGNITIVE LEVEL
I	Classical Thermodynamics: Partial molar properties- Chemical potential- Gibb's- Duhem equation-binary and ternary systems- Determination of partial molar quantities. Thermodynamics of real gases - Fugacity-determination of fugacity by graphical and equation of state methods-dependence of temperature- pressure and composition- Thermodynamics of ideal and non-ideal binary mixtures-Duhem - Margulus equation - applications of ideal and non-ideal mixtures- Activity and activity coefficients-standard states - determination-vapour pressure- EMF and freezing point methods.	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
II	Irreversible Thermodynamics: Theories of conservation of mass and energy entropy production in open systems by heat- matter and current flow- force and flux concepts- Onsager theory-validity and verification- Onsager reciprocal relationships- Electro kinetic and thermo mechanical effects-Application of irreversible thermodynamics to biological systems.	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
III	Electrode-electrolyte interface: Interfacial phenomena -Evidences for electrical double layer- polarizable and non-polarizable interfaces- Electrocapillary phenomena - Lippmann equation electro capillary curves- Electro-kinetic phenomena electro-osmosis- electrophoresis-streaming and sedimentation potentials-colloidal and poly electrolytes- Structure of double layer- Helmholtz - Perrin, Guoy- Chapman and Stern models of electrical double layer- Zeta potential and potential at zero charge- Applications and limitations.	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
IV	Applications to Hydrogen and Polyelectronatoms: Hydrogen atom and hydrogen like ions-Hamiltonian-	18	CO1 CO2 CO3	K1 K2 K3

	wave equation and solutions- radial and angular functions- representation of radial distribution functions- Approximation methods –variation methods- trial wave function-variation integral and application to particle in 1D box- Perturbation method - first order applications- Hartree-Fock self-consistent field method-Hohenberg-Kohn theorem and Kohn-Sham equation- Helium atom-electron spin-Pauli's exclusion principle and Slater determination.		CO4 CO5	K4 K5
V	Applications of quantum and group theory: Hydrogen Molecule-Molecular orbital theory and Heitler London (VB) treatment- Energy level diagram-Hydrogen molecule ion- Use of linear variation function and LCAO methods- Electronic conjugated system- Huckel method to Ethylene butadiene- cyclopropenyl, cyclobutadiene and Benzene- Applications of group theory to molecular vibrations- electronic spectra of ethylene.	18	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
VI	Self-study: (Not for final examination) Eigen value. Eigen function, applications of quantum mechanics-black body radiation, photoelectric effect, hydrogen spectrum. Need for quantum mechanics, Postulates.		CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5

Text Books

1. Rajaram and Kuriacose J.C (1986), Thermodynamics for Students of Chemistry, S.L.N.Chand and Co., Jalandhar, 2nd edition,
2. Grutu N, Grutu, A. (2015) Advanced Physical Chemistry. Pune, India. Pragathi publisher, 18th Edition
3. Atkins, P.W. (2008). Physical Chemistry. Oxford, UK. Oxford University Press, 8th Edition.
4. Prasad, R.K. (2006). Quantum Chemistry. New Delhi, India. New Age International (P) Ltd., Revised 3rd Edition.
5. Albert Cotton, F. (2008). Chemical Applications of Group theory. New Delhi, India. Wiley India Pvt Ltd., publisher, 3rd Edition.
6. L.I Antropov (1977), Theoretical electrochemistry, Mir Publishers.

Reference Books

1. Rastogi R.P and Misra R.R (1990), Classical Thermodynamics, Vikas Publishing, Pvt. Ltd., New Delhi.
2. Maron S.H and Lando J.B (1974), Fundamentals of Physical Chemistry, Macmillan Publishers, New York.
3. Levine N (1983), Quantum Chemistry, Allyn & Bacon Inc, 4th edition.

4. Kaur.K, (2014), Spectroscopy, 16th edition, Pragati Prakashan Educational Publisher.
5. Sharma Y. R (2016), Elementary organic spectroscopy, revised 4th edition, S. Chand &Co Ltd, New Delhi.
6. Atkins P.W and de Paula J (2000), Physical Chemistry, 7th Ed., Oxford University Press, Oxford,
7. Rahman A (1986), Nuclear Magnetic Resonance-Basic Principles, Springer-Verlag, New York.
8. Levine N.I (1974), Molecular Spectroscopy, John Wiley & Sons, New York.

Web References

1. <https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=13G8VouhmrFfuhs6rkiyTA>
2. <https://www.chem.tamu.edu/rgroup/hughbanks/courses/673/lecturenotes/lecturenotes.>
3. <http://www.kpgcollege.org/admin/upload/1586604901.pdf>
4. <https://youtu.be/ALwziZSRiqM>
5. <https://youtu.be/ACY-Wbudg0o>
6. <https://youtu.be/yO8v0nszUz8>
7. <https://nptel.ac.in/courses/104101124>
8. <https://ipc.iisc.ac.in/~kls/teaching.html>
9. <https://www.pdfdrive.com/modern-electrochemistry-e34333229.>

Pedagogy

Chalk and talk, PPT, E-content, Discussion, Assignment, Demo, Quiz, Seminar

Course Designers

Dr. V. Sangu

Semester III	Internal Marks:40		External Marks:60	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs/Week	CREDITS
22PCH3CC4P	INORGANIC CHEMISTRY –II (P)	CORE PRACTICAL	6	5

Course Objective

- To gain the knowledge on the molecular structure and of chemical and biological properties of biomolecules such as amino acids, proteins, lipids and nucleic acids.
- To know the mechanisms of enzymatic reactions, the various role of organic molecules in living systems.
- To learn the concepts of bio energies.

Prerequisites

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	On the successful completion of the course students will be able to Apply the principles for the separation of cations.	K3
CO2	Prepare the inorganic complexes.	K3
CO3	Estimation of metal ions by volumetric and gravimetric methods	K3
CO4	Characterization of metal ions	K4
CO5	Identification and recrystallisation of complexes	K5

Mapping with Programme Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	2	3	2	3	3	3	2	2
CO2	2	3	2	2	1	3	2	3	3	3
CO3	3	2	2	3	3	3	3	3	2	2
CO4	3	2	2	2	3	3	3	3	2	2
CO5	3	2	2	3	2	3	3	3	2	2

“1” – Slight or No Correlation

“2” –(Moderate(/Medium) correlation

“3” – Substantial(High) Correlation

“-” – indicates No Correlation

SYLLABUS

I. TITRIMETRY AND GRAVIMETRY

A mixture of solution(s) should be given for estimation

1. Cu (V) and Ni (G)
2. Cu (V) and Zn (G)
3. Fe (V) and Zn (G)
4. Fe (V) and Ni (G)
5. Zn (C) and Cu (G)

II. PREPARATION OF COMPLEXES

1. Tris(thiourea)copper(I) chloride
2. Tetraamminecopper(II) sulphate
3. Potassium trioxalatoferrate
4. Potassium trioxalatoaluminate(III)
5. Potassium trioxalatochromate(III)
6. Hexamine cobalt(III) chloride.

TextBooks

1. Vogel A. I, (2000). Text Book of Quantitative Inorganic Analysis; 6th Ed, Longman, New Delhi.

Reference Books

1. Gurthu, J.N and Kapoor R, Advanced Experimental Chemistry, S. Chand and Co., 1987.

Web References:

1. <https://www.youtube.com/watch?v=OGFWZclzXkk>

Pedagogy

E-content, Demo, Hands on training

Course Designer

Dr. K. Shenbagam

Semester III	Internal Marks: 25		External Marks: 75	
COURSECODE	COURSE TITLE	CATEGORY	Hrs/Week	CREDITS
22PCH3CCC2B	PHOTOCHEMISTRY AND ADVANCED CHEMICAL KINETICS	CORE CHOICE COURSE	5	4

Course Objective

- To learn the basic principles of photochemistry and energy transfer mechanism.
- To learn about the theories of reaction rates and kinetics of fast reactions.
- To gain knowledge about the catalysis and solar cells.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Recall the terms related to photochemistry, theories of reaction rates, kinetics of fast reactions and catalysis.	K1
CO2	Discuss the various methods to study photochemistry and chemical kinetics.	K2
CO3	Apply the concepts of photochemistry, chemical kinetics and solar cells.	K3
CO4	Analyze the importance of photochemistry, chemical kinetics, catalysis and solar cells.	K4
CO5	Evaluate the theory and applications of photochemistry, chemical kinetics, and solar cells.	K5

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	2	3	3	3	2	3	3
CO5	3	3	3	2	3	3	3	2	3	3

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“-” indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Photo Chemistry Principle - absorption and emission spectra - properties of excited states - excited state acidity constants - dipole moments and redox properties - importance of photochemistry - photo physical processes in electronically excited molecules - types of photophysical pathways - types of radiation less transitions - fluorescence emission-fluorescence and structure - Triplet state and phosphorescence emission – delayed fluorescence - e - type and p-type delayed fluorescence - photosynthesis.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Electronically excited states Electronic, vibrational and spin levels - unimolecular and bimolecular photophysical processes - kinetic collisions and optical collisions - mechanism of fluorescence quenching - collisions in solution - kinetics of collisional quenching - Stern- Volmer equation - deviations from Stern- Volmer equation - concentration dependence of quenching and excimer formation - quenching by added substances - charge transfer- mechanism - energy transfer mechanism.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Theories of reaction rates Potential energy surfaces – reaction coordinate – theories of unimolecular gas phase reactions – Lindemann hypothesis – Hinshelwood treatment – reactions in solutions – kinetic isotope effect – Linear free energy relationships – Hammett equation – Okamoto–Brown Equation – Taft Equation - chain reactions $\text{H}_2\text{--Cl}_2$, $\text{H}_2\text{--Br}_2$ and $\text{H}_2\text{--O}_2$ reaction – explosion limits – factors affecting explosion limits.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

IV	Kinetics of Fast Reactions Chemical relaxation method - principles – parameters affecting relaxation time and amplitude – derivation of equations for relaxation time for one-step transformations – chemical relaxation in two step – experimental techniques - pressure jump - principle and relaxational behavior in beryllium sulphate solutions – temperature jump - principle and factors affecting relaxation time –competition methods – nuclear magnetic resonance line shape analysis – nuclear relaxation – effect of chemical exchange –flash photolysis and pulse radiolysis – principles and applications.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Catalysis and Solar Cells Homogenous catalysis – heterogenous catalysis – enzyme catalysis: Kinetics – influence of substrate concentration – pH – temperature – turn over number – catalytic efficiency – enzyme-like catalysis– critical micellar concentration (CMC) – factors affecting CMC – thermodynamics of micellization – reverse micelles – mechanism of surface reactions – unimolecular and bimolecular surface reactions – solar cells – photovoltaic and photo galvanic cells –prospects of solar energy conversion and storage - organic solar cells.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self-Study for Enrichment: (Not to be included for External Examination) Photo chemical reactions - ketones, olefins conjugated olefins and aromatic compounds - Mechanism of sensing - sensing techniques based on coalitional quenching - electrical field jump - principles and applications to neutralization reaction - methods with enhance time resolution- photoelectron chemistry - –	-	CO1, CO2, CO3, CO4	K1, K2

	Michaelis-Menten equation – reactions assisted by micelles.			
--	---	--	--	--

Text Books

1. Kalidas. C., (1995). Chemical Kinetic Methods Principles of relaxation techniques and Applications. (2nded.). New Age International (P) Ltd., New Delhi.
2. Keith J Laidler, (2004). Chemical Kinetics. (3rded.). Pearson education. New Delhi.
3. Santosh K. Upadhyay, (2006). Chemical Kinetics and Reaction Dynamics, New York: Springer with Anamaya Publishers. New Delhi.
4. Margaret Robson Wright, (2005). An introduction to Chemical Kinetics. John Wiley & sons, Ltd. England.
5. Rohatgi K. K and Mukherjee, (1978). Fundamentals of Photochemistry. NewAge International Publisher. New Delhi.

Reference Books

1. Peter Atkins and Julio de Paula, (2016). Physical Chemistry. (10thed.). Oxford University Press. New Delhi.
2. Houston, Paul L, (2001). Chemical Kinetics and Reaction Dynamics. McGraw-Hill, Inc, Singapore.
3. Ira N. Levine, (2011). Physical Chemistry.(6thed.). McGraw-Hill Higher Education. New York.
4. Robert G. Mortimer, (2008). Physical Chemistry. (3rded.). Elsevier Academic Press. London.
5. Alan Cox and Terence James Kemp, (1971). Photochemistry. McGraw-Hill. European.

Web References

1. <https://www.jstor.org/stable/2414473>
2. <https://www.sciencedirect.com/topics/chemistry/excited-electronic-state#:~:text=An%20excited%20electronic%20state%20of,any%20of%20the%20valence%20electrons.>
3. <https://archive.nptel.ac.in/courses/104/101/104101128/>
4. https://www.youtube.com/watch?v=k3Y_tONFQTU
5. <https://pdfcoffee.com/homogeneous-catalyst-pdf-free.html>

Pedagogy

Chalk and talk, PPT, Discussion, Assignment, Demo, Quiz, Seminar

Course Designer

Dr. P. Thamizhini

Semester III	Internal Marks: 25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs / Week	CREDITS
22PCH3CCC2C	ELECTRO CHEMISTRY	CORE CHOICE COURSE	5	4

Course Objective

- To understand the theories and concepts of electrochemistry.
- To understand the behavior of electrolytes in solution and compare the structures of electrical double layer of different models.
- To predict the kinetics of electrode reactions applying Butler-Volmer and Tafel equations
- To gain knowledge about modern areas of electrochemistry like electrocatalysis, photoelectron catalysis and bioelectrodics.

Pre requisites:

Electrode, bio electrochemistry, electrodiodes, Debye-Huckel

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Categorize and account the importance ions in electrode reactions and applications of electrochemistry.	K1&K2
CO2	Demonstrate and categorize the importance of electrodicts and its reactions in multi-step systems	K3
CO3	Understand the concept and applications of electrochemistry in photo and bio electrochemistry.	K4
CO4	Recognize the characterization of electrolyte in Electro-chemical reaction mechanisms with rates of reaction.	K6
CO5	Distinguish the categorization of electrolyte in Electro-chemical reaction mechanisms and and bio electrochemistry.	K6

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	2	2	3	2	1	3	2
CO2	3	2	1	2	2	3	3	1	1	2
CO3	3	2	2	3	3	3	3	2	2	3
CO4	3	1	2	3	2	3	3	2	1	2
CO5	3	2	2	3	2	3	3	2	2	2

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	Cos	COGNITIVE LEVEL
I	Ionics: Arrhenius theory –limitations- van't Hoff factor and its relation to colligative properties- Deviation from ideal behavior- Ionic activity- mean ionic activity and mean ionic activity coefficient-concept of ionic strength-Debye Huckel theory of strong electrolytes- activity coefficient of strong electrolytes-Determination of activity coefficient ion solvent and ion-ion interactions- Born equation- Debye-Huckel Bjerrum model- Derivation of Debye-Huckel limiting law at appreciable concentration of electrolytes modifications and applications- Electrolytic conduction-Debye-Huckel Onsager treatment of strong electrolyte qualitative and quantitative verification and limitations- Evidence for ionic atmosphere- Ion association and triple ion formations.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	Electrode-electrolyte interface: Interfacial phenomena - Evidences for electrical double layer-, polarizable and non-polarizable interfaces- Electrocapillary phenomena - Lippmann equation electrocapillary curves-Electro-kinetic phenomena electro-osmosis- electrophoresis- streaming and sedimentation potentials- colloidal and poly electrolytes- Structure of double layer- Helmholtz –Perrin- GuoyChapman and Stern models of electrical double layer- Zeta potential and potential at zero charge. Applications and limitations.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	Electrodics of Elementary Electrode Reactions: Behavior of electrodes- Standard electrodes and electrodes at equilibrium- Anodic and Cathodic currents, condition for the discharge of ions- Nernst equation- polarizable and non-polarizable electrodes- Model of three electrode system-	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

	over potential- Rate of electro chemical reactions- Rates of simple elementary reactions- Butler-Volmer equation-significance of exchange current density- net current density and symmetry factor-Low and high field approximations-symmetry factor and transfer coefficient Tafel equations and Tafel plots.			
IV	Electrodics of Multistep Multi Electron System: Rates of multi-step electrode reactions- Butler - Volmer equation for a multi-step reaction- Rate determining step-electrode polarization and depolarization- Transfer coefficients, its significance and determination-Stoichiometric number. Electro-chemical reaction mechanisms-rate expressions- order and surface coverage-Reduction of I^{3-} - Fe^{2+} -and dissolution of Fe to Fe^{2+} - Overvoltage - Chemical and electro chemical- Phase-activation and concentration over potentials- Evolution of oxygen and hydrogen at different pH.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
V	Advanced topics in electrochemistry Photo electrochemistry- introduction, band bending at the semiconductor/solution interface- photo excitation of electrons by absorption of light- surface effects in photo electrochemistry-photo electrochemical splitting of water- photo electrochemical reduction of CO_2 . Bioelectrochemistry – bioelectrodics-membrane potentials- electrochemical communication in biological organisms- enzymes as electrodes- electron transfer in enzymes- electrochemical sensors- electrochemical biosensors-gas sensors- solid state devices and sensor arrays.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
VI	Self-Study for Enrichment(Not to be included for External Examination) Rates of electrochemical reactions- over potential- chemical-electrochemical conditions for the discharge of ions- electrocatalysis- Basics of electrodics- rates of simple electrode reactions- elementary electron electrode process.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6

Text Books:

1. D. R. Crow, Principles and applications of electrochemistry, 4th edition, Chapman & Hall/CRC, 2014.
2. J. Rajaram and J.C. Kuriakose, Kinetics and Mechanism of chemical transformations Macmillan India Ltd., New Delhi, 2011.
3. S. Glasstone, Electro chemistry, Affiliated East-West Press, Pvt., Ltd., New Delhi, 2008.
4. B. Viswanathan, S. Sundaram, R. Venkataraman, K. Rengarajan and P.S. Raghavan, Electrochemistry-Principles and applications, S. Viswanathan Printers, Chennai, 2007.
5. Joseph Wang, Analytical Electro chemistry, 2nd edition, Wiley, 2004.

Reference Books:

1. J.O.M. Bockris and A.K.N. Reddy, Modern Electro chemistry, vol.1 and 2B, Springer, Plenum Press, New York, 2008.
2. J.O.M. Bockris, A.K.N. Reddy and M.G. Aldeco Morden Electro chemistry, vol. 2A, Springer, Plenum Press, New York, 2008.
3. Philip H. Rieger, Electrochemistry, 2nd edition, Springer, New York, 2010.
4. L.I. Antropov, Theoretical electrochemistry, Mir Publishers, 1977.
5. K.L. Kapoor, A Text book of Physical chemistry, volume-3, Macmillan, 2001.

Web Reference

1. <https://www.dalalinstitute.com/wp-content/uploads/Books/A-Textbook-of-Physical-Chemistry-Volume-1/ATOPCV1-4-5-Debye-Huckel-Limiting-Law-of-Activity-Coefficients-and-Its-Limitations.pdf>
2. <https://www.pdfdrive.com/modern-electrochemistry-e34333229>.
3. <https://www.ph.tum.de/academics/org/labs/fopra/docs/userguide-28.en.pdf>

Pedagogy

Chalk and talk, PPT, Discussion, Assignment, Demo, Quiz, Seminar

Course Designer

Dr. K. Uma Sivakami

Semester III	Internal Marks: 40	External Marks: 60		
COURSECODE	COURSE TITLE	CATEGORY	Hrs/Week	CREDITS
22PCH3CC5P	PHYSICAL CHEMISTRY – I (P)	CORE	6	5

Course Objective

- To understand the principle of conductivity experiments through conductometric titrations.
- To evaluate the order of the reaction, temperature coefficient, and activation energy of the reaction by following pseudo first order kinetics.
- To construct the phase diagram of two component system forming congruent melting solid and find its eutectic temperatures and compositions. To determine the kinetics of adsorption of oxalic acid on charcoal.

Prerequisites

Basic Knowledge in electrochemistry, kinetics, phase rule and adsorption theories.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Recall the principles associated with various physical chemistry experiments.	K1,K2
CO2	Scientifically plan and perform kinetics, rate and adsorption experiments.	K3, K4
CO3	Calculate and process the experimentally measured values and compare with graphical data.	K4, K5
CO4	Interpret the experimental data scientifically to improve students' efficiency for societal developments.	K6
CO5	Comprehend the kinetics and mechanism of substitution reactions in octahedral and square planar complexes.	K5

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	2	3
CO2	3	3	3	3	3	2	3	3	3	2
CO3	3	3	3	3	3	3	2	3	3	3
CO4	3	3	3	3	3	3	3	2	3	3
CO5	3	3	3	3	3	3	3	2	3	3

“1”–Slight (Low) Correlation

“3”–Substantial (High) Correlation

“2”–Moderate (Medium) Correlation

“-” indicates there is no correlation

SYLLABUS

I. Kinetics

1. Study the kinetics of acid hydrolysis of an ester, relative strength of acids, determine the temperature coefficient and also the activation energy of the reaction.
2. Study the kinetics of the reaction between acetone and iodine in acidic medium by half-life method and determine the order with respect to iodine and acetone.
3. Study of effect of salt (ionic strength) on the kinetics of reaction between potassium persulphate and potassium iodide (second order reaction).

II. Phase diagram -Construction of phase diagram for a simple binary system

1. Naphthalene- Phenanthrene
2. Naphthalene – Biphenyl
3. Benzophenone- diphenylamine
4. Benzoic acid and Cinnamic acid

III. Adsorption and CST

1. Adsorption of oxalic acid on charcoal and determination of surface area (Freundlich adsorption isotherm only).
2. Determination of critical solution temperature of phenol-water system.
3. Effect of added electrolyte on the CST of phenol-water system.

Text Books

1. Viswanathan B and Raghavan P.S, Practical Physical Chemistry (2009), Viva Books, New Delhi,
2. Sundaram, Krishnan (1996), Raghavan, Practical Chemistry (Part II), Viswanathan Co. Pvt.,
3. Athawale and Parul Mathur (2008), Experimental Physical Chemistry, New Age International (P)Ltd., New Delhi.
4. Lewers E.G (2011), Computational Chemistry: Introduction to the Theory and Applications of Molecular and Quantum Mechanics, 2nd Ed., Springer, New York,

Reference Books

1. Yadav J.B, (2001), Advanced Practical Physical Chemistry, Goel Publishing House,
2. Gurthu J.N and Kapoor R (1987), Advanced Experimental Chemistry, S. Chand & Co.,

Web References

https://web.iitd.ac.in/~nkurur/2015-16/Isem/cmp511/lab_handout_new.pdf

Pedagogy

E-content, Demo, Hands on training, Quiz, Assignments.

Course Designers

Dr.V.Sangu,

Semester III	External Marks: 100			
COURSE CODE	COURSE TITLE	CATEGORY	Hrs /Week	CREDITS
22PCH3DSE3A	CHEMISTRY FOR COMPETITIVE EXAMINATIONS	DISCIPLINE SPECIFIC ELECTIVE	4	3

Course Objectives

- To know the types of bonds, properties of transition elements, structures and functions of biomolecules.
- To study the reaction mechanism and spectroscopy techniques.
- To learn the catalytic behavior of organometallic compounds.

Prerequisites

Polarity, oxidation state, biomolecules, selection rule

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Recall and understand the modern approaches of chemical bonding, coordination compounds, reaction mechanism and various spectral techniques.	K1,K2
CO2	Interpret the shapes, reactions, spectrum and point group of the molecules.	K3
CO3	Analyze bond properties, catalytic behaviour, enzyme mechanism, reagents and frequencies of functional group.	K4
CO4	Explain the molecular bonding, functions of biomolecules, rearrangements and applications of various spectroscopies.	K5
CO5	Predict the nature of bonds, organometallic reactions, electron transfers, reagents and structure of molecules.	K6

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	1	3	2	3	1	1	1	3
CO2	3	2	1	3	2	2	3	1	1	2
CO3	3	3	1	1	2	3	2	2	2	3
CO4	3	3	2	2	3	3	2	1	2	3
CO5	3	3	1	1	2	3	2	2	2	3

“1”–Slight (Low) Correlation
 “3”–Substantial (High) Correlation

“2”–Moderate(Medium) Correlation
 “-”indicates there is no correlation

SYLLABUS

UNIT	CONTENT	HOURS	CO	COGNITIVE LEVEL
I	Chemical Bonding: Ionic bond - lattice energy- Born-Haber cycle. Covalent bond- polarities of bonds in molecules and their dipole moments. Valence bond theory - VSEPR model- shapes of molecules. Molecular orbital theory (LCAO method): Bonding in H ₂ , He ₂ , Li ₂ , Be ₂ , B ₂ , N ₂ , NO, CO, HF, and CN ⁻ . Bond order- bond strength and bond length.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	Chemistry of Coordination Complexes: IUPAC nomenclature - No. of possible isomers - EAN rule- Valence bond theory - CFT and CFSE calculation- Jahn Teller distortion theory. Organometallic reactions: ligand association - dissociation - oxidative addition- reductive elimination and insertion reactions. Reactions of coordinated ligands in organometallics: hydrogenation- hydroformylation - epoxidation - metathesis- polymerization of olefins and olefin oxidation (Wacker process).	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	Bioinorganic Chemistry: Metal ions in biological systems - role in ion transport across the membranes (molecular mechanism) - oxygen uptake proteins. Heme and non-heme proteins - haemoglobin and myoglobin - oxygen transport and storage - electron transfer and oxygen activation- cytochromes - Ferredoxin and Rubredoxin. Copper containing proteins: Classification and examples - electron transfer - oxygen transport - oxygenation - oxidases and reductases - cytochrome oxidase - superoxide dismutase (Cu, Zn). Nickel containing enzyme: urease.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

IV	Reaction Mechanism of Rearrangements and Reagents: Molecular Rearrangements: Baeyer-Villiger – Favorskii- Fries – Claisen – Cope - Stevens and Wagner-Meerwein rearrangements. Aldol condensation - Claisen condensation – Dieckmann – Perkin – Knoevenagel –Witting - Von Richter reactions. Synthetic Uses of Reagents: OsO ₄ - HIO ₄ - Pb(OAc) ₄ - SeO ₂ – NBS - LiAlH ₄ - NaBH ₄ - n-BuLi and MCPBA.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4,K5,K6
V	Spectroscopy and Group Theory: Principle and applications in structural elucidation. Rotational: Diatomic molecules - isotopic substitution and rotational constants. Vibrational: Diatomic molecules- linear triatomic molecules - specific frequencies of functional groups in polyatomic molecules. Mass Spectrometry- parent peak - base peak - metastable peak -McLafferty rearrangement. Group theory: symmetry elements - symmetry operation - point group of simple molecules like H ₂ O, NH ₃ , BF ₃ , C ₆ H ₆ , biphenyl and Ferrocene.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4,K5,K6
VI	Self-Study for Enrichment: (Not to be included for External Examination) Lewis structure -hydrogen bonding - calculation of oxidation number and oxidation state - action of enzymes - types of fissionsand rearrangements - electromagnetic radiations - wavelength - frequency and wave number.	--	CO1, CO2, CO3, CO4	K1, K2, K3, K4,K5

Text Books

1. Puri B. R., Sharma L. R., Day M. C., and Selbin J. (2012), Theoretical Inorganic Chemistry; Sisler, Literary Licensing (LLC), Montana.
2. Jagdambasingh (2016), Organic Synthesis, Pragati Prakashan.

3. Kasim W and Schewederski B. (2013), Bioinorganic Chemistry: Inorganic Elements in the Chemistry of Life; 2ndEdn. John Wiley and Sons, New York, USA.
4. Finar I.R, (2009) Organic Chemistry Vol.1, 7thEdn, Pearson Education Asia.
5. Banwell C.N and Mc Cash.E.M.(2000) Fundamentals of Molecular Spectroscopy, 4thEdn, Tata McGraw Hill, New Delhi.

Reference Books

1. Huheey J. E. (2006) Inorganic Chemistry, 4th Edn., Harper and Row publisher, Singapore.
2. Mukherji,S.M and Singh.S.P (2015) Reaction Mechanism in Organic Chemistry, (Revised Edition), Trinity, New Delhi.
3. Dargo.R.S. (1977) Physical Methods in Chemistry, Saunders, Philadelphia.
4. Carey.F.A and Sundberg R.J (2000) Advanced Chemistry Part A &B, 4th Edn, Kluwer Academic/Plenum Publishers.
5. Ramam.K.V. (1990) Group Theory and its Application to Chemistry, Tata Mc Graw Hill, New Delhi.

Web References

- 1.[https://chem.libretexts.org/Bookshelves/Organic_Chemistry/Supplemental_Modules_\(Organic_Chemistry\)/Fundamentals/Ionic_and_Covalent_Bonds](https://chem.libretexts.org/Bookshelves/Organic_Chemistry/Supplemental_Modules_(Organic_Chemistry)/Fundamentals/Ionic_and_Covalent_Bonds)
2. <https://byjus.com/jee/coordination-compounds/>
- 3.[https://chem.libretexts.org/Bookshelves/Inorganic_Chemistry/Organometallic_Chemistry_\(Evans\)/04%3A_Fundamentals_of_Organometallic_Chemistry](https://chem.libretexts.org/Bookshelves/Inorganic_Chemistry/Organometallic_Chemistry_(Evans)/04%3A_Fundamentals_of_Organometallic_Chemistry)
- 4.<https://www.ncbi.nlm.nih.gov/books/NBK544256/#:~:text=Myoglobin%20is%20a%20protein%20located,can%20reversibly%20bind%20to%20oxygen.>
- 5.https://tmv.ac.in/ematerial/chemistry/kpb/SEM_IV_Honours_Rearrangement%20final.pdf

Pedagogy

Chalk and talk,PPT, Discussion, Assignment, Demo, Quiz, Seminar.

Course Designer

Dr. A.Sharmila

Semester III	Internal marks : 25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRs/ WEEKS	CREDITS
22PCH3DSE3B	BIOORGANIC CHEMISTRY	DISCIPLINE SPECIFIC ELECTIVE	4	3

Course Objective

- To Gain the knowledge on the molecular structure and of chemical and biological properties of biomolecules such as amino acids, proteins, lipids and nucleic acids.
- To know the mechanisms of enzymatic reactions, the various role of organic molecules in living systems.
- To learn the concepts of bio energies.

Prerequisites

Bio energies, nucleic acids, molecular structure.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course students will be able to	Cognitive Level
CO1	To understand the basic concepts of biomolecules and natural products.	K2, K3
CO2	To integrate and assess the different methods of preparation of structurally different biomolecules and natural products.	K2, K3
CO3	To illustrate the applications of biomolecules and their functions in the metabolism of living organisms.	K3, K4
CO4	To analyse and rationalise the structure and synthesis of heterocyclic compounds.	K4, K5
CO5	To develop the structure of biologically important heterocyclic compounds by different methods.	K4, K5

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	1	3	2	3	1	1	1	3
CO2	3	2	1	3	2	2	3	1	1	2
CO3	3	3	1	1	2	3	2	2	2	3
CO4	3	3	2	2	3	3	2	1	2	3
CO5	3	3	2	3	3	3	3	2	1	3

“1”–Slight (Low) Correlation

“3”–Substantial (High) Correlation

“2”–Moderate(Medium) Correlation

“-”indicates there is no correlation

SYLLABUS

UNIT	CONTENT	HOURS	Cos	COGNITIVE LEVEL
I	Chemistry and metabolism of carbohydrates Definition, classification and biological role of carbohydrates. Monosaccharides: Linear and ring structures (Haworth formula) of ribose, glucose, fructose and mannose (structure determination not required), physical and chemical properties of glucose and fructose. Disaccharides: Ring structures (Haworth formula) –occurrence, physical and chemical properties of maltose, lactose and sucrose. Polysaccharides: Starch, glycogen and cellulose – structure and properties, glycolysis of carbohydrates.	12	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
II	Steroids and Hormones: Steroids-Introduction, occurrence, nomenclature, configuration of substituents. Diels' hydrocarbon, stereochemistry, classification, Diels' hydrocarbon, biological importance, colour reactions of sterols, cholesterol-occurrence, tests, physiological activity, biosynthesis of cholesterol from squalene. Hormones-Introduction, classification, functions of sex hormones-androgens and estrogens, adrenocortical hormones-cortisone and cortisol	12	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
III	Proteins: Separation and purification of proteins – dialysis, gel filtration and electrophoresis. Catabolism of amino acids - transamination, oxidative deamination and decarboxylation. Biosynthesis of proteins: Role of nucleic acids. Amino acid metabolism and ureacycle.	12	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6

IV	Nucleicacids: Structure, methods for the synthesis of nucleosides - direct combination, formation of heterocyclic base and nucleoside modification, conversion of nucleoside to nucleotides. Primary and secondary structure of RNA and DNA, Watson-Crick model, solid phase synthesis of oligonucleotides.	12	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
V	Fused Ring Heterocyclic Compounds: Benzofused five membered rings: Indole, isoindole, benzofuran and benzothiophene, Preparation and properties. Benzofused six membered rings: Quinoline and isoquinoline: Preparation by ring closure reactions, Reactions: Mechanism of electrophilic and nucleophilic substitutions, oxidation and reduction reactions	12	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5 K6
VI	Self-Study for Enrichment (Not to be included for External Examination) Formation of heterocyclic base and nucleoside modification, conversion of nucleoside to nucleotides. Structure and functions of non-steroidal hormones-adrenaline and thyroxin.		CO1, CO2	K2, K3

Text Books

1. Lindhorst, T.K., (2007). Essentials of Carbohydrate Chemistry and Biochemistry, Wiley VCH, North America, 2007.
2. Finar, I. L., (1975). Organic Chemistry Vol-2, 5th edition, Pearson Education Asia.
3. Ahluwalia V. K., Goyal, M., (2000). Textbook of Heterocyclic compounds, Narosa Publishing, New Delhi, 2000.
4. Jain M. K. , Sharma, S. C., (2014). Modern Organic Chemistry, Vishal Publishing Co., Jalandhar, Delhi.
5. Ahluwalia, V. K., (2009). Steroids and Hormones, Ane books pub., New Delhi.

Reference Books

1. Finar, I. L. , (2004). Organic Chemistry Vol-1, 6th edition, Pearson Education Asia.

2. Pelletier, (2000). Chemistry of Alkaloids, Van Nostrand Reinhold Co.
3. Shoppe, (1994). Chemistry of the steroids, Butterworthes.
4. Khan, I. A. , Khanum, A. (2004). Role of Biotechnology in medicinal & aromatic plants, Vol 1 and Vol 10, Ukkaz Publications, Hyderabad.
5. Singh. M. P. , Panda, H. , (2005). Medicinal Herbs with their formulations, Daya Publishing House, Delhi.

Web References

1. <https://www.organic-chemistry.org/>
2. <https://www.studyorgo.com/summary.php>
3. <https://www.clutchprep.com/organic-chemistry>

Pedagogy

Chalk and talk, PPT ,Discussion, Assignment, Demo, Quiz, Seminar

Course Designers

Dr. K. Shenbagam

Semester III	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs /Week	CREDITS
22PCH3DSE3C	PHARMACEUTICAL CHEMISTRY	DISCIPLINE SPECIFIC ELECTIVE	4	3

Course Objectives

- To understand the advanced concepts of pharmaceutical chemistry. To recall the principle and biological functions of various drugs.
- To train the students to know the importance as well the consequences of various drugs.
- To have knowledge on the various analysis and techniques.
- To familiarize on the drug dosage and its structural activities

Prerequisites

Drugs, Isotopic dilution analysis, clinical testing, Radio pharmaceuticals

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO 1	To identify the suitable drugs for various diseases.	K1,K2
CO 2	To apply the principles of various drug action and drug design.	K3
CO 3	To acquire the knowledge on product development based on SAR.	K4
CO 4	To apply the knowledge on applications of computers in chemistry.	K5
CO 5	To synthesize new drugs after understanding the concepts SAR.	K6

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	1	3	2	3	1	1	1	3
CO2	3	2	1	3	2	2	3	1	1	2
CO3	3	3	1	1	2	3	2	2	2	3
CO4	3	3	2	2	3	3	2	1	2	3
CO5	3	3	2	3	3	3	3	2	1	3

“1”–Slight (Low)Correlation

“3”–Substantial (High)Correlation

“2”–Moderate(Medium)Correlation

“-”indicates there is no correlation

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Physical properties in Pharmaceuticals: Physical properties- Refractive index- specific&molar refraction. Optical activity\rotation- angle of rotation, specific rotation- examples-measurement of optical activity-Dielectric Constant- Induced Polarization-explanation-determination. Rheology of pharmaceutical systems-concept of viscosity, Newton's law of flow,Kinematic,Relative,Specific,Reduced & Intrinsic viscosity.Newtonian system, non-Newtonian system- Plastic flow-Pseudo plastic flow- Dilatant flow- Viscosity measurements- selection of viscometer for Newtonian andnon- Newtonian system.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
II	Isotopic Dilution analysis: Principleandapplications- Neutronactivationanalysis:Principle, advantages and limitations, Scintillation counters: Body scanning-radio pharmaceuticals.Properties-diagnostics, astherapeutics, for research and sterilization. Physico Chemical Properties and drugaction- Physico chemical properties of drugs-Partition coefficient-solubility-surfaceactivity-degreeofionization.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4,K5,K6
III	Drug dosage and product development: Drug dosage Forms- Drug Delivery system– DrugRegulationandcontrol-pharmacopoeiasformularies-sources of drug- drug nomenclature- routes of administration of drugs products-need for a dosage form-classification of dosage forms- Drug dosage and product development. Introduction to drug dosage Forms &Drug Delivery system–Drug regulation and control-pharmacopoeias formularies, sources of drug, drug nomenclature, routes of administration of drugs products, need for a dosage form, classification of	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K 6

	dosage forms.			
IV	Development of new drugs: Drug design, the research for lead compounds- molecular modification of lead compounds.Structure- Activity Relationship(SAR)-Factorseffectingbioactivity- resonance-inductiveeffect-isoterism,-ioisosterism,spatial considerations -biological properties of simple functional groups-theories of drug activity- occupancytheory-ratetheory-induced-fittheory- 4.3Quantitative structure activity relationship(QSAR)- Development of QSAR- drug recept or interactions-the additivity of group contributions- physico- chemical parameters- Lipophilicity parameters- electronic parameter-ionization constants.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	Antibiotics, Analgesics, Antipyretics and Anaesthetics Definition – introduction – classification and biological actions- structure, properties and therapeutic uses – chemical structure and pharmacological activity of antibiotics, analgesics, antipyretics and anaesthetics- Aspirin, paracetamol and phenacetin – analgen– methohexitone-,ibuprofen,cocaine and amethocaine preparation- structure-properties and uses .	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self-Study for Enrichment: (Not to be included for External Examination) Determination of sugar (glucose) in serum – o-toluidine method – diagnostic test for sugar in urine – Benedict’s test – detection of diabetes – detection of cholesterol in urine – detection of anaemia – estimation of haemoglobin (Hb concentration) – red cell count.		CO1, CO2 CO3	K1, K2, K3,K4

Text Books

1. Physical Chemistry-Bahl and Tuli.
2. Text Book of Physical Pharmaceutics, II nd edition, Vallabh Prakashan-.C.V.S. Subramanyam.
3. Medicinal Chemistry (Organic Pharmaceutical Chemistry), G.R Chatwal, Himalaya Publishing House.
4. Instrumental method of Analysis: Hubert H,Willard, 7th edition.
5. Text book of Pharmaceutical Chemistry by, Jayshree Ghosh,S Chand & company Ltd.
6. Pharmaceutical Chemistry by Dr. S. Lakshmi, Sultan Chand & Sons
7. Bansal. R.K.(1975).Organic Reaction Mechanisms. Tata McGraw Hill.

Reference Books

1. Computers in chemistry, K.V. Raman, TataMc.Graw-Hill,
2. Computers for Chemists, S.K Pundir,Anshu bansal,A pragate prakashan., 2 nd edition, New age international (P) limited, New Delhi.
3. Physical Pharmacy and Pharmaceutical Sciences by Martins, Patrick J.Sinko, Lippincott. William and Wilkins.
4. Cooper and Gunn's Tutorial Pharmacy, 6 th edition by S.J. Carter, CBS Publisher Ltd.

Web References

<https://www.ncbi.nlm.nih.gov/books/NBK482447/https://training.seer.cancer.gov/treatment/chemotherapy/types.html>

Pedagogy

Chalk and talk, PPT, Discussion, Assignment, Demo, Quiz, Seminar.

Course Designers

1. Dr. R.Subha
2. Dr. C. Rajarajeswari

Semester -III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22PPH3GEC1	Science of Materials	GEC - I	3	2

Course Objectives

- To develop the knowledge in material science and to understand the chemical structure and bonding between the molecules
- To gain cognition on the defects in materials
- To acquire the knowledge about the materials and its mechanical properties
- To identify the materials defects and given a simple set on explaining the non– destructive testing in materials
- To acquire the knowledge about the uses of the materials in the space

Pre-requisites

- Basic knowledge on different materials

Course Outcome and Cognitive Level Mapping

On the successful completion of the course, students will be able to:

CO Number	CO statement	Knowledge level
CO1	Remembering and understanding of the different types of crystal structure and bonding in solids and the different kinds of materials and their testing methods.	K1,K2
CO2	Analyze the different kinds of technological properties of materials	K2,K3
CO3	Classify the new materials in the material engineering and to understand their role in materials behavior ,analyze the type of bond, be able to explain its physical origin as well as Strength	K2,K3
CO4	Evaluate the materials defects and given a simple set on explaining the non– destructive testing in materials	K3,K4
CO5	Analyze the nuclear materials and uses of the materials in the space	K4,K5

Mapping with Programme Outcomes

Cos	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	2	3	3	3	3	3	3	2	2	3
CO 2	2	3	3	3	3	3	3	2	2	3
CO 3	2	3	3	3	3	3	3	2	3	3
CO 4	2	3	3	2	3	3	2	2	2	3
CO 5	2	3	3	2	3	3	2	2	2	3

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation;

“3” – Substantial (High) Correlation

“-” indicates there is no correlation.

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	CRYSTAL STRUCTURE AND CHEMICAL BONDS Introduction to crystals – Classification of crystal system – Introduction to Bravais lattice –Lattice planes and Miller indices – Interplanar spacing in a cubic lattice – Cubic lattice – SC –BCC – FCC – Sodium chloride and Diamond crystal structure– Bonding of solids (Ionic, Covalent, Metallic, Hydrogen and Vander Waal)	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	TECHNOLOGICAL PROPERTIES Introduction to material science – Classification of engineering materials – Structure – Property relationships in materials - Stability and meta stability – Selection of materials – Weld ability–Machine ability–Formability– Castability.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	NEW MATERIALS AND PHASE TRANSFORMATION Metallic glass–Fiber reinforced materials– Metal matrix composites–SAW materials– Biomaterials– Ceramics. Nucleation and Growth - solidification - Allotropic transformation- isothermal transformation – tensitic transformation phase transformation in alloy steels.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	MECHANICAL PROPERTIES AND NON-DESTRUCTIVETESTING: Mechanical properties -Tensile – Fatigue – Creep – plastic deformation mechanisms-methods of strengthening metals against yield – creep resistance – fracture – fatigue failures – factors affecting mechanical properties of a material. NON-DESTRUCTIVE TESTING: Introduction – Radiographic methods- production of x- rays -ultrasonic methods-basic properties of sound beam - production of ultrasonic waves-Piezoelectric ultrasonic generator - magnetostriction ultrasonic generator-applications	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	MATERIALS FOR NUCLEAR AND SPACEAPPLICATIONS: Nuclear fuels - fuel cladding- moderators, control materials -Coolants - shielding materials Space programme - extreme high materials for thermal protection – pressure vessels – Lubrication.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

VI	<u>SELF-STUDY FOR ENRICHMENT</u> (Not included for End Semester Examinations) Measurement of mechanical properties - such as strength – hardness - Optical properties - refractive index-photo-sensitivity - Thermal properties melting point - conductivity - electrical properties resistance - conductivity - capacitance - chemical properties - pH - corrosion – resistance.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
----	---	---	-------------------------------------	-----------------------------

TextBooks:

1. Arumugam. M (2009) *Material Science* first edition Anuradha agencies, Kombakonam
2. Aghavan .V (1993) *Material Science and Engineering* fifth edition Prentice Hall.
3. Hayra Choudhury. S.K. (1991) *Materials Science and Processes* first edition Indian BookDistributing

ReferenceBooks

1. Pillai .S.O., (2005) *Solid State Physics* New Age International Private Limited sixth edition
2. Baldev Raj., T. Jayakumar & M. Thavasimuthu., (2002) , *Practical NDT Second edition*, Narosapublishing house , New Delhi.
3. Raghavan.V., (2015), *Physical Metallurgy , third edition , PHI Learning.*

Web references

1. <https://www.britannica.com/technology/materials-science>
2. <https://materialseducation.org/resources/what-is-materials-science/>
3. <https://engineering.princeton.edu/research/materials-science-and-engineering>
4. <https://www.mccormick.northwestern.edu/materials-science/>

Pedagogy

Chalk and talk, power point presentation, assignment, seminar, interaction, problem solving

Course Designer

Dr.S.Priya

ANNEXURE K

**CAUVERY COLLEGE FOR WOMEN
(AUTONOMOUS)**

**Nationally Accredited with 'A' Grade by NAAC
ISO 9001:2015 Certified
TIRUCHIRAPPALLI**

PG AND RESEARCH DEPARTMENT OF COMPUTER SCIENCE



B.Sc. COMPUTER SCIENCE

SYLLABUS

2023 -2024 and Onwards



Cauvery College for Women (Autonomous), Trichy
PG & Research Department of Computer Science B.Sc Computer Science
LEARNING OUTCOMES BASED CURRICULUM FRAMEWORK (CBCS – LOCF)
(For the Candidates admitted from the Academic year 2023-2024 and onwards)
Semester I

Semester	Part	Course	Course Title	Course Code	Inst. Hrs. / week	Credits	Exam			Total
							Hrs.	Marks		
								Int	Ext	
I	I	Language Course-I (LC)	பொதுத்தமிழ்- 1	23ULT1	6	3	3	25	75	100
			Hindi ka Samanya Gyan aur Nibandh	23ULH1						
			Poetry, Grammar and History of Sanskrit Literature	23ULS1						
			Foundation Course: Paper I - French I	23ULF1						
	II	English Language Course- I(ELC)	General English -I	23UE1	6	3	3	25	75	100
	III	Core Course – I(CC)	Python Programming	23UCS1CC1	5	5	3	25	75	100
		Core Practical - I (CP)	Python Programming (P)	23UCS1CC1P	3	3	3	25	75	100
		First Allied Course- I (AC)	Numerical Methods	23UCS1AC1	4	3	3	25	75	100
		First Allied Course- II (AC)	Graph Theory and its Applications	23UCS1AC2	4	3	3	25	75	100
	IV	Ability Enhancement Compulsory Course-I (AECC)	UGC Jeevan Kaushal- Value Education	23UGVE	2	2	-	100	-	100
	Total				30	22				700

SEMESTER I

SYLLABUS

Semester I	Internal Marks:25			External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS	
23UCA1CC1/ 23UCS1CC1	Python Programming	CORE	5	5	

Course Objectives

- To make students understand the concepts of Python programming
- To apply the OOPs concept in PYTHON programming
- To impart knowledge on demand and supply concepts
- To make the students learn best practices in PYTHON programming
- To know the costs and profit maximization

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Learn the basics of python, Do simple programs on python, Learn how to use an array.	K1
CO2	Develop program using selection statement, Work with Looping and jump statements, Do programs on Loops and jump statements.	K2
CO3	Concept of function, function arguments, Implementing the concept strings in various application, Significance of Modules, Work with functions, Strings and modules.	K3
CO4	Work with List, tuples and dictionary, Write program using list, tuples and dictionary.	K4
CO5	Usage of File handlings in python, Concept of reading and writing files, Do programs using files.	K5

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	3	2	1	1	3	3	2	3	2
CO2	3	2	3	1	1	3	2	2	3	3
CO3	3	3	3	2	2	3	3	2	3	2
CO4	3	2	3	2	2	3	3	2	3	2
CO5	3	3	3	2	2	3	3	2	2	3

“1”-Slight (Low) Correlation

“3” -Substantial(High)Correlation

“2”-Moderate (Medium)Correlation

“-” - Indicates there Is no Correlation

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Basics of Python Programming: History of Python-Features of Python-Literal-Constants-Variables - Identifiers–Keywords–Built-in Data Types-Output Statements – Input Statements-Comments – Indentation-Operators-Expressions-Type Conversions. Python Arrays: Defining and Processing Arrays.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Control Statements: Selection/Conditional Branching statements: if, if-else, nested if and if-elif-else statements. Iterative Statements: while loop, for loop, else suite in loop and nested loops. Jump Statements: break, continue.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Functions: Function Definition – Function Call – Variable Scope and its Lifetime-Return Statement. Function Arguments: Required Arguments, Keyword Arguments, Default Arguments and Variable Length Arguments-Recursion. Python Strings: String operations-Immutable Strings - Built-in String Methods and Functions - String Comparison. Modules: import statement- The Python module – dir() function – Modules and Namespace.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Lists: Creating a list -Access values in List-Updating values in Lists-Nested lists -Basic list operations-List Methods. Tuples: Creating, Accessing, Updating and Deleting Elements in a tuple – Nested tuples– Difference between lists and tuples. Dictionaries: Creating, Accessing, Updating and Deleting Elements in a Dictionary – Dictionary Functions and Methods - Difference between Lists and Dictionaries.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Python File Handling: Types of files in Python - Opening and Closing files-Reading and Writing files: write() and writelines() methods-append() method – read() and readlines() methods – with keyword – Splitting words – File methods - File Positions-	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self Study for Enrichment (Not to be included for End Semester Examination) Array methods - pass statements- Defining our own modules- Renaming and deleting files.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Textbook

1. Reema Thareja. (2017), Python Programming using problem solving approach, 1st Edition, Oxford University Press.
2. Dr. R. Nageswara Rao. (2017), Core Python Programming, 1st Edition, Dream tech Publishers.

Reference Books

1. VamsiKurama, Python Programming: A Modern Approach, Pearson Education.
2. Mark Lutz, Learning Python, Orielly.
3. Adam Stewarts, Python Programming, Online.
4. Fabio Nelli, Python Data Analytics, APress.
5. Kenneth A. Lambert, Fundamentals of Python – First Programs, CENGAGE Publication.

Web References

1. <https://www.programiz.com/python-programming>
2. <https://www.guru99.com/python-tutorials.html>
3. https://www.w3schools.com/python/python_intro.asp
4. <https://www.geeksforgeeks.org/python-programming-language/>
5. [https://en.wikipedia.org/wiki/Python_\(programming_language\)](https://en.wikipedia.org/wiki/Python_(programming_language))

Pedagogy

Chalk & Talk, PowerPoint Presentation, Discussion, Assignment, Demo, Quiz and Seminar

Course Designer

TANSCHÉ

Semester I	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS./WEEK	CREDITS
23UCS1CC1P	PYTHON PROGRAMMING (P)	CORE	3	3

Course Objective

- Acquire programming skills in core Python.
- Implement Object-Oriented Programming skills in Python.
- Use functions and represent Compound data using Lists, Tuples and Dictionaries.
- Develop the skill of designing Graphical-User Interfaces (GUI) in Python.

Course Outcomes and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	Understand the problem-solving approaches	K2
CO2	Identify suitable programming constructs for problem solving.	K3
CO3	Analyze various concepts of Python language to solve the problem in an efficient way.	K4
CO4	Examine the various Python programming techniques.	K5
CO5	Develop a python program for a given problem and test for its Correctness.	K6

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO 1	PO 2	PO 3	PO 4	PO 5
CO1	2	3	3	1	3	3	3	3	3	3
CO2	3	3	3	3	3	2	3	3	3	3
CO3	3	3	3	3	3	3	3	2	3	3
CO4	3	3	3	3	3	3	3	1	3	3
CO5	3	3	3	3	3	3	3	2	3	3

“1”–Slight (Low) Correlation

“3”–Substantial (High) Correlation

“2”–Moderate (Medium) Correlation

“-”indicates there is no Correlation.

List of Exercises

1. Program using variables, constants and I/O statements.
2. Program using Operators.
3. Program using Conditional Statements.
4. Program using Loops.
5. Program using Jump Statements.
6. Program using Functions and Recursion.
7. Program using Arrays.
8. Program using Strings.
9. Program using Modules.
10. Program using Lists.
11. Program using Tuples.
12. Program using Dictionaries.
13. Program for File Handling.

Web References

1. <https://www.w3resource.com/python-exercices/>
2. <https://www.programiz.com/python-programming/online-compiler/>
3. <http://www.w3schools.in/python/>
4. <https://studyglance.in/>

Pedagogy

Power Point Presentations, Demo by e-Contents

Course Designer

Ms.R.Ramya

FIRST ALLIED COURSE – I

NUMERICAL METHODS

(For B.Sc Computer Science, BCA, Information Technology &
Computer Science with Cognitive Systems)

(2023 – 2024 ONWARDS)

Semester I	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs/Week	CREDITS
23UCG1AC1/ 23UCS1AC1/ 23UCA1AC1/ 23UIT1AC1	NUMERICAL METHODS	ALLIED	4	3

Course Objective

- **Learn** the various topics in Numerical methods.
- **Understand** the fundamentals of algebraic equations, interpolation, numerical differentiation and integration.
- **Develop** skills in solving problems of numerical techniques.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Remember the basic concepts of numerical methods.	K1
CO2	Illustrate the various notions of computational numerical streams.	K2
CO3	Apply the different techniques of numerical problems	K3
CO4	Classify the methods of numerical techniques.	K4
CO5	Examine the solutions of numerical problems.	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	3	3	3	3	3	3	2	3
CO2	3	2	3	3	3	3	3	3	3	2
CO3	3	2	3	3	3	3	3	3	2	2
CO4	3	2	2	3	3	3	3	3	3	2
CO5	3	2	3	3	3	3	3	3	2	2

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –

“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Solution of Algebraic and Transcendental Equations: Introduction – Bisection Method – The Iteration Method – The Method of False Position – Newton Raphson Method. (Simple Problems Only).	12	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4
II	Interpolation: Finite differences – Forward differences – Backward differences – Central differences – Newton's Formulae for interpolation–Interpolation with Unevenly Spaced Points – Lagrange's Interpolation Formula. (Simple Problems Only)	12	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4
III	Numerical Differentiation and Integration: Introduction – Numerical Differentiation – Numerical Integration – Trapezoidal Rule – Simpson's 1/3 Rule – Simpson's 3/8 Rule (Simple Problems Only)	12	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4
IV	Numerical Linear Algebra: Solution of Linear Systems – Direct Methods – Gauss - Elimination – Gauss -Jordan method. Solution of Linear Systems – Iterative Methods. (Simple Problems Only)	12	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4
V	Numerical Solution of Ordinary Differential Equations: Introduction – Solution by Taylor's Series – Euler's Method – Modified Euler's Method – Runge-Kutta Method–Predictor-Corrector Methods – Adams-Moulton Method – Milne's Method(Simple Problems Only)	12	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4
VI	Self-Study for Enrichment (Not included for End Semester Examination) Ramanujan's Method – Bessel's Formula – Newton-Cotes Integration Formulae –The QR Method – Picard's Method of Successive Approximations	-	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4

Text Books

Sastry.S.S (2004), *Introductory Methods of Numerical Analysis* (Third Edition), Prentice Hall of India Private Ltd, New Delhi.

Chapters and Sections

UNIT-I Chapter 2: Sections: 2.1 – 2.5 (Omit 2.3.1 & 2.5.1)

UNIT II Chapter 3: Sections: 3.3 : 3.3.1 – 3.3.3, 3.6, 3.9 : 3.9.1

UNIT-III Chapter 5: Sections: 5.1, 5.2 (only), 5.4 : 5.4.1 – 5.4.3

UNIT-IV Chapter 6: Sections: 6.3: 6.3.2, 6.4

UNIT-V Chapter 7: Sections: 7.1,7.2, 7.4: 7.4.2, 7.5,7.6

Reference Books

1. Venkataraman, M.K. (2003). *Numerical Methods in Science and Engineering*, The National Publishing Company.
2. Iyengar S.R.K, Jain R.K, (2009). *Numerical Methods*, New Age International Publishers.
3. Subramanian,N. (2007). *Numerical Methods*, SCM Publisher, Erode.

Web References

1. <https://tinurl.com/4v7knvm9>
2. <https://tinurl.com/t29niev5>
3. <https://www.youtube.com/watch?v=TIWRvzzFUYO>
4. <https://www.youtube.com/watch?v=iviiGB5vxLA>
5. https://www.youtube.com/watch?v=j_4MVZ3VADU

Pedagogy

Assignment, Seminar, Lecture, Quiz, Group discussion, Brain storming, e-content.

Course Designer

1. Dr. V. Geetha
2. Dr. S. Sasikala

FIRST ALLIED COURSE - II
GRAPH THEORY AND ITS APPLICATIONS
(2023-2024 Onwards)

Semester I	Internal Marks: 25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs /Week	CREDITS
23UCS1AC2/ 23UIT1AC2	GRAPH THEORY AND ITS APPLICATIONS	ALLIED	4	3

Course Objective

- **Introduce** the notion of graph theory and its application.
- **Understand** the fundamental concepts in graph theory.
- **Explore** some of the most important notions of graph theory and develop their skills and solving basic exercise.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Define basic definitions of graphs.	K1
CO2	Describe the concepts and Characterization of Graphs.	K2
CO3	Explain the notion of Spanning Trees.	K2
CO4	Compute the properties of Planar Graphs.	K3
CO5	Analyze the concept of graphs in Matrix Representation.	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	2	2	3
CO2	3	2	3	3	3	3	3	3	2	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	2	3	3	2	3	3	2	2	3
CO5	3	2	3	3	2	3	3	3	3	2

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –

“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	INTRODUCTION: Definition of a Graph – Application of Graphs – Finite and Infinite Graphs – Incidence and Degree – Isolated Vertex, Pendant Vertex and Null Graph. PATHS AND CIRCUITS: Isomorphism – Subgraphs – Walks, Paths and Circuits – Connected Graphs, Disconnected Graphs and Components.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	PATHS AND CIRCUITS: Euler Graphs – Operation on Graphs – More on Euler Graphs – Hamiltonian Paths and Circuits – The Traveling Salesman Problem.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	TREES AND FUNDAMENTAL CIRCUITS: Trees – Some Properties of Trees – Pendant Vertices in a Tree – Distance and Centers in a Tree – Rooted and Binary Trees – On Counting Trees – Spanning Trees.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	CUT - SETS AND CUT - VERTICES: Cut-Sets – Some Properties of a Cut-Set – All Cut-Sets in a Graph – Fundamental Circuits and Cut-Sets – Connectivity and Separability.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	PLANAR GRAPHS: Planar Graphs – Kuratowski's Two Graphs – Different Representations of a Planar Graph. MATRIX REPRESENTATION OF GRAPHS: Incidence Matrix – Submatrices of $A(G)$ – Circuit Matrix.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
VI	Self Study for Enrichment: (Not included for End Semester Examination) Brief History of Graph Theory – A Puzzle with Multicolored Cubes – Finding All Spanning Trees of a Graph – Network Flows – Combinatorial Vs. Geometric Graphs – An Application to a switching network.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

Text Books

1. Narsingh Deo, “*Graph Theory with Application to Engineering and Computer Science*”
Prentice Hall of India 2010(Reprint).

Chapters and Sections

- UNIT-I Chapter 1: Sections 1.1 – 1.5
Chapter 2: Sections 2.1, 2.2, 2.4, 2.5
- UNIT-II Chapter 2: Sections 2.6 – 2.10
- UNIT-III Chapter 3: Sections 3.1 – 3.7
- UNIT- IV Chapter 4: Sections 4.1 – 4.5
- UNIT- V Chapter 5: Sections 5.2 – 5.4
Chapter 7: Sections 7.1 – 7.3

Reference Books

1. Arumugam S and Ravichandran S, “Invitation to Graph Theory”, Scitech Publications (India) Private Limited.
2. Gary Chartrand and Ping Zhang, “Introduction to Graph Theory”, Tata McGraw-Hill Edition, 2004.

Web References

1. <https://youtu.be/S1Zwhz-Mhcs>
2. <https://youtu.be/R5LZIpz-oIE>
3. https://youtu.be/X2B_J1ajsIY
4. <https://youtu.be/5M7bOXrn54A>
5. <https://youtu.be/OwX1ncB13B0>

Pedagogy

Power point presentations, Group Discussions, Seminar, Quiz, Assignment.

Course Designer

Dr. P. SHALINI

**CAUVERY COLLEGE FOR WOMEN
(AUTONOMOUS)**

**Nationally Accredited with 'A' Grade by NAAC
ISO 9001:2015 Certified
TIRUCHIRAPPALLI**

PG AND RESEARCH DEPARTMENT OF COMPUTER SCIENCE



B.Sc. COMPUTER SCIENCE

SYLLABUS

2022 -2023 and Onwards

Semester	Part	Course	Course Title	Course Code	Inst. Hrs. / week	Credits	Exam			Total
							Hrs.	Marks		
								Int	Ext	
III	I	Language Course-III (LC)	Kaappiyamum, Naadakamum	22ULT3	5	3	3	25	75	100
			Hindi Literature &Grammar – III	22ULH3						
			Prose, Textual Grammar and vakyarachana	22ULS3						
			Intermediate French - I	22ULF3						
	II	English Language Course-III(ELC)	Learning Grammar Through Literature- I	22UE3	6	3	3	25	75	100
	III	Core Course– III(CC)	Data Structures & Algorithms	22UCS3CC3	6	6	3	25	75	100
		Core Practical - IV(CP)	Data Structures (P)	22UCS3CC4P	3	3	3	40	60	100
		Second Allied Course-I (AC)	Digital & Microprocessor Fundamentals	22UCS3AC4	4	3	3	25	75	100
		Second Allied Course- II (AP)	Digital & Microprocessor (P)	22UCS3AC5P	4	3	3	40	60	100
		IV	Generic Elective Course- I (GEC)	Office Automation (P)	22UCS3GEC1P	2	2	3	40	60
	Basic Tamil – I			22ULC3BT1	25				75	
	Special Tamil – I			22ULC3ST1						
		Extra Credit Course	SWAYAM	As per UGC Recommendation						
Total				30	23				700	
15 Days INTERNSHIP during Semester Holidays										

SEMESTER III

SYLLABUS

Semester III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22UCS3CC3	DATA STRUCTURES & ALGORITHMS	CORE	6	6

Course Objectives

- Understanding basic concepts of various data structures and the different ways of organizing them
- To articulate the essential components and operations of the data structures
- To familiarize knowledge in designing algorithms using the data structures

Course Outcomes and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	Understand the abstract data types and operations of data structure	K1
CO2	Demonstrate the problems to represent the linear and nonlinear structures	K2
CO3	Implement the basic data structures and Algorithm design Techniques	K3
CO4	Analyze the efficiency and proofs of correctness	K4
CO5	Assess, evaluate and choose appropriate data structure and Algorithmic techniques to solve real-world problems.	K5

Mapping of CO with PO and PSO

CO s	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5
CO1	3	2	2	1	2	3	3	3	3	2
CO2	2	2	3	2	2	2	2	1	2	2
CO3	3	3	3	2	3	3	3	1	3	3
CO4	3	2	3	2	3	3	3	2	3	3
CO5	3	3	3	2	3	3	3	2	3	3

“1”–Slight(Low) Correlation

“3”–Substantial (High) Correlation

“2”–Moderate(Medium)Correlation

“-”indicates there is no Correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	BASIC TERMINOLOGY: Overview of Data Structures- Abstract Data Types - Definition and an example – Arrays – Ordered Lists – Polynomial addition- Sparse Matrices - Representation of arrays.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	STACK & QUEUE: Overview of Stacks and Queues- Operations on Stack-PUSH and POP-Operation on Queue-INSERT and DELETE- application of stack – Evaluation of Expressions- Circular Queue, Multiple Stacks and Queues- Dequeue, Priority Queue.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Overview of Linked list: Singly linked list implementation - Traversing a Linked list, Searching a Linked List - Insertion into a Linked List – Deletion from a Linked List – Doubly linked list – Insertion, deletion, searching - Application of linked list – Polynomial addition – Linked Stacks and Queues.	19	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	TREES & GRAPHS: Trees Terminology – Binary tree representations – Tree Traversal – Threaded Binary Trees – Graphs Terminology – Memory Representations of Graphs – Traversals, Connected Components and Spanning Trees - Prim's Algorithm – Kruskal's Algorithm.	19	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	ALGORITHM: SORTING & SEARCHING: Algorithm – Overview – Pseudo code - complexity of algorithm - Bubble Sort - Insertion Sort - Heap Sort-Quick Sort. Searching- Linear Search – Binary Search. Greedy Method: General Method – Job sequencing and deadlines.	19	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self Study for Enrichment (Not included for End Semester Examinations) Reverse the elements of the stack using only stack operations (push & pop)-Implement one queue efficiently using two stacks- Finding Shortest path- Branch and Bound – Back Tracking method	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Books

1. Ellis Horowitz, Sartaj Sahni, (2010). *Fundamentals of Data Structure*, Galgotia Publications.
2. Ellis Horowitz, Sartaj Sahni and Sanguthevar, (2009). *Fundamentals of Computer Algorithms*, Galgotia Publications.

Reference Books

1. Jean-Paul Tremblay and Paul G. Sorenson, (2001), *An Introduction to Data Structures with Applications*, Second Edition, Tata McGraw-Hill.
2. Alfred V. Aho, John E. Hopcroft Jeffry D. Ullman (2006). *Data Structures and Algorithms*, Pearson Education.
3. Seymour Lipshutz (2011), *Data Structures with C*, 3rd Edition, Tata McGraw Hill Education Pvt. Ltd

Web References

1. www.studytonight.com/data-structures
2. <https://lpuguidecom.files.wordpress.com/2017/04/fundamentals-of-data-structures-ellis-horowitz-sartaj-sahni.pdf>
3. <https://www.slideshare.net/canaokar/fundamentals-of-computer-algorithms-by-horowitz-sahni-rajsekaran>

Pedagogy

Chalk and Talk, PPT, Discussion, Assignment, Demo, Quiz and Seminar.

Course Designer

Ms.N.Agalya

Semester III	Internal Marks: 40		External Marks: 60	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22UCS3CC4P	DATA STRUCTURES (P)	CORE	3	3

Course Objectives:

- To develop and execute high level language programs for various data structures
- To apply the knowledge of programming features
- To implement various sorting , searching Algorithms on real time data
- To understand the efficiency of an algorithm based on the choice of data structure

Course Outcomes and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	Recall program execution and Debugging	K1
CO2	Demonstrate the ideas of Data structures	K2
CO3	Make use of Operations of Linear and Non- linear data structures	K3
CO4	Develops the ability to analyze a problem and implement an algorithm to solve it.	K4
CO5	Acquire logical thinking, Identify the correct and efficient ways of solving problems	K5

Mapping of CO with PO and PSO

CO s	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5
CO1	3	2	2	1	2	3	2	1	2	2
CO2	3	2	3	1	2	3	2	2	2	2
CO3	3	3	3	2	3	3	3	2	3	3
CO4	3	2	2	2	2	3	3	2	3	3
CO5	3	3	3	2	3	3	3	2	3	3

“1”–Slight (Low) Correlation

“3”–Substantial (High) Correlation

“2”–Moderate(Medium)Correlation

“-”indicates there is no Correlation.

“

List of Exercises

1. Operations on Stack
2. Operations on Queue
3. Linked list Operations
4. Binary tree traversal
5. Operations on Graph
6. Sorting algorithms
7. Searching algorithms
8. Greedy method

Web References

1. <https://www.geeksforgeeks.org/introduction-to-stack-data-structure-and-algorithm-tutorials/>
2. <https://www.simplilearn.com/tutorials/data-structure-tutorial/stacks-in-data-structures>
3. <https://www.programiz.com/dsa/>
4. <https://www.digitalocean.com/community/tutorials/stack-in-c>

Pedagogy

Demonstration, e-contents

Course Designer

Ms.N.Agalya

Semester III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22UCS3AC4	DIGITAL & MICROPROCESSOR FUNDAMENTALS	SECOND ALLIED COURSE-I (AC)	4	3

Course Objectives

- To acquire knowledge on the number system and logic gates.
- To understand the concepts of combinational logic circuits.
- To impart the ideas on microprocessor architecture.
- To design simple microprocessor programme

Pre -requisites

- Basic knowledge on number system.
- A basic understanding of digital circuits.
- Fundamental ideas on microprocessor.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Classify and convert one number system to other number systems and to select the most suitable one for specific application.	K1,K2
CO2	Interpret simple logic circuits and its applications	K3
CO3	Analyse Boolean equations for logic circuits and thereby develop equivalent circuits.	K4
CO4	Demonstrate complete architecture of microprocessor	K5
CO5	Develop assembly language programming using intel 8085.	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	3	3	3	2	3	3	3
CO2	2	2	3	3	3	3	2	3	3	3
CO3	2	2	3	3	3	3	2	3	3	3
CO4	2	3	2	3	3	3	1	2	1	2
CO5	2	3	3	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” – indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	INTRODUCTION TO NUMBER SYSTEM: Introduction-Binary, Decimal, Octal and Hexadecimal- Conversion of number system – Binary Addition and Subtraction - Binary Multiplication and Division - 1's complement and 2's complement - BCD code- Excess-3 code -Gray code- ASCII code.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	BOOLEAN ALGEBRA AND LOGIC GATES: Boolean Algebra: Definitions - Rules and Laws of Boolean Algebra - Simplification of Boolean expressions - Demorgan's Theorems - The Basic Gates - NOT, OR, AND - Universal Logic Gates – NOR, NAND - Karnaugh Map - Sum of Products method(SOP) - Pairs, Quads, Octets – Don't Care Conditions- Product of sums method(POS) - Product of sums Simplifications	13	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	COMBINATIONAL AND SEQUENTIAL LOGIC CIRCUITS Half and Full Adders - Half and Full Subtractors - Multiplexer (4:1 line) – 1 to 4 line Demultiplexer - Encoders - Decoders - Introduction to Flip Flops -RS Flip Flop – Clocked RS Flip Flop - D Flip Flop - JK Flip Flop - T Flip Flop - Triggering of Flip Flops	10	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	MICROPROCESSOR (INTEL 8085) Evolution of microprocessor - Components of microprocessor - Architecture of Intel 8085 - Pin configuration - Flags - Instruction set - Addressing modes - Types of instructions - Data Transfer - Arithmetic- Logical- Branch Control- Stack I/O and Machine Control	13	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	PROGRAMMING OF INTEL 8085 Assembly language programming - 8 bit Addition- 8-bit Subtraction - Multibyte Addition- Multiplication- Division- Sum of series- Finding Largest and smallest number in a data array- Arranging numbers in ascending and descending order - Decimal to hexadecimal conversion – Hexadecimal to Decimal Conversion.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	SELF STUDY FOR ENRICHMENT: (Not included for End Semester Examinations) Application of binary number system in coding - Solving Boolean Expressions using Karnaugh Map– Developing basic understanding of higher order microprocessor- Writing program for Complement, Shifting and other conversions	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Books

1. Vijayendran. V, (2003). *Digital fundamentals*. (1st edition) S. Viswanathan Printers and Publishers Pvt. Ltd., Chennai.
2. Virendra Kumar, (2007). *Digital electronics Theory and Experiments*. (2nd edition). New Age International Publishers, Chennai.
3. Ram.B, (1986), *Fundamentals of Microprocessor and Microcomputers* (1st edition) Dhanpat Rai Publications, New Delhi.

Reference Books

1. Anand Kumar A, (2016). *Fundamentals of Digital Electronics*. (1st edition) PHI Learning Pvt. Ltd., New Delhi.
2. Godse.D.A, Godse.A.P, (2008). *Digital Electronics*. (1st edition) Technical publications, Maharashtra.
3. Ramesh S.Gaonkar, (1984). *Microprocessor Architecture Programming, and Applications with the 8085*. (5th Edition) Pearson Education, UK.

Web References

1. <https://www.educba.com/digital-computer-fundamentals/>
2. <https://collegedunia.com/exams/number-system-mathematics-articleid-3097>
3. <https://www.tutorialspoint.com/difference-between-half-adder-and-full-adder>
4. <https://electronicsdesk.com/8085-microprocessor.html>
5. <https://www.digimat.in/nptel/courses/video/108105102/L01.html>

Pedagogy

Chalk and Talk, Assignment, Group discussion and quiz

Course Designer

Dr.D.Devi

Semester III	Internal Marks: 40		External Marks: 60	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22UCS3AC5P	DIGITAL & MICROPROCESSOR(P)	SECOND ALLIED COURSE-II (AP)	4	3

Course Objectives

- To enable the student to gain practical knowledge
- To acquire basic understanding of laboratory technique
- To understand the theory and develop practical application skills

Pre -requisites

- Basic knowledge on usage of logic gates

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Recall the principles of electronics.	K1
CO2	Interpret findings using the correct physical scientific framework.	K2
CO3	Analyze working principles of logic circuits.	K4
CO4	Design electronic circuits.	K5
CO5	Design simple program using microprocessor	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	2	2	3	2	1	2	2
CO2	1	3	2	3	2	3	3	2	3	3
CO3	2	3	2	3	3	3	3	3	3	3
CO4	2	3	3	3	3	3	3	3	3	2
CO5	3	3	3	3	3	3	2	3	3	3

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” – indicates there is no correlation.

Syllabus

LIST OF EXPERIMENTS (Any 8)

Digital Electronics

1. Verification of Logic gates.
2. Construction of Half and Full adder.
3. Construction of Half and Full subtractor
4. Solving K-Map.
5. Excess-3 to BCD Conversion using gates
6. Construction of RS Flip Flop

Microprocessor 8085

1. 8-bit addition and 8-bit subtraction.
2. 8-bit multiplication and 8-bit division.
3. Conversion from decimal to hexadecimal.
4. Conversion from hexadecimal to decimal system.
5. Finding the largest number in a data array
6. Finding the smallest number in a data array

Text Books

1. Ouseph, C.C., Rao, U.J., Vijayendran, V., (2016). *Practical Physics and Electronics*. S.Viswanathan, Printers & Publishers Pvt Ltd., Chennai.
2. Vijayendran.V, (2009). *Introduction to Integrated Electronics: Digital and Analog* (Revised Edition). Viswanathan S., Printers & Publishers Pvt Ltd., Chennai.
3. Ram.B, (2013). *Fundamental of Microprocessor and microcontroller* (8th Edition) Dhanpat Rai Publications(P) Ltd., New Delhi.

Reference Books

1. Anand Kumar.A, (2016). *Fundamentals of Digital Electronics*. (4th Edition). PHI Learning Pvt. Ltd., New Delhi.

Web References

1. <https://de-iitr.vlabs.ac.in/>
2. <http://vlabs.iitkgp.ernet.in/dec/>
3. <https://www.vlab.co.in/>
4. <https://de-iitr.vlabs.ac.in/exp/truth-table-gates/simulation.html>
5. <https://de-iitr.vlabs.ac.in/exp/half-full-adder/simulation.html>

Pedagogy

Demonstration and practical sessions.

Course Designer

Dr.D.Devi

Semester III	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	HOURS / WEEK	CREDITS
22UEN3GEC1	Presentation Skills in English	Generic Elective Course -I (GEC)	2	2

COURSE OBJECTIVES

- To enhance the student's personality and to develop their leadership traits
- To improve their communication skills and gain competence in presentation skills
- To be good orators, presenters and skill creators in English Language with a professional touch

COURSE OUTCOMES

Course Outcomes and Cognitive Level Mapping

On the successful completion of the course students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Relate the modalities of presentation skills with a professional touch by being competent and confident in life	K1
CO2	Illustrate the plan and structure for effective presentation with innovative techniques, knowledge with global standards	K2
CO3	Select the mechanism of Audio - Visual aids and its usage for presentation for higher learning purposes	K3
CO4	Apply the presentation skills in public speaking to enhance an all round personality with good presentation skills	K3
CO5	Analyze the different levels in various Presentation skills to comprehend higher learning for a better self and society	K4

Mapping of CO with PO and PSO

CO	PSO 1	PSO 2	PSO 3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3	3	3	2	3	3
CO2	3	3	2	3	3	3	3	3	2	3
CO3	2	2	3	2	3	3	3	2	2	3
CO4	3	3	2	3	3	3	2	3	2	3
CO5	3	3	2	3	3	3	3	2	2	3

“1” – Slight (Low) Correlation

“2” - Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” indicates there is No Correlation

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Introduction to Presentation Skills Classic Structure of a Presentation- Getting Started (Greetings, Addressing, Introducing Self, Opening Remarks,) Know Your Audience - Presenting Message with Confidence	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	Preparation for Presentation Skills Think about, the 4 Ps, 8 Ways to Perfect your Presentation Skills in English. Challenges and Benefits of Effective Speaking Skills	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	Presentation Planning Visualize the PowerPoint Presentation - Anticipate the Difficulties - Organize the Aids - Knowing the Target Audience - Good Planning - Visual Representation of Data	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	Deliverance How to Deliver an Effective Presentation Be Aware of your Non – Verbal Communication - Take Time to Think During your Presentation - Pay Attention to your Voice - Body Language	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	Evaluation Concluding a Presentation, Interactive Session, Encouraging Questions - Discussion with the Audience - Maintaining Good Relationship with the Audience	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4,
VI	Self- Study for Enrichment (Not to be included for End Semester Examination) Active Listening Tasks - Practice Speaking – More Visuals Aids - Content Writing	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

Text Books

Roz Townsend, *Presentation Skills for the Upwardly Mobile*, Emerald Publishers, 2009

Hill, Monica. Storey Anne, *Speak Easy! Oral Presentation Skills in English for Academic and Professional Use*. Hong Kong University Press, 2000

Kizan , Merrier, Logan and Williams, *Effective business communication* , Cengage Learning, 2008

Reference Books

Bradbury, A. *Successful Presentation Skills* (4th ed.), Kogan Page (2010)

Cottrell, S. *The Study Skills Handbook* (3rd ed.), Palgrave Macmillan (2008)

Abraham, Dulcie. *Planning and Teaching, Practical Suggestions for English in the Classroom*, PenebitFajar Bakit 2022

Hasbany Ghassan : *How to Make Winning Presentation* : Jaico Publication

Web References

<https://www.quora.com>

<https://www.theknowledgeacademy.com>

<https://www.wordstream.com>

<https://presentationskills.me/body-language/>

<https://www.envision-creative.com/top-powerpoint-tips-dos-and-donts/>

Pedagogy Seminar, Quiz, Assignment, Group Discussion

Course Designer Ms.C.Chithra

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)
NATIONALLY ACCREDITED WITH “A” GRADE BY NAAC
ISO 9001:2015 Certified
TIRUCHIRAPPALLI

PG & RESEARCH DEPARTMENT OF COMPUTER SCIENCE



B.Sc Computer Science with Cognitive Systems
2022-2023 and Onwards

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)
PG AND RESEARCH DEPARTMENT OF COMPUTER SCIENCE

VISION

To create an ambience for a quality academic erudition which drives technologically adept, innovative and globally competent graduates with ethical values

MISSION

- To have a breadth of knowledge across the subject areas of Computer Science
- To professionally enrich the students for successful career in Academia, Industry and Research
- To promote and inculcate ethics and code of professional practice among students

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEOs	Statements
PEO 1	LEARNING ENVIRONMENT To facilitate value-based holistic and comprehensive learning by integrating innovative learning practices to match the highest quality standards and train the students to be effective leaders in their chosen fields.
PEO 2	ACADEMIC EXCELLENCE To provide a conducive environment to unleash their hidden talents and to nurture the spirit of critical thinking and encourage them to achieve their goal.
PEO 3	EMPLOYABILITY To equip students with the required skills in order to adapt to the changing global scenario and gain access to versatile career opportunities in multidisciplinary domains.
PEO 4	PROFESSIONAL ETHICS AND SOCIAL RESPONSIBILITY To develop a sense of social responsibility by formulating ethics and equity to transform students into committed professionals with a strong attitude towards the development of the nation.
PEO 5	GREEN SUSTAINABILITY To understand the impact of professional solutions in societal and environmental contexts and demonstrate the knowledge for an overall sustainable development.

PROGRAMME OUTCOMES FOR B.Sc Computer Science /
B.Sc Computer Science with Cognitive Systems /BCA/B.Sc Information Technology

PO NO.	On completion of B.Sc Computer Science / B.Sc Computer Science with Cognitive Systems / BCA/ B.Sc Information Technology Programme, The students will be able to
PO 1	Academic Skills & Social Responsibility Apply Computing, Mathematical and Scientific Knowledge in Various disciplines by understanding the concerns of the society.
PO 2	Critical Thinking and Innovative Progress Design the software applications with varying intricacies using programming languages for innovative learning in techno world to meet the changing demands.
PO 3	Personality Development Perceive Leadership skills to accomplish a common goal with effective communication and understanding of professional, ethical, and social responsibilities.
PO 4	Lifelong Learning Identify resources for professional development and apply the skills and tools necessary for computing practice to gain real life experiences.
PO 5	Creativity and Holistic Approach Create a scientific temperament and novelties of ideas to support research and development in Computer Science to uphold scientific integrity and objectivity.

PROGRAMME SPECIFIC OUTCOMES FOR
B.Sc COMPUTER SCIENCE WITH COGNITIVE SYSTEMS

PSO NO.	The students of B.Sc Computer Science with Cognitive Systems will be able to	POs Addressed
PSO1	Gain knowledge in the core topics of Computer Science and to develop an equal appreciation of current industry standards.	PO1, PO2
PSO2	Equip them as industry ready students and an entrepreneur with significant knowledge on digital ecosystem that provide values to business needs in the area of IT Infrastructure and IT Application, Maintenance & Service Support.	PO2, PO3, PO4, PO5
PSO3	Apply appropriate techniques and skills in various domains of computer science to solve real world problems.	PO1, PO2, PO4,
PSO4	Create awareness on current issues and latest trends in technological development and thereby implement innovative ideas and solutions to existing problems in society.	PO2, PO4, PO5
PSO5	Implement independent projects of their own choice using latest tools and also work as an effective team member to attain the predefined goals.	PO1, PO3, PO5



Cauvery College for Women (Autonomous)
PG & Research department of Computer Science
B.Sc Computer Science with Cognitive Systems
LEARNING OUTCOMES BASED CURRICULUM FRAMEWORK (CBCS – LOCF)
(For the Candidates admitted from the Academic year 2022-2023 and onwards)

Semester	Part	Course	Course Title	Course Code	Inst. Hrs. / week	Credits	Exam			Total
							Hrs.	Marks		
								Int	Ext	
II	I	Language Course-II (LC)	Idaikkaala Ilakkiyamum Puthinamum	22ULT2	5	3	3	25	75	100
			Hindi Literature & Grammar – II	22ULH2						
			Poetry, Textual Grammar and Alankara	22ULS2						
			Basic French-II	22ULF2						
	II	English Language Course-II (ELC)	Functional English for Effective Communication - II	22UE2	6	3	3	25	75	100
	III	Core Course – III (CC)	Computer Networks	22UCG2CC3	5	5	3	25	75	100
		Core Practical-II (CP)	Computer Networks (P)	22UCG2CC2P	2	2	3	40	60	100
		Core Course – IV (CC)	Information Technology Infrastructure Library	22UCG2CC4	2	2	3	25	75	100
		First Allied Course – II (AC)	Statistics	22UCG2AC2	4	3	3	25	75	100
		First Allied Course – III (AC)	Operations Research	22UCG2AC3	4	3	3	25	75	100
			Ability Enhancement Compulsory Course-II (AECC)	Environmental Studies	22UGEVS	2	2	-	100	-
Total					30	23				800
III	I	Language Course-III (LC)	Kaappiyamum Naadakamum	22ULT3	5	3	3	25	75	100
			Hindi Literature & Grammar – III	22ULH3						
			Prose, Textual Grammar and Vakyarachana	22ULS3						
			Intermediate French-I	22ULF3						
	II	English Language Course-III (ELC)	Learning Grammar Through Literature-I	22UE3	6	3	3	25	75	100
	III	Core Course – V (CC)	Java Programming	22UCG3CC5	5	5	3	25	75	100
		Core Practical – III (CP)	Java Programming (P)	22UCG3CC3P	2	2	3	40	60	100
		Core Course-VI (CC)	Infrastructure Management (T&P)	22UCG3CC6	4+2	6	2	50*	50*	100
		Second Allied Course- I (AC)	Digital Computer Fundamentals	22UCG3AC4	4	3	3	25	75	100
	IV	Generic Elective Course- I (GEC)	Office Automation (P)	22UCG3GEC1P	2	2	3	40	60	100
			Basic Tamil – I	22ULC3BT1				25	75	
			Special Tamil – I	22ULC3ST1						
		Total				30	24			

15 Days INTERNSHIP during Semester Holidays

IV	I	Language Course - IV (LC)	Pandaiya Ilakkiyamum	22ULT4	6	3	3	25	75	100
			Urainadaiyum							
			Hindi Literature & Functional Hindi	22ULH4						
			Drama, History of Drama Literature	22ULS4						
			Intermediate French-II	22ULF4						
	II	English Language Course – IV (ELC)	Learning Grammar Through Literature–II	22UE4	6	3	3	25	75	100
	III	Core Course – VII (CC)	Database Management Systems (T&P)	22UCG4CC7	4+2	6	2	50*	50*	100
		Second Allied Course- II (AP)	Digital & Microprocessor (P)	22UCG4AC5P	4	3	3	40	60	100
		Second Allied Course –III (AC)	Microprocessor & Microcontrollers	22UCG4AC6	4	3	3	25	75	100
		Internship	Internship	22UCG4INT	-	2	-	-	-	100
	IV	Generic Elective Course- II (GEC)	Multimedia (P)	22UCG4GEC2P	2	2	3	40	60	100
			Basic Tamil – II	22ULC4BT2				25	75	
			Special Tamil – II	22ULC4ST2						
		Ability Enhancement Compulsory Course-III (AECC)	Campus to Corporate	22UGCM	2	2	-	100	-	100
		Total			30	24				800
V	III	Core Course – VIII (CC)	Software Testing (T&P)	22UCG5CC8	3+2	5	2	50*	50*	100
		Core Course- IX (CC)	Introduction to Digital Technologies (T&P)	22UCG5CC9	4+2	6	2	50*	50*	100
		Core Course – X (CC)	Client Relationship Management (T&P)	22UCG5CC10	4+2	6	2	50*	50*	100
		Core Course –XI (CC)	Virtualization & Cloud	22UCG5CC11	4	4	3	25	75	100
		Discipline Specific Elective – I (DSE)	A. Computer Organization & Architecture	22UCG5DSE1A	5	4	3	25	75	100
			B. Process Management	22UCG5DSE1B						
			C. Computer Graphics	22UCG5DSE1C						
	IV	Ability Enhancement Compulsory Course-IV (AECC)	UGC Jeevan Kaushal - Professional Skills	22UGPS	2	2	-	100	-	100
		Skill Enhancement Course – I (SEC)	Virtualization & Cloud (P)	22UCG5SEC1P	2	2	3	40	60	100
		Total			30	29				700

VI	III	Core Course –XII (CC)	Python Programming (T & P)	22UCG6CC12	4+2	6	2	50*	50*	100
		Core Course –XIII (CC)	Data Structures & Algorithms	22UCG6CC13	6	6	3	25	75	100
		Core Course –XIV (CC)	Cyber Security	22UGCS	5	4	3	25	75	100
		Discipline Specific Elective – II (DSE)	A. Artificial Intelligence	22UCG6DSE2A	5	4	3	25	75	100
			B. Network Security	22UCG6DSE2B						
			C. Big Data & IoT	22UCG6DSE2C						
		Project	Project Work	22UCG6PW	5	4	-	-	100	100
	IV	Skill Enhancement Course – II (SEC)	HTML, CSS, JavaScript (P)	22UCG6SEC2P	2	2	3	40	60	100
	V	Gender Studies	Gender Studies	22UGGS	1	1	-	100	-	100
		Extension activity		22UGEA	0	1	0	-	-	-
Total					30	28				700
Grand Total					180	150				4400

T & P: ESE: 50 (Theory Exam), CIA: 50* (Practical: 40 + Theory :10)

The Internal and external marks for theory and practical courses are as follows:

Course	Internal Marks	External Marks
Theory	25	75
Practical	40	60
Theory & Practical	50	50
Internship	25	75
Project	-	100

For Theory Courses:

The passing minimum for CIA shall be 40% out of 25 marks (i.e. 10 marks)

The passing minimum for End Semester Examinations shall be 40% out of 75marks (i.e.30 marks)

For Practical Courses:

The passing minimum for CIA shall be 40% out of 40 marks (i.e. 16 marks)

The passing minimum for End Semester Examinations shall be 40% out of 60 marks (i.e. 24 marks)

For Theory & Practical Courses:

The passing minimum for CIA shall be 40% out of 50 marks (i.e. 20 marks)

The passing minimum for End Semester Examinations shall be 40% out of 50 marks (i.e.20 marks)

For Internship:

The passing minimum not less than 40% in the aggregate.

For Project Work:

The passing minimum not less than 40% out of 100 marks

Part	Course	No. of Courses	Credits	Total Credits
I	Tamil/ Other Language	4	12	12
II	English	4	12	12
III	Core (Theory& Practical)	17	76	108
	Project Work	1	4	
	Internship	1	2	
	First Allied	3	9	
	Second Allied	3	9	
	DSE	2	8	
IV	GEC	2	4	16
	SEC	2	4	
	AECC-I -Universal Human Values	1	2	
	AECC-II-Environmental Studies	1	2	
	AECC-III-Campus to Corporate	1	2	
	AECC-IV Professional Skills	1	2	
V	Gender Studies	1	1	02
	Extension Activities	–	1	
Total		44		150

CIA COMPONENTS

Theory Courses

Component	Marks
CIA I&CIA II	10
Library/ e-Resources	05
Seminar	05
Assignment	05
TOTAL	25

Practical Courses

Component	Marks
Model Practical	15
Record Note	10
Continuous Performance in Practical	10
Observation Note	05
TOTAL	40

Theory & Practical Courses

Component	Marks
CIA Tests- Theory	2 x 5 =10
Record Note	05
Internal Practical Exam by External Practical Examiner	30
Viva Voce	05
TOTAL	50

Question Paper Pattern

Question Paper Pattern for Theory Courses with 75 marks

BSc Degree Examination

Time: 3 Hrs

Max.Marks:75

Section A

Answer ALL Questions (20 * 1=20)

1 to 5. Choose the best Answer

6 to 10. Fill in the Blanks

11 to 15. Say True or False

16 to 20. Answer in one or Two sentences

Section- B

Answer ALL Questions (5*5=25)

21 (a) or (b)

22 (a) or (b)

23 (a) or (b)

24 (a) or (b)

25 (a) or (b)

Section- C

Answer any THREE questions (3*10=30)

26.

27.

28.

29.

30.

Question Paper Pattern for Theory & Practical Courses with 50 marks

BSc Degree Examination

Time: 2 Hrs

Max.Marks:50

Section A

Answer ALL Questions (10 * 1=10)

1 to 10. Choose the best Answer

Section- B

Answer ALL Questions (5*3=15)

11 (a) or (b)

12 (a) or (b)

13 (a) or (b)

14 (a) or (b)

15 (a) or (b)

Section- C

Answer any FIVE questions (5*5=25)

16.

17.

18.

19.

20.

21.

22.

23.

SEMESTER II

Semester II	Internal Marks: 25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS. / WEEK	CREDITS
22UCG2CC3	COMPUTER NETWORKS	CORE	5	5

Course Objective

- To describe how computer networks are organized with the concept of layered approach
- To inculcate the knowledge in bandwidth utilization, IP addressing and Network Devices
- To understand the CISCO products and routing algorithms

Course Outcome and Cognitive Level Mapping

On the successful completion of the course, students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Define the fundamental concepts of Computer Networks	K1
CO2	Summarize the Process of Data communication between the nodes	K2
CO3	Explain the performance of Devices, Models, Addressing and Routing	K2
CO4	Make use of the various techniques of Networks	K3
CO5	Analyze and Determine the functionalities of different Components of Networks	K4,K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2	3	3	3	2	3
CO2	2	2	2	2	2	2	2	3	2	2
CO3	2	2	3	1	2	2	2	2	2	3
CO4	2	2	2	2	3	2	3	2	2	3
CO5	3	3	3	3	3	2	3	3	2	3

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“ - ” indicates there is no Correlation

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Need of Network Network classifications LAN, MAN, WAN, Data and signals: Periodic Analog signals, Digital signals, bit rate, baud rate, bandwidth, Transmission impairments - Attenuation, Distortion and Noise, Data Communication protocols & standards, Network models - OSI model layers and their functions, TCP/IP protocol suite.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Bandwidth Utilization and Multiplexing Multiplexing - FDM, TDM, Spread spectrum - Frequency hopping spread spectrum, Direct sequence spread spectrum, Transmission media - Guided and unguided media, Switching message, Circuit and Packet switched networks, Datagram networks and Virtual circuit networks.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	IP Addressing IP Addressing Version 4 – IP Addressing Version 6- Subnetting Basic Version 4 - Subnetting VLSM – VLAN: VTP - CDP.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Routing Algorithms Routing algorithms – Congestion Control Algorithms, CISCO PRODUCTS: CISCO Hardware - Cisco Software - Managing Password. Routing: Dynamic Routing protocols:- OSPF – RIP – EIGRP.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Monitoring Network Devices Overview of ACL-NAT- WAN-Wireless LAN: IEEE 802.11- Architecture-MAC sublayer- Addressing Mechanism.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self Study for Enrichment (Not to be included for End Semester Examination) Error Detection and Correction - Domain Name Systems- Remote Logging TELNET - Electronic Mail - File Transfer.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Books

1. B A Forouzan. (2010). *Data Communications and Networking*. (4th Edition). M C Graw Hill Publications. **(Units: I, II, III)**
2. David J.Wetherall, Andrew S.Tanenbaum. (2019). *Computer Networks*, (5th Edition). Pearson Education. **(Units: I, IV)**
3. Silviu Angelescu (2010). *CCNA Certification All-in-One for Dummies*, Wiley Publications. **(Units: III, IV, V)**

Web References

1. <https://www.studytonight.com/computer-networks/overview-of-computer-networks>
2. https://www.tutorialspoint.com/data_communication_computer_network/index.html
3. <https://www.geeksforgeeks.org/transport-layer-responsibilities/?ref=lbp>

Pedagogy

Chalk & Talk, PowerPoint Presentation, Demonstration, e-Content

Course Designer

TCS

Semester II	Internal Marks:40		External Marks:60	
COURSE CODE	COURSE TITLE	CATEGORY	HRS./ WEEK	CREDITS
22UCG2CC2P	COMPUTER NETWORKS (P)	CORE	2	2

Course Objective

- To understand the working principle of CISCO Packet Tracer
- To inculcate knowledge in configuration of switching
- To know the concepts of static and dynamic routing

Course Outcomes and Cognitive Level Mapping

On the successful completion of the course, students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Demonstrate the installation of CISCO Packet Tracer	K2
CO2	Make use of Switch Interface	K3
CO3	Experiment with VLAN	K3
CO4	Implement and examine the router setup and static routing	K3
CO5	Execute dynamic routing in CISCO Packet Tracer	K3

Mapping of CO with PSO and PO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	2	2	3	3	2	2	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“-” indicates there is no correlation.

List of Exercises

1. Installation of Cisco Packet Tracer
2. Configuration of Cisco Packet Tracer
3. Basic Switch Setup
4. Configuring Switch Interfaces
5. VLAN and VTP Configuration
6. Basic Router Setup
7. Configuration of Static Routes
8. Configuration of IP Routing using RIP

Software Essentials:

Cisco Packet Tracer software (Freeware)

Web References

1. https://booksite.elsevier.com/9780123850591/Lab_Manual/Lab_04.pdf
2. <https://www.networkcomputing.com/data-centers/comparing-dynamic-routing-protocols>
3. <https://skillsforall.com/course/getting-started-cisco-packet-tracer>
4. <http://freeciscolab.com/category/lab-scenarios/>
5. <http://freeccnalab.com/>
6. https://virl.scsiraidguru.com/?page_id=858
7. <https://www.packettracernetwork.com/labs/lab1-basicswitchsetup.html>

Pedagogy

Power Point Presentation, Demonstration

Course Designer

TCS

Semester II	Internal Marks: 25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS. / WEEK	CREDITS
22UCG2CC4	INFORMATION TECHNOLOGY INFRASTRUCTURE LIBRARY	CORE	2	2

Course Objective

- To be able to design an Infrastructure Library
- To understand the management principles and its risks in ITIL
- To know the various management practices

Course Outcome and Cognitive Level Mapping

On the successful completion of the course, students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Recall and Rephrase the key concepts of ITIL	K1,K2
CO2	Outline the models of Service Management	K2
CO3	Utilize the various functionalities of Service Management	K3
CO4	Categorize the different types of Management Practices	K4
CO5	Analyze and Explain the Service Management features in Infrastructure Library	K4,K5

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3	2	3	3	3	3
CO2	3	3	3	2	2	3	3	3	3	3
CO3	3	3	3	2	3	2	2	2	3	3
CO4	3	3	3	3	3	3	2	2	3	3
CO5	3	3	2	2	2	2	3	3	2	3

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“ - ” indicates there is no Correlation

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Introduction & Key & concepts of Service management to ITIL 4 Introduction: IT Service Management in the modern world - About ITIL v4 - The structure and benefits of the ITIL v4 Framework. Key Concepts of Service Management: Value and Value Co-Creation, Stakeholders - Products and Services - Service Relationships and Value.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	ITIL 4 Dimension Model of IT Service Management Organization & People: Information & Technology: Partners & Suppliers: Value Streams & Processes - External factors.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	ITIL Service Value System Service Value System (SVS) Overview: Opportunity – demand - and Value. Guiding Principles: Focus on value - Think and work holistically - Keep it simple and practical - Optimize and automate - Principle interaction. Service value chain - Continual improvement.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	ITIL Management Practices: General Management Practices Continual improvement - Information Security management - Knowledge Management - Measurement & reporting - Organizational change Management - Portfolio Management - Project Management - Relationship Management - Risk Management - Service Financial Management - Strategy Management - supplier management - Workforce & talent Management. Technical Management Practices: Deployment Management - Infrastructure & Platform - Software development.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

V	ITIL Management Practices: Service management Practices Availability management - Business analysis Capacity and performance management - Change control - Incident management - IT asset management - Monitoring and event management - Problem management - Release management - Service catalogue management - Service configuration management - Service continuity management - Service design - Service desk - Service level management -Service request management - Service validation and testing.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self Study for Enrichment (Not to be included for End Semester Examination) Foundation Library-Variou s levels of Service Management-Benefits and risks of Management Protocols.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Recommended Book

ITIL Foundation v4 Edition 2. Published by TSO (The Stationary Office), part of WILLIAMS LEA TAG (2019), AXELOS-GLOBAL BEST PRACTICE-ITIL OFFICIAL PUBLISHER. (Online)

Reference Books

1. *ITIL For Beginners: The Complete Beginner's Guide to ITIL Edition 2*, January 2017.
2. *ITIL for Dummies* Copyright @ 2012 John Wiley & Sons Ltd., Chichester ,West Sussex, England.

Web References:

1. https://www.google.co.in/books/edition/ITIL_Foundation_ITIL/HmsYwQEACAAJ?hl=en
2. <https://www.techtarget.com/searchdatacenter/definition/ITIL>
3. <https://www.axelos.com/certifications/itil-service-management/>

Pedagogy

Chalk & Talk, PowerPoint Presentation, Demonstration, e-Content

Course Designer

TCS

SEMESTER III

Semester III	Internal Marks: 25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS./ WEEK	CREDITS
22UCG3CC5	JAVA PROGRAMMING	CORE	5	5

Course Objective

- To provide the basic OOPs concepts in Java
- To comprehend building blocks of OOPs language, inheritance, package and interfaces
- To identify exception handling methods in Java
- To develop GUI based desktop application in project-based learning

Course Outcome and Cognitive Level Mapping

On the successful completion of the course, students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Understand OOPs concepts.	K1
CO2	Demonstrate the concept of object oriented programming through Java	K2
CO3	Apply the concept of interface, exceptions and threads to develop Java programs	K3
CO4	Develop Java program graphics programming	K4
CO5	Create the interactive Java program.	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	3	2	3	2	3	2	3	2
CO2	3	3	3	3	3	2	3	2	3	3
CO3	2	3	3	3	3	2	3	2	3	3
CO4	2	3	3	3	3	2	3	2	3	2
CO5	2	3	3	3	2	2	3	2	3	3

“1”- Slight (Low) Correlation

“3” - Substantial (High) Correlation

“2”- Moderate (Medium) Correlation

“-” - Indicates there is no Correlation

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Fundamentals of Object-Oriented Programming: Basic Concepts of Object-Oriented Programming - Benefits and Applications of OOP. Java Evolution: Java Features - Java Environment - Overview of Java Language: Java Program Structures, Statements – Implementing a Java Program – Java Virtual Machine –. Constants, Variables and Data Types: Constants-Variables – Data Types – Declaration of Variables – Giving Values to Variables – Scope of Variables – Symbolic Constants- Type Casting- Getting Values of Variables.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Operators and Expressions: Introduction - Arithmetic Operators-Relational Operator - Logical Operator - Assignment Operator-increment and decrement Operator-Conditional Operator - Bitwise Operator-Special Operator - Decision Making and Branching: Introduction - Decision making with if statement - Simple if statement -The if ..else Statement-Nesting of if ...else statements - The switch statement - The Conditional Operator(?:Operator) - Decision Making and Looping : While, Do, For Statement, Jump in Loops, Return Statement.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Classes, Objects and Methods: Defining a Class – Fields and Methods Declaration - Creating Objects – Accessing Class Members – Constructors – Method Overloading – Static Members – Nesting of Methods – Inheritance: Extending a Class – Overriding Methods – Final Variables, Methods and Classes – Abstract Methods and Classes – Visibility Control. Arrays, Strings and Vectors: Creating Arrays – One and two Dimensional Arrays - Strings. Interfaces: Multiple Inheritance: Introduction - Defining Interfaces - Extending Interfaces-Implementation Interfaces - Accessing Interfaces Variables	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Packages: Introduction - Java Packages - Using System Packages-Naming conventions - Creating packages - Accessing a package - Using a Package - Adding a class to a package - Multithreaded Programming: Creating Threads – Extending the Thread Class – Thread- Life Cycle of Thread-Using Thread Method - Thread Priority – Synchronization – Managing Errors and Exceptions: Introduction - Types of Errors - Exceptions-Syntax of Exception Handling code-Multiple Catch Statements	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

V	Applet Programming: Building Applet Code - Applet Life Cycle - Creating and Executable Applet – Designing a Web Page using Applet – Passing parameters to Applets - Getting input from the user. Graphics Programming: The Graphics Class- Lines and Rectangles- Circles and Ellipses-Drawing Arcs - Drawing Polygons – Using control loops in Applet.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self Study for Enrichment (Not to be included for End Semester Examination) History of Java - Installing and Configuring Java- Comment Line Arguments – Enumerated Types - Finalizer Methods. Managing Input/Output Files in Java: Stream Classes – Byte Stream Classes – Character Stream Classes – Creation of Files – Reading/Writing Characters – Reading/Writing bytes.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Book

E. Balagurusamy (2019). *Programming with Java*. McGraw Hill Education (India) Pvt. Ltd.

Reference Book

Herbert Schildt. (2019). *The Complete Reference JAVA*. (11th Edition). McGraw Hill Education (India) Pvt. Ltd.

Web References

1. <https://www.slideshare.net/sreedharchowdam1/java-notes-56309340>
2. <https://sites.google.com/a/rcoe.co.in/computer-programming-ii-java/dashboard/java-notes>
3. <https://slideplayer.com/slide/13598881/>

Pedagogy

Chalk and Talk, Power Point Presentation, Demonstration, e-Content

Course Designer

Dr. A. Bhuvaneswari

Semester III	Internal Marks: 40		External Marks:60	
COURSE CODE	COURSE TITLE	CATEGORY	HRS./ WEEK	CREDITS
22UCG3CC3P	JAVA PROGRAMMING (P)	CORE	2	2

Course Objective

- To demonstrate the basic programming components in Java
- To learn how to apply the Object Oriented concepts in Java to develop applications
- To design and develop GUI applications

Course Outcome and Cognitive Level Mapping

On the successful completion of the course, students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Demonstrate and implement the fundamental OOPs concept	K1,K2
CO2	Apply the reusability and develop the Java program	K3
CO3	Analyze the working of exception handling and threads	K4
CO4	Illustrate of the applet concept to design interactive program	K4
CO5	Design the animation program using graphics class	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	2	3	2	3	2	3	2	3	2
CO2	3	2	2	3	3	2	3	2	3	3
CO3	2	3	3	3	3	2	3	2	3	3
CO4	2	3	3	3	3	2	3	2	3	2
CO5	2	3	3	3	2	2	3	2	3	3

“1”- Slight (Low) Correlation

“3” - Substantial (High) Correlation

“2”- Moderate (Medium) Correlation

“-” - Indicates there is no Correlation

List of Exercises

1. Write a Java Program to overload the constructors and instantiate its object.
2. Write a Java program to practice using String class and its methods.
3. Write a Java Program to implement inheritance and demonstrate use of method overriding.
4. Write a Java Program to implement multilevel inheritance by applying various access controls to its data members and methods.
5. Write a program to demonstrate use of implementing and extending interfaces.
6. Write a Java program to implement the concept of creating packages and importing classes from user defined package.
7. Write a program to implement the concept of Thread Class.
8. Write a program to implement the concept of Exception Handling.
9. Write a program using parameter passing to display a message in the Applet.
10. Write an interactive program in Applet
11. Write programs using Graphics class.
 - a. To display basic shapes and fill them
 - b. To animate a ball using applet

Web References

1. <https://www.programiz.com/java-programming>
2. <https://code-exercises.com/>
3. <https://practity.com/765-2/>

Pedagogy

Power Point Presentation and Demonstration.

Course Designer

Dr. A. Bhuvaneswari

Semester III	Internal Marks:50		External Marks:50		
COURSE CODE	COURSE TITLE	CATEGORY	HRS./ WEEK		CREDITS
			T	P	
22UCG3CC6	INFRASTRUCTURE MANAGEMENT (T & P)	CORE	4	2	6

Course Objective

- To describe devices, drivers, configuration task
- To acquire the process of planning and configuring technique
- To monitor and create reports

Course Outcome with Cognitive Level

On the successful completion of the course, students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Define the key concepts of Infrastructure Management	K1
CO2	Outline the functions of Configuration manager	K2
CO3	Utilize the knowledge to deploy client and server	K3
CO4	Analyze the performance of OS and able to monitor the infrastructure	K4
CO5	Categorize and explain the functions of SCCM and SCOM	K4,K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	3	2	2	2	2	3	2
CO2	3	2	2	3	2	2	3	2	3	2
CO3	3	2	3	3	3	3	3	2	3	2
CO4	2	3	2	3	2	2	3	2	3	3
CO5	3	2	2	3	3	3	3	2	3	2

“1”-Slight (Low)Correlation

“3” –Substantial (High)Correlation

“2”-Moderate(Medium)Correlation

“-” - Indicates there is no Correlation

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Windows 10 Client OS Introducing Windows 10, Overview of Deploying Windows 10, Configure Devices and Drivers, Perform Post installation Configuration Tasks, Managing Apps in Windows.	10	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Introduction to SCCM System Center Configuration Manager Overview, SCCM Features and Capabilities, SCCM Setup & Installation, Configuration Manager Basics, Deploying SCCM Client, User and Device Collections in SCCM.	20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Managing Systems with SCCM Application Management using SCCM, Operating System Deployment using SCCM, Endpoint Protection using SCCM, Troubleshooting SCCM Server, Troubleshooting SCCM Clients, Creating Reports using SCCM Reports.	20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Introduction to SCOM System Center Operations Manager Overview, SCOM Features and Capabilities, SCOM Setup & Installation, Operations Manager Basics, Deploying SCOM Clients, Management Packs in SCOM.	20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Monitoring Systems with SCOM Managing & Administering SCOM Environment, Managing Alerts using SCOM, Creating Custom Management Packs and Alerts, Troubleshooting SCOM Server, Troubleshooting SCOM Clients, Creating Reports using SCOM Reporting.	20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self Study for Enrichment (Not to be included for End Semester Examination) Managing and creating global conditions configuration manager queries: Introducing the queries node - Creating queries- ConfigMgr query builder - Criterion types, Operators and values - Writing Advanced queries.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Suggested Readings

1. Woody Leonhard, Ciprian Rusen. (2021). *Windows 10 All-in-One For Dummies*
2. Kerrie Meyler, Gerry Hampson, Saud Al-Mishari, Greg Ramsey, Kenneth van Surksun, Michael Gottlieb Wiles. (2018).
System Center Configuration Manager Current Branch Unleashed. (1st Edition). Sams Publishing.
3. Kevin Greene. (2016). *Getting Started with Microsoft System Center Operations Manager*

Web References

- **Windows 10**
 - [Windows 10 Tutorial - 3.5 Hour Windows Guide + Windows 10 Tips](#)
 - [Windows 10 for Dummies, Newbies, and other Fine Beginners](#)
- **System Center Configuration Manager (SCCM)**
 - [System Center Configuration Manager Overview](#)
 - [SCCM Features and Capabilities](#)
 - [SCCM Setup & Installation](#)
 - [Configuration Manager Basics](#)
 - Deploying SCCM Client
 - [Configuration Manager client application](#)
 - [Client installation methods in Configuration Manager](#)
 - User and Device Collections in SCCM
 - [Introduction to collections in Configuration Manager](#)
 - [Prerequisites for collections in Configuration Manager](#)
 - [How to create collections in Configuration Manager](#)
 - [How to manage collections in Configuration Manager](#)
 - Application Management using SCCM
 - [Create applications in Configuration Manager](#)
 - [Deploy applications with Configuration Manager](#)
 - [Manage Applications](#)
 - [Monitor applications from the Configuration Manager console](#)
 - Operating System Deployment using SCCM
 - [Introduction to operating system deployment in Configuration Manager](#)
 - [Infrastructure requirements for OS deployment in Configuration Manager](#)
 - [Scenarios to deploy enterprise operating systems with Configuration Manager](#)
 - Endpoint Protection using SCCM
 - [Endpoint Protection Overview](#)
 - [Endpoint Protection Client](#)
 - [Example Scenario: Use Endpoint Protection to protect computers from malware](#)
 - [Troubleshooting SCCM Server](#)
 - [Troubleshooting SCCM Clients](#)
 - Creating Reports using SCCM Reports
 - [Operations and maintenance for reporting in Configuration Manager](#)
 - [List of reports in Configuration Manager](#)

- **System Center Operations Manager (SCOM)**
 - System Center Operations Manager Overview
 - Operations Manager key concepts
 - SCOM Features and Capabilities
 - SCOM Setup & Installation
 - Deploying System Center Operations Manager
 - Single-server deployment of Operations Manager
 - Operations Manager Basics
 - Management server
 - Web console server
 - Reporting server
 - Operational database
 - Data warehouse database
 - Deploying SCOM Clients
 - Install Agent on Windows Using the Discovery Wizard
 - Management Packs in SCOM
 - What is in an Operations Manager management pack?
 - Management packs installed with Operations Manager
 - Managing & Administering SCOM Environment
 - How to connect to the Operations and Web Console
 - Finding data and objects in the Operations Manager consoles
 - Using the Operations Manager Operations console
 - Using the Administration workspace in Operations Manager
 - Managing Alerts using SCOM
 - How an alert is produced?
 - Viewing active alerts and details
 - How to suspend monitoring temporarily by using maintenance mode
 - Creating Custom Management Packs and Alerts
 - Management pack templates
 - Create management pack templates
 - Troubleshooting SCOM Server
 - Troubleshooting SCOM Clients
 - Creating Reports using SCOM Reporting
 - Using the Reporting Workspace in Operations Manager
 - How to create reports in Operations Manager
 - How to run, save, and export a report

Lab Exercises:

1. **Windows 10**
 - a. Explain the Deployment Overview of Windows 10
2. **System Center Configuration Manager (SCCM)**
 - a. Installation of SCCM Server
 - b. Deployment of SCCM Agents
 - c. Explain the OS and Software Deployment using SCCM
 - d. Generate Reports for SCCM

3. System Center Operations Manager (SCOM)

- a. Installation of SCOM Server
- b. Deployment of SCOM Agents
- c. Explain the Deployment and Customization of Management Packs in SCOM
- d. Create Alerts and Notifications using SCOM
- e. Generate Reports for SCOM

Pedagogy

Chalk and Talk, Power point Presentation, Assignment, Seminar, e-content

Course Designer

TCS

Semester – III	Internal Marks: 25			External Marks: 75		
COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CREDITS
21UCG3AC4	DIGITAL COMPUTER FUNDAMENTALS	ALLIED	60	4	-	3

Objective

- To acquire the knowledge and understanding of Digital Electronics concepts
- To impart how to design Digital Circuits.
- To acquire the knowledge of Memory Devices
- To understand the working mechanism and design guidelines of different combinational, sequential circuits and their role in the digital system design
- To acquire knowledge of the positive and negative logic, Boolean algebra, logic gates, logical variables, the truth table, number systems, codes, and their conversion from to others.

Course Outcome

On the successful completion of the course, students will be able to:

Co Number	CO statement	Knowledge level
CO 1	Outline the knowledge of Binary conversion, Code system, Logic gates and their circuits, Memory storage.	K1,K2
CO 2	Illustrate the concepts of Digital Principles, Logical Circuit and Memory System	K1,K2
CO 3	Extend the concept of Binary Addition, Subtraction, Multiplication, Division, Boolean Algebra and LogicGates, Memory Storage.	K1,K2
CO 4	Apply the Concepts of number conversion , Combinational Logic circuits and Sequential LogicCircuits, Memory storage:	K2,K3
CO5	Utilize the Digital concepts of Binary numbers and Binary Codes, Logical Circuits and memory storage	K2, K3

Mapping with programme outcome

CO's	PO1	PO2	PO3	PO4	PO5
CO1	L	S	S	S	S
CO2	L	S	S	M	S
CO3	L	S	S	S	S
CO4	L	S	S	S	S
CO5	L	S	S	S	S

S–Strong; M–Medium; L–Low

Syllabus

Unit I Number Systems and Codes 10 Hours

Introduction to Number Systems and Conversion – Binary to Decimal Conversion – Decimal to Binary Conversion – Binary Addition and Subtraction – Binary Multiplication and Division – Representation of Negative Numbers - 1's complement and 2's complement - Complement arithmetic-BCD code, Digital Codes -Excess-3 code, Gray code, Binary to Excess -3 code conversion and vice versa.

Unit II Boolean algebra and Logic Gates 15 Hours

Boolean Algebra: Definitions – Rules and Laws of Boolean Algebra – Boolean Functions – Minterms and Maxterms – Simplification of Boolean expressions – De Morgan's Theorems. Logic Gates: Basic Gates and – Applications of XOR Gate – Universal Building Blocks (UBB) – NAND Gate as UBB – NOR Gate as UBB.

Unit III Combinational Logic Circuits 10 Hours

Design Procedure - Half and Full Adders – BCD Adder - Binary Subtractors – Half and Full Subtractors – Multiplexers (4:1 line) – 1 to 4 line Demultiplexers – Decoders: BCD to decimal - BCD to Seven Segment - Encoders: 4:2 line, Octal to Binary.

Unit IV Sequential Logic Circuits: 10 Hours

Flip Flops – RS Flip Flop – Clocked RS Flip Flop – D Flip Flop – JK Flip Flop – T Flip Flop – Triggering of Flip Flops – Master Slave Flip Flop – Counters – synchronous Counter – Asynchronous/Ripple Counter – Ring Counter.

Unit V Memory and Storage 15 Hours

Classification of memories – ROM – ROM organization – PROM – EPROM – EEPROM – EAPROM, RAM – RAM organization – Write operation – Read operation – Memory cycle Static RAM Cell-Bipolar RAM cell – MOSFET RAM cell – Dynamic RAM cell .

Text Books

S.No .	Authors	Title of the book	Publishers	Year of Publication	Edition
1	V.Vijayendran	Introduction to Integrated Electronics: Digital and Analog	Viswanathan S., Printers & Publishers Pvt Ltd	2009	Revised Edition
2	R.P Jain	Modern digital electronics	Tata Mc Graw Hill, New Delhi	2009	Fourth Edition

Reference Books

S.No .	Authors	Title of the book	Publishers	Year of Publication	Edition
1	A. Anand Kumar	Fundamentals of Digital Electronics	PHI Learning Pvt. Ltd.	2016	4 th Edition
2	D.A.Godse A.P.Godse	Digital Electronics	Technicalpublication s	2008	3 rd Edition

Web References

<https://www.vedantu.com/maths/number-system>
<https://www.electronicshub.org/binary-codes/>
https://www.electronics-tutorials.ws/sequential/seq_1.html
https://www.electronics-tutorials.ws/combinational/comb_1.html
<https://www.geeksforgeeks.org/what-is-a-storage-device-definition-types-examples/>

Pedagogy

Lecture with Discussion, Power point presentation, Group discussion and Seminars.

Course designer

Ms.S.Priya

GENERIC ELECTIVE COURSE – I (GEC)
(For BCA, B.Sc Computer Science with Cognitive, B.Sc IT)
MATHEMATICS FOR COMPETITIVE EXAMINATIONS-I
(2022-2023 Onwards)

Semester III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs /Week	CREDITS
22UMA3GEC1	MATHEMATICS FOR COMPETITIVE EXAMINATIONS-I	GENERIC ELECTIVE COURSE – I	2	2

Course Objective

- **Explain** many short tricks to solve the mathematical problems easily.
- **Apply** the knowledge to **interpret** and **solve** the problems.
- **Explore** the ideas and to solve the Mathematical problems.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Knowledge Level
CO1	On the successful completion of the course, students will be able to Explain the knowledge of the various techniques of Quantitative Aptitude and Reasoning.	K1, K2
CO2	Apply the concepts in solving mathematical problems to succeed in various Competitive examinations.	K3
CO3	Examine various types of Problems using Arithmetic and Reasoning test.	K3
CO4	Apply the different concepts of Arithmetic and Reasoning test to solve the problems.	K3
CO5	Analyze real-life problems and finding solutions.	K4

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	2	2	2	3	2	3	3	3
CO2	3	2	2	2	2	2	3	3	3	3
CO3	3	2	2	2	2	3	3	2	2	3
CO4	3	2	2	2	2	3	3	2	2	2
CO5	3	2	2	2	2	3	3	3	3	2

“1” – Slight (Low) Correlation –

“2” – Moderate (Medium) Correlation –

“3” – Substantial (High) Correlation

– “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Problems on Numbers – Problems on Ages.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	Time & Distance – Calendar – Clocks.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	Data Interpretation: Bar Graphs – Pie Charts – Line Graphs.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	Reasoning (Including Mathematical): Series – Codes – Relationship – Classification.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	Logical Reasoning.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
VI	Self -Study for Enrichment: (Not included for End Semester Examination) Numbers -HCF and LCM of Numbers -Time and Work- Tabulation – Analogy.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

Text Book

1. Aggarwal. R.S . (2015). *Quantitative Aptitude For Competitive Examinations (Fully Solved)*. S.Chand & Company Pvt.Ltd.
2. Dr.Kautilya.K. (2018). *UGC NET/JRF/SET Teaching & Research Aptitude (General Paper - I)*. UPKAR PRAKASHAN, AGRA – 2, Sixth Edition.

Chapters and Sections

UNIT-I	Chapter 7,8	: Pg.No 161 – 181,182-194 [1]
UNIT-II	Chapter 17, 27,28	: Pg.No 384 – 404 ,593 – 596,597-604 [1]
UNIT-III	Chapter 37,38,39	: Pg.No 676 –694,695-708,709-726 [1]
UNIT- IV	Unit-5	: Sections 1-3,5 [2]
UNIT- V	Unit-6	: Pg.No 162 – 190 [2]

Reference Books

1. Edgar Thorpe. (2000). *Test of Reasoning for Competitive Examinations*. Tata McGraw-Hill Publishing Company Limited, New Delhi, 2nd Edition.
2. Sinha. T.K. (2002). *80+ Practice Sets of Quantitative Aptitude for Bank PO Exams*. Arihant Publication (India) limited.
3. Abhijit Guha.(2014). *Quantitative Aptitude for Competitive Examinations*. McGraw-Hill Publishing Company Limited, New Delhi, 5 th Edition.

Web References

1. https://www.youtube.com/watch?v=viKaYznFJbw&list=PL5cSYiJ8KoWGqLLS_w6_G80U5FUEI0T39 .
2. <https://www.youtube.com/watch?v=ufbDCFUn6PY>
3. <https://www.youtube.com/watch?v=hGFGybSQDxQ>
4. https://www.youtube.com/watch?v=_up3mXnsVEc&list=PLOoogDtEDyvs3Qznc3-1DnlpbQSRuWP-z
5. https://www.youtube.com/watch?v=MV00SQU_f7E&list=PLOoogDtEDyvvDNHO_Ba58OrE567nCzzl2
6. <https://www.youtube.com/watch?v=31qZR-BbPIs>
7. <https://www.youtube.com/watch?v=ev2SkXJVAaA&list=PLOoogDtEDyvsBG38tzlj1Zkd0PLxgZwXV>

Pedagogy

Chalk and Talk, Power point presentation, Group Discussion, Seminar, Assignment and Quiz.

Course Designer

1. Dr.L.Mahalakshmi

SEMESTER IV

Semester IV	Internal Marks: 50		External Marks:50		
COURSE CODE	COURSE TITLE	CATEGORY	HRS. / WEEK		CREDITS
22UCG4CC7	DATABASE MANAGEMENT SYSTEMS (T& P)	CORE	T	P	6
			4	2	

Course Objective

- To study the basic concepts of database systems and its Architecture
- To understand Database design and E-R model
- To inculcate knowledge of Relational database management

Course Outcome and Cognitive Level Mapping

On the successful completion of the course, students will be able to

COS	CO STATEMENT	COGNITIVE LEVEL
CO1	Remember and understand the fundamental concepts of databases	K1,K2
CO2	Classify and make use of the database models	K2,K3
CO3	Utilize and Examine database functionality	K3,K4
CO4	Analyze and Select the queries for data retrieval from the database	K4,K5
CO5	Evaluate a database for real-time applications	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	2	2	3	2	2	3	2
CO2	3	3	2	2	2	3	2	3	3	2
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1”-Slight (Low) Correlation

“3” –Substantial (High) Correlation

“2”-Moderate (Medium) Correlation

“-” - Indicates there is no Correlation

Syllabus:**Theory:**

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Database and Database Users: Introduction- Characteristics of the Database Approach- Actors on the Scene- Advantage of Using DBMS Approach- Database System Concepts and Architecture: Data Models, Schema and Instances- Three Schema Architecture and Data Independence – Database Language and Interfaces- The Database System Environment - Centralized and Client/Server Architecture for DBMSs- Classification of Database Management Systems.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Relational Model: Structure of Relational Databases - Database Schema - Keys - Schema Diagrams - Relational Query Languages – Formal Relational Query Languages: The Relational Algebra: Fundamental Operation- Additional Relational Algebra Operations	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	SQL: Overview of the SQL Query Language - SQL Data Definition - Basic Structure of SQL Queries - Additional Basic Operations - Set Operations - Null Values Aggregate Functions - Nested Subqueries - Modification of the Database - Join Expressions - Views - Transactions - Integrity Constraints - SQL Data Types and Schemas – Authorization.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Formal Relational Query Languages : The Tuple Relational Calculus - The Domain Relational Calculus- Database Design and the E-R Model: Overview of the Design Process - The Entity- Relationship Model – Constraints- Reduction to Relational Schemas - Entity- Relationship Design Issues - Extended E-R Features.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Basics of Functional Dependencies and Normalization for Relational Databases: Functional Dependencies- Normal Forms Based on Primary Keys- General Definition of Second and Third Normal Forms- Boyce-Codd Normal Form- Multivalued Dependency and Fourth Normal Form- Join Dependencies and Fifth Normal Form.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self Study for Enrichment (Not to be included for End semester Examinations) Database System Architecture: Centralized and Client Server Architecture- System Server Architectures- Parallel Systems- Distributed Systems	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Books

1. A Ramez Elmasri, Shamkant B Navathe (2019). *Fundamentals of Database Systems* 7th Edition. Pearson India Education Services Pvt. Ltd
2. Abraham Silberschatz, Henry F. Korth, S. Sudharsan. (2017). *Database System Concepts* 6th Edition. Mc Graw Hill Education Pvt. Ltd.

Reference Books

1. Alexis Leon & Mathews Leon. (2008). *Database Management Systems*, Vikas Publishing.
2. Raghuram Ramakrishnan & Johannes Gehrke. (2003). *Database Management Systems* 3rd Edition, Tata McGraw Hill Education Pvt. Ltd

Web References

1. <https://www.tutorialspoint.com/>
2. <https://www.sausriengg.com/e-course-material>
3. <https://www.ntu.edu.sg/home/ehchua/programming/sql/>

Practical

List of Exercises

1. Write SQL queries to perform DDL & DML operations
2. Develop SQL queries to implement the Set operations
3. Develop SQL queries to implement the Aggregate functions
4. Develop SQL queries to implement Join operations
5. Develop SQL queries to implement Nested subqueries
6. Develop SQL queries to create a view and expand it
7. Develop SQL queries to implement String Operations
8. Create a database for a banking enterprise and generate suitable reports

Web References

1. <https://www.w3resource.com/> 2. <https://www.ntu.edu.sg/home/ehchua/programming/sql/>
2. <https://www.tutorialride.com/>

Pedagogy

Quiz, Assignment, Chalk & Talk, Power Point Presentation and e-Contents

Course Designer

Ms. R. Rita Jenifer

Semester IV	Internal Marks: 100		External Marks: -	
COURSE CODE	COURSE TITLE	CATEGORY	HRS./ WEEK	CREDITS
22UGCM	CAMPUS TO CORPORATE	AECC	2	2

Course Objective:

- To develop confidence and competence in corporate world and BPS industry.
- To enhance communication skills, analytical thinking and professional skills.
- To enrich knowledge of vocabulary, writing skills, presentation skills and managing time and stress.

Course Outcome with Cognitive Level

On the successful completion of the course, students will be able to

COs	CO Statement	Cognitive Level
CO1	Recall to relate BPS in Corporate society and in the world.	K1
CO2	Illustrate to understand the campus and corporate life in real life situations.	K2
CO3	Develop etiquette skills in workplace and to be groomed in Professional ethics and management for higher research.	K3
CO4	Apply Professional skills in career and build communication skills for a holistic approach.	K3
CO5	Examine LSRW Skills and create a campus corporate world for higher prospects and better learning to tackle problems in society.	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO4
CO1	3	3	3	3	3	2	2	3	3	3
CO2	3	2	3	3	3	3	3	3	3	3
CO3	3	2	3	3	3	3	2	3	3	2
CO4	2	3	3	3	3	3	3	3	2	3
CO5	2	3	3	3	3	2	3	3	3	3

“1”- Slight (Low) Correlation

“3” - Substantial (High) Correlation

“2”- Moderate (Medium) Correlation

“-” - Indicates there is no Correlation

Syllabus:

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Overview of Corporate: Ice-breaker Session, What is Corporate? - History of Corporate. Overview of BPS Industry: What is BPS? - History of BPS - Benefits of BPS - BPS Industry in World - BPS Industry in India - TCS BPS.	6	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4
II	Change Management (Understand the difference between campus and corporate life and prepare themselves for the same). Learn the Culture - Impact of your attitude and behavior - Consider the language - Establish and maintain relationship - Respect others - Be Confident - Keep on learning & consider the body language.	6	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4
III	Corporate Etiquettes: Dressing and Grooming Skills - Workplace Etiquette - Business Etiquette - Email Etiquette - Telephone Etiquette - Meeting Etiquette & Presentation Skills. Professional Competencies: Analytical Thinking - Listening Skills - Time Management - Team Skills - Assertiveness - Stress Management - Participating in Group Discussion - Interview Facing - Ownership and Attention to detail.	6	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4
IV	Grammar- Phonetics- One on One basic conversation Skill Practice. Reading Comprehension- Listening Comprehension - Improving Vocabulary - Improving Writing Skills and Comprehension while interacting face to face.	6	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4
V	Recitation of short stories - Interview Skills - Group Discussion - Social Conversation Skills- Presentation & One Act Plays.	6	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4
VI	Self-Study for Enrichment (Not to be included for End Semester Examinations) Communication skills, Leadership Qualities, Panel Interview, Screening or Telephonic interview	-	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4

Suggested Readings

1. Alex,K.(2009).*Soft Skills*. New Delhi: S.Chand and Company Ltd.
2. Dr. Rita Shanthakumar and Dr.S.Jayashree Agarwal. *Handbook of Professional Skills*

Web References

1. <https://www.careerizma.com/blog/how-to-behave-corporate-world/>
2. <https://www.business-standard.com/company/tcs-5400/information/company-history>
3. <https://www.britannica.com/science/phonetics>

Pedagogy

Power Point Presentation, Discussion, Quiz

Course Designer

TCS

Assessment Rubrics for 100 Marks

1. **Mock Interview – 25 Marks**
2. **Panel Discussion – 25 Marks**
3. **Quiz – 25 Marks**
4. **Debate (or) Elocution- 25 Marks**

There will be no End Semester Examination for this course. However, the subject teacher will evaluate the above mentioned components based on the performance of the students and submit the marks out of 100 (in the format to be supplied by the COE) with the approval of the concerned Head of the Department to the COE along with CIA marks of other courses.

Semester IV	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HOURS./ WEEK	CREDITS
22UCG4INT	INTERNSHIP	INTERNSHIP	-	2

Objective

- At the end of Semester III, the students should undergo an internship in a reputed IT company or IT division of reputed company
- Minimum number of days for the internship is 15 days
- A project report and a certificate of attendance are to be submitted after completing the internship

EVALUATION PATTERN FOR INTERNSHIP

Internal Components	Marks	External Components	Marks
Institution Profile	5	Regularity	10
Presentation skill	10	Problem solving	10
Report Evaluation	10	Participation and Hands – on training	20
		Professional Attitude	15
		Report Writing	20
Total	25	Total	75

SEMESTER V

Semester V	Internal Mark: 50			External Mark: 50	
COURSE CODE	COURSE TITLE	CATEGORY	HRS. / WEEK		CREDITS
22UCG5CC8	SOFTWARE TESTING (T & P)	CORE	T	P	5
			3	2	

Course Objective

- To understand the basic concepts of Selenium
- To inculcate complex practical skills in Scripting
- To implement the testing concepts using Selenium

Course Outcome and Cognitive Level Mapping

On successful completion of the course, students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Recite the basic concepts of Selenium	K1
CO2	Identify and examine the test scripts to validate functionality using Selenium	K1, K2
CO3	Explain and demonstrate the software testing based on Selenium	K2, K3
CO4	Apply and analyze various problems using Selenium	K3, K4
CO4	Experiment and evaluate the automated test across browsers using Selenium testing tool	K4, K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	2	3	3	2	2	2
CO2	3	3	3	2	2	3	3	2	2	2
CO3	3	3	3	2	2	3	3	2	2	2
CO4	3	3	3	2	1	3	2	2	2	2
CO5	3	3	3	3	1	3	2	2	1	1

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“-” indicates there is no correlation.

Syllabus

Theory:

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Selenium Basics Introduction of Selenium: Selenium's tool suite – How to choose the right Selenium tool for your need- Installation requirements for Selenium. Installing Selenium Components: Installing Selenium IDE – Installing Firebug plug-in – Installing the FirePath – Installing JDK – Installing and configuring Eclipse – Installing WinANT.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Selenium IDE and UI Controls Using Selenium IDE: Selenium IDE interface – Recording Using Selenium IDE – Save and replay the script using IDE – Inserting / Editing Test steps manually – Adding verifications and asserts with the context menu. Managing User Interface (UI) Controls: How does Selenium IDE replay scripts – Locate the elements on a web page – Find XPath using Firefox Add-on.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Create and Verification of WebDriver Script Creating First Selenium WebDriver script: Recording and exporting script from IDE – Configure eclipse to work with Selenium – Running the test. Selenium Methods: Selenium WebDriver methods. Verification Point in Selenium: Need for a verification point – Inserting a verification point – Understand how to implement a few common validations – Assets statements in Junit.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Popup Dialogs, Debugging and Reporting Handling Pop-up dialogs and multiple windows:	9	CO1, CO2,	K1, K2,

	Handle alerts and prompts – Working with multiple windows. Debugging scripts: Debugging features – Run Tests in Debug mode with Breakpoints – Step commands, variables and watch. Reporting in Selenium: Test Framework Reporting Tools – Configuring Junit HTML Reports – Configuring TestNG Report for your tests – Custom reporting in excel sheets or databases.		CO3, CO4, CO5	K3, K4, K5
V	Automation Frameworks and Selenium Functions Automation Frameworks: Why do we need automation frameworks – What exactly is an automation framework – Types of frameworks. Selenium Functions: How to use JavaScript – How to read rows, columns and cell data from table – working with multiple browsers – working with drop-down lists – working with radio buttons and groups – working with checkboxes.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self study for Enrichment (Not to be included for End Semester Examinations) Exception Handling in WebDriver: Handling WebDriver Exceptions, handle Specific Exceptions – Common WebDriver Exceptions.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Book

1. Navneesh Garg. (2014). *Test Automation using Selenium WebDriver with Java: step by step Guide*. AdactIn Group Pty Ltd.

Reference Book

1. Rex Allen Jones – II. (2016). *Absolute beginner Java 4 selenium WebDriver: Come learn how to program automation testing*. Rex Jones II, CSTE, TMap.

Web References

1. https://www.tutorialspoint.com/selenium/selenium_ide.htm
2. <https://www.guru99.com/locate-by-link-text-partial-link-text.html>
3. <https://www.geeksforgeeks.org/selenium-basics-components-features-uses-and-limitations/>
4. <https://www.javatpoint.com/selenium-tutorial>

Practical:

List of Exercises:

1. Write a script to open google.com and verify that title is Google and verify that it is redirected to google.co.in.
2. Write a script to open google.co.in using chrome browser (ChromeDriver).
3. Write a script to open google.co.in using internet explorer (InternetExplorerDriver).
4. Write a script to create browser instance based on browser name.
5. Write a script to search for specified option in the listbox.
6. Write a script to print the content of list in sorted order.
7. Write a script to print all the options. For duplicates add entry only once. Use HashSet.
8. Write a script to close all the browsers without using quit() method.
9. Write generic method in selenium to handle all locators and return web element for any locator.
10. Write generic method in selenium to handle all locators containing dynamic wait and return web element for any locator.

Pedagogy

Chalk and talk, Power Point Presentation, Assignment, Demonstration, Quiz and Seminar.

Course Designer

TCS

Semester V	Internal Marks:50			External Marks: 50	
COURSE CODE	COURSE TITLE	CATEGORY	HRS./ WEEK		CREDITS
22UCG5CC9	INTRODUCTION TO DIGITAL TECHNOLOGIES (T & P)	CORE	T	P	6
			4	2	

Course Objective

- To study the basic concepts of Digital Technologies
- To understand about Robotic Process Automation tools
- To develop bots through Automation Anywhere

Course Outcome and Cognitive Level Mapping

On the successful completion of the course, students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Remember and understand the key concepts of digital technologies	K1,K2
CO2	Classify and make use of current technologies	K2
CO3	Implement information in new situations	K3
CO4	Analyze the different use cases	K4
CO5	Evaluate new ideas	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	2	2	3	2	2	3	2
CO2	3	3	2	2	2	3	2	3	3	2
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1”-Slight (Low) Correlation

“3” –Substantial (High) Correlation

“2”-Moderate (Medium) Correlation

“-” - Indicates there is no Correlation

Syllabus**Theory:**

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Digital Primer: Why is Digital Different, Digital Metaphors, On Cloud 9, A Small Intro to Big Data, social media & Digital Marketing, Artificial Intelligence, Unchain the Blockchain, Internet of Everything, Immersive Technology	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Digital for Industries: Manufacturing and Hi-tech, Banking and Financial Services, Insurance and Healthcare, Retail, Travel & Hospitality, Communications, Media & Information Services and Government.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Automatix – Art of RPA: Introduction - Setting the Context, RPA Prelude, RPA Demystified, RPA vs BPM, RPA Implementations.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	RPA: RPA in Industries, RPA Tools, Automatix. Automation Anywhere: Getting Started with AA Enterprise, Exploring AA Enterprise, AA Enterprise – Architecture.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Automation Anywhere: Knowing the Bots, More About TaskBots. AA Enterprise - Assess your Learning, All About Recorders, Designers, MetaBots and Cognitive RPA.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self Study for Enrichment (Not to Be included for End Semester Examinations) Inspiring Digital Transformation Case Studies: Amazon Business - Netflix - Tesla - Glass door- Walmart.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Books

1. Vaibhav Srivastava (2021). *Getting started with RPA using Automation Anywhere: Automate your day-to-day Business Processes using Automation Anywhere*. 1st Edition, BPB Publications.
2. Arun Kumar Asokan and Nandan Mullakara (2020). *Robotic Process Automation Projects: Build Real-world RPA Solutions Using UiPath and Automation Anywhere*. 1st Edition, Packt Publishing Limited.

Reference Books

1. AdeelJaved, AnumSundrani (2021). Nadia Malik & Sidney Madison Prescott, *Robotic Process Automation using UiPathStudioX: A Citizen Developer's Guide to Hyper automation*. 1st edition, Apress.
2. Jonathan Sireci (2021). *The Project Manager's Guide to RPA: A Practical Guide for Deploying Robotics Process Automation*. Independently Published.

Web References

1. <https://university.automationanywhere.com/training/rpa-learning-trails/getting-started-with-rpa/>
2. <https://university.automationanywhere.com/training/rpa-learning-trails/citizen-developer-basics/>
3. <https://university.automationanywhere.com/training/rpa-learning-trails/tips-and-tricks-beginner/>
4. <https://www.youtube.com/watch?v=G0gVfi7ri7w>
5. <https://www.automationanywhere.com/products/enterprise/community-edition>
6. <https://whatfix.com/blog/digital-transformation-examples/>

Practicals:

List of Exercises

1. Simple bot creation
2. Build a bot to automate the action of getting the title of an active window and to automate the action of closing a notepad window.
3. Build a bot to automate the task of replacing a few characters from a string.
4. Build a bot to automate the task of copying the files from a source folder to the destination folder.
5. Build a bot to automate the task of extracting a table from a webpage.
6. Build a bot to automate the task of extracting a text from a window and displaying the output.
7. Build a bot to automate the task of writing text into a notepad file.
8. Build a bot to automate the task of extracting the data from an Excel File according to some condition and storing the extracted data in another File.

Web References

1. <https://www.edureka.co/blog/automation-anywhere-examples>
2. <https://docs.automationanywhere.com/bundle/enterprise-v2019/page/enterprise-cloud/topics/aae-client/bot-creator/commands/enter-data-into-webform-from-file.html>

Resources

Lab Requirement: Automation Anywhere

Pedagogy

Chalk & Talk, PowerPoint Presentation, Demonstration, e-Content

Course Designer

TCS

Semester V	Internal Marks: 50			External Marks: 50	
COURSE CODE	COURSE TITLE	CATEGORY	HRS. / WEEK		CREDITS
22UCG5CC10	CLIENT RELATIONSHIP MANAGEMENT (T & P)	CORE	T	P	6
			4	2	

Course Objective

- To Acquire knowledge about ServiceNow platform
- To get acquainted with various features of ServiceNow platform and tool
- To use various script types used throughout the platform

Course Outcome and Cognitive Level Mapping

On successful completion of the course, students will be able to

COs	CO Statement	Knowledge Level
CO1	Understand ServiceNow Intermediate Level	K1
CO2	Summarize the features of ServiceNow	K2
CO3	Make use of the database for process automation	K3
CO4	Analyze comprehensive knowledge in ServiceNow Interface	K4
CO5	Compare the script types throughout the platform	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	2	3	3	2	2	2
CO2	3	3	3	2	2	3	3	2	2	2
CO3	3	3	3	2	2	3	3	2	2	2
CO4	3	3	3	2	1	3	2	2	2	2
CO5	3	3	3	3	1	3	2	2	1	1

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“-” indicates there is no correlation.

Syllabus

Theory

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	The Interface - Versions, Frames, Important application menus and modules, Content Frame, UI Settings and Personalization. Lists and Forms – List V2 versus List V3, Lists and Tables, Forms.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	UI Customization – Branding your Instance, Custom Themes, UI-Impacting System Properties, Configuring Service Portal UI, Creating a Custom Homepage, Styling Pages and Widgets, Setting up the War Room page, and Styling the CMS.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Understanding Data and Relationships – One-to-many relationships in ServiceNow, Many-to-many relationships in ServiceNow, Enforcing one-to-one relationships, Defining Custom Relationships, Database table inheritance.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Tasks and Workflows – Important Task fields, Journals, and the activity formatter, Extending the task table, Workflows, SLAs, Approvals, Assignment, Creating Task fields. UI and Data Policies – UI Policies, Reverse if false, Scripting in UI policies, UI Policy Order, Data Policies, Converting between data and UI Policies, Data Policies Vs ACLs.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	User Administration and Security – Users, Groups and Roles, Emails and Notifications, User Preferences, ACLs – Security Rules. Introduction to Scripting – Client-side versus Server-side APIs, where scripting is supported, Integrated development environment.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

VI	Self study for Enrichment (Not to be included for End Semester Examinations) CRM Ticketing System- Ticket Management Tool.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
----	--	---	-------------------------------------	--------------------------------

Text Book

1. Tim Woodruff (2018). *Learning ServiceNow: Administration and development on the Now platform, for powerful IT automation*. 2nd Edition, Packt Publishing Ltd.

Web References

1. <https://www.tutorialspoint.com/>
2. <https://www.sausriengg.com/e-course-material>
3. <https://www.ntu.edu.sg/home/ehchua/programming/sql/>

Practical

List of Exercises

1. Basic Navigation
 - a. Navigation and the User Interface
 - b. Navigating Applications
 - c. Introduction to Searching
2. Managing Records in Lists
 - a. Using Lists
 - b. Finding Information in Lists
 - c. Using Filters and Breadcrumbs
 - d. Editing Lists
 - e. Creating Personal Lists
3. Managing Records in Forms
 - a. Forms

Resources

ServiceNow

Web References

- [ServiceNow Essentials](#)
- [ServiceNow User Interface](#)
- [ServiceNow Fundamentals Simulator](#)
- [ServiceNow System Administrator Training](#)

Pedagogy

Chalk and talk, Power Point Presentation, Assignment, Demonstration, Quiz and Seminar.

Course Designer

TCS

Semester V	Internal Marks: 25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS./WEEK	CREDITS
22UCG5CC11	VIRTUALIZATION & CLOUD	CORE	4	4

Course Objective

- To understand the advent of distributed computing
- To become familiar with the concept of data centers
- To explore the working process of virtualization

Course Outcomes and Cognitive Level Mapping

On the successful completion of the course, students will be able to

CO NUMBER	CO STATEMENT	COGNITIVE LEVEL
CO1	Define the recent trends in computing and list the basics of Cloud Computing	K1
CO2	Interpret about Data centers and its transformations	K2
CO3	Apply the concept of Virtualization and identify the technologies of Virtualization.	K3
CO4	Examine and discover the concept of Cloud Computing	K4
CO5	Assess and perceive the knowledge of Hybrid Cloud	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	2	3	2	2	2	2	2	3	2
CO2	3	2	3	2	3	3	3	2	3	2
CO3	3	3	3	2	3	3	3	2	3	3
CO4	3	2	3	2	3	2	2	2	3	3
CO5	3	3	3	2	3	3	3	2	2	3

“1”–Slight (Low) Correlation

“3”–Substantial (High) Correlation

“2”–Moderate (Medium) Correlation

“-”indicates there is no correlation

Syllabus

Theory:

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Distributed Systems: Overview of Computing Paradigm, Recent trends in Computing, Cluster Computing, Distributed Computing, Utility Computing, Cloud Computing, Evolution of Cloud Computing, Benefits of Cloud Computing	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Data Center: Data Center Overview, Data Center Evolution, Modern Business Requirements for Data Center, Making Agile Datacenter, Data Center Transformations, Future of Data Centers	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Virtualization: Virtualization, Need of Define Virtualization, Virtualization Technologies, Uses of Virtualization, Planning for Virtualization, Virtualization Pitfalls	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Cloud: Cloud Fundamentals, Benefits of Cloud Computing, Type of Clouds, Cloud Computing Services, Cloud Computing Architecture, Virtualization and Cloud Computing, Grid Computing vs Cloud Computing, Security Concerns	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Hybrid Cloud: Hybrid Cloud Fundamentals, Benefits of a Hybrid Cloud, Key Considerations for Hybrid Cloud, Components of Hybrid Cloud, Managing Hybrid Cloud Environments	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self Study for Enrichment (Not included for End Semester Examinations) Devise a model for Grid Computing, Hybrid Cloud Deployment Models	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Books

1. George, C., Jean, D., Tim, K., & Gordon, B. (2012). *Distributed Systems Concepts and Design*. 5th Edition.
2. Josyula, V., Orr, M., & Page, G. (2012). *Cloud Computing: Automating the Virtualized Data Center*. Cisco Systems.
3. Franklin, C., & Chee, B. J. (2019). *Securing the Cloud: Security Strategies for the Ubiquitous Data Center*. Auerbach Publications.

Web References

1. <https://www.tutorialspoint.com/Distributed-Systems>
2. <https://blog.stackpath.com/distributed-system/>
3. <https://www.youtube.com/playlist?list=PLJuCep43JwAV117HMP-ZRwmlEn2mzhha>
4. https://www.youtube.com/playlist?list=PLndqfxA_9SWFsFpP1Db_E8DmzY3K5Wkq
5. <https://www.guru99.com/cloud-computing-for-beginners.html>
6. <https://www.youtube.com/playlist?list=PLDns5jVqEmIoNrmSY0aRHwK5LqGM9u3LL>
7. <https://www.youtube.com/playlist?list=PLospHqNVtKABPTyvxoNW0e4XSgCNdZ40F>

Pedagogy

Chalk and Talk, PowerPoint Presentation, e-Content

Course Designer

TCS

Semester V	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS./ WEEK	CREDITS
22UCG5DSE1B	PROCESS MANAGEMENT	DSE	5	4

Course Objective

- To define, visualize, measure, monitor, and optimize processes
- To know the key principles, models and concepts of Process management
- To understand the risk management and event management concepts

Course Outcome and Cognitive Level Mapping

On the successful completion of the course, the students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Define and summarize the process models in software industry	K1
CO2	Interpret and use the agile concepts in process management	K2
CO3	Apply and correlate the principles of Scrum and DevOps	K3
CO4	Illustrate the strategies work of Design Thinking	K4
CO5	Plan and develop applications using Agile, Scrum and DevOps for real world scenario	K5

Mapping of CO with PO and PSO

CO s	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	3	3	3	3	3	3	3	2	2	3
CO 2	3	3	3	2	2	3	3	3	3	3
CO 3	3	3	2	2	3	3	3	2	3	3
CO 4	3	3	3	3	2	2	3	2	3	3
CO 5	3	2	3	2	3	2	3	3	2	2

“1”–Slight (Low) Correlation

“3”–Substantial (High) Correlation

“2”–Moderate (Medium) Correlation

“-” indicates there is no correlation.

Syllabus:

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Software and Software Engineering: The Nature of Software - The Unique Nature of WebApps - Software Engineering - Software Process, Software Engineering Practice - Software Myths - Software Process Model: A Generic Process Model - Process Assessment and Improvement - Perspective Process Models - Specialized Process Model - The Unified Process - Software Engineering Code of Ethics.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Agile: Introduction to Agile- Understanding Agile Value- Agile Manifesto- Principles of Agile- Agile Methodologies- Advantages and Disadvantages of Agile - Agile anti- patterns, Scaled Agile Framework- Why Lean UX-The Three Foundations of Lean UX- Principles of Lean UX.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Scrum: Definition of Scrum- Uses of Scrum- Scrum Theory- Scrum Values- The Scrum Team-Scrum Events-Scrum Artifacts-Artifact Transparency.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	DevOps: Introduction to DevOps- methodologies-principles, strategies- Automation- Performance Measurement through KPIS and Metrics-Agile and DevOps-Agile Infrastructure, Velocity- Lean Startup UPS.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Design Thinking : Introduction to Design Thinking – Lean thinking, Actionable Strategy- The Problem with Complexity- Vision and Strategy, Defining Actionable Strategy Act to Learn- Leading Teams to Win	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self Study for Enrichment (Not to be included for End Semester Examination) Product and Process-Managing Software Projects- Conventional Methods for Software Engineering- Object Oriented Software Engineering	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Suggested Readings

1. Roger S.Pressman (2019).*Software Engineering A Practitioner's Approach*. 8th Edition, McGraw Hill Education.
2. Andrew Stellman, Jennifer Greene(2014).*Learning Agile*. 1stEdition, O'Reilly.
3. Kallori Vikram (2016).*Introduction to DevOps*.1st Edition.
4. Jonny Schneider(2017).*Understanding Design Thinking, Lean and Agile*. 1stEdition, O'Reilly Media.
5. Ken Schwaber, Jeff Sutherland(2017). *The Scrum Guide*.
6. Jeff Gothelf, Josh Seiden(2016).*Lean UX* . 2nd Edition, O'Reilly.
7. Jeff Gothelf(2017) .*Lean vs. Agile vs. Design Thinking*. 1stEdition, Sense and RespondPress.
8. S.Kenneth Rubin(2015).*Essential Scrum: A Practical Guide to the most popular Agile Process*. 1st Edition, Pearson Education.

Web References

1. <https://www.javatpoint.com/software-engineering-agile-model>
2. <https://scrumguides.org/scrum-guide.html>
3. <https://www.techtarget.com/searchitoperations/definition/DevOps>
4. <https://designthinking.ideo.com/>
5. https://www.tutorialspoint.com/software_engineering/
6. <https://www.atlassian.com/agile/scrum>
7. <https://www.knowledgehut.com/blog/agile/what-is-agile-scrum>
8. <https://www.altexsoft.com/blog/engineering/devops-principles-practices-and-devops-engineer-role/>
9. <https://www.oreilly.com/library/view/understanding-design-thinking/9781491998410/toc01.html>

Pedagogy

Power Point Presentation, Demonstration

Course Designer

TCS

Semester V	Internal Marks: 40		External Marks: 60		
COURSE CODE	COURSE TITLE	CATEGORY	HRS. /WEEK		CREDITS
			T	P	
22UCG5SEC1P	VIRTUALIZATION & CLOUD (P)	SEC	-	2	2

Course Objective

- To install and create Virtual Machines in Workstation Player
- To apply the knowledge of how to Install and Upgrade VMware Tools
- To Implement how to configure various Virtual Machine Hardware Settings

Course Outcomes and Cognitive Level Mapping

On the successful completion of the course, students will be able to

CO NUMBER	CO STATEMENT	COGNITIVE LEVEL
CO1	Demonstrate the workstation Player Preference settings	K2
CO2	Apply the knowledge to install, upgrade and configure on VMware tools	K3
CO3	Examine the knowledge on Virtual Machines	K4
CO4	Analyze the hardware settings of the Virtual Machines	K4
CO5	Assess the Network connections	K5

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	1	3	2	1	1	3	2	1	2	2
CO2	2	3	3	2	2	3	3	1	3	3
CO3	3	3	3	2	2	3	3	1	3	2
CO4	3	2	3	3	2	3	3	1	3	3
CO5	3	3	3	1	1	3	2	1	3	2

“1”–Slight (Low) Correlation

“3”–Substantial (High) Correlation

“2”–Moderate (Medium) Correlation

“-”indicates there is no correlation

Practical

List of Exercises:

1. Installing and Using Workstation Player
 - a. Install Workstation Player on a Windows Host
 - b. Start Workstation Player
 - c. Use the Workstation Player Window
2. Changing Workstation Player Preference Settings
 - a. Configuring Close Behavior Preference Settings
 - b. Configuring Software Updates Settings
 - c. Configuring Workstation Player Color Theme Settings
3. Creating Virtual Machines in Workstation Player
 - a. Preparing to Create a Virtual Machine
 - b. Create a Virtual Machine
4. Installing and Upgrading VMware Tools
 - a. Installing VMware Tools
 - b. Upgrading VMware Tools
 - c. Configure Software Update Preferences
 - d. Configure VMware Tools Updates for a Specific Virtual Machine
5. Starting and Stopping Virtual Machines in Workstation Player
 - a. Start a Virtual Machine in Workstation Player
 - b. Power Off a Virtual Machine in Workstation Player
 - c. Use Ctrl+Alt+Delete to Shut Down a Guest
 - d. Suspend and Resume a Virtual Machine in Workstation Player
 - e. Reset a Virtual Machine in Workstation Player
6. Changing the Virtual Machine Display
 - a. Configure Display Settings for a Virtual Machine
 - b. Use Full Screen Mode in Workstation Player
7. Configuring and Managing Virtual Machines
 - a. Change the Name of a Virtual Machine
 - b. Change the Working Directory for a Virtual Machine
 - c. Change the Virtual Machine Directory for a Virtual Machine
 - d. Change the Memory Allocation for a Virtual Machine
 - e. Moving Virtual Machines
 - f. Delete a Virtual Machine
8. Configuring and Managing Devices
 - a. Configuring DVD, CD-ROM, and Floppy Drives
 - b. Configuring and Maintaining Virtual Hard Disks
 - c. Configuring Keyboard Features
 - d. Modify Hardware Settings for a Virtual Machine
9. Configuring Network Connections
 - a. Understanding Common Networking Configurations
 - b. Configuring Bridged Networking
 - c. Configuring Network Address Translation
 - d. Configuring Host-Only Networking
 - e. Changing a Networking Configuration
10. Configuring Virtual Machine Option Settings
 - a. Configuring General Option Settings for a Virtual Machine
 - b. Configuring Power Options for a Virtual Machine
 - c. Configuring VMware Tools Options for a Virtual Machine
11. Configuring Virtual Machine Hardware Settings

- a. Adding & Removing Hardware to a Virtual Machine
- b. Adjusting Virtual Machine Memory
- c. Configuring Virtual Machine Processor Settings
- d. Configuring and Maintaining Virtual Hard Disks
- e. Configuring Virtual Network Adapter Settings
- f. Configuring Display Settings

Resources

Lab Requirements:

- Download VMware Workstation Player
https://customerconnect.vmware.com/en/downloads/info/slug/desktop_end_user_computing/vmware_workstation_player/16_0

Web References

User Guide: Using VMware Workstation Player for Windows
<https://docs.vmware.com/en/VMware-Workstation-Player-for-Windows/16.0/com.vmware.player.win.using.doc/GUID-B8509247-258C-4B11-8637-5DABACEA4965.html>

Course Designer

TCS

SEMESTER VI

Semester VI	Internal Marks: 50		External Marks:50		
COURSE CODE	COURSE TITLE	CATEGORY	HRS. / WEEK		CREDITS
			T	P	
22UCG6CC12	PYTHON PROGRAMMING (T & P)	CORE	4	2	6

Course Objective

- To understand the concepts of Python programming language
- To understand the knowledge of Operators, Functions and Strings
- To inculcate the knowledge of Graphics programming in Python

Course Outcome and Cognitive Level Mapping

On the successful completion of the course, students will be able to

CO NUMBER	CO STATEMENTS	COGNITIVE LEVEL
CO1	Recall execution and debugging of Python program	K1
CO2	Demonstrate the concept of classes and objects using Python	K2
CO3	Make use of Python features to build real-time applications	K3
CO4	Analyze the various functionalities of Python	K4
CO5	Access the performance of inheritance and method overriding	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	3	2	1	2	3	3	3	3	3
CO2	3	3	3	1	2	3	3	2	3	3
CO3	3	3	3	2	3	3	3	3	3	2
CO4	2	3	2	3	2	3	2	3	2	2
CO5	3	3	2	2	2	3	2	3	3	3

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“ - ” indicates there is no Correlation

Syllabus**Theory**

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Basics of Python Programming: Introduction: Python Character Set – Token - Python Core Data Type - The <i>print</i> () Function - Assigning value to a variable - Multiple Assignments - Writing Simple Programs in Python - The <i>input</i> () Function - The <i>eval</i> () Function- Formatting Number and Strings - Python Inbuilt Functions.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Operators, Expressions, Decision and Loop Control Statements: Operators and Expressions - Arithmetic Operators - Operator Precedence and Associativity - Bitwise Operator. Decision Statement: Boolean Operators - Using Numbers with Boolean Operators - Using String with Boolean Operators - Boolean Expressions and Relational Operators.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Decision Statements and Loop Control Statements: Decision-Making Statements: Conditional Expressions. Loop control Statements: The <i>while</i> Loop - The <i>range</i> () Function-The <i>for</i> Loop - Nested Loops - The <i>break</i> Statement - The <i>continue</i> Statement.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Functions and Strings Syntax and Basics of a Function - Use of a Function - Parameters and Arguments in a Function - The Local and Global Scope of a Variable - The <i>return</i> Statement - Recursive Functions - The Lambda Function. Strings: The <i>str</i> class - Basic Inbuilt Python Functions for String - The <i>index</i> []Operator - Traversing String with <i>for</i> and <i>while</i> Loop - Immutable Strings - String Operators - String Operations.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, ,K5
V	Object-Oriented Programming: Class, Objects and Inheritance Searching Techniques - Introduction to Sorting. Object-Oriented Programming: Class, Objects and Inheritance: Defining Classes - The Self-parameter and Adding Methods to a Class - Display Class Attributes and Methods - Special	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

	Class Attributes – Accessibility - The_ init__ Method(constructor) - _del_()(Destructor method) - Method Overloading in Python - Operator Overloading – Inheritance - Types of Inheritance -Inheritance in Detail - Subclass Accessing Attributes of Parent Class -Multilevel Inheritance in Detail- Multiple Inheritance in Detail - Using <i>super()</i> - Method Overriding.			
VI	Self Study for Enrichment (Not to be included for End Semester Examination) Introduction to Computers and Python Programming: History of Python – Executing Python Programs – Commenting in Python – Multiline Statement in Python – Membership Operator – Identity Operator – The Compound Assignment Statement – Variable Length Non-keyword and Keyword arguments – The String Operators – Exception Handling: Errors and Exceptions – Handling Exception.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Book

1. Ashok Namdev Kamthane, Amit Ashok Kamthane (2018). *Programming and Problem Solving with Python*. (2nd Edition). MC Graw Hill Education.

Reference Books

1. Jeeva Jose and P. Sojan Lal (2016). *Introduction to Computing and Problem Solving with Python*, (1st Edition). Khanna Book Publishing
2. Ch. Satyanarayana, M Radhika Mani & B N Jagadesh (2018). *Python Programming*. (Kindle Edition). Universities Press.

Web References

1. <https://www.tutorialspoint.com/python/index.htm>
2. <https://www.guru99.com/python-tutorials.html>
3. <https://www.programiz.com/python-programming>

Practical

List of Exercises

1. Types of Operators
2. Control Flow
3. Strings
4. Functions
5. Classes and Objects
6. Constructors
7. Inheritance
8. Method Overriding

Web References

1. <https://www.shahucollegelatur.org.in/practical.pdf>
2. https://www.w3schools.com/python/python_operators.asp
3. <https://mindmajix.com/python/basic-operators-in-python>
4. <https://www.cs.otago.ac.nz/staffpriv/mccane/Downloads/PracticalProgramming.pdf>

Pedagogy

Chalk & Talk, PowerPoint Presentation, Demonstration e-Content

Course Designers

Ms. T. Julie Mary

A. Anandhavalli

Semester: VI	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS./WEEK	CREDITS
22UCG6CC13	DATA STRUCTURES & ALGORITHMS	CORE	5	5

Course Objective

- To learn the concept of Data Structure and different ways of organizing data and performing various operations on that data.
- To articulate the essential components of data structures like Stack, Queue, List, Trees& Graphs.
- To get familiarize knowledge with designing an algorithm using data structures

Course Outcomes and Cognitive Level Mapping

On the successful completion of the course, students will be able to:

CO Number	CO Statement	Cognitive level
CO1	Recognize and Understand data organization, data structure operations	K1,K2
CO2	Design the various types of algorithms and data structure	K2,K3
CO3	Demonstrate problems to represent the linear and nonlinear structures by recognizing its memory representation and traversal techniques.	K3,K5
CO4	Implement and evaluate various techniques of algorithms using suitable data structures.	K4,K5
CO5	Analyze the different design technique of algorithm and recommend the technique for practical problems	K4,K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2	3	3	3	3	2
CO2	3	3	3	3	2	3	3	3	3	2
CO3	3	3	3	3	3	3	3	3	3	2
CO4	3	3	2	2	2	2	2	2	2	2
CO5	3	3	2	2	2	2	2	2	2	2

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“-” indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Data Structures Introduction and Overview: Introduction- Basic Terminology –Data Structures- Data Structure Operations. Arrays – Introduction – Linear Arrays-Representation of Linear Arrays in Memory- Traversing Linear Arrays-Multidimensional Arrays-Two Dimensional Arrays – Representation of Two Dimensional Arrays in Memory. Stacks& Queues: Stacks-Array Representation of Stacks - Arithmetic Expressions, Polish Notation – Recursion – Queues– Deques-Priority Queues.	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
II	Linked Lists: Overview of Linked List – Representation of Linked Lists in Memory – Traversing a Linked List –Searching a Linked List- Memory allocation; Garbage Collection-Insertion into a Linked List – Deletion from a Linked List – Two-way Lists – Operations on Two-way Lists.	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
III	Trees & Graphs: Trees: Introduction- Binary Trees – Representing Binary Trees in Memory – Traversing Binary Trees – Header nodes ;Threads –Binary Search Trees. Graphs: Graph Theory Terminology – Sequential Representation of Graphs: Adjacency Matrix, Path Matrix – Linked representation of a Graph– Traversing a Graph.	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
IV	Algorithm Introduction: Algorithm-Algorithm Specification-Performance Analysis- Divide & Conquer: General method- Binary Search-Finding maximum and minimum-Merge Sort-Quick sort. The Greedy Method: General Method - Knapsack Problem – Job Sequencing With Deadlines.	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
V	Dynamic programming: General method-All-pairs shortest paths- Single source shortest path-Travelling Sales Person problem. Back tracking: The General Method – The 8-Queens Problem – Sum of Subsets – Graph Coloring.	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
VI	Self Study for Enrichment (Not To Be Included for End Semester Examinations) Linear search-Sorting list elements-Searching and inserting elements in binary search trees- Spanning trees-Minimum cost spanning trees- Insertion sort-Bubble sort- Selection Sort- Heap Sort- Branch and bound method.	-	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5

Text Books

1. Seymour Lipschutz. (2008). *Data Structures*, McGraw Hill Education India Private Limited, New Delhi, Revised First Edition. **(Unit I, II & III)**
2. Ellis Horowitz, Sartaj Sahni and Sanguthevar Rajasekaran, (2015), *Fundamentals of Computer Algorithms*, 2nd Edition, Universities Press. **(Unit IV & V)**

Reference Books

1. Jean-Paul Tremblay and Paul G. Sorenson, (2017) , *An Introduction to Data Structures with Applications*. Second Edition. Tata McGraw-Hill, New Delhi.
2. Alfred V. Aho, John E. Hopcroft and Jeffry D. Ullman. (2006). *Data Structures and Algorithms*. Pearson Education, New Delhi.
3. Ellis Horowitz, Sartaj Sahni. (2010), *Fundamentals of Data Structure*. Galgotia Publications.

Web References

1. www.studytonight.com/data-structures
2. <https://lpuguidecom.files.wordpress.com/2017/04/fundamentals-of-data-structures-ellis-horowitz-sartaj-sahni.pdf>
3. <https://www.slideshare.net/canaokar/fundamentals-of-computer-algorithms-by-horowitz-sahni-rajasekaran>
4. <https://www.geeksforgeeks.org/data-structures/>

Pedagogy

Chalk & talk, Assignment, Power Point Presentation, Seminar, e-Content.

Course Designer

Ms.K.Sangeetha

Semester VI	Internal Marks: 25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS. /WEEK	CREDITS
22UCG6DSE2C	BIG DATA & IOT	DSE	5	4

Course Objective

- To become familiar with the fundamental concepts of Big Data.
- To provide an overview of apache Hadoop.
- To learn the tools and techniques for handling large datasets.
- To understand the concepts of Internet of things.

Course Outcome and Cognitive Level Mapping

On the successful completion of the course, students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Recall the overview and its classifications of a growing field of big data analytics, Big data technology and IoT	K1
CO2	Relate HADOOP and MAPREDUCE, IoT and M2M	K2
CO3	Apply NoSQL, MongoDB Queries and IoT technology	K3
CO4	Infer knowledge from Big data and IoT applications	K4
CO5	Recommend the required features of Bigdata and IoT for Real time environment	K5

Mapping of CO with PO and PSO

COs/POs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	3	3	2	2	3	1	3	3
CO2	3	2	3	3	2	2	3	2	3	2
CO3	3	3	3	2	2	3	3	2	3	3
CO4	3	3	3	3	3	3	3	2	3	3
CO5	3	3	3	3	3	2	3	2	3	3

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“-” indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Types of Digital Data: Classification of Digital Data - Characteristics of Data-Evolution of Big Data-Definition of Big Data-Challenges with Big Data- Characteristics of Big Data-Other characteristics of data - Need for Big Data. Big Data Analytics: Characteristics of Big Data analytics- Need for Big Data analytics-Classification of analytics-Greatest challenges that prevent businesses from capitalizing on Big Data – Importance of Big Data analytics – Data science- Data scientist- Terminologies used in Big Data environments-Analytics tools.	16	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
II	Big data Technology: NoSQL - Hadoop. Introduction to Hadoop: Introducing Hadoop-Need for Hadoop-Limitations of RDBMS - RDBMS versus HADOOP-History of Hadoop – Hadoop overview-Interacting with Hadoop ecosystem –HDFS - Processing Data with Hadoop MapReduce – Managing resources and applications with Hadoop YARN-Introduction to MAPREDUCE programming.	16	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
III	Introduction to MongoDB: Need for MongoDB - Terms used in RDBMS and MongoDB - Data types in MongoDB- MongoDB Query Language	13	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
IV	Introduction to IoT: Physical Design of IoT – Logical Design of IoT – IoT Enabling Technologies – IoT Levels & Deployment Templates – Domain Specific IoTs: Home Automation – Cities – Environment – Energy – Logistics – Retail – Agriculture.	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
V	IoT and M2M: Introduction – M2M – Different between IoT and M2M – SDN and NFV for IoT– IoT System Management with NETCONF-YANG: Simple Network Management Protocol (SNMP)- Network operator Requirement.	15	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5
VI	Self Study for Enrichment (Not included for End Semester Examinations) Columnar Database – NoSQL Queries -IoT solutions using Raspberry Pi and Arduino simulator	-	CO1 CO2 CO3 CO4 CO5	K1 K2 K3 K4 K5

Text Books

1. Seema Acharya, S. C. (2015). *Bigdata and Analytics*, Wiley India Pvt Ltd, Bengaluru (**Unit I – III**)
2. Arshdeep Bahga, Vijay Madisetti. (2014). *Internet of Things A Hands on Approach*, University press (**Unit IV – V**)

Reference Books

1. V.K.Jain .(2017).*Big Data and Hadoop*. Khanna Book Publishing Co.(P) Ltd
2. V.Bhuvaneswari T.Devi. (2016).*Bigdata Analytics A Practioner's Approach*, Bharathiyar University, Coimbatore
3. Raj Kamal (2017), *Internet of things Architecture and Design Principles*, McGraw Hill
4. David Hanes, Gonzalo Salgueiro, Patrick Grossetete, Robert Barton. (2017), *IoT Fundamentals, Networking Technologies*. Cisco Press

Web References

1. <https://www.mongodb.com/>
2. <https://www.tutorialspoint.com/cassandra/index.html>
3. <https://www.edureka.co/blog/mapreduce-tutorial/>
4. <https://github.com/connectiot/iottoolkit>
5. <https://www.arduino.cc/>
6. <https://www.tutorialspoint.com/>
7. https://emerging-researchers.org/wp-content/uploads/2021/03/ahmed_a_le6.pdf

Pedagogy

Chalk and talk, PPT, e-Content

Course Designer

1. Dr.J.Sangeetha
2. Dr.M.Anandhi
3. Dr.A.Bhuvaneswari

Semester VI	Internal Marks:40			External Marks:60	
COURSE CODE	COURSE TITLE	CATEGORY	HRS./ WEEK		CREDITS
			T	P	
22UCG6SEC2P	HTML, CSS, JavaScript (P)	SEC	-	2	2

Course Objective

- To recognize and code the basic structure of web page
- To design and implement static and dynamic website
- To develop web based application using suitable browser side scripting language

Course Outcomes and Cognitive Level Mapping

On the successful completion of the course, students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Understand the basic concept of web design	K2
CO2	Apply custom styles to style the web	K3
CO3	Build real time web applications	K3
CO4	Analyze a web page and identify its elements and attributes	K4
CO5	Compare static and dynamic web page	K5

Mapping of CO with PO and PSO

CO s	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	2	2	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	2	3	3	3	2	3	2
CO4	3	2	3	3	3	3	3	3	3	3
CO5	3	2	3	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“-” indicates there is no Correlation

List of Exercises

1. Write a HTML program for the demonstration of Tags, List, Hyperlinks, Multimedia and Map.
2. Write a HTML program using Tables.
3. Design Student Registration Form in HTML.
4. Write a HTML program to develop a Static web page.
5. Develop and demonstrate the usage of inline, internal and external style sheet using CSS.
6. Design a webpage using CSS classes and the class attribute.
7. Write a JavaScript program to validate User Registration page
 - a) First Name (Name should contain alphabets and the length should not be less than 6 characters)
 - b) Password (Length of the password should not be less than 6 characters)
8. Write a JavaScript program to perform different Mathematical operations.
9. Demonstrate JavaScript Event-Handler.
10. Demonstrate Database connectivity in JavaScript.

Web References

1. https://www.w3schools.com/html/html_scripts.asp
2. <https://www.studytonight.com/javascript/javascript-events>
3. https://www.tutorialspoint.com/html/html_basic_tags.htm
4. <https://www.javatpoint.com/javascript-form-validation>

Pedagogy

Power Point Presentation, Demonstration

Course Designer

Ms.R.Ramya

Semester VI	Internal Marks: -		External Marks: 100	
COURSE CODE	COURSE TITLE	CATEGORY	HRS./WEEK	CREDITS
22UCG6PW	PROJECT WORK	PROJECT	5	4

Course Objective:

- To build problem solving ability and technical skills through the application of theoretical concepts for modeling the real world problems using latest technologies

Project Evaluation

The project work shall be done by either an individual or a group of students. Two components will be considered in assessing the project work:

- Dissertation
- Viva Voce

The Dissertation/Project work submitted will be evaluated based on the following components:

- Problem Identification
- Domain Knowledge
- Documentation
- Presentation

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)
Nationally Accredited (III Cycle) with 'A' Grade by NAAC
ISO 9001:2015 Certified
Annamalai Nagar, Trichy

PG & RESEARCH DEPARTMENT OF COMPUTER SCIENCE



B.Sc Computer Science with Cognitive Systems
2021-2022 Onwards

B.Sc Computer Science with Cognitive Systems

PROGRAMME OUTCOMES

- To gain knowledge in the core topics of Computer Science and to develop an equal appreciation of current industry standards
- To equip industry ready students and teaching ecosystem that provide values to business needs in the area of IT Infrastructure and IT Application, Maintenance & Service Support
- Learn to comprehend and integrate learners research practice in computational languages, Artificial Intelligence, Machine Learning, Robotics and Human Computer Integration
- To create awareness on current issues and latest trends in technological development and thereby implement innovative ideas and solutions to existing problems in society



Cauvery College for Women (Autonomous)
PG & Research Department of Computer Science
B.Sc Computer Science with Cognitive Systems
 (For the Candidates admitted from the Academic year **2021-2022** and onwards)

Semester	Part	Course	Title	Course Code	Inst. Hrs/ Week	Credits	Exam			Total
							Hrs.	Marks		
								Int.	Ext.	
IV	I	Language Course - IV (LC) – Tamil */ Other Language**#	Pandaiya Ilakkiyam	19ULT4	6	3	3	25	75	100
			Letter writing, General Essays, Technical Terms, Proverbs, Idioms & Phrases, Hindi Literature-4	19ULH4						
			Communication in French- IV	19ULF4						
			Drama, History of Drama Literature	19ULS4						
	II	English Language Course- IV(ELC)	Reading and Writing for Effective Communication-II	19UE4	6	3	3	25	75	100
	III	Core Course – VII(CC)	Database Management Systems (Theory & Practicals)	21UCG4CC7	4+2	5	2	50*	50*	100
		Second Allied Course– II	Digital & Microprocessor Practicals	21UCG4AC1P	3	3	3	40	60	100
		Second Allied Course– III	Microprocessor & Microcontrollers	21UCG4AC5	3	3	3	25	75	100
	IV	Non Major Elective II	Multimedia Practical	21UCG4NME2P	2	2	3	40	60	100
			Basic Tamil	19ULC4BT2				25	75	
			Special Tamil	19ULC4ST2						
		Skill Based Elective – I	HTML,CSS, JavaScript Practical	21UCG4SBE1AP	2	2	3	40	60	100
			Computer Hardware and Trouble Shooting Practical	21UCG4SBE1BP						
		Behavioral Oriented Course	Campus to Corporate	21UGCM	2	1	-	100	-	100
	TOTAL				30	22				800

V	III	Core Course – VIII (CC)	Software Testing (Theory & Practicals)	21UCG5CC8	3+2	5	2	50*	50*	100
		Core Course- IX (CC)	Introduction to Digital Technologies (Theory & Practicals)	21UCG5CC9	4+2	5	2	50*	50*	100
		Core Course – X (CC)	Client Relationship Management (Theory & Practicals)	21UCG5CC10	4+2	5	2	50*	50*	100
		Core Course - XI(CC)	Virtualization & Cloud	21UCG5CC11	4	4	3	25	75	100
		Major based Elective – I	Computer Organization & Architecture	21UCG5MBE1A	5	5	3	25	75	100
	Process Management		21UCG5MBE1B							
	Computer Graphics		21UCG5MBE1C							
	IV	Skill based Elective –II	Virtualization & Cloud Practical	21UCG5SBE2AP	2	2	3	40	60	100
			Dot Net Practical	21UCG5SBE2BP						
		UGC Jeevan Kaushal Life Skills	Professional Skills	21UGPS	2	1	3	25	75	100
	TOTAL					30	27			
VI	III	Core Course – XII (CC)	Python Programming (Theory & Practicals)	21UCG6CC12	4+2	5	2	50*	50*	100
		Core Course – XIII (CC)	Data structures & Algorithms	21UCG6CC13	6	5	3	25	75	100
		Major Based Elective – II	Artificial Intelligence	21UCG6MBE2A	5	5	3	25	75	100
			Mobile Computing	21UCG6MBE2B						
			Data mining & Warehousing	21UCG6MBE2C						
		Major Based Elective – III	Network Security	21UCG6MBE3A	5	5	3	25	75	100
			Human Computer Interaction	21UCG6MBE3B						
			Big Data & IoT	21UCG6MBE3C						
		Project	Project Work	21UCG6PW	5	4	-	-	100	100
	IV	Skill Based Elective – III	Mobile Application Development Practical	21UCG6SBE3AP	2	2	3	40	60	100
			MONGODB Practical	21UCG6SBE3BP						
	V	Gender Studies	Gender Studies	19UGGS	1	1	3	25	75	100
		Extension activity		19UGEA	0	1	0	-	-	0
TOTAL					30	28				700
					180	140				4200

Theory & Practicals: ESE: 50 (Theory Exam), CIA: 50* (Practicals:40 + Theory :10)

For Theory Courses:

- The passing minimum for CIA shall be 40% out of 25 marks (i.e. 10 marks)
- The passing minimum for End Semester Examinations shall be 40% out of 75marks (i.e.30 marks)

For Practical Courses:

- The passing minimum for CIA shall be 40% out of 40 marks (i.e. 16 marks)
- The passing minimum for End Semester Examinations shall be 40% out of 60 marks (i.e. 24 marks)

For Theory & Practicals Courses:

- The passing minimum for CIA shall be 40% out of 50 marks (i.e. 20 marks)
- The passing minimum for End Semester Examinations shall be 40% out of 50 marks (i.e.20 marks)

For Project Work:

The passing minimum not less than 40% out of 100 marks

Courses & Credits for C.Sc with Cognitive Systems (2021-2022)

	Course	No. of Courses	Credits	Total Credits
I	Tamil/ Other Language	4	12	12
II	English	4	12	12
III	Core (Theory& Practicals)	14	61	98
	Project Work	1	4	
	First Allied	3	9	
	Second Allied	3	9	
	MBE	3	15	
IV	NME	2	4	16
	SBE	3	6	
	Universal Human Values	1	2	
	Environmental Studies	1	2	
	Professional Skills	1	1	
	Behavioural Oriented Course	1	1	
V	Gender Studies	1	1	02
	Extension Activities	-	1	
	Total	42		140

CIA COMPONENTS

Theory Courses

Component	Marks
CIA I&CIA II	10
Library/ e-Resources	05
Seminar	05
Assignment	05
TOTAL	25

Practical Courses

Component	Marks
Model Practical	15
Record Note	10
Continuous Performance in Practical	10
Observation Note	05
TOTAL	40

Theory & Practical Courses

Component	Marks
CIA Tests- Theory	2 x 5 =10
Record Note	05
Internal Practical Exam by External Practical Examiner	30
Viva Voce	05
TOTAL	50

Question Paper Pattern

Question Paper Pattern for Theory Courses with 75 marks

BSc Degree Examination **Max.Marks:75**
Time: 3 Hrs

Section A

Answer ALL Questions (20 * 1=20)

1 to 5. Choose the best Answer

6 to 10. Fill in the Blanks

11 to 15. Say True or False

16 to 20. Answer in one or Two sentences

Section- B

Answer ALL Questions (5*5=25)

21 (a) or (b)

22 (a) or (b)

23 (a) or (b)

24 (a) or (b)

25 (a) or (b)

Section- C
Answer any THREE questions (3*10=30)

26.

27.

28.

29.

30.

Question Paper Pattern for Theory & Practical Courses with 50 marks

BSc Degree Examination **Max.Marks:50**
Time: 2 Hrs

Section A

Answer ALL Questions (10 * 1=10)

1 to 10. Choose the best Answer

Section- B

Answer ALL Questions (5*3=15)

11 (a) or (b)

12 (a) or (b)

13 (a) or (b)

14 (a) or (b)

15 (a) or (b)

Section- C

Answer any FIVE questions (5*5=25)

16.

17.

18.

19.

20.

21.

22.

23.

SEMESTER IV

Semester IV	Internal Marks: 50			External Marks:50		
COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CREDITS
21UCG4CC7	DATABASE MANAGEMENT SYSTEMS (Theory &Practicals)	CORE	60+30 =90	4	2	5

Objective

- To study the basic concepts of database systems and its Architecture
- To understand Database design and E-R model
- To understand the strategies for storing objects, transaction management, and security
- To inculcate knowledge of Relational database management

Course Outcomes

On the successful completion of the course, students will be able to

COs	CO Statement	Knowledge Level
CO1	Remember and understand the fundamental concepts of databases	K1,K2
CO2	Classify and make use of the database models	K2,K3
CO3	Utilize and Examine database functionality	K3,K4
CO4	Analyze and Select the queries for data retrieval from the database	K4,K5
CO5	Evaluate a database for real-time applications	K5

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4
CO1	S	S	M	S
CO2	S	S	S	S
CO3	S	M	S	M
CO4	S	S	S	M

S–Strong; M–Medium; L –Low

Syllabus

UNIT I

12 HOURS

Database and Database Users: Introduction-Characteristics of the Database Approach-Actors on the Scene-Advantage of Using DBMS Approach-**Database System Concepts and Architecture:** Data Models, Schema and Instances-Three Schema Architecture and Data Independence –Database Language and Interfaces-The Database System Environment -Centralized and Client/Server Architecture for DBMSs-Classification of Database Management Systems.

UNIT II

12 HOURS

Relational Model: Structure of Relational Databases -Database Schema - Keys - Schema Diagrams - Relational Query Languages –**Formal Relational Query Languages: The Relational Algebra:** Fundamental Operation-Additional Relational- Algebra Operations

UNIT III

12 HOURS

SQL: Overview of the SQL Query Language - SQL Data Definition - Basic Structure of SQL Queries - Additional Basic Operations - Set Operations - Null Values Aggregate Functions - Nested Subqueries - Modification of the Database -Join Expressions - Views - Transactions - Integrity Constraints - SQL Data Types and Schemas – Authorization.

UNIT IV

12 HOURS

Formal Relational Query Languages : The Tuple Relational Calculus - The Domain Relational Calculus- **Database Design and the E-R Model:** Overview of the Design Process - The Entity-Relationship Model –Constraints-Reduction to Relational Schemas - Entity-Relationship Design Issues - Extended E-R Features.

UNIT V

12 HOURS

Basics of Functional Dependencies and Normalization for Relational Databases: Functional Dependencies-Normal Forms Based on Primary Keys-General Definition of Second and Third Normal Forms-Boyce-Codd Normal Form-Multivalued Dependency and Fourth Normal Form- Join Dependencies and Fifth Normal Form.

Text Books

S.NO	AUTHORS	TITLE OF THE BOOK	PUBLISHER / EDITION	YEAR OF PUBLICATION
1	RamezElmasri.Shamkant B Navathe(Unit I,V)	Fundamentals of Database Systems	Pearson India Education Services Pvt. Ltd. 7th Edition	2019
2	Abraham Silberschatz, HenryF.Korth,S. Sudharsan(Unit II,III,IV)	Database System Concepts	Mc Graw Hill Education Pvt. Ltd,6th Edition	2017

Reference Books

S.NO	AUTHORS	TITLE OF THE BOOK	PUBLISHER / EDITION	YEAR OF PUBLICATION
1	Alexis Leon & Mathews Leon	Database Management Systems	Vikas Publishing	2008
2	Raghu Ramakrishnan & Johannes Gehrke	Database Management Systems	Tata McGraw Hill Education Pvt. Ltd 3 rd Edition	2003

Web References

1. <https://www.tutorialspoint.com/>
2. <https://www.sausriengg.com/e-course-material>
3. <https://www.ntu.edu.sg/home/ehchua/programming/sql/>

Practicals

List of Exercises

1. Write SQL queries to perform DDL & DML operations
2. Develop SQL queries to implement the Set operations
3. Develop SQL queries to implement the Aggregate functions
4. Develop SQL queries to implement Join operations
5. Develop SQL queries to implement Nested subqueries
6. Develop SQL queries to create a view and expand it
7. Develop SQL queries to implement String Operations
8. Create a database for a banking enterprise and generate suitable reports

Web References

1. <https://www.w3resource.com/>
2. <https://www.ntu.edu.sg/home/ehchua/programming/sql/>
3. <https://www.tutorialride.com/>

Pedagogy

Quiz, Assignment, Chalk&Talk, Powerpoint Presentation and e-Contents

Course Designer

Ms.R.Rita Jenifer

Semester – IV	Internal Marks: 40			External Marks: 60		
COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CREDITS
21UCG4AC1P	DIGITAL & MICROPROCESSOR PRACTICALS	ALLIED	45	-	3	3

Objective

- To enable the student to gain practical knowledge
- To acquire basic understanding of laboratory technique
- To understand the theory and develop practical application skills

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Recall the principles of electronics.	K1
CO2	Interpret findings using the correct physical scientific framework.	K2
CO3	Develop skills in handling equipment.	K3
CO4	Design electronic circuits.	K3
CO5	Build hands on experience using various techniques.	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	M	S	S	S	S
CO2	M	S	S	M	M
CO3	S	M	S	M	M
CO4	S	S	M	S	M
CO5	S	M	M	S	S

S – Strong; M – Medium; L - Low

Syllabus

List of experiments

Section A: Digital Electronics

1. Verification of Logic gates.
2. Construction of Half and Full adder.
3. Construction of Half and Full subtractor.
4. K-Map.
5. NAND as UBB.
6. NOR as UBB.

Section B: Microprocessor 8085

1. 8-bit addition and 8-bit subtraction.
2. 8-bit multiplication and 8-bit division.
3. Conversion from decimal to hexadecimal.
4. Conversion from hexadecimal to decimal system.
5. Find the sum of series.
6. 1's compliment and 2's compliment subtraction.

Text Books

S.No.	Authors	Title of the book	Publishers	Year of Publication	Edition
1.	V.Vijayendran	Introduction to Integrated Electronics: Digital and Analog	Viswanathan S., Printers & Publishers Pvt Ltd	2009	Revised Edition
2.	B.Ram	Fundamental of Microprocessor and microcontroller	Dhanpat Rai Publications(P) Ltd, New Delhi	2013	8 th Edition

Reference Book

S.No.	Authors	Title of the book	Publishers	Year of Publication	Edition
1.	A. Anand Kumar	Fundamentals of Digital Electronics	PHI Learning Pvt. Ltd.	2016	4 th Edition

Web References

1. <https://de-iitr.vlabs.ac.in/exp/truth-table-gates/simulation.html>
2. <https://de-iitr.vlabs.ac.in/exp/half-full-adder/simulation.html>
3. <http://vlabs.iitkgp.ernet.in/coa/exp13/index.html#>
4. <https://de-iitr.vlabs.ac.in/exp/realization-of-logic-functions/theory.html>

Pedagogy

Demonstration and practical sessions

Course Designer

Ms.N.Manopradha

Semester – IV	Internal Marks: 25			External Marks: 75		
COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CREDITS
21UCG4AC5	MICROPROCESSOR & MICROCONTROLLERS	ALLIED	45	3	-	3

Objectives

- To understand the architecture of 8085 & 8051.
- To impart the knowledge about the instruction set.
- To develop skill in writing simple program for 8085 and its interfacing applications.

Course Outcomes

On the successful completion of the course, students will be able to:

CO Number	CO Statement	Knowledge Level
CO 1	Understand the architecture of 8085 and 8051	K1, K2
CO 2	Illustrate the knowledge about the instruction sets of 8085 & 8051	K1, K2
CO 3	Distinguish between 8085 and 8051 architecture	K1,K2
CO 4	Outline the functions of peripheral devices	K3
CO 5	Develop skill in simple program writing for 8085 and 8051 based systems	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	L	S
CO2	S	M	M	S
CO3	S	S	M	S
CO4	M	M	M	S
CO5	S	S	S	S

S – Strong; M – Medium; L – Low

Syllabus

Unit I 8-bit Microprocessor (8085)**9 Hours**

Microprocessor evolution and types, Microprocessor architecture and operations of its components, addressing modes, Interrupts, data transfer schemes, instruction and data flow, timer and timing diagram.

Unit II Microprocessor Programming**9 Hours**

Assembly language programming based on Intel 8085. Instructions, data transfer, arithmetic, logic, branch operations, stack, I/O operations, control looping, counting, indexing, programming techniques, counters and time delays, stacks and subroutines, conditional call and return instructions.

Unit III Simple Programs**10 Hours**

8- bit Addition – 8-bit Subtraction – Multiplication and Division - BCD to Binary and Binary to BCD conversions –BCD to HEX and HEX to BCD conversions – Finding the largest and smallest number in a data array- sorting-sum of a series –Ascending and descending order – Subtraction using 1's complement and 2's complement.

Unit IV Peripheral Interfacing**9 Hours**

Peripheral Devices: 8237 DMA Controller - 8255 programmable peripheral interface - 8253/8254 programmable timer/counter - 8259 programmable interrupt controller - 8251 USART.

Unit V Microcontroller (8051)**8 Hours**

Comparison between microprocessor and microcontroller - Features of 8051 - Architecture - Pin configuration - Memory organization - External data and program memory - Addressing modes.

Textbooks

S.No.	Author name	Title of the book	Publishers	Year of Publication	Edition
1.	Gaonkar,Ramesh S	Microprocessor Architecture, Programming and Applications with 8085	Pearson Education	1984	5 th Edition
2.	B.Ram	Fundamental of Microprocessor and microcontroller	Dhanpat Rai Publications(P) Ltd, New Delhi	2013	8 th Edition

3.	Muhammad Ali Mazidi, Janice Gillispie Mazidi, Rolin D. McKinlay	The 8051 Microcontroller and Embedded Systems	Prentice Hall of India, New Delhi.	2005	2 nd Edition
----	---	---	------------------------------------	------	-------------------------

Reference books

S.No.	Author name	Title of the book	Publishers	Year of Publication	Edition
1.	A.Nagoorkani	Microprocessors & Microcontrollers	RBA Publications, Chennai	2012	2 nd Edition
2.	A.P. Godse and D.A. Godse.	Microprocessors and Microcontrollers	Technical Publications, Pune	2017	4 th Revised Edition

Web References

https://www.tutorialspoint.com/microprocessor/microcontrollers_overview.htm
<https://www.guru99.com/difference-between-microprocessor-and-microcontroller.html>
<https://www.javatpoint.com/microprocessor-tutorial>

Pedagogy

Lecture, Seminar, Interaction, Assignment, Debate, power point presentation.

Course Designer

Ms. D.Devi

NON-MAJOR ELECTIVE (NME)– II
MATHEMATICS FOR COMPETITIVE EXAMINATIONS - II
2019-2020 Onwards

Semester - IV	MATHEMATICS FOR COMPETITIVE EXAMINATIONS - II	Hours/Week – 2	
Non-Major Elective-II		Credits – 2	
Course Code – 19UMA4NME2		Internal 25	External 75

Objectives:

- To provide the knowledge to analyze, interpret and solve the Mathematical problems.
- To develop the thinking capacity to solve the problems.
- To study many short tricks to solve the mathematical problems easily

Course Outcomes:

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Solve decimal fractions and simplification.	K2
CO2	Explain the concept of square roots, cube roots, Average, profit and loss	K2
CO3	Apply the concept of Ratio & Proportion and Problems on Trains.	K3
CO4	Distinguish the concept of Simple Interest and Compound Interest.	K3
CO5	Apply the concept of Permutations & Combinations, Odd Man Out & Series.	K3

Mapping with Programme Outcomes:

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	M	S	S	S	S
CO3	S	S	M	M	S
CO4	S	S	M	M	M
CO5	S	S	S	S	M

S - Strong, M - Medium, L - Low

NON-MAJOR ELECTIVE – II (NME)
MATHEMATICS FOR COMPETITIVE EXAMINATIONS - II
SYLLABUS

UNIT I (6 Hours)

Decimal Fractions – Simplification

UNIT II (6 Hours)

Square Roots & Cube Roots - Average - Profit & Loss

UNIT III (6 Hours)

Ratio & Proportion - Problems on Trains

UNIT IV (6 Hours)

Simple Interest - Compound Interest

UNIT V (6 Hours)

Permutations & Combinations – Odd Man Out & Series

TEXT BOOKS:

S. No.	Authors Name	Title of the Book	Publishers Name	Year of Publication
1.	R.S.Aggarwal	Quantitative Aptitude	S. Chand & Company Ltd,	2007

CHAPTERS AND SECTIONS:

Unit	Chapter	Pages
I	3 & 4	46 – 116
II	5, 6 & 11	117 - 160 and 251 - 293
III	12 & 18	294 – 310 and 405 - 424
IV	21 & 22	445 – 486
V	30 & 35	613 – 620 and 649 - 657

REFERENCE BOOKS:

S. No.	Authors Name	Title of the Book	Publishers Name	Year of Publication
1.	T.K.Sinha	80+ Practice Sets of Quantitative Aptitude for Bank PO Exams	Arihant Publication (India) limited	2002
2.	Abhijit Guha	Quantitative Aptitude for Competitive Examinations	McGraw-Hill Publishing Company Limited, New Delhi, 5 th Edition	2014

Web links:

1. <https://youtu.be/8BeJUzLqOTE>
2. <https://youtu.be/pShzc9AQMos>
3. <https://youtu.be/JP5J-rzoATg>
4. <https://youtu.be/ZnpEoROH1Vc>
5. <https://youtu.be/VIsyYMEAagc>

Pedagogy:

Group Discussion, Seminar, Assignment.

Semester IV	Internal Marks: 40			External Marks: 60		
COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CREDITS
21UCG4SBE1AP	HTML,CSS, JavaScript PRACTICAL	SBE	30	-	2	2

Objective

- To recognize and code the basic structure of web page
- To design and implement static and dynamic website
- To develop web based application using suitable browser side scripting language

Course Outcomes

On the successful completion of the course, students will be able to

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Understand the basic concepts of web design.	K2
CO2	Build real time web applications	K3
CO3	Analyze a web page and identify its elements and attributes	K4
CO4	Compare static and dynamic web pages	K5

Mapping with Programme Outcomes

CO s	PO1	PO2	PO3	PO4
CO1	S	S	M	M
CO2	S	S	S	S
CO3	S	S	M	S
CO4	S	S	S	S

S-Strong; M-Medium; L-Low

List of Exercises

1. Write a HTML program for the demonstration of Tags, List, Hyperlinks, Multimedia and Map.
2. Write a HTML program using Tables.
3. Design Student Registration Form inHTML.

4. Write a HTML program to develop a Static web page.
5. Develop and demonstrate the usage of inline, internal and external style sheet using CSS.
6. Design a webpage using CSS classes and the class attribute.
7. Write a JavaScript program to validate User Registration page
 - a) First Name (Name should contain alphabets and the length should not be less than 6 characters)
 - b) Password (Length of the password should not be less than 6 characters)
8. Write a JavaScript program to perform different Mathematical operations.
9. Demonstrate JavaScript Event-Handler.
10. Demonstrate Database connectivity in JavaScript.

Web References

1. https://www.w3schools.com/html/html_scripts.asp
2. <https://www.studytonight.com/javascript/javascript-events>
3. https://www.tutorialspoint.com/html/html_basic_tags.htm
4. <https://www.javatpoint.com/javascript-form-validation>

Pedagogy

Power Point Presentation, Demonstration

Course Designer

Ms.R. Ramya

BEHAVIOURAL ORIENTED COURSE

Semester IV	Internal Marks: 100			External Marks: -		
COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CREDIT
21UGCM	CAMPUS TO CORPORATE	BOC	30	2	-	1

Objective:

- To develop confidence and competence in corporate world and BPS industry.
- To enhance communication skills, analytical thinking and professional skills.
- To enrich knowledge of vocabulary, writing skills, presentation skills and managing time and stress.

Course Outcome:

On the successful completion of the course, students will be able to

COs	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Recall to relate BPS in Corporate society and in the world.	K1
CO2	Illustrate to understand the campus and corporate life in real life situations.	K2
CO3	Develop etiquette skills in workplace and to be groomed in Professional ethics and management for higher research.	K3
CO4	Apply Professional skills in career and build communication skills for a holistic approach.	K3
CO5	Examine LSRW Skills and create a campus corporate world for higher prospects and better learning to tackle problems in society.	K4

Mapping with Programme Outcomes:

COs	PO1	PO2	PO3	PO4
CO1	M	M	S	S
CO2	S	S	S	S
CO3	S	M	S	S
CO4	S	S	S	M
CO5	M	S	S	S

S-Strong; M-Medium; L-Low

Syllabus:

UNIT - I**(6 Hours)**

Overview of Corporate: Ice-breaker Session, What is Corporate? - History of Corporate. Overview of BPS Industry: What is BPS?- History of BPS - Benefits of BPS - BPS Industry in World - BPS Industry in India - TCS BPS.

UNIT – II**(6 Hours)**

Change Management (Understand the difference between campus and corporate life and prepare themselves for the same). Learn the Culture - Impact of your attitude and behavior - Consider the language - Establish and maintain relationship - Respect others - Be Confident - Keep on learning & Consider the body language.

UNIT – III**(6 Hours)**

Corporate Etiquettes: Dressing and Grooming Skills - Workplace Etiquette - Business Etiquette - Email Etiquette -Telephone Etiquette - Meeting Etiquette & Presentation Skills. Professional Competencies: Analytical Thinking - Listening Skills - Time Management -Team Skills – Assertiveness - Stress Management - Participating in Group Discussion- Interview Facing - Ownership and Attention to detail.

UNIT – IV**(6 Hours)**

Grammar- Phonetics- One on One basic conversation Skill Practice. Reading Comprehension- Listening Comprehension - Improving Vocabulary - Improving Writing Skills and Comprehension while interacting face to face.

UNIT – V**(6 Hours)**

Recitation of short stories - Interview Skills - Group Discussion - Social Conversation Skills - Presentation & One Act Plays.

Suggested Readings:

S.NO	AUTHORS	TITLE OF THE BOOK	PUBLISHER / EDITION	YEAR OF PUBLICATION
1	Alex,K	Soft Skills	S.Chand and Company Ltd, New Delhi	2009
2	Dr. Rita Shanthakumar and Dr.S.Jayashree Agarwal.	A Handbook of Professional Skills	-	-

Web References

1. <https://www.careerizma.com/blog/how-to-behave-corporate-world/>
2. <https://www.business-standard.com/company/tcs-5400/information/company-history>
3. <https://www.britannica.com/science/phonetics>

Pedagogy

Power Point Presentation, Demonstration, Discussion

Course Designer

TCS

Assessment Rubrics for 100 Marks

- 1. Mock Interview – 25 Marks**
- 2. Panel Discussion – 25 Marks**
- 3. Quiz – 25 Marks**
- 4. Debate (or) Elocution- 25 Marks**

There will be no End Semester Examination for this course. However, the subject teacher will evaluate the above mentioned components based on the performance of the students and submit the marks out of 100 (in the format to be supplied by the COE) with the approval of the concerned Head of the Department to the COE along with CIA marks of other courses.

SEMESTER V

Semester V	Internal Mark: 50		External Mark: 50			
COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CREDITS
21UCG5CC8	SOFTWARE TESTING (Theory & Practicals)	CORE	45+30= 75	3	2	5

Objective

- To understand the basic concepts of Selenium
- To inculcate complex practical skills in Scripting
- To implement the testing concepts using Selenium

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Recite the basic concepts of Selenium	K1
CO2	Identify and examine the test scripts to validate functionality using Selenium	K1, K2
CO3	Explain and demonstrate the software testing based on Selenium	K2, K3
CO4	Apply and analyze various problems using Selenium	K3, K4
CO4	Examine and evaluate the automated test across browsers using Selenium testing tool	K4, K5

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	M	M
CO2	S	S	M	M	M
CO3	S	S	M	M	M
CO4	S	M	M	M	M
CO5	S	M	M	L	L

S - Strong; M - Medium; L - Low

Syllabus

UNIT I: Selenium Basics

(9 HOURS)

Introduction of Selenium: Selenium's tool suite – How to choose the right Selenium tool for your need- Installation requirements for Selenium. **Installing Selenium Components:** Installing Selenium

IDE – Installing Firebug plug-in – Installing the FirePath – Installing JDK – Installing and configuring Eclipse – Installing WinANT.

UNIT II: Selenium IDE and UI Controls

(9 HOURS)

Using Selenium IDE: Selenium IDE interface – Recording Using Selenium IDE – Save and replay the script using IDE – Inserting / Editing Test steps manually – Adding verifications and asserts with the context menu. **Managing User Interface (UI) Controls:** How does Selenium IDE replay scripts – Locate the elements on a web page – Find XPath using Firefox Add-on.

UNIT III: Create and Verification of WebDriver Script

(9 HOURS)

Creating First Selenium WebDriver script: Recording and exporting script from IDE – Configure eclipse to work with Selenium – Running the test. **Selenium Methods:** Selenium WebDriver methods. **Verification Point in Selenium:** Need for a verification point – Inserting a verification point – Understand how to implement a few common validations – Assets statements in Junit.

UNIT IV: Popup Dialogs, Debugging and Reporting

(9 HOURS)

Handling Pop-up dialogs and multiple windows: Handle alerts and prompts – Working with multiple windows. **Debugging scripts:** Debugging features – Run Tests in Debug mode with Breakpoints – Step commands, variables and watch. **Reporting in Selenium:** Test Framework Reporting Tools – Configuring Junit HTML Reports – Configuring TestNG Report for your tests – Custom reporting in excel sheets or databases.

UNIT V: Automation Frameworks and Selenium Functions

(9 HOURS)

Automation Frameworks: Why do we need automation frameworks – What exactly is an automation framework – Types of frameworks. **Selenium Functions:** How to use JavaScript – How to read rows, columns and cell data from table – working with multiple browsers – working with drop-down lists – working with radio buttons and groups – working with checkboxes.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHER/ EDITION	YEAR OF PUBLICATION
1	Navneesh Garg	Test Automation using Selenium WebDriver with Java: step by step Guide	AdactIn Group Pty Ltd.	2014

Reference Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHER/ EDITION	YEAR OF PUBLICATION
1	Rex Allen Jones -	Absolute beginner Java 4	Rex Jones II,	2016

	II	Selenium WebDriver: Come learn how to program automation testing	CSTE, TMap	
--	----	---	------------	--

Web References

1. https://www.tutorialspoint.com/Selenium/Selenium_ide.htm
2. <https://www.guru99.com/locate-by-link-text-partial-link-text.html>
3. <https://www.geeksforgeeks.org/Selenium-basics-components-features-uses-and-limitations/>
4. <https://www.javatpoint.com/Selenium-tutorial>

Practical:

List of Exercises:

1. Write a script to open google.com and verify that title is Google and verify that it is redirected to google.co.in
2. Write a script to open google.co.in using chrome browser (ChromeDriver)
3. Write a script to open google.co.in using internet explorer (InternetExplorerDriver)
4. Write a script to create browser instance based on browser name
5. Write a script to search for specified option in the listbox
6. Write a script to print the content of list in sorted order.
7. Write a script to print all the options. For duplicates add entry only once. Use HashSet.
8. Write a script to close all the browsers without using quit () method.
9. Write generic method in selenium to handle all locators and return web element for any locator.
10. Write generic method in selenium to handle all locators containing dynamic wait and return web element for any locator.

Pedagogy

Chalk and talk, Power Point Presentation, Assignment, Demonstration, Quiz and Seminar.

Course Designer

TCS

Semester V	Internal Marks: 50		External Marks:50			
COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CREDITS
21UCG5CC9	INTRODUCTION TO DIGITAL TECHNOLOGIES (Theory & Practicals)	CORE	60+30 =90	4	2	5

Objective

- To study the basic concepts of Digital Technologies
- To understand about Robotic Process Automation tools
- To develop bots through Automation Anywhere

Course Outcomes

On the successful completion of the course, students will be able to

COs	CO Statement	Knowledge Level
CO1	Remember and understand the key concepts of digital technologies	K1,K2
CO2	Classify and make use of current technologies	K2
CO3	Implement information in new situations	K3
CO4	Analyze the different use cases	K4
CO5	Evaluate new ideas	K5

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	M	M	S	M
CO2	S	M	S	S	M
CO3	S	S	S	S	S
CO4	S	S	S	S	S
CO5	S	S	S	S	S

S–Strong; M–Medium; L –Low

Syllabus

UNIT I

12 HOURS

Digital Primer: Why is Digital Different, Digital Metaphors, On Cloud 9, A Small Intro to Big Data, social media & Digital Marketing, Artificial Intelligence, Unchain the Blockchain, Internet of Everything and Immersive Technology.

UNIT II

12 HOURS

Digital for Industries: Manufacturing and Hi-tech, Banking and Financial Services, Insurance and Healthcare, Retail, Travel & Hospitality, Communications, Media & Information Services and Government.

UNIT III

12 HOURS

Automatix – Art of RPA: Introduction - Setting the Context, RPA Prelude, RPA Demystified, RPA vs BPM, RPA Implementations.

UNIT IV

12 HOURS

RPA: RPA in Industries, RPA Tools, Automatix. **Automation Anywhere:** Getting Started with AA Enterprise, Exploring AA Enterprise, AA Enterprise – Architecture.

UNIT V

12 HOURS

Automation Anywhere: Knowing the Bots, More About TaskBots. AA Enterprise - Assess your Learning, All About Recorders, Designers, MetaBots and Cognitive RPA.

Text Books

S.NO	AUTHORS	TITLE OF THE BOOK	PUBLISHER / EDITION	YEAR OF PUBLICATION
1	Vaibhav Srivastava	Getting started with RPA using Automation Anywhere: Automate your day-to-day Business Processes using Automation Anywhere	BPB Publications; 1 st edition	2021
2	Arun Kumar Asokan and Nandan Mullakara	Robotic Process Automation Projects: Build Real-world RPA Solutions Using UiPath and Automation Anywhere	Packt Publishing Limited	2020

Reference Books

S.NO	AUTHORS	TITLE OF THE BOOK	PUBLISHER / EDITION	YEAR OF PUBLICATION
1	Adeel Javed, Anum Sundrani , Nadia Malik & Sidney Madison Prescott	Robotic Process Automation using UiPath StudioX: A Citizen Developer's Guide to Hyper Automation	Apress; 1 st Edition	2021
2	Jonathan Sireci	The Project Manager's Guide to RPA: A Practical Guide for Deploying Robotics Process Automation	Independently Published (6 June 2021)	2021

Web References

1. <https://university.automationanywhere.com/training/rpa-learning-trails/getting-started-with-rpa/>
2. <https://university.automationanywhere.com/training/rpa-learning-trails/citizen-developer-basics/>
3. <https://university.automationanywhere.com/training/rpa-learning-trails/tips-and-tricks-beginner/>
4. <https://www.youtube.com/watch?v=G0gVfi7ri7w>
5. <https://www.automationanywhere.com/products/enterprise/community-edition>
6. <https://whatfix.com/blog/digital-transformation-examples/>

Practicals

List of Exercises

1. Simple bot creation
2. Build a bot to automate the action of getting the title of an active window and to automate the action of closing a notepad window.
3. Build a bot to automate the task of replacing a few characters from a string.
4. Build a bot to automate the task of copying the files from a source folder to the destination folder.
5. Build a bot to automate the task of extracting a table from a webpage.
6. Build a bot to automate the task of extracting a text from a window and displaying the output.
7. Build a bot to automate the task of writing text into a notepad file.
8. Build a bot to automate the task of extracting the data from an Excel File according to some condition and storing the extracted data in another file.

Web References

1. <https://www.edureka.co/blog/automation-anywhere-examples>
2. <https://docs.automationanywhere.com/bundle/enterprise-v2019/page/enterprise-cloud/topics/aae-client/bot-creator/commands/enter-data-into-webform-from-file.html>

Resources

Lab Requirements: Automation Anywhere

Pedagogy

Quiz, Assignment, Chalk & Talk, PowerPoint Presentation and e-Contents

Course Designer

TCS

Semester V	Internal Mark: 50			External Mark: 50		
COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CREDITS
21UCG5CC10	CLIENT RELATIONSHIP MANAGEMENT (Theory & Practicals)	CORE	60+30=90	4	2	5

Objective

- To acquire knowledge about ServiceNow platform.
- To get acquainted with various features of ServiceNow platform and tool.
- To use various script types used throughout the platform.

Course Outcomes

On the successful completion of the course, students will be able to

COs	CO Statement	Knowledge Level
CO1	Understand ServiceNow Intermediate Level	K1
CO2	Acquire ServiceNow features and tools	K2
CO3	Get the database for process automation	K2
CO4	Analyze comprehensive knowledge in ServiceNow Interface	K3
CO5	Evaluate script types throughout the platform	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	M	S
CO2	S	S	M	M	M
CO3	S	S	M	M	M
CO4	S	S	M	S	S
CO5	S	S	M	S	M

S–Strong; M–Medium; L –Low

Syllabus

UNIT I: (12 HOURS)

The Interface - Versions, Frames, Important application menus and modules, Content Frame, UI Settings and Personalization. **Lists and Forms** – List V2 versus List V3, Lists and Tables, Forms.

UNIT II: (12 HOURS)

UI Customization – Branding your Instance, Custom Themes, UI-Impacting System Properties, Configuring Service Portal UI, Creating a Custom Homepage, Styling Pages and Widgets, Setting up the War Room page, and Styling the CMS.

UNIT III: (12 HOURS)

Understanding Data and Relationships – One-to-many relationships in ServiceNow, Many-to-many relationships in ServiceNow, Enforcing one-to-one relationships, Defining Custom Relationships, Database table inheritance.

UNIT IV: (12 HOURS)

Tasks and Workflows – Important Task fields, Journals, and the activity formatter, Extending the task table, Workflows, SLAs, Approvals, Assignment, Creating Task fields. **UI and Data Policies** – UI Policies, Reverse if false, Scripting in UI policies, UI Policy Order, Data Policies, Converting between data and UI Policies, Data Policies Vs ACLs.

UNIT V: (12 HOURS)

User Administration and Security – Users, Groups and Roles, Emails and Notifications, User Preferences, ACLs – Security Rules. **Introduction to Scripting** – Client-side versus Server-side APIs, where scripting is supported, Integrated development environment.

Text Book

S.NO	AUTHORS	TITLE OF THE BOOK	PUBLISHER / EDITION	YEAR OF PUBLICATION
1	Tim Woodruff	Learning ServiceNow: Administration and development on the Now platform, for powerful IT automation	2nd Edition, Packt Publishing Ltd.	2018

Web References

1. <https://www.tutorialspoint.com/>
2. <https://www.sausriengg.com/e-course-material>
3. <https://www.ntu.edu.sg/home/ehchua/programming/sql/>

Practical

List of Exercises

1. Basic Navigation
 - a. Navigation and the User Interface
 - b. Navigating Applications
 - c. Introduction to Searching
2. Managing Records in Lists
 - a. Using Lists
 - b. Finding Information in Lists
 - c. Using Filters and Breadcrumbs
 - d. Editing Lists
 - e. Creating Personal Lists
3. Managing Records in Forms
 - a. Forms

Web References

ServiceNow Trainings

- [ServiceNow Essentials](#)
- [ServiceNow User Interface](#)
- [ServiceNow Fundamentals Simulator](#)
- [ServiceNow System Administrator Training](#)

Pedagogy

Quiz, Assignment, Chalk & Talk, Power Point Presentation and e-Contents

Course Designer

TCS

Semester V	Internal Marks: 25		External Marks:75			
COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CREDITS
21UCG5CC11	VIRTUALIZATION & CLOUD	CORE	60	4	-	4

Objective

- ❖ To understand the advent of distributed computing
- ❖ To become familiar with the concept of data centers
- ❖ To explore the working process of virtualization
- ❖ To acquire the basics of Cloud Computing
- ❖ To learn the techniques of Hybrid Cloud Fundamentals

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Define the recent trends in computing and list the basics of cloud computing	K1
CO2	Interpret about Data centers and its transformations	K2
CO3	Apply the concept of Virtualization and identify the technologies of Virtualization.	K3
CO4	Examine and discover the concept of cloud computing	K4
CO5	Assess and perceive the knowledge of Hybrid Cloud	K5

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	M	M	M	S	M
CO2	S	S	M	S	M
CO3	S	S	M	S	S
CO4	M	M	M	S	S
CO5	S	S	M	M	S

S–Strong; M–Medium; L–Low

Syllabus

UNIT I

(12 HOURS)

Distributed Systems: Overview of Computing Paradigm, Recent trends in Computing, Grid Computing, Cluster Computing, Distributed Computing, Utility Computing, Cloud Computing, Evolution of Cloud Computing, Benefits of Cloud Computing

UNIT II

(12 HOURS)

Data Center: Data Center Overview, Data Center Evolution, Modern Business Requirements for Data Center, Making Agile Datacenter, Data Center Transformations, Future of Data Centers

UNIT III

(12 HOURS)

Virtualization: Virtualization, Need of Define Virtualization, Virtualization Technologies, Uses of Virtualization, Planning for Virtualization, Virtualization Pitfalls

UNIT IV

(12 HOURS)

Cloud: Cloud Fundamentals, Benefits of Cloud Computing, Type of Clouds, Cloud Computing Services, Cloud Computing Architecture, Virtualization and Cloud Computing, Grid Computing vs Cloud Computing, Security Concerns

UNIT V

(12 HOURS)

Hybrid Cloud: Hybrid Cloud Fundamentals, Benefits of a Hybrid Cloud, Key Considerations for Hybrid Cloud, Components of Hybrid Cloud, Hybrid Cloud Deployment Models, Managing Hybrid Cloud Environments

Text Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHER / EDITION	YEAR OF PUBLICATION
1	George Coulouris, Jean Dollimore, Tim Kindberg& Gordon Blair	Distributed Systems: Concepts and Design	5 th Edition	2012
2	Josyula	Cloud Computing: Automating the Virtualized Data Center	1 st Edition	2012
3	Brian J,S, Chee, Curtis Franklin Jr	Cloud Computing: Technologies and Strategies of the Ubiquitous Data Center	1 st Edition	2019

Web References

- <https://www.tutorialspoint.com/Distributed-Systems>
- <https://blog.stackpath.com/distributed-system/>
- <https://www.youtube.com/playlist?list=PLJuCep43JwAV117HMP-NZRwmlEn2mzhha>
- https://www.youtube.com/playlist?list=PLndqfxA_9SWF-sFpP1Db_E8DmzY3K5Wkq
- <https://www.guru99.com/cloud-computing-for-beginners.html>
- <https://www.youtube.com/playlist?list=PLDns5jVqEmIoNrmSY0aRHwK5LqGM9u3LL>
- <https://www.youtube.com/playlist?list=PLOspHqNVtKABPTyvxoNW0e4XSgCNdZ40F>

Pedagogy

Chalk and talk, Power Point Presentation, e-Content

Course Designer

TCS

Semester V	Internal Marks: 25			External Marks: 75		
COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CREDITS
21UCG5MBE1B	PROCESS MANAGEMENT	MBE	75	5	-	5

Objective

- To define the work processes in an organization
- To understand the workflows and process controls in Process management
- To manage the processes effectively

Course Outcomes

On the successful completion of the course, the students will be able to

COs	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Define and summarize the process models in software industry	K1, K2
CO2	Interpret and use the agile concepts in process management	K2, K3
CO3	Apply and correlate the principles of Scrum and DevOps	K3, K4
CO4	Illustrate the strategies work of Design Thinking	K4
CO5	Plan and develop applications using Agile, Scrum and DevOps for real world scenario	K5, K6

Mapping with Programme Outcomes

CO s	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	M	S
CO2	S	S	M	S	M
CO3	M	S	S	S	S
CO4	S	S	S	M	M
CO5	S	M	S	M	M

S - Strong; M - Medium; L - Low

Syllabus:

UNIT I

(15 HOURS)

Software and Software Engineering: The Nature of Software - The Unique Nature of WebApps - Software Engineering - Software Process, Software Engineering Practice - Software Myths - Software Process Model: A Generic Process Model - Process Assessment and Improvement - Perspective Process Models - Specialized Process Model - The Unified Process - Software Engineering Code of Ethics.

UNIT II

(15 HOURS)

Agile: Introduction to Agile - Understanding Agile Value - Agile Manifesto - Principles of Agile - Agile Methodologies - Advantages and Disadvantages of Agile - Agile anti-patterns, Scaled Agile Framework - Why Lean UX - The Three Foundations of Lean UX - Principles of Lean UX.

UNIT III

(15 HOURS)

Scrum: Definition of Scrum - Uses of Scrum - Scrum Theory - Scrum Values - The Scrum Team - Scrum Events - Scrum Artifacts - Artifact Transparency.

UNIT IV

(15 HOURS)

DevOps: Introduction to DevOps - Methodologies – Principles and strategies - Automation - Performance Measurement through KPIS and Metrics - Agile and DevOps - Agile Infrastructure, Velocity - Lean Startup UPS.

UNIT V

(15 HOURS)

Design Thinking: Introduction to Design Thinking - Lean thinking, Actionable Strategy - The Problem with Complexity - Vision and Strategy, Defining Actionable Strategy Act to Learn - Leading Teams to Win.

Text Books

S.NO	AUTHORS	TITLE OF THE BOOK	PUBLISHER / EDITION	YEAR OF PUBLICATION
1.	Roger S. Pressman	Software Engineering A Practitioner's Approach	McGraw Hill Education, 8 th Edition	2019
2.	Andrew Stellman, Jennifer Greene	Learning Agile	O'Reilly, 1 st Edition	2014
3.	Kallori Vikram	Introduction to DevOps	McGraw Hill Education	2016
4.	Jonny Schneider	Understanding Design Thinking, Lean and Agile	O'Reilly Media/Shroff, 1 st Edition	2017

Reference Books

S.NO	AUTHORS	TITLE OF THE BOOK	PUBLISHER / EDITION	YEAR OF PUBLICATION
1.	Ken Schwaber, Jeff Sutherland	Scrum Guide	O'Reilly, 1 st Edition	2017
2.	Jeff Gothelf	Lean vs Agile vs Design Thinking	Sense and Respond, 1 st Edition	2017
3.	Jeff Gothelf, Josh Seiden	Lean UX	O'Reilly, 2 nd Edition	2016
4.	S. Kenneth Rubin	Essential Scrum: A Practical Guide to the most popular Agile Process	Pearson Education, 1 st Edition	2015

Web References

- <https://www.javatpoint.com/software-engineering-agile-model>
- <https://scrumguides.org/scrum-guide.html>
- <https://www.techtarget.com/searchitoperations/definition/DevOps>
- <https://designthinking.ideo.com/>
- https://www.tutorialspoint.com/software_engineering/
- <https://www.atlassian.com/agile/scrum>
- <https://www.knowledgehut.com/blog/agile/what-is-agile-scrum>
- <https://www.altexsoft.com/blog/engineering/devops-principles-practices-and-devops-engineer-role/>
- <https://www.oreilly.com/library/view/understanding-design-thinking/9781491998410/toc01.html>

Pedagogy

Chalk and Talk, Power Point Presentation and Seminar

Course Designer

TCS

Semester V	Internal Marks: 40		External Marks:60			
COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CREDITS
21UCG5SBE2AP	VIRTUALIZATION & CLOUD PRACTICAL	SBE	30	-	2	2

Objectives

- To install and create Virtual Machines in Workstation Player
- To apply the knowledge of how to Install and Upgrade VMware Tools
- To Implement how to configure various Virtual Machine Hardware Settings

Course Outcomes

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Demonstrate the workstation Player Preference settings	K2
CO2	Apply the knowledge to install, upgrade and configure on VMware tools	K3
CO3	Examine the knowledge on Virtual Machines	K4

List of Exercises:

1. Installing and Using Workstation Player
 - a. Install Workstation Player on a Windows Host
 - b. Start Workstation Player
 - c. Use the Workstation Player Window
2. Changing Workstation Player Preference Settings
 - a. Configuring Close Behavior Preference Settings
 - b. Configuring Software Updates Settings
 - c. Configuring Workstation Player Color Theme Settings
3. Creating Virtual Machines in Workstation Player
 - a. Preparing to Create a Virtual Machine
 - b. Create a Virtual Machine
4. Installing and Upgrading VMware Tools
 - a. Installing VMware Tools
 - b. Upgrading VMware Tools
 - c. Configure Software Update Preferences
 - d. Configure VMware Tools Updates for a Specific Virtual Machine
5. Starting and Stopping Virtual Machines in Workstation Player

- a. Start a Virtual Machine in Workstation Player
 - b. Power Off a Virtual Machine in Workstation Player
 - c. Use Ctrl+Alt+Delete to Shut Down a Guest
 - d. Suspend and Resume a Virtual Machine in Workstation Player
 - e. Reset a Virtual Machine in Workstation Player
6. Changing the Virtual Machine Display
 - a. Configure Display Settings for a Virtual Machine
 - b. Use Full Screen Mode in Workstation Player
7. Configuring and Managing Virtual Machines
 - a. Change the Name of a Virtual Machine
 - b. Change the Working Directory for a Virtual Machine
 - c. Change the Virtual Machine Directory for a Virtual Machine
 - d. Change the Memory Allocation for a Virtual Machine
 - e. Moving Virtual Machines
 - f. Delete a Virtual Machine
8. Configuring and Managing Devices
 - a. Configuring DVD, CD-ROM, and Floppy Drives
 - b. Configuring and Maintaining Virtual Hard Disks
 - c. Configuring Keyboard Features
 - d. Modify Hardware Settings for a Virtual Machine
9. Configuring Network Connections
 - a. Understanding Common Networking Configurations
 - b. Configuring Bridged Networking
 - c. Configuring Network Address Translation
 - d. Configuring Host-Only Networking
 - e. Changing a Networking Configuration
10. Configuring Virtual Machine Option Settings
 - a. Configuring General Option Settings for a Virtual Machine
 - b. Configuring Power Options for a Virtual Machine
 - c. Configuring VMware Tools Options for a Virtual Machine
11. Configuring Virtual Machine Hardware Settings
 - a. Adding & Removing Hardware to a Virtual Machine
 - b. Adjusting Virtual Machine Memory
 - c. Configuring Virtual Machine Processor Settings
 - d. Configuring and Maintaining Virtual Hard Disks
 - e. Configuring Virtual Network Adapter Settings
 - f. Configuring Display Settings

Lab Requirements

- Download: [VMware Workstation Player](#)

Web References

User Guide: [Using VMware Workstation Player for Windows](#)

Course Designer

TCS

SEMESTER VI

Semester VI	Internal Marks: 50		External Marks:50			
COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CREDITS
21UCG6CC12	PYTHON PROGRAMMING (Theory & Practicals)	CORE	60+30 =90	4	2	5

Objective

- To understand the concepts of Python programming language
- To understand the knowledge of Operators, Functions, and Strings
- To inculcate the knowledge of OOPs concept in Python

Course Outcomes

On the successful completion of the course, students will be able to

COs	CO Statement	Knowledge Level
CO1	Recall execution and debugging of Python program	K1
CO2	Demonstrate the concept of classes and objects using Python	K2
CO3	Make use of Python features to build real-time applications	K3
CO4	Analyze the various functionalities of Python	K4
CO5	Access the performance of inheritance and method overriding	K5

Mapping with Programme Outcomes

COs	PO1	POS2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	M	S	S
CO3	S	S	S	S	M
CO4	S	M	S	M	M
CO5	S	M	S	S	S

S–Strong; M–Medium; L –Low

Syllabus

Theory

UNIT I

12 HOURS

Basics of Python Programming: Introduction: Python Character Set – Token - Python Core Data Type - The *print* () Function - Assigning value to a variable - Multiple Assignments - Writing Simple Programs in Python - The *input*() Function - The *eval*() Function- Formatting Number and Strings - Python Inbuilt Functions.

UNIT II

12 HOURS

Operators, Expressions, Decision and Loop Control Statements: Operators and Expressions - Arithmetic Operators - Operator Precedence and Associativity - Bitwise Operator. **Decision Statement:** Boolean Operators - Using Numbers with Boolean Operators - Using String with Boolean Operators - Boolean Expressions and Relational Operators.

UNIT III

12 HOURS

Decision Statements and Loop Control Statements: Decision-Making Statements: Conditional Expressions. **Loop control Statements:** The *while* Loop - The *range*() Function-The *for* Loop - Nested Loops - The *break* Statement - The *continue* Statement.

UNIT IV

12 HOURS

Functions and Strings: Syntax and Basics of a Function - Use of a Function - Parameters and Arguments in a Function - The Local and Global Scope of a Variable - The *return* Statement - Recursive Functions - The Lambda Function. **Strings:** The *str* class - Basic Inbuilt Python Functions for String - The *index*[]Operator - Traversing String with *for* and *while* Loop - Immutable Strings - String Operators - String Operations..

UNIT V

12 HOURS

Object-Oriented Programming: Class, Objects and Inheritance: Searching Techniques - Introduction to Sorting. **Object-Oriented Programming: Class, Objects and Inheritance:** Defining Classes - The Self-parameter and Adding Methods to a Class - Display Class Attributes and Methods - Special Class Attributes – Accessibility - The *__init__* Method(constructor) - *__del__*() (Destructor method) - Method Overloading in Python - Operator Overloading – Inheritance - Types of Inheritance - Inheritance in Detail - Subclass Accessing Attributes of Parent Class -Multilevel Inheritance in Detail- Multiple Inheritance in Detail - Using *super*() - Method Overriding.

Text Books

S.NO	AUTHORS	TITLE OF THE BOOK	PUBLISHER / EDITION	YEAR OF PUBLICATION
1	Ashok Namdev Kamthane, Amit Ashok Kamthane	Programming and Problem Solving with Python	MC Graw Hill Education;2 nd Edition	2018

Reference Books

S.NO	AUTHORS	TITLE OF THE BOOK	PUBLISHER / EDITION	YEAR OF PUBLICATION
1	Jeeva Jose and P. Sojan Lal	Introduction to Computing and Problem Solving with Python	Khanna Book Publishing; 1 st Edition	2016

2	Ch. Satyanarayana, M Radhika Mani & B N Jagadesh	Python Programming	(Kindle Edition). Universities Press.	2018
---	--	--------------------	--	------

Web References

1. <https://www.tutorialspoint.com/python/index.htm>
2. <https://www.guru99.com/python-tutorials.html>
3. <https://www.programiz.com/python-programming>

Practicals

List of Exercises

1. Types of Operators
2. Control Flow
3. Strings
4. Functions
5. Classes and Objects
6. Constructors
7. Inheritance
8. Method Overriding

Web References

1. <https://www.shahucollegelatur.org.in/practical.pdf>
2. https://www.w3schools.com/python/python_operators.asp
3. <https://mindmajix.com/python/basic-operators-in-python>
4. <https://www.cs.otago.ac.nz/staffpriv/mccane/Downloads/PracticalProgramming.pdf>

Pedagogy

Quiz, Assignment, Chalk & Talk, PowerPoint Presentation and e-Contents

Course Designers

Ms. T. Julie Mary
Ms. A. Anandhavalli

Semester VI	Internal Marks: 25			External Marks:75		
COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CREDITS
21UCG6CC13	DATA STRUCTURES & ALGORITHMS	CORE	90	6	-	5

Objective

- Understanding Data Structure concept and knowing different ways of organizing data and performing various operations on that data.
- To articulate the essential components of data structures like Stack, Queue, List, Trees& Graphs.
- To get familiarize knowledge with designing an algorithm using data structures

Course Outcomes

On the successful completion of the course, students will be able to,

CO Number	CO Statement	Knowledge Level
CO1	Understand data organization & data structure operations	K1,K2
CO2	Design the various types of algorithms and data structure	K2,K3
CO3	Demonstrate problems to represent the linear and non linear structures by recognizing its memory representation and traversal techniques.	K3,K4
CO4	Implement various techniques of algorithms by using suitable data structures	K3,K4
CO5	Analyze the different design technique of algorithm and recommend the technique for practical problems	K4,K5

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	S	M	M
CO3	S	S	S	S
CO4	S	S	M	M
CO5	M	M	M	M

S-Strong, M-Medium, L- Low

Syllabus

UNIT I: Linear Data Structures

(18 HOURS)

Introduction and Overview: Introduction - Basic Terminology – Data Structures - Data Structure Operations. **Arrays** – Introduction – Linear Arrays - Representation of Linear Array in Memory - Traversing Linear Arrays - Multidimensional Arrays - Two Dimensional Arrays – Representation of

Two Dimensional Array in Memory. **Stacks & Queues:** Array Representation of Stacks - Arithmetic Expressions, Polish Notation - Recursion – Queues– Deques - Priority Queues.

UNIT II: Linked Lists

(18 HOURS)

Overview of Linked List – Representation of Linked Lists in Memory – Traversing a Linked List – Searching a Linked List-Memory allocation; Garbage collection-Insertion into a Linked List – Deletion from a Linked List – Two-way Linked Lists – Operations on Two-way lists.

UNIT III: Non-Linear Structures: Trees & Graphs

(18 HOURS)

Trees: Introduction - Binary Trees – Representing Binary Trees in Memory – Traversing Binary Trees-Header nodes; Threads –Binary Search Trees. **Graphs:** Graph Theory Terminology – Sequential Representation of Graphs: Adjacency Matrix, Path Matrix – Linked representation of a Graph– Traversing a Graph.

UNIT IV: Algorithm

(18 HOURS)

Introduction: Algorithm-Algorithm Specification-Performance Analysis-**Divide & Conquer:** General method- Binary Search-Finding maximum and minimum-Merge Sort-Quick sort. **The Greedy Method:** General Method - Knapsack Problem – Job Sequencing With Deadlines.

UNIT V:

(18 HOURS)

Dynamic programming: General method - All-pairs shortest paths - Single source shortest path - Travelling Sales Person problem. **Back tracking:** The General Method – The 8-Queens Problem – Sum of Subsets – Graph Coloring.

Text Books

S.NO	TITLE	AUTHOR	PUBLISHER /EDITION	YEAR
1	Data Structures	Seymour Lipschutz (Schaum's Series)	McGraw Hill Education (India) Private Limited Ltd., New Delhi, Revised First Edition,	2008
2	Fundamentals of Computer Algorithms	Ellis Horowitz, Sartaj Sahni and Sanguthevar	Galgotia Publications	2015.

Reference Books

S.NO	TITLE	AUTHOR	PUBLISHER /EDITION	YEAR
1	An Introduction to Data Structures with Applications	Jean-Paul Tremblay and Paul G. Sorenson	Tata McGraw-Hill, New Delhi, Second Edition	2017
2	Data Structures and Algorithms	Alfred V. Aho, John E. Hopcroft and Jeffry D. Ullman	Pearson Education, New Delhi	2006
3	Fundamentals of Data Structure	Ellis Horowitz, Sartaj Sahni	Galgotia Publications	2010

Web References

1. www.studytonight.com/data-structures
2. <https://lpuguidecom.files.wordpress.com/2017/04/fundamentals-of-data-structures-ellis-horowitz-sartaj-sahni.pdf>
3. <https://www.slideshare.net/canaokar/fundamentals-of-computer-algorithms-by-horowitz-sahni-rajsekaran>
4. <https://www.geeksforgeeks.org/data-structures/>

Pedagogy

Quiz, Assignment, Chalk-Talk, Power Point Presentations, e-Contents

Course Designer

Ms.K.Sangeetha

Semester VI	Internal Marks: 25			External Marks: 75		
COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CREDITS
21UCG6MBE2A	ARTIFICIAL INTELLIGENCE	MBE	75	5	-	5

Objective

- To impart the basic concepts, theories and state-of the art techniques of artificial intelligence
- To inculcate problem solving methodologies in the search space
- To introduce most fundamental knowledge representation strategies
- To learn about the future trends of robotics

Course Outcomes

On the successful completion of the course, the students will be able to

COs	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Understand the fundamentals of Artificial Intelligence (AI) and expert systems.	K1
CO2	Identify the type of search strategy that is more appropriate to address a particular problem and implement the selected strategy	K3
CO3	Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning	K3
CO4	Analyze the future trends of AI applications	K4
CO5	Assess the importance of knowledge representation in intelligent and expert systems	K5

Mapping with Programme Outcomes

CO s	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	S	S
CO2	S	S	M	S	M
CO3	S	S	M	M	S
CO4	M	M	M	S	M
CO5	S	S	M	M	S

S-Strong, M-Medium, L- Low

Syllabus:

UNIT I:

ARTIFICIAL INTELLIGENCE (AI): Computerized Reasoning - Turing Test - What is Intelligence? - Artificial Intelligence- Goals of Artificial Intelligence - History of Artificial Intelligence - Advantages of Artificial Intelligence - Application Areas of Artificial Intelligence - Components of Artificial Intelligence

UNIT II:

PROBLEM REPRESENTATION: Introduction - Problem Characteristics - Problem - Representation in AI - Production System - Conflict Resolution **The Search Process** : Search Process - Strategies for Search - Search Techniques

UNIT III:

GAME PLAYING : Game Playing - Game Tree -Components of a Game Playing Program - Game Playing Strategies - Problems in Computer Game Playing Programs - KNOWLEDGE REPRESENTATION - Introduction - Definition of Knowledge - Importance of Knowledge - Knowledge-Based Systems - Differences Between Knowledge-Based Systems and Database Systems - Knowledge Representation Scheme

UNIT IV:

EXPERT SYSTEMS : Introduction - Definition of an Expert System- Characteristics of an Expert System - Architectures of Expert Systems - Expert System Life Cycle - Knowledge Engineering Process - Knowledge Acquisition - Difficulties in Knowledge Acquisition - Knowledge Acquisition Strategies - Advantages of Expert Systems- Limitations of Expert Systems - Examples of Expert Systems

UNIT V: LEARNING : General Model for Machine Learning Systems - Characteristics of Machine Learning - Types of Learning - Advantages of Machine Learning - Disadvantages of Machine Learning - ARTIFICIAL INTELLIGENCE MACHINES AND ROBOTICS - Introduction - Technical Issues - Applications: Robotics in the Twenty-First Century.

Text Books

S.NO	AUTHORS	TITLE OF THE BOOK	PUBLISHER /EDITION	YEAR OF PUBLICATION
1.	Roger S.Pressman	Software Engineering A Practitioner's Approach	McGraw Hill Education,8 th Edition	2019
2.	Andrew Stellman, Jennifer Greene	Learning Agile	O'Reilly,1 st Edition	2014
3.	Kallori Vikram	Introduction to DevOps	McGraw Hill Education	2016
4.	Jonny Schneider	Understanding Design Thinking, Lean and Agile	O'Reilly Media/Shroff, 1 st Edition	2017

Reference Books

S.NO	AUTHORS	TITLE OF THE BOOK	PUBLISHER/EDITION	YEAR OF PUBLICATION
1.	Stuart J. Russell and Peter Norvig	Artificial Intelligence: A Modern Approach – Global Edition	Pearson	2016
2.	Elaine Rich, Kevin Knight, Shivashankar B Nair	Artificial Intelligence	Tata McGraw Hill, 3rd edition	2017

Web References

1. <https://intellipaat.com/course-cat/artificial-intelligence-and-machine-learning-courses/>
2. <https://www.youtube.com/hashtag/machinelearningprojectusingpython>
3. <https://cse.iitk.ac.in/users/cs365/2013/readings/am-lecs-intro.pdf>

Pedagogy

Chalk and Talk, Power Point Presentation and Seminar

Course Designer

Dr.P. Tamilselvi

Semester VI	Internal Marks: 25		External Marks:75			
COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CREDITS
21UCG6MBE3C	BIG DATA & IOT	MBE	75	5	-	5

Objective

- To become familiar with the fundamental concepts of Big Data.
- To provide an overview of apache Hadoop.
- To learn the tools and techniques for handling large datasets.
- To understand the concepts of Internet of things.

Course Outcomes

On the successful completion of the course, students will be able to

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Outline to provide an overview and its classifications of a growing field of big data analytics.	K1
CO2	Use the tools required to manage and analyse big data like Hadoop.	K2
CO3	Apply knowledge using MongoDB & NoSQL.	K3
CO4	Illustrate IoT enabling Technologies	K3
CO5	Recommend the required features of Bigdata and IoT for Real time environment	K4

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4
CO1	S	S	S	M
CO2	S	S	S	M
CO3	S	S	S	M
CO4	S	S	M	L
CO5	S	M	M	L

S–Strong; M–Medium; L –Low

Syllabus

UNIT I (15 HOURS)

Types of Digital Data: Classification of Digital Data - Characteristics of Data-Evolution of Big Data- Definition of Big Data-Challenges with Big Data- Characteristics of Big Data-Other characteristics of data - Need for Big Data. **Big Data Analytics:** Characteristics of Big Data analytics- Need for Big Data analytics- Classification of analytics-Greatest challenges that prevent businesses from capitalizing on Big Data –Importance of Big Data analytics – Data science-Data scientist - Terminologies used in Big Data environments - Analytics tools.

UNIT II (15 HOURS)

Big data Technology: NoSQL - Hadoop. Introduction to Hadoop: Introducing Hadoop- Need for Hadoop - Limitations of RDBMS - RDBMS versus HADOOP - History of Hadoop – Hadoop overview - Interacting with Hadoop ecosystem – HDFS - Processing Data with Hadoop MapReduce – Managing resources and applications with Hadoop YARN - Introduction to MAPREDUCE programming.

UNIT III (15 HOURS)

Introduction to MongoDB: Need for MongoDB -Terms used in RDBMS and MongoDB - Data types in MongoDB - MongoDB Query Language.

UNIT IV (15 HOURS)

Introduction to IoT: Physical Design of IoT – Logical Design of IoT – IoT Enabling Technologies – IoT Levels & Deployment Templates – Domain Specific IoTs: Home Automation – Cities – Environment – Energy – Logistics – Retail – Agriculture.

UNIT V (15 HOURS)

IoT and M2M: Introduction – M2M – Different between IoT and M2M – SDN and NFV for IoT– IoT System Management with NETCONF - YANG: Simple Network Management Protocol (SNMP) - Network operator Requirement.

Text Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHER / EDITION	YEAR OF PUBLICATION
1	Seema Acharya, Subhashini Chellappan	Bigdata and Analytics	Wiley India Pvt.Ltd	2015
2	ArshdeepBahga, Vijay Madiseti	Internet of Things A Hands on Approach	University press	2014

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHER / EDITION	YEAR OF PUBLICATION
1	V.K. Jain	Big Data and Hadoop	Khanna Book Publishing Co.(P) Ltd.,	2017
2	V.Bhuvaneswari T.Devi	Bigdata Analytics A Practioner's Approach	Bharathiyar University, Coimbatore	2016
3	Raj Kamal	Internet of things Architecture and Design Principles	McGraw Hill	2017
4	David Hanes, Gonzalo Salgueiro, Patrick Grossette, Robert Barton, Jerome Henry	IoT Fundamentals, Networking Technologies, Protocols and Use cases for Internet of Things	Cisco Press	2017
5	Olivier Hersent, David Boswarthick, Omar Elloumi	The Internet of Things – Key applications and Protocols	Wiley	2012

Web References

1. <https://www.mongodb.com/>
2. <https://www.tutorialspoint.com/cassandra/index.html>
3. <https://www.edureka.co/blog/mapreduce-tutorial/>
4. <https://github.com/connectiot/iottoolkit>
5. <https://www.arduino.cc/>
6. https://emerging-researchers.org/wp-content/uploads/2021/03/ahmed_a_le6.pdf

Pedagogy

Chalk and Talk, Power Point Presentation, E-Content

Course Designers

Dr.J.Sangeetha

Dr.M.Anandhi

Dr.A.Bhuvaneswari

Semester VI	Internal Marks: -		External Marks: 100			
COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CREDITS
21UCG6PW	PROJECT WORK	PROJECT	75	-	5	4

Objective:

- To build problem solving ability and technical skills through the application of theoretical concepts for modeling the real world problems using latest technologies

Project Evaluation

The project work shall be done by either an individual or a group of students. Two components will be considered in assessing the project work:

- Dissertation
- Viva Voce

The Dissertation/Project work submitted will be evaluated based on the following components:

- Problem Identification
- Domain Knowledge
- Documentation
- Presentation

Semester VI	Internal Marks:40			External Marks:60		
COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CREDITS
21UCG6SBE3BP	MONGODB PRACTICAL	SBE	30	-	2	2

Objective

- Get knowledge about the basic concept of non-relational DBMS.
- Work with query unstructured database
- Define, compare and use the four types of NoSQL Databases (Document-oriented, Key Value Pairs, Column-oriented and Graph).

Course Outcomes

On the successful completion of the course, students will be able to

COs	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Demonstrate the installation of MongoDB	K3
CO2	Experiment with the basic commands in MongoDB	K3
CO3	Apply the various logical operations in MongoDB	K3
CO4	Examine the Key/Value databases in Modern web development	K4
CO5	Determine the concepts of Transactions Spanning Different Operations	K5

Mapping of CO with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	M	S	S	S	S
CO2	S	S	M	S	S
CO3	S	M	S	S	S
CO4	S	S	S	M	S
CO5	S	S	S	S	S

S - Strong, M - Medium, L – Low

List of Exercises

1. Introduction to MongoDB and its Installation

2. Description of Mongo Shell, Create database and show database
3. Commands for MongoDB and to study operations in MongoDB – Insert, Query, Update, Delete and Projection
4. Where Clause equivalent in MongoDB
5. Operations in MongoDB – AND in MongoDB, OR in MongoDB, Limit Records and Sort Records.
6. Operations in MongoDB – Indexing, Advanced Indexing, Aggregation and Map Reduce
7. Practice with ' macdonalds ' collection data for document oriented database. Import restaurants collection and apply some queries to get specified output.
8. Column oriented databases study, queries and practices

Web References

1. <https://www.mongodb.com/>
2. <https://www.mongodb.com/docs/manual/reference/sql-comparison/>
3. <https://www.mongodb.com/docs/manual/reference/method/db.collection.mapReduce/>
4. <https://www.w3resource.com/mongodb-exercises/index.Database>
5. <https://www.kdnuggets.com/2021/02/understanding-nosql-database-types-column-oriented-databases.html>

Pedagogy

Power point Presentation, Demonstration

Course Designers

Ms. T.Julie Mary
Ms.A.Anandhavalli

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)

NATIONALLY ACCREDITED WITH “A” GRADE BY NAAC

ISO 9001:2015 Certified

TIRUCHIRAPPALLI

PG & RESEARCH DEPARTMENT OF COMPUTER SCIENCE



M. Sc. COMPUTER SCIENCE

SYLLABUS

2023-2024 and Onwards

Cauvery College for Women (Autonomous), Trichy

PG & Research Department of Computer Science

M.Sc. Computer Science

LEARNING OUTCOME BASED CURRICULUM FRAMEWORK (CBCS- LOCF)

(For the Candidates admitted from the Academic year 2023-2024 and onwards)

Semester I

Semester	Course	Course Title	Course Code	Inst. Hrs. / week	Credits	Exam			Total
						Hrs.	Marks		
							Int.	Ext.	
I	Core Course– I (CC)	Analysis & Design of Algorithms	23PCS1CC1	6	5	3	25	75	100
	Core Course – II (CC)	Object Oriented Analysis and Design & C++	23PCS1CC2	6	5	3	25	75	100
	Core Course –III (CC)	Python Programming	23PCS1CC3	6	5	3	25	75	100
	Core Practical - I (CP)	Algorithm and OOPS (P)	23PCS1CC1P	6	5	3	25	75	100
	Discipline Specific Elective Course-I (DSE)	A. Advanced Software Engineering	23PCS1DSE1A	6	3	3	25	75	100
		B. Advanced Computer Architecture	23PCS1DSE1B						
		C. Advanced Database Systems	23PCS1DSE1C						
	Total				30	23	-	-	-
15 Days INTERNSHIP during Semester Holidays									

SEMESTER I

Semester I	Internal Marks: 25	External Marks:75		
COURSE CODE	COURSE TITLE	CATEGORY	Hrs / Week	CREDITS
23PCS1CC1	ANALYSIS & DESIGN OF ALGORITHMS	CORE	6	5

Course Objective

- To learn the Elementary Data Structures and algorithms
- To understand the basics of an algorithm, their analysis and design
- To inculcate the knowledge of Basic Traversal and Search Techniques, Greedy method, Divide and Conquer method, Dynamic programming and Backtracking

Prerequisite

Basic concepts of data structures and algorithms

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Get knowledge about algorithms and determine their time complexity	K1
CO2	Demonstrate specific search and sort algorithms using divide and conquer technique	K2
CO3	Apply different methods to analyze the algorithm performance	K3
CO4	Compare the concept of various algorithm technique	K4
CO5	Explore the algorithm technique on Real time applications	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2	3	3	1	3	2
CO2	3	3	3	2	3	3	3	2	3	3
CO3	3	2	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	2	1	2
CO5	3	3	3	3	3	3	3	2	3	3

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“-” –indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Introduction: - Algorithm Definition and Specification – Space complexity - Time Complexity - Asymptotic Notation. Elementary Data Structures: Stacks and Queues – Binary Trees - Binary Search Trees - Heaps – Heap sort - Graphs.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Basic Traversal And Search Techniques: Techniques for Binary Trees - Techniques for Graphs. Divide and Conquer: General Method – Binary Search – Merge Sort – Quick Sort.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	The Greedy Method: General Method – Knapsack Problem – Minimum Cost Spanning Trees: Prim's Algorithm – Kruskal Algorithm – Optimal storage on Tapes – Single Source Shortest Paths.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Dynamic Programming: General Method – Multistage Graphs – All Pair Shortest Path – Optimal Binary Search Trees – 0/1 Knapsack – Traveling Sales person Problem – Flow Shop Scheduling.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Backtracking: General Method – 8-Queens Problem – Sum Of Subsets – Graph Coloring– Hamiltonian Cycles. Branch And Bound: - The Method – Traveling Sales person.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self Study for Enrichment: (Not included for End Semester Examination) NP Hard and NP Complete Problems: Basic Concept – COOK's theorem – NP Hard Graph Problems – NP Hard Code Generation.		CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Book

1. Ellis Horowitz, Sartaj Sahni, Sanguthevar Rajasekan.(2017). *Fundamentals of Computer Algorithms*. 2nd Edition, University Press.

Reference Books

1. Alfred V. Aho, John E Hopcraf, Jefffrey D. Ullman.(2004). *Data Structures and Algorithms*. Pearson Education.
2. Goodrich. *Data Structures & Algorithms in Java*. 3rd Edition, Wiley.
3. Skiena.(2008). *The Algorithm Design Manual*. 2nd Edition, Springer.
4. Anany Levith.(2003). *Introduction to the Design and Analysis of algorithm*. Pearson Education Asia.
5. Robert Sedgewick, Phillipe Flajolet.(1996). *An Introduction to the Analysis of Algorithms*.Addison- Wesley Publishing Company.

Web References

1. <https://nptel.ac.in/courses/106/106/106106131/>
2. https://www.tutorialspoint.com/design_and_analysis_of_algorithms/index.htm
3. <https://www.javatpoint.com/daa-tutorial>

Pedagogy

Chalk and talk, PPT, Discussion, Assignment, Quiz, Seminar.

Course Designer

Ms. P. Muthulakshmi

Semester: I	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
23PCS1CC2	OBJECT ORIENTED ANALYSIS AND DESIGN & C++	CORE	6	5

Course Objective

- Present the object model, classes and objects, object orientation, machine view and model management view
- Enable the students to learn the basic functions, principles and concepts of object oriented analysis and design
- Enable the students to understand C++ language with respect to OOAD

Prerequisites

Basics of C Programming and Object Oriented Concepts

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	Understand the concept of Object oriented development and modeling techniques	K1, K2
CO2	Gain knowledge about the various steps performed during object design	K2, K3
CO3	Abstract object-based views for generic software systems	K3
CO4	Link OOAD with C++ language	K4, K5
CO5	Apply the basic concepts of OOPs and familiarize to write C++ program	K5, K6

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	3	2
CO2	3	2	3	3	2	3	3	2	3	2
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	2	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“-” – indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	The Object Model: The Evolution of the Object Model – Elements of the Object Model – Applying the Object Model. Classes and Objects: The Nature of an Object – Relationships among Objects- The Nature of Class – Relationship among Classes – The Interplay of classes and Objects.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	Introduction to C++ - Input and Output in C++ - C++ Declarations - Control Structures.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	Functions in C++ - Classes and Objects – Constructors and Destructors – Operator Overloading and Type Conversion.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	Inheritance – Pointers and Arrays- C++ And Memory: the new and Delete operators – Polymorphism and Virtual Functions.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	Applications with Files – Exception Handling – Working with Strings - Overview of Standard Template Library (STL).	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self-Study for Enrichment: (Not included for End Semester Examinations) Classification: The Importance of Proper Classification –Identifying Classes and Objects – Key Abstractions and Mechanisms. Notation: The Unified Modeling Language – Component Diagrams-Deployment Diagrams-Use Case Diagrams-Activity Diagrams-Class Diagrams-Object Diagrams.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Books

1. Grady Booch, Robert A. Maksimchuk, Michael W. Engle, Bobbi J. Young, Jim Conallen, Kelli A. Houston. (2014). *Object Oriented Analysis and Design with Applications*. 3rd Edition, Pearson Education. (Unit: I)
2. Ashok N. Kamthane. (2009), *Object-Oriented Programming with ANSI & TurboC++*, 7th Impression, Pearson Education Limited. (Unit: II - V)

Reference Books

1. Balagurusamy (2003), *Object Oriented Programming with C++*, Second Edition, TMH.

Web References

1. https://onlinecourses.nptel.ac.in/noc19_cs48/preview
2. <https://nptel.ac.in/noc/courses/noc16/SEM2/noc16-cs19/>
3. https://www.tutorialspoint.com/object_oriented_analysis_design/ooad_object_oriented_analysis.htm

Pedagogy

Chalk and Talk, PPT, Discussion, Assignment, Quiz, Seminar

Course Designer

Ms.K.Pradeepa

Semester: I	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
23PCS1CC3	PYTHON PROGRAMMING	CORE	6	5

Course Objective

- To learn the Syntax and Semantics of Python Programming Language
- To write Python functions to facilitate code reuse and manipulate Strings
- To Understand different Data Structures of Python
- To Illustrate the process of Structuring the data using Lists, Tuples and Dictionaries

Prerequisites

Basic Knowledge in Programming Language

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	Recall and understand the basic concepts of Python Programming	K1, K2
CO2	Understand the fundamental principles of Classes and Objects	K2
CO3	Solve real world problems by applying Object Oriented Skills	K3
CO4	Analyze the concepts of Python for developing Web applications	K4
CO5	Develop and evaluate programs for Client Server Networking applications	K5, K6

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	2	3	3	2	3
CO2	3	2	2	2	2	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	2	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“-” – indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	A Taste of Py: Installing Python – Running Python. Py Ingredients: Numbers, Strings, and Variables. Py Filling: Lists, Tuples, Dictionaries and Sets.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	Py Crust: Code Structures: Compare with if, elif and else – Repeat with while – Iterate with for – Comprehensions – Functions – Generators – Decorators – Namespaces and Scope – Handle Errors with try and except – Make your own Exceptions.	18	CO1, CO2, CO3, CO4, CO5,	K1, K2, K3, K4, K5, K6
III	Py Boxes: Modules, Packages, and Programs: Standalone Programs – Command-Line Arguments – Modules and the import Statement – Packages - The Python Standard Library. Oh Oh: Objects and Classes: Objects - Define a Class with class – Inheritance – Override a Method – Add a Method – Get Help from Your Parent with super – In self Defense –Get and Set Attribute Values with Properties –Name Mangling for Privacy – Method Types – Duck Typing – Special Methods – Aggregation and Composition.	20	CO1, CO2, CO3, CO4, CO5,	K1, K2, K3, K4, K5, K6
IV	Mangle Data Like a Pro: Text Strings – Binary Data. Data Has to Go Somewhere: File Input/Output – Structured Text Files – Structured Binary Files - Relational Databases – NoSQL Data Stores. The Web, Untangled: Web Clients – Web Servers – Web Services and Automation.	17	CO1, CO2, CO3, CO4, CO5,	K1, K2, K3, K4, K5, K6
V	Systems: Files – Directories – Programs and Processes – Calendars and Clocks. Concurrency and Networks: Concurrency: Queues – Processes – Threads –Green Threads and event – twisted – Redis-Networks: Patterns – The Publish - Subscribe Model – TCP/IP – Sockets – ZeroMQ – Internet Services – Web Services and APIs – Remote Processing – Big Fat Data and Map Reduce – Working in the Clouds.	17	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

VI	Self-Study for Enrichment: (Not included for End Semester Examinations) Full-Text Databases – PyCharm-Case Study: Data Analysis and Visualization using Python- Web Development Using Python-Scientific Computing Using Python.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
-----------	--	---	-------------------------------------	--------------------------------

Text Book

1. Bill Lubanovic.(2016). *Introducing Python*. 1st Edition, Third Release, O'Reilly

Reference Books

1. MarkLutz.(2013). *Learning Python*. 5th Edition, O'Reilly
2. David M. Beazley.(2009). *Python Essential Reference*. 4th Edition, Developer's Library.
3. SheetalTaneja, Naveen Kumar.(2017). *Python Programming – A Modular Approach*, Pearson Publications

Web References

1. <https://www.programiz.com/python-programming/>
2. <https://www.tutorialspoint.com/python/index.htm>
3. https://onlinecourses.swayam2.ac.in/aic20_sp33/preview
4. https://www.w3schools.com/python/python_intro.asp
5. <https://www.javatpoint.com/python-tutorial>

Pedagogy

Chalk and Talk, PPT, Discussion, Assignment, Quiz, Seminar

Course Designer

Ms.R.Sangeetha

Semester: I	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
23PCS1CC1P	ALGORITHM AND OOPS (P)	CORE	6	5

Course Objective

- This course enables the students to learn the applications of the data structures using various techniques
- It also enable the students to understand C++ language with respect to OOAD concepts
- Application of OOPS concepts

Prerequisites

Basic understanding of C++ Programming

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	Identify and apply the suitable data structure for the given real world problem	K2, K3
CO2	Able to understand and implement OOPS concepts.	K2,K3
CO3	Apply the concepts of Stack, Queue, Tree, List using C++	K3
CO4	Analyze the concepts of sorting and searching algorithms using relevant data structures.	K4
CO5	Interpret and Solve problem involving graphs, trees and heaps	K6

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	3	2
CO2	3	2	3	3	2	3	3	2	3	2
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	2	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“-” –indicates there is no correlation.

Exercises

1. Write a program to solve the tower of Hanoi using recursion.
2. Write a program to traverse through Binary Search Tree using traversals.
3. Write a program to perform various operations on Stack using Linked list.
4. Write a program to perform various operations in a circular queue.
5. Write a program to sort an array of elements using Quick sort.
6. Write a program to solve the number of elements in ascending order using Heap sort.
7. Write a program to solve the knapsack problem using Greedy method
8. Write a program to search for an element in a tree using Divide & Conquer strategy.
9. Write a program to place the 8 queens on an 8 x 8 matrix so that no two queens Attack.
10. Write a C++ program to perform Virtual Function
11. Write a C++ program to perform Parameterized Constructor
12. Write a C++ program to perform Friend Function
13. Write a C++ program to perform Function Overloading
14. Write a C++ program to perform Single Inheritance
15. Write a C++ program to perform Employee Details using files.

Web References

1. https://onlinecourses.nptel.ac.in/noc19_cs48/preview
2. https://www.tutorialspoint.com/object_oriented_analysis_design/ooad_object_oriented_analysis.htm
3. <https://www.geeksforgeeks.org/c-plus-plus/?ref=shm>
4. <https://www.tutorialspoint.com/cplusplus-program-to-implement-stack-using-linked-list>
5. <https://webeduclick.com/cpp-program-tower-of-hanoi-using-recursion/>

Pedagogy

PowerPoint Presentation, Live Demonstration

Course Designer

Ms. S.Saranya

Semester: I	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
23PCS1DSE1A	ADVANCED SOFTWARE ENGINEERING	DISCIPLINE SPECIFIC ELECTIVE	6	3

Course Objective

- To learn the concepts of Software Engineering
- To provide the idea of decomposing the given problem into Analysis, Design, Testing and Maintenance phases
- To inculcate knowledge on Software Project Management, Software Design & Testing

Prerequisites

Basics of Software Engineering & Software Project Management

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	Understand about Software Engineering process	K1, K2
CO2	Make use of Software Project Management Skills, Design and Quality Management	K3
CO3	Analyze on Software Requirements and Specification	K4
CO4	Analyze and Compare Software Testing, Maintenance and Software Re-Engineering	K4, K5
CO5	Design and conduct various types and levels of software quality or a software project	K5, K6

Mapping of CO with PO and PSO

COs	PSO 1	PSO 2	PSO 3	PSO4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5
CO1	3	3	2	2	3	3	3	2	2	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“-” indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Introduction: The Problem Domain – Software Engineering Challenges - Software Engineering Approach. Software Processes: Software Process – Characteristics of a Software Process – Software Development Process Models – Other software processes.	16	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	Requirements Analysis and Specification: Requirements Gathering and Analysis- Software Requirements Specification (SRS) - Formal System Specification – Axiomatic Specification – Algebraic Specification. Software Quality Management: Software Quality-Software Quality Management System-ISO 9000 - SEI Capability Maturity Model.	20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	Software Project Management: Responsibilities of a Software Project Manager – Project Planning – Metrics for Project Size Estimation – Project Estimation Techniques – Empirical Estimation Techniques – COCOMO – Halstead’s Software Science – Staffing Level Estimation – Scheduling– Organization and Team Structures – Staffing – Risk Management – Software Configuration Management.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	Software Design: Outcome of the Design Process – Characteristics of a good software design – Cohesion and Coupling -Layered Arrangement of Modules- Function Oriented Design – Object Oriented Design. Function Oriented SoftwareDesign: Structured Analysis-Structured Design-Detailed Design-Design Review.	16	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	Software Testing: Basic concepts and Terminologies – Design Test Cases: Functional testing– Structural testing – Levels of testing: Unit testing, Integration Testing and System Testing – Debugging–Program Analysis tools-Some General Issues Associated with Testing: Regression testing. Software Maintenance: Characteristics of Software Maintenance – Software Reverse Engineering – Software Maintenance Process Models: Software Re-engineering.	20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self-Study for Enrichment: (Not included for End Semester Examinations) Requirement engineering -Strategy of Design-IEEE Recommended Practice for Software Design Descriptions - Reliability Estimation. Case Study: Student Result Management System.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Books

1. Pankaj Jalote, (2005). *An Integrated Approach to Software Engineering*, 3rd Edition, Springer Science+Business Media. (Unit: I)
2. Rajib Mall, (2018). *Fundamentals of Software Engineering*, 5th Edition, PHI Learning Private Limited. (Unit: II - V)

Reference Books

1. K.K. Aggarwal and Yogesh Singh, (2005). *Software Engineering*. Revised 2nd Edition, New Age International Publishers.
2. R.S. Pressman (2010). *A Practitioner's Approach-Software Engineering*. McGraw-Hill Higher Education.
3. Carlo Ghezzi, M. Jazayeri, D. Mandrioli (2010). *Fundamentals of Software Engineering*, PHI Publication

Web References

1. <https://www.javatpoint.com/software-engineering-tutorial>
2. https://onlinecourses.swayam2.ac.in/cec20_cs07/preview
3. https://onlinecourses.nptel.ac.in/noc19_cs69/preview
4. https://www.google.co.in/books/edition/FUNDAMENTALS_OF_SOFTWARE_ENGINEERING_FIF/
5. https://www.google.co.in/books/edition/_/pJc3xKQfD-MC?hl=en&gbpv=1

Pedagogy

Chalk & Talk, PPT, Group Discussion, Seminar and Assignment

Course Designer

Dr.K.Reka

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)

NATIONALLY ACCREDITED WITH “A” GRADE BY NAAC

ISO 9001:2015 Certified

TIRUCHIRAPPALLI

PG & RESEARCH DEPARTMENT OF COMPUTER SCIENCE



M. Sc. COMPUTER SCIENCE

SYLLABUS

2022-2023 and Onwards



Cauvery College for Women (Autonomous), Trichy

PG & Research Department of Computer Science

M.Sc. Computer Science

LEARNING OUTCOME BASED CURRICULUM FRAMEWORK (CBCS- LOCF)
(For the Candidates admitted from the Academic year 2022-2023 onwards)

Semester III

Semester	Course	Course Title	Course Code	Inst. Hrs. / week	Credits	Exam			Total
						Hrs.	Marks		
							Int.	Ext.	
III	Core Course– VI (CC)	Compiler Design	22PCS3CC6	6	5	3	25	75	100
	Core Course – VII (CC)	Cloud Computing	22PCS3CC7	6	5	3	25	75	100
	Core Choice Course– II (CCC)	A. Cyber Security	22PGCS3CCC2A	5	4	3	25	75	100
		B. IoT	22PCS3CCC2B						
		C. Natural Language Processing	22PCS3CCC2C						
	Core Practical - III (CP)	Cloud Computing (P)	22PCS3CC3P	5	5	3	40	60	100
	Discipline Specific Elective Course-III (DSE)	A. Computer Science for Competitive Examinations	22PCS3DSE3A	5	3	2	-	100	100
		B. IoT (P)	22PCS3DSE3BP			3	40	60	
		C. Natural Language Processing (P)	22PCS3DSE3CP			3	40	60	
	Generic Elective Course -I (GEC)	Data Analysis (P)	22PCS3GEC1P	3	2	3	40	60	100
Extra Credit Course	SWAYAM	As per UGC Recommendation							
Total				30	24	-	-	-	600

SEMESTER III

SYLLABUS

Semester : III	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22PCS3CC6	COMPILER DESIGN	CORE	6	5

Course Objective

- To enrich the knowledge in various development phases of compiler and its uses
- To learn Code optimization techniques, machine code generation and use of symbol table
- To identify the similarities and differences among various parsing techniques and grammar transformation techniques

Prerequisites

Basic Knowledge in Programming Languages, Data Structures and Discrete Mathematics

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	Understand the structure of compiler, applications of finite automata, regular expressions, Grammar and identify the significance of different phases of the compiler.	K1,K2
CO2	Demonstrate the construction of finite automaton, various parsing, intermediate, target code generation and code optimization techniques.	K2
CO3	Construct the finite automaton, various parsing tables and develop intermediate and target code by using storage allocation strategies.	K3,K4
CO4	Analyze and explain the relationship among the phases of compiler, various parsing and code optimization techniques	K4,K5
CO5	Assess and Recommend tools, methods, and techniques to build compiler	K4,K5

Mapping of CO with PO and PSO

COs	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	2	3	3	3	3	2
CO4	3	3	3	3	2	3	3	3	3	2
CO5	3	3	3	3	2	3	3	3	3	2

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“-” indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Introduction to Compiler– The Structure of a Compiler – Lexical Analysis: The Role of the Lexical Analyzer – Specification of Tokens–Finite Automata- Nondeterministic Finite Automata-Deterministic Finite Automata- From Regular Expressions to Automata-Conversion of an NFA to a DFA-Construction of an NFA from Regular Expression.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Syntax Analysis: The Role of the Parser-Context Free Grammars-Verifying the language generated by a grammar-Context Free Grammars versus Regular Expressions-Writing a Grammar-Eliminating ambiguity -Elimination of Left Recursion-Left Factoring – Top-Down Parsing-Recursive Descent Parsing – Nonrecursive Predictive Parsing- Bottom-Up Parsing- Shift-Reduce Parsing.	20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	LR Parsers- The LR-Parsing algorithm-Constructing SLR Parsing tables-Canonical LR(1) Parsing tables-Constructing LALR Parsing tables. Syntax-Directed Translation: Inherited and Synthesized Attributes – Dependency Graphs – S-Attributed Definitions – L-Attributed Definitions – Construction of syntax trees- Syntax Directed Translations Schemes.	20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Intermediate-Code Generation: Variants of Syntax trees – Three Address code – Types and Declarations - Translation of Expressions – Type Checking - Control Flow - Backpatching - Switch Statements – Intermediate Code for Procedures.	16	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Code Generation: Issues in the design of a Code Generator - Basic Blocks and Flow graphs– Optimization of Basic Blocks- The DAG Representation of Basic Blocks - Peephole Optimization	16	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self Study for Enrichment: (Not included for End Semester Examinations) Compiler Construction tools -Input buffering- Recognition of tokens- Symbol Tables - Lexical analyzer Generator Lex-Parser Generator YACC. Error recovery in Parsing – Run time Environments- Storage organization- The target machine - A simple code generator.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Book

1. Alfred V. Aho, Monica S.Lam, Ravi Sethi and Jeffrey D. Ullman,(2013). “*Compilers- Principles, Techniques and Tools*”, Second Edition, Pearson Education.

Reference Books

1. Kennath C. Loudon,(2006). “*Compiler Construction: Principles and Practice*”, Vikas publishing House.
2. S.Godfrey Winstler, S.Aruna Devi, R.Sujatha,(2020). “*Compiler Design*”, Second Edition, Yesdee Publishers.
3. Raghavan V, (2017). “*Principles of Compiler Design*” Tata McGraw Hill Education Pvt. Ltd.

Web References

1. <https://www.geeksforgeeks.org/introduction-of-finite-automata/>
2. https://www.slideshare.net/appasami/cs6660-compiler-design-notes?next_slideshow=1
3. <https://www.javatpoint.com/lr-parser>
4. https://www.tutorialspoint.com/compiler_design/compiler_design_phases_of_compiler.htm
5. <https://byjus.com/gate/intermediate-code-generation-in-compiler-design-notes/>
6. <https://www.youtube.com/watch?v=F9ZoFP7D474>
7. <https://www.codingninjas.com/codestudio/library/code-generation-4403>

Pedagogy

Chalk & Talk, PPT, Group Discussion, Seminar and Assignment

Course Designer

Ms.K.Sangeetha

Semester : III	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22PCS3CC7	CLOUD COMPUTING	CORE	6	5

Course Objective

- To provide an in-depth and comprehensive knowledge of the Cloud Computing fundamental issues, technologies, applications and implementations.
- To motivate students to do programming and experiment with the various cloud computing environments
- To introduce about the Cloud Standards

Prerequisites

Distributed and Grid Computing

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	Understand and discuss the fundamentals of various cloud models	K1, K2
CO2	Determine the applications and the architectures of cloud	K3, K5
CO3	Identify and Examine services and appropriate virtualization concepts	K3, K4
CO4	Explore and recommend cloud solutions for mobile cloud and mobile web services	K4, K5
CO5	Justify and Enhance real time cloud applications to its appropriate environment	K5, K6

Mapping of CO with PO and PSO

Cos	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5
CO1	3	3	2	3	2	3	3	2	3	2
CO2	3	3	2	3	2	3	3	2	3	2
CO3	3	3	2	3	3	3	3	2	3	3
CO4	3	3	2	3	3	3	3	2	3	3
CO5	3	3	3	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“-” indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Defining Cloud Computing- Cloud Types: The NIST model - The Cloud Cube Model -Deployment models - Service models - Examining the Characteristics of Cloud Computing: Paradigm shift- Benefits of cloud computing - Disadvantages of cloud computing – Assessing the Value Proposition: Measuring the Cloud's value: The laws of clouonomics - Cloud computing obstacles - Behavioral factors relating to cloud adoption – Measuring cloud computing costs – Avoiding Capital Expenditures – Computing the Total Cost of Ownership – Specifying Service Level Agreements.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	Understanding Cloud Architecture: Exploring the Cloud Computing Stack–Composability- Infrastructure – Platforms - Virtual Appliances - Communication Protocols –Applications – Connecting to the Cloud. Understanding Services and Applications by Type: Defining Infrastructure as aService (IaaS) - Defining Platform as a Service (PaaS) - Defining Software as a Service (SaaS) –SaaS characteristics- Salesforce.com and CRM SaaS – Defining Identity as a Service (IDaaS).	20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	Understanding Abstraction and Virtualization: Using Virtualization Technologies – Load Balancing and Virtualization: Advanced load balancing - The Google cloud – Understanding Hypervisors: Virtual machine types-VMware vSphere-Understanding Machine Imaging –Porting Applications: The Simple Cloud API-AppZero Virtual Application Appliance. Capacity Planning -Load testing-Resource ceilings - Network Capacity - Scaling.	20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	Understanding Service Oriented Architecture: Introducing Service Oriented Architecture – Defining SOA Communications – Managing and Monitoring SOA. Using the Mobile Cloud: Working with Mobile Devices – Defining the Mobile Market–Using Smartphones with the Cloud. Working with Mobile Web Services: Understanding Service Types–Performing Service Discovery – Using SMS – Defining WAP and other Protocols –Performing Synchronization	20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	Cloud Programming and Software Environments: Parallel and Distributed Programming Paradigms – Programming support of Google App Engine – Programming on Amazon AWS and Microsoft Azure – Ubiquitous Clouds and the Internet of Things: Cloud Trends in Supporting Ubiquitous Computing.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

VI	Self Study for Enrichment (Not included for End Semester Examinations) Using Media and Streaming: Understanding the Streaming process- Protocols in use – The cloud computing advantages -Audio Streaming – Working with VoIP applications-Skype – Google Voice and Google Talk-Video Streaming – Television in the cloud- Streaming video formats – YouTube	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
----	---	---	-------------------------------------	---------------------------------------

Text Books

1. Barrie Sosinsky.(2011).*Cloud Computing Bible*. Wiley Publishing Inc.(Unit I – IV)
2. Kai Hwang, Geoffrey C.Foxand Jack J.Dongarra (2013). *Distributed and Cloud computing: From parallel processing to the Internet of Things*. Morgan Kaufmann (Unit V)

Reference Books:

1. Michael Miller(2012).*Cloud Computing*. 7th Edition, Pearson Education Inc.
2. Rajkumar Buyya & Co,(2011). *Cloud Computing Principles and Paradigms*, John Wiley & Sons Publications

Web References

1. https://www.tutorialspoint.com/cloud_computing/index.htm
2. <https://data-flair.training/blogs/cloud-computing-tutorial/>

Pedagogy

Chalk & Talk, Discussion, Quiz, Assignment & PPT

Course Designer

Ms. S. Udhaya Priya

Semester : III	Internal Marks:40		External Marks:60	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22PCS3CC3P	CLOUD COMPUTING (P)	CORE	5	5

Course Objective

- To develop web applications in cloud
- To learn the design and development process involved in creating a cloud-based application
- To learn to implement and use parallel programming using Hadoop

Prerequisites

Java, Python, HTML and Linux

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	List and illustrate the usage of Python and HTML Tags in web applications	K1,K2
CO2	Demonstrate and make use of Google App Engine (GAE) in web applications	K2,K3
CO3	Apply and Compare python for cloud-based applications	K3,K4
CO4	Examine and Evaluate the web applications with CloudSim	K4,K5
CO5	Interpret and Develop web application using Hadoop	K5,K6

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	3	2	3	3	3	3	2
CO2	3	3	2	3	2	3	2	2	3	2
CO3	3	3	2	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	2
CO5	3	3	3	3	3	3	3	3	3	3

“1”– Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” indicates there is no correlation

Exercises

1. Install Virtualbox/VMware Workstation with different flavours of linux or windows OS on top of windows7 or 8.
2. Install a C compiler in the virtual machine created using virtual box and execute Simple Programs
3. Install GAE. Create hello world app and other simple web applications using python/java.
4. Use GAE launcher to launch the web applications.
5. Simulate a cloud scenario using CloudSim and run a scheduling algorithm that is not present in CloudSim.
6. Find a procedure to transfer the files from one virtual machine to another virtual machine.
7. Find a procedure to launch virtual machine using TryStack.
8. Install Hadoop single node cluster and run simple applications like wordcount.
9. i) Explore JustCloud, Amazon Drive file storage and sharing solutions.
i) Work with YouTube, a cloud service to upload your own educational video(s) and use appropriate settings to make it public.

Web References

1. <https://www.iitk.ac.in/nt/faq/vbox.htm>
2. <https://www.javatpoint.com/virtualbox-installation>
3. <https://cloud.google.com/appengine/docs/flexible/python/create-app>
4. <https://edwardsamuel.wordpress.com/2014/10/25/tutorial-creating-openstack-instance-in-trystack/>
5. <https://www.geeksforgeeks.org/how-to-install-single-node-cluster-hadoop-on-windows/>
6. <https://www.edureka.co/blog/install-hadoop-single-node-hadoop-cluster>

Pedagogy

Demonstration

Course Designer

Ms. S. Udhaya Priya

Semester: III	Internal Marks: -		External Marks: 100	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22PCS3DSE3A	COMPUTER SCIENCE FOR COMPETITIVE EXAMINATIONS	DISCIPLINE SPECIFIC ELECTIVE	5	3

Course Objective

- To understand the need for preparing competitive exams
- To study the basic concepts of core subjects in computer science
- To inculcate the knowledge of implementation of various concepts

Prerequisites

Basic concept of core computer science

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	Explain concepts of computer science core subjects	K2
CO2	Apply the knowledge to solve various types of problems	K3
CO3	Examine various computer science concepts on real time applications	K4
CO4	Develop a scientific aptitude and sense of reasoning	K6
CO5	Develop students with professional and ethical attitude	K6

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	3	2	3	3	2	3	3	3	3	3
CO3	3	3	3	3	2	3	3	3	3	3
CO4	3	3	3	2	2	3	3	3	3	3
CO5	3	3	3	3	2	3	3	3	3	2

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“-” –indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Number Systems- Series Completion -Coding & Decoding- Problems on Ages - Blood Relation - Probability – Permutation & Combination - Data Interpretation - ICT (Information and Communications Technology-Logical Reasoning & Non – Verbal Reasoning. Programming Languages - Programming in C- Object Oriented Programming – Programming in C++/JAVA - Web Programming	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Mathematical Logic: Propositional and Predicate Logic - Predicates and Quantifiers-Rules of Inference-Sets and Relations: Set Operations, Representation and Properties of Relations, Equivalence Relations, Partially Ordering. Counting, Mathematical Induction and Discrete-Probability - Group Theory –Graph Theory – Minimum Spanning Tree – Graph Algorithms-Optimization- Digital Logic: Number systems-Boolean Algebra – Map Simplification - Combinational Circuits – Sequential Circuits. Memory Hierarchy: Main Memory - Auxilliary Memory - Associative Memory - Cache Memory - Virtual Memory	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Operating System: Threads – CPU Scheduling - Disk Scheduling– Deadlocks - Paging– Process Management-Memory Management – Storage Management – File and Input/output Systems – Security – Kernel modules - Linux – Data Structures and Algorithms: Time and Space Complexity,Linked Lists, Stacks and Queues – Trees-Search and Sorting Algorithms – Hashing – Algorithm design techniques: Greedy Approach, Dynamic Programming - Divide and Conquer – Graph Search, Minimum Spanning trees, Shortest paths – Complexity Theory(P and NP Class problem)	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Data Communication and Computer Networks: Concept of Layering – Network Types & Models – Functions of OSI & TCP/IP Layers - Flow and Error Control techniques, switching – IPV4/IPV6, routers and routing algorithms – TCP/UDP and sockets, congestion controls. Application Layer Protocols (WWW, DNS, SMTP, POP, FTP, and HTTP) -Network Security: authentication- basics of public key- cryptography-digital signatures and certificates- firewalls. Database Management Systems: Basic concepts – Data Modeling – SQL – Normalization- Data models.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Theory of Computation: Finite Automata and Regular Languages–Context Free Languages and Push down Automata–Recursive Enumerable sets and Turing Machines – Syntax & Semantic Analysis- Compiler Design: Lexical Analysis and Parsing – Syntax Directed Translation- Intermediate code generation – Code optimization Approaches to AI: Turing Test and	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

	Rational Agent Approaches- State Space Representation of Problems - Heuristic Search Techniques - Min-Max Search - Alpha Beta Cutoff Procedures.			
VI	Self-Study for Enrichment: (Not included for End Semester Examinations) Estimation and Scheduling of Software Projects: Software Sizing - LOC and FP based Estimations. Estimating Cost and Effort- Estimation Models- Constructive Cost Model (COCOMO). Computer Organization and Architecture: Machine Instruction and Addressing Modes – ALU & Data Path, CPU Control Design – Memory & I/O Interface – Instruction Pipeline – Secondary Storage – Microprocessor- Computer Graphics: 2-D Geometrical Transforms and Viewing- 3-D Object Representation, Geometric Transformations and Viewing	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Reference Books:

1. Dr.R.S.Aggarwal, (2017), *Quantitative Aptitude for Competitive Examinations*, S.Chand Publishing
2. Dr.R.S.Aggarwal,(2020), *A modern Approach to verbal & Non-verbal Reasoning*, S.Chand Publishing
3. R.Gupta,(2015), *UGC – NET/SET Computer Science & Applications*, R.Gupta
4. Surbhi Sharma, Kailasah Chandra Gurunani,(2018), *UGC NET Computer Science and Applications*, Arihant Publication
5. Trishna Knowledge Systems, (2019), *GATE Computer Science and Information Technology- GATE 2020*, Pearson

Web References

1. <https://www.careerbless.com/aptitude/qa/home.php>
2. <https://www.sawaal.com/aptitude-reasoning/quantitative-aptitude-arithmetic-ability-questions-and-answers.html>
3. <https://www.indiabix.com/non-verbal-reasoning/questions-and-answers/>
4. <https://www.geeksforgeeks.org/ugc-net-cs-preparation/>
5. <http://www.netugc.com/ugc-net-solved-question-papers-in-computer-science-and-applications>
6. <https://gatecse.in/>
7. <https://gateoverflow.in/>

Pedagogy

Chalk and Talk, PPT, Discussion, Assignment, Quiz and Seminar

Course Designer

Ms.Rita Jenifer, Ms.S.Saranya and Ms.R.Ramya

GENERIC ELECTIVE COURSE –I (GEC)
FOUNDATION FOR LOGICAL THINKING
(2022-2023 and Onwards)

Semester III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs / Week	CREDITS
22PMA3GEC1	FOUNDATION FOR LOGICAL THINKING	GENERIC ELECTIVE	3	2

Course Objectives

- **Explain** many short tricks to solve mathematical problems easily.
- **Apply** the knowledge to **interpret** and **solve** the problems.
- **Predict** elite knowledge in verbal reasoning.

Prerequisite

Knowledge of basic mathematics

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Explain the knowledge of the various techniques of quantitative aptitude and reasoning.	K1, K2
CO2	Apply the concepts in solving mathematical problems to succeed in various competitive examinations.	K3
CO3	Examine various types of Problems using arithmetic and reasoning test.	K3
CO4	Apply the concept obtained in the course to solve the problems.	K3
CO5	Analyse real-life problems and find solutions.	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3	3	3	2	2	3
CO2	3	2	3	3	3	3	3	3	2	3
CO3	3	3	2	3	3	3	3	3	3	3
CO4	3	2	3	3	2	3	3	2	2	3
CO5	3	2	3	3	2	3	3	3	3	2

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” indicates there is no Correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Arithmetical Ability: Surds and indices - Logarithms – Alligation or Mixture	9	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4
II	Probability – Heights and Distances – Odd Man Out and Series	9	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4
III	Data Interpretation: Bar Graphs - Pie Chart - Line Graphs.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	Reasoning Test: Relationship –Direction Sense Test - Problems based on Alphabet.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	Logical Reasoning	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
VI	Self-Study for Enrichment: (Not included for End Semester Examinations) Arithmetical Ability: Permutation and Combination- Clocks – Calendar. Verbal Reasoning: Analogy- Classification.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

Text Books

1. R.S.Aggarwal (Reprint 2017), *Quantitative Aptitude for Competitive Examinations (Fully Solved)*, S.Chand and Company Ltd., New Delhi.
2. Dr.Lal, Jain and Dr. K. C. Vashisthu (2018), *UGC NET/JRF/SET Teaching & Research Aptitude*, Upkar Prakashan, Agra.

Chapters and Sections

UNIT-I	Section I (9, 10, 21) [1]
UNIT-II	Section I (31, 34, 35) [1]
UNIT-III	Section II (37, 38, 39) [1]
UNIT- IV	Section I (1, 5, 7) [2]
UNIT- V	Section II [2]

Reference Books

1. Dinesh Khattar (2016), *Pearson Guide to Quantitative Aptitude for Competitive Examinations*, Pearson Publication, 3rd Edition.
2. Lal, Jain and Vashisthu .K .C (2018), *UGC NET/JRF/SET Teaching Research Aptitude*.
3. Abhijit Guha (2014), *Quantitative Aptitude for Competitive Examinations*, McGraw Hill Education Private Limited, New Delhi, 5th Edition.

Web References

1. <https://www.indiabix.com/aptitude/questions-and-answers/>
2. <https://www.youtube.com/watch?v=IFHjNbSmsCE>
3. <https://www.sawaal.com/aptitude-reasoning/quantitative-aptitude-arithmetic-ability-questions-and-answers.html>
4. <https://www.youtube.com/watch?v=xRLNYich5Ls>
5. <https://www.youtube.com/watch?v=qwHJtfEUCgE>
6. https://www.youtube.com/watch?v=g0_1ZhueCcE
7. <https://www.indiabix.com/logical-reasoning/questions-and-answers/>
8. <https://byjus.com/govt-exams/logical-reasoning/>

Pedagogy

Power Point Presentations, Group Discussions, Seminar, Quiz and Assignment.

Course Designer

Ms. V. ManiMozhi

ANNEXURE L



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)
DEPARTMENT OF COMPUTER APPLICATIONS

BCA

LEARNING OUTCOMES BASED CURRICULAM FRAMEWORK (CBCS – LOCF)

(For the Candidates admitted from the Academic year 2023-2024 and onwards)

Semester	Part	Course	Course Title	Course Code	Inst. Hrs. / week	Credits	Exam			Total
							Hrs.	Marks		
								Int	Ext	
I	I	Language Course - I (LC)	Podhu Tamil – I	23ULT1	6	3	3	25	75	100
			Hindi ka Samanya Gyan aur Nibandh	23ULH1						
			Poetry, Grammar and History of Sanskrit Literature	23ULS1						
			Foundation Course: Paper I- French I	23ULF1						
	II	English Language Course - I (ELC)	General English -I	23UE1	6	3	3	25	75	100
	III	Core Course – I (CC)	Python Programming	23UCA1CC1	5	5	3	25	75	100
		Core Practical - I (CP)	Python Programming Lab (P)	23UCA1CC1P	3	3	3	25	75	100
		First Allied Course - I (AC)	Numerical Methods	23UCA1AC1	4	3	3	25	75	100
		First Allied Course - II (AC)	Statistical Methods and its Application-I	23UCA1AC2	4	3	3	25	75	100
	IV	Ability Enhancement Compulsory Course -I (AECC)	Value Education	23UGVE	2	2	-	100	-	100
	Total				30	22				700

Semester I	Internal Marks:25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
23UCA1CC1 / 23UCS1CC1	Python Programming	CORE	5	5

Course Objectives

- To make students understand the concepts of Python programming
- To apply the OOPs concept in PYTHON programming
- To impart knowledge on demand and supply concepts
- To make the students learn best practices in PYTHON programming
- To know the costs and profit maximization

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Learn the basics of python, Do simple programs on python, Learn how to use an array.	K1
CO2	Develop program using selection statement, Work with Looping and jump statements, Do programs on Loops and jump statements.	K2
CO3	Concept of function, function arguments, Implementing the concept strings in various application, Significance of Modules, Work with functions, Strings and modules.	K3
CO4	Work with List, tuples and dictionary, Write program using list, tuples and dictionary.	K4
CO5	Usage of File handlings in python, Concept of reading and writing files, Do programs using files.	K5

Mapping of CO with PO and PSO

	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	3	2	1	1	3	3	2	3	2
CO2	3	2	3	1	1	3	2	2	3	3
CO3	3	3	3	2	2	3	3	2	3	2
CO4	3	2	3	2	2	3	3	2	3	2
CO5	3	3	3	2	2	3	3	2	2	3

“1”-Slight(Low)Correlation

“2”-Moderate(Medium)Correlation

“3” -Substantial(High)Correlation

“-” - Indicates there Is no Correlation

Syllabus

UNIT	Contents	HOURS	COs	COGNITIVE LEVEL
I	Basics of Python Programming: History of Python-Features of Python-Literal-Constants-Variables - Identifiers–Keywords-Built-in Data Types-Output Statements – Input Statements-Comments – Indentation- Operators-Expressions-Type Conversions. Python Arrays: Defining and Processing Arrays.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Control Statements: Selection/Conditional Branching statements: if, if-else, nested if and if-elif-else statements. Iterative Statements: while loop, for loop, else suite in loop and nested loops. Jump Statements: break, continue.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Functions: Function Definition – Function Call – Variable Scope and its Lifetime-Return Statement. Function Arguments: Required Arguments, Keyword Arguments, Default Arguments and Variable Length Arguments-Recursion. Python Strings: String operations-Immutable Strings - Built-in String Methods and Functions - String Comparison. Modules: import statement- The Python module – dir() function – Modules and Namespace.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Lists: Creating a list -Access values in List-Updating values in Lists-Nested lists -Basic list operations-List Methods. Tuples: Creating, Accessing, Updating and Deleting Elements in a tuple – Nested tuples– Difference between lists and tuples. Dictionaries: Creating, Accessing, Updating and Deleting Elements in a Dictionary – Dictionary Functions and Methods - Difference between Lists and Dictionaries.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Python File Handling: Types of files in Python - Opening and Closing files-Reading and Writing files: write() and writelines() methods- append() method – read() and readlines() methods – with keyword – Splitting words – File methods - File Positions-	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self Study for Enrichment (Not to be included for End Semester Examination) Array methods - pass statements- Defining our own modules- Renaming and deleting files.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Textbook

1. Reema Thareja. (2017), Python Programming using problem solving approach, 1st Edition, Oxford University Press.
2. Dr. R. Nageswara Rao. (2017), Core Python Programming, 1st Edition, Dream tech Publishers.

References

1. VamsiKurama, Python Programming: A Modern Approach, Pearson Education.
2. Mark Lutz, Learning Python, Orielly.
3. Adam Stewarts, Python Programming, Online.
4. Fabio Nelli, Python Data Analytics, APress.
5. Kenneth A. Lambert, Fundamentals of Python – First Programs, CENGAGE Publication.

Web References

1. <https://www.programiz.com/python-programming>
2. <https://www.guru99.com/python-tutorials.html>
3. https://www.w3schools.com/python/python_intro.asp
4. <https://www.geeksforgeeks.org/python-programming-language/>
5. [https://en.wikipedia.org/wiki/Python_\(programming_language\)](https://en.wikipedia.org/wiki/Python_(programming_language))

Pedagogy

Chalk & Talk, PowerPoint Presentation, Discussion, Assignment, Demo, Quiz and Seminar

Course Designer

TANSCHÉ

Semester I	Internal Marks:25			External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS	
23UCA1CC1P / 23UCS1CC1P	Python Programming Lab (P)	CORE	3	3	

Course Objectives

- Be able to design and program Python applications.
- Be able to create loops and decision statements in Python.
- Be able to work with functions and pass arguments in Python.
- Be able to build and package Python modules for reusability.
- Be able to read and write files in Python.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Demonstrate the understanding of syntax and semantics of	K1
CO2	Identify the problem and solve using PYTHON programming techniques.	K2
CO3	Identify suitable programming constructs for problem solving.	K3
CO4	Analyze various concepts of PYTHON language to solve the problem in an efficient way.	K4
CO5	Develop a PYTHON program for a given problem and test for its correctness.	K5

Mapping of CO with PO and PSO

	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	3	2	1	1	3	3	2	3	2
CO2	3	2	3	1	1	3	2	2	3	3
CO3	3	3	3	2	2	3	3	2	3	2
CO4	3	2	3	2	2	3	3	2	3	2
CO5	3	3	3	2	2	3	3	2	2	3

“1”-Slight(Low)Correlation

“2”-Moderate(Medium)Correlation

“3” -Substantial(High)Correlation

“-”- Indicates there Is no Correlation

List of Practicals

1. Program using variables, constants, I/O statements in Python.
2. Program using Operators in Python.
3. Program using Conditional Statements.
4. Program using Loops.
5. Program using Jump Statements.
6. Program using Functions.
7. Program using Recursion.
8. Program using Arrays.
9. Program using Strings.
10. Program using Modules.
11. Program using Lists.
12. Program using Tuples.
13. Program using Dictionaries.
14. Program for File Handling.

Web References

1. <https://www.programiz.com/python-programming>
2. <https://www.guru99.com/python-tutorials.html>
3. https://www.w3schools.com/python/python_intro.asp
4. <https://www.geeksforgeeks.org/python-programming-language/>
5. [https://en.wikipedia.org/wiki/Python_\(programming_language\)](https://en.wikipedia.org/wiki/Python_(programming_language))

Pedagogy

Chalk & Talk, PowerPoint Presentation, Discussion, Assignment, Demo, Quiz and Seminar

Course Designer

TANSCHÉ

Semester I	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs/Week	CREDITS
23UCG1AC1/ 23UCS1AC1/ 23UCA1AC1/23 UIT1AC1	NUMERICAL METHODS	ALLIED	4	3

Course Objective

- **Learn** the various topics in Numerical methods.
- **Understand** the fundamentals of algebraic equations, interpolation, numerical differentiation and integration.
- **Develop** skills in solving problems of numerical techniques.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Remember the basic concepts of numerical methods.	K1
CO2	Illustrate the various notions of computational numerical streams.	K2
CO3	Apply the different techniques of numerical problems	K3
CO4	Classify the methods of numerical techniques.	K4
CO5	Examine the solutions of numerical problems.	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	3	3	3	3	3	3	2	3
CO2	3	2	3	3	3	3	3	3	3	2
CO3	3	2	3	3	3	3	3	3	2	2
CO4	3	2	2	3	3	3	3	3	3	2
CO5	3	2	3	3	3	3	3	3	2	2

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –

“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Solution of Algebraic and Transcendental Equations: Introduction – Bisection Method –The Iteration Method – The Method of False Position – Newton Raphson Method. (Simple Problems Only).	12	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4
II	Interpolation: Finite differences – Forward differences – Backward differences – Central differences – Newton’s Formulae for interpolation–Interpolation with Unevenly Spaced Points – Lagrange’s Interpolation Formula. (Simple Problems Only)	12	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4
III	Numerical Differentiation and Integration: Introduction – Numerical Differentiation – Numerical Integration – Trapezoidal Rule – Simpson’s 1/3 Rule – Simpson’s 3/8 Rule (Simple Problems Only)	12	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4
IV	Numerical Linear Algebra: Solution of Linear Systems – Direct Methods – Gauss - Elimination – Gauss -Jordan method. Solution of Linear Systems – Iterative Methods. (Simple Problems Only)	12	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4
V	Numerical Solution of Ordinary Differential Equations: Introduction – Solution by Taylor’s Series – Euler’s Method – Modified Euler’s Method – Runge-Kutta Method–Predictor-Corrector Methods – Adams-Moulton Method – Milne’s Method(Simple Problems Only)	12	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4
VI	Self-Study for Enrichment (Not included for End Semester Examination) Ramanujan’s Method – Bessel’s Formula – Newton-Cotes Integration Formulae –The QR Method – Picard’s Method of Successive Approximations	-	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4

Text Books

Sastry.S.S (2004), *Introductory Methods of Numerical Analysis* (Third Edition), Prentice Hall of India Private Ltd, New Delhi.

Chapters and Sections

- UNIT-I Chapter 2: Sections: 2.1 – 2.5 (Omit 2.3.1 & 2.5.1)
- UNIT II Chapter 3: Sections: 3.3 : 3.3.1 – 3.3.3, 3.6, 3.9 : 3.9.1
- UNIT-III Chapter 5: Sections: 5.1, 5.2 (only), 5.4 : 5.4.1 – 5.4.3
- UNIT-IV Chapter 6: Sections: 6.3: 6.3.2, 6.4
- UNIT-V Chapter 7: Sections: 7.1,7.2, 7.4: 7.4.2, 7.5,7.6

Reference Books

1. Venkataraman, M.K. (2003). *Numerical Methods in Science and Engineering*, The National Publishing Company.
2. Iyengar S.R.K, Jain R.K, (2009). *Numerical Methods*, New Age International Publishers.
3. Subramanian,N. (2007). *Numerical Methods*, SCM Publisher, Erode.

Web References

1. <https://tinyurl.com/4y7knvm9>
2. <https://tinyurl.com/t29njcy5>
3. <https://www.youtube.com/watch?v=TIWRvzzFUYQ>
4. <https://www.youtube.com/watch?v=iviiGB5vxLA>
5. https://www.youtube.com/watch?v=j_4MVZ3VADU

Pedagogy

Assignment, Seminar, Lecture, Quiz, Group discussion, Brain storming, e-content.

Course Designer

1. Dr. V. Geetha
2. Dr. S. Sasikala

ALLIED COURSE-II (AC)
STATISTICAL METHODS AND ITS APPLICATION-I
(For BCA Students)
(2023-2024 Onwards)

Semester I	Internal Marks:25		External Marks:75	
COURSECODE	COURSE TITLE	CATEGORY	Hrs/Week	CREDITS
23UCA1AC2	STATISTICAL METHODS AND ITS APPLICATION - I	ALLIED	4	3

Course Objective

- **Enable** the short historical development of Statistics.
- **Provide** the knowledge to interpret and solve the statistical problems.
- **Explore** the ideas of statistical tools.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Remember and recall the basic concepts of statistics.	K1
CO2	Illustrate the various notions in the respective stream.	K2
CO3	Apply the different terminologies of statistics.	K3
CO4	Classify the solution of statistical methods using various techniques.	K4
CO5	Explain the solution of statistical problems.	K4

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	2	3	2	2	3	2	2	2	3
CO2	2	2	3	2	2	2	2	2	2	3
CO3	3	2	3	2	2	3	2	2	3	3
CO4	3	2	2	2	2	2	2	2	2	2
CO5	2	2	2	2	3	2	3	1	2	2

“1”–Slight(Low)Correlation “2”–Moderate(Medium) Correlation

“3”–Substantial(High) Correlation“-” indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Measures of Central Tendency: Averages–Arithmetic Mean – Median – Mode – Geometric Mean.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	Dispersion: Dispersion – Measures of Dispersion – Coefficients of Dispersion (Simple Problems Only).	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	Correlation: Introduction – Meaning of Correlation – Scatter Diagram – Karl Pearson’s Co-efficient of Correlation. Rank Correlation: Spearman’s Rank Correlation Coefficient – Tied Ranks (Derivations not needed and Simple Problems Only).	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	Linear Regression: Introduction–Linear Regression–Regression Coefficients–Properties of Regression Coefficients–Angle between Two Lines of Regression–Correlation Coefficient between Observed and Estimated Values(Derivations not needed and Simple Problems Only).	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	Skewness, Kurtosis, Moments: Introduction –Meaning-Skewness- Test of Skewness- Dispersion and Skewness- Measures-Objective-Karlpearson’s Coefficient of Skewness-Bowley’s Coefficient of Skewness – Kelly’s Coefficient of Skewness – Moments- Meaning – Kurtosis - Meaning(Simple Problems Only).	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
VI	Self Study for Enrichment: (Not included for End Semester Examination) HarmonicMean–Range– Repeated Ranks(Continued)– Standard Error of Estimate or Residual Variance- Sheppard’s Correction for moments.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

Text Books

1. Gupta.S.C. &V.K.Kapoor. (2014). *Fundamentals of Mathematical Statistics*. Sultan Chand&Sons, New Delhi.
2. Pillai.R.S.N & Bhagavathi (2008).*Statistics Theory and Practice*. S.Chand & Sons, New Delhi.

Chapters and Sections

UNIT-I	Chapter 2: Sections 2.4 – 2.8 [1]
UNIT-II	Chapter 2: Sections 2.12–2.14[1]
UNIT- III	Chapter 10: Sections 10.1 to 10.4 and 10.7(10.7.1, 10.7.2)[1]
UNIT-IV	Chapter 11: Sections 11.1 to 11.2 (11.2.1, 11.2.2, 11.2.3, 11.2.5)[1]
UNIT-V	Chapter 11: Pages : 338–363[2]

Reference Books

1. Gupta. S.C. & Kapoor. V.K.(2004). *Elements of Mathematical Statistics*. Sultan Chand & Sons, New Delhi.
2. Veerarajan.T.(2010). *Probability, Statistics and Random Processes*. Tata Mc Graw Education Private.
3. Bhisma Rao.G.S.S. (2011). *Probability and Statistics*. Scitech Publications (India) Private Limited.

Web References:

1. <https://www.youtube.com/watch?v=6DYtC7lrVuY>
2. <https://youtu.be/64ELhoTvzk0>
3. https://www.youtube.com/watch?v=xZ_z8KWkhXE
4. https://www.youtube.com/watch?v=nk2COITm_eo
5. <https://rcub.ac.in/econtent/ug/bcom/sem4/Business%20Statistics%20Unit%204%20Correlation%20and%20Regression.pdf>
6. <https://youtu.be/Gp6dqDLchbk>

Pedagogy

Power Point Presentation, Group Discussion, Seminar, Assignment.

Course Designer

Dr. P. Geethanjali



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)
DEPARTMENT OF COMPUTER APPLICATIONS
BCA

LEARNING OUTCOMES BASED CURRICULAM FRAMEWORK (CBCS – LOCF)

(For the Candidates admitted from the Academic year 2022-2023 and onwards)

Semester	Part	Course	Course Title	Course Code	Inst. Hrs. / week	Credits	Exam			Total	
							Hrs.	Marks			
								Int	Ext		
III	I	Language Course -III (LC)	Kaapiyamum Nadagamum	22ULT3	5	3	3	25	75	100	
			Hindi Literature & Grammar -III	22ULH3							
			Prose,Textual Grammar and Vakyarachana	22ULS3							
			Intermediate French-I	22ULF3							
	II	English Language Course - III (ELC)	Learning Grammar Through Literature – I	22UE3	6	3	3	25	75	100	
	III	Core Course – IV (CC)	Database Management Systems	22UCA3CC4	6	6	3	25	75	100	
		Core Practical – III (CP)	Database Management Systems (P)	22UCA3CC3P	3	3	3	40	60	100	
		Second Allied Course - I (AC)	Financial Accounting	22UCA3AC4	4	3	3	25	75	100	
		Second Allied Course - II (AP)	Computer Applications in Business (P)	22UCA3AC5P	4	3	3	40	60	100	
	IV	Generic Elective Course - I (GEC)	Animation Tools - I (P)	22UCA3GEC1P	2	2	3	40	60	100	
			Basic Tamil - I	22ULC3BT1				25	75		
			Special Tamil - I	22ULC3ST1							
		Extra Credit Course	SWAYAM	As per UGC Recommendation							
		Total				30	23				700

Semester III	Internal Mark: 25		External Mark: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs/Week	CREDITS
22UCA3CC4	Database Management Systems	CORE	6	6

Course Objectives

- To understand the basic concepts and the applications of database systems
- To provide the basics of SQL and construct queries using SQL, E-R model and Normalization

Course Outcomes and Cognitive Level Mapping

COs	CO STATEMENTS On the successful completion of the course, students will be able to	COGNITIVE LEVEL
CO1	Define the basic concepts of database design, architecture and its data model	K1
CO2	Illustrate the structure of Relational database	K2
CO3	Apply the various queries in the database	K3
CO4	Examine the database design and E-R model	K4
CO5	Explain the concepts of Relational Database Design	K2,K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	3	2	1	1	3	3	2	3	2
CO2	3	2	3	1	1	3	2	2	3	3
CO3	3	3	3	2	2	3	3	2	3	2
CO4	3	2	3	2	2	3	3	2	3	2
CO5	3	3	3	2	2	3	3	2	2	3

“1” – Slight (Low) Correlation
“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation
“-” indicates there is no correlation.

Syllabus:

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Introduction to Database System Concepts: Introduction – Database-System Applications – Purpose of Database Systems – View of Data: Data Abstraction – Instances and Schemas – Data Models – Relational Databases: Tables – Data-Manipulation Language – Data-Definition Language – Database Design: Design Process – The Entity – Relationship Model – Normalization – Data Storage and Querying: Storage Manager – The Query Processor – Transaction Management – Database Architecture – Database Users and Administrators: Database Users and User Interfaces – Database Administrator.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Introduction to Relational Model and SQL: Structure of Relational Databases – Database Schema – Keys – Schema Diagrams – Relational Query Languages – Relational Operations - Introduction to SQL: Overview of the SQL Query Language – SQL Data Definition: Basic Types – Basic Schema Definition – Basic Structure of SQL Queries: Queries on Single Relation – Queries on Multiple Queries - The Natural Join.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Introduction to SQL: Additional Basic Operations: The Rename Operation – String Operations – Attributes Specification in Select Clause – Ordering the Display of Tuples – Where clause Predicates – Set Operations: The Union Operation – The Intersect Operation - Except Operation – Null Values – Aggregate Functions: Basic Aggregation – Aggregation with Grouping - The Having Clause - Nested Sub queries: Set Membership – Set Comparison – Modification of the Database.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Database Design and E-R Model The Entity – Relationship Model: Entity Sets – Relationship Sets – Attributes – Constraints: Mapping Cardinalities – Keys – Entity-Relationship Diagrams: Basic Structure – Mapping Cardinality - Complex Attributes - Weak Entity Sets – Design Alternative: Smaller Schemas - Atomic Domains and First Normal Form Decomposition using Functional Dependencies: Keys and Functional Dependencies - Boyce-Codd Normal Form - BCNF and Dependency Preservation – Third Normal Form	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Relational Database Design Functional Dependency Theory: Closure of a set of Functional Dependencies - Closure of Attribute	18	CO1, CO2, CO3,	K1, K2, K3,

	Sets - Canonical Cover – Lossless Decomposition – Dependency Preservation. Transaction Management: Transaction Concepts-A Simple Transaction Model-Storage Structure-Transaction Atomicity & Durability-Transaction Isolation.		CO4, CO5	K4, K5
VI	Self-Study for Enrichment (Not to be included for End Semester Examination) SQL data types and Schemas - Reduction to Relational Schemas - ER design issues - E-R diagram for the University Enterprise.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Textbook

Abraham Sliberschatz ,Henry F Korth & Sudharsan (2013). Database System Concepts, 6th Edition ,McGraw Hill Education(India) Private Limited.

References

- Alexis Leon, Mathews Leon (2009). Essentials of Database Management Systems, McGraw Hill Education India Pvt Ltd.
- Peter Rob, Carlos Coronel (2009). Database System Concepts, Lengage Learning.

Web References

- <https://beginnersbook.com/2015/04/dbms-tutorial/>
- <https://www.studytonight.com/dbms/>
- <https://www.tutorialspoint.com/dbms/>

Pedagogy

Chalk and Talk, PPT, Discussion, Assignment, Demo, Quiz and Seminar.

Course Designer

Dr. Lakshna Arun, Associate Professor, Department of Computer Applications.

Semester III	Internal Mark: 40		External Mark: 60	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs/Week	CREDITS
22UCA3CC3P	Database Management Systems (P)	CORE	3	3

Course Objective

- To provide in depth programming knowledge in MYSQL

Course Outcomes and Cognitive Level Mapping

COs	CO STATEMENTS On the successful completion of the course, students will be able to	COGNITIVE LEVEL
CO1	Recall DDL and DML Commands	K1
CO2	Apply Arithmetic, Logical and Set operators	K3
CO3	Implement string operations	K3
CO4	Use Join operations in SQL Queries	K3
CO5	Create Bank Database	K5

Mapping of CO with PO and PSO

	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	3	2	1	1	3	3	2	3	2
CO2	3	2	3	1	1	3	2	2	3	3
CO3	3	3	3	2	2	3	3	2	3	2
CO4	3	2	3	2	2	3	3	2	3	2
CO5	3	3	3	2	2	3	3	2	2	3

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” indicates there is no correlation.

List of Practical

1. Create a table and perform the following DDL operations
 - a. Set the primary key
 - b. Check Constraints
 - c. Alter the structure of the table
 - d. Drop the table
 2. Create a table and perform the following DML operations
 - a. Insert Values
 - b. Update and Delete records based on constraints
 - c. Display values using various forms of select clause
 3. Perform Arithmetic, Logical and Set Operations
 - a. Arithmetic Operators
 - b. AND, OR, NOT Operators
 - c. UNION, INTERSECTION, MINUS
 4. JOIN and SUB Queries
 5. Implement Grouping and Ordering Commands in a Table.
 6. Develop MYSQL queries to implement String operations using % and “_”
- [Note: create necessary tables for the above questions (1 to 8) with required attributes]
7. Consider the following relations for a Banking enterprise database
BRANCH(branch-name:string, branch-city:string, assets:real)
ACCOUNT(accno:int, branch-name:string, balance:real)
DEPOSITOR(customer-name:string, accno:int)
CUSTOMER(customer-name: string, customer-street: string, customer-city:string) Perform the following operations:
 - a. Create the above relations by properly specifying the primary keys and the Foreign keys
 - b. Enter at least five tuples for each relation
 - c. Find all the customers who have at least two accounts at the main branch
 - d. Find all the customers who have an account at all the branches located in a specific city.
 - e. Generate suitable reports

Web References

- <https://beginnersbook.com/2015/04/dbms-tutorial/>
- <https://www.studytonight.com/dbms/>
- <https://www.tutorialspoint.com/dbms/>

Pedagogy

Demonstration, Discussion, Assignment, and Seminar.

Course Designer

Dr. Lakshna Arun, Associate Professor, Department of Computer Applications.

Semester III	Internal Marks:25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs. /Week	CREDITS
22UCA3AC4	FINANCIAL ACCOUNTING	ALLIED	4	3

Course Objective

- To equip the students with fundamental knowledge and acquire analytical skills on the accounting concepts.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Define the basic concepts of Accounting	K1
CO2	Explain the accounting rules required for business enterprise	K2
CO3	Make use of accounting concepts to interpret the performance of business	K3
CO4	Analyze the financial statement of the firm	K4

Mapping of CO with PO and PSO

COs/ PSOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	3	3	3	2	3	3	2
CO2	2	3	3	3	3	3	2	3	3	2
CO3	3	3	3	3	2	3	2	3	3	2
CO4	2	3	3	3	3	3	2	3	3	2
CO5	2	3	3	3	3	3	2	3	3	2

“1”–Slight(Low)Correlation“2”–Moderate(Medium) Correlation
“3”–Substantial (High)Correlation“-”indicate there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Accounting Meaning – Definition of Accounting- Need for Accounting – Meaning of Book Keeping – Book Keeping Vs Accounting- Accounting Principles – Accounting Cycle – Accounting Equation. Double Entry: Meaning – Nature and Principle of Double Entry. Journal: Meaning and Need – Steps in Journalizing – Exercises of Journal Entry.	12	CO1, CO2, CO3, CO4	K1,K2,K3,K4
II	Ledger: Meaning – Utility – Format – Posting – Balancing an Account – Preparation of Trial Balance – Total Method – Balance Method - Comprehensive Problems on Journal, Ledger and Trial Balance	12	CO1, CO2, CO3, CO4	K1,K2,K3,K4
III	Subsidiary Books – Meaning – Cash Book – Simple cash book – Two Column cash book with Bank and Discount Columns – Three Column cash book – Petty Cash Book – Imprest System – Analytical petty cash book- Problems on Triple Column Cash Book and Petty cash book	12	CO1, CO2, CO3, CO4	K1,K2,K3,K4
IV	Pass Book – need for Bank Reconciliation statement – Methods of Preparation of Bank Reconciliation Statement – Favorable and Unfavorable Balances – Problems on BRS Depreciation – Meaning – Straight Line Method, Diminishing Balance Method and Annuity Method.	12	CO1, CO2, CO3, CO4	K1,K2,K3,K4

	(Simple Problems only)			
V	Meaning – Need for Preparation – Components of Final Accounts – Trading Account – Profit and Loss Account – Balance sheet – Adjustments – Problems with adjustments	12	CO1, CO2, CO3, CO4	K1,K2,K3,K4
IV	Self Study for Enrichment (Not to be included for External Examination) Distinction between Journal and Ledger – Objective of Preparing Trial Balance – Benefits of subsidiary book System – Causes for the differences between cash book and pass book- Differences Between Trial Balance and Balance sheet – Need for Providing Depreciation		CO1, CO2, CO3, CO4	K1,K2,K3,K4

Text Book

1. S.P.Jain and K.L.Narang (2016), Fundamentals of Accounting, Kalyani Publishers, 2017
2. T.S. Reddy & Murthy (2020), Financial Accounting, Margham Publications, 2017

Reference Books

1. Dalston L. Cecil and Jenitra L.Merwin. (2015). Business Accounting. 4th Edition, Learn Tech Publishers.
2. R.L. Gupta & Radhaswamy M. (2018). Financial Accounting. 8th Edition, Sultan Chand Sons
3. Shukla & Grewal. (2018). Advanced Accountancy. Sultan Chand Sons.

Web Reference

1. www.accountingcoach.com
2. www.accountingstudyguide.com
3. www.futureaccountant.com
4. www.onlinelibrary.wiley.com

Pedagogy

Chalk and Talk, PPT, Discussion, Assignment, Demo, Quiz and Seminar.

Course Designer

Ms. G. Kanagavalli

Semester III	Internal Marks:40	External Marks: 60		
COURSE CODE	COURSE TITLE	CATEGORY	Hrs. / Week	CREDITS
22UCA3AC5P	COMPUTER APPLICATIONS IN BUSINESS (P)	ALLIED	4	3

Course Objective

- The primary objective of this course is to expose the students with the Accounting Software Tally ERP9 with GST

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Recall the basic concepts of components of computer	K1
CO2	Understand the basic features of Tally ERP 9	K2
CO3	Prepare different types of financial reports	K3
CO4	Analyse stock group, stock category, stock item and compare stock category summary with go down summary.	K4
CO5	Explain the procedure for GST Registration and Bank Reconciliation Statement.	K5

Mapping of CO with PO and PSO

COs/ PSOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2	3	2	3	3	2
CO2	3	3	3	3	2	3	2	3	3	2
CO3	3	3	3	3	3	3	2	3	3	2
CO4	3	3	3	3	2	3	2	3	3	2
CO5	3	3	3	3	3	3	2	3	3	2

“1”–Slight (Low) Correlation □ “2”– Moderate (Medium) Correlation □

“3”–Substantial (High) Correlation □ “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Introduction to computerized Accounting – Features – Advantages –Manual Accounting Vs .Computerized Accounting – Accounting transaction.	9	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
II	Introduction to Tally ERP 9 – Features of Tally – Creation of Company – Selecting a Company – Altering / Modifying existing company – Configuration of Tally – Tally screen and Menu – Accounting Features – Accounting Groups – User defined groups – Ledger creation, alteration and deletion	9	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
III	Accounting vouchers – inventory vouchers – invoicing – optional & non-accounting voucher – order processing – advanced voucher entry.	9	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
IV	Introduction to Cost – Creation of cost Categories – Creation of Cost Centre– Editing – Deleting – Usage of Cost Category and Cost Centres in voucher entry – Inventory Information: Stock Groups – Stock Categories – Godowns – Unit Of Measure – Stock Items – Purchase orders and Sales orders processing – Recording Transactions using Orders.	9	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
V	Goods and Service Tax (GST): GST Concepts – Enabling GST – Configuring Master with GST Details – GST Reports – Bank Reconciliation Statement	9	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
IV	Self-Study for Enrichment (Not to be included for End Semester Examination)	-	CO1,CO2, CO3,CO4,	K1, K2, K3, K4, K5

	Journal Entry – Ledgers – Trial Balance – Balance, Adjustments		CO5	
--	---	--	------------	--

LIST OF PRACTICALS:

1. Creation, alteration and deletion of companies and user defined accounting groups.
2. Creation, alteration and deletion of ledger Accounts.
3. Preparation of Final Accounts with adjustments.
4. Voucher entries in double entry mode.
5. Creation, alteration and deletion of inventory masters.
6. Creation of Inventory Reports
7. Creation of Bank Reconciliation Statement
8. Creation of GST Registration

Text Book

1. V. SrinivasaVallabhan (2014). *Computer Applications in Business*, Sultan Chand & Sons
2. A.K. Nadhani(2015), *Computer ApplicationbyImplementing Tally ERP*, BPB Publications,Chennai.

Reference Books

1. Asok K. Nadhani, “TALLY ERP 9 TRAINING GUIDE - 4TH REVISED & UPDATED EDITION”, January 2018.
2. Official guide to financial accounting using TALLY ERP 9 with GST, Tally Education P. Ltd.
3. Chadwick, L, “The Essence of Financial Accounting”, PHI, 2nd Edition.

Web Reference

<https://www.youtube.com/watch?v=s-r7hNyfuJs>

Pedagogy

Lecture and Lab demonstration

Course Designer

Ms. S. Praveena

GENERIC ELECTIVE COURSE – I (GEC)
(For BCA, B.Sc Computer Science with Cognitive, B.Sc IT)
MATHEMATICS FOR COMPETITIVE EXAMINATIONS – I
(2022-2023 Onwards)

Semester III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs /Week	CREDITS
22UMA3GEC1	MATHEMATICS FOR COMPETITIVE EXAMINATIONS - I	GENERIC ELECTIVE COURSE – I	2	2

Course Objective

- **Explain** many short tricks to solve the mathematical problems easily.
- **Apply** the knowledge to **interpret** and **solve** the problems.
- **Explore** the ideas and to solve the Mathematical problems.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Knowledge Level
CO1	On the successful completion of the course, students will be able to Explain the knowledge of the various techniques of Quantitative Aptitude and Reasoning.	K1, K2
CO2	Apply the concepts in solving mathematical problems to succeed in various Competitive examinations.	K3
CO3	Examine various types of Problems using Arithmetic and Reasoning test.	K3
CO4	Apply the different concepts of Arithmetic and Reasoning test to solve the problems.	K3
CO5	Analyze real-life problems and finding solutions.	K4

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	2	2	2	3	2	3	3	3
CO2	3	2	2	2	2	2	3	3	3	3
CO3	3	2	2	2	2	3	3	2	2	3
CO4	3	2	2	2	2	3	3	2	2	2
CO5	3	2	2	2	2	3	3	3	3	2

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –

“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Problems on Numbers – Problems on Ages.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	Time & Distance – Calendar – Clocks.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	Data Interpretation: Bar Graphs – Pie Charts – Line Graphs.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	Reasoning (Including Mathematical): Series – Codes – Relationship – Classification.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	Logical Reasoning.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
VI	Self-Study for Enrichment: (Not included for End Semester Examination) Numbers -HCF and LCM of Numbers -Time and Work- Tabulation – Analogy.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

Text Book

1. Aggarwal. R.S . (2015). *Quantitative Aptitude For Competitive Examinations (Fully Solved)*. S.Chand & Company Pvt.Ltd.
2. Dr.Kautilya.K. (2018). *UGC NET/JRF/SET Teaching & Research Aptitude (General Paper - I)*. UPKAR PRAKASHAN, AGRA – 2, Sixth Edition.

Chapters and Sections

UNIT-I	Chapter 7,8	: Pg.No 161 – 181,182-194 [1]
UNIT-II	Chapter 17, 27,28	: Pg.No 384 – 404 ,593 – 596,597-604 [1]
UNIT-III	Chapter 37,38,39	: Pg.No 676 –694,695-708,709-726 [1]
UNIT- IV	Unit-5	: Sections 1-3,5 [2]
UNIT- V	Unit-6	: Pg.No 162 – 190 [2]

Reference Books

1. Edgar Thorpe. (2000). *Test of Reasoning for Competitive Examinations*. Tata McGraw-Hill Publishing Company Limited, New Delhi, 2nd Edition.
2. Sinha. T.K. (2002). *80+ Practice Sets of Quantitative Aptitude for Bank PO Exams*. Arihant Publication (India) limited.
3. Abhijit Guha.(2014). *Quantitative Aptitude for Competitive Examinations*. McGraw-Hill Publishing Company Limited, New Delhi, 5 th Edition.

Web References

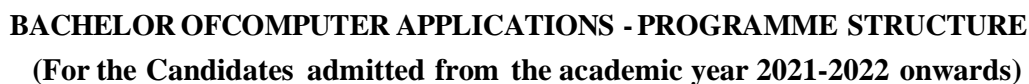
1. https://www.youtube.com/watch?v=viKaYznFJbw&list=PL5cSYiJ8KoWGqLLS_w6_G80U5FUEI0T39 .
2. <https://www.youtube.com/watch?v=ufbDCFUn6PY>
3. <https://www.youtube.com/watch?v=hGFGybSQDxQ>
4. <https://www.youtube.com/watch?v=up3mXnsVEc&list=PL0oogDtEDyvs3Qznc3-1DnlpbQSRuWP-z>
5. https://www.youtube.com/watch?v=MV00SQU_f7E&list=PL0oogDtEDyvvDNHO_Ba58OrE567nCzzl2
6. <https://www.youtube.com/watch?v=3lqZR-BbPIs>
7. <https://www.youtube.com/watch?v=ev2SkXJVAaA&list=PL0oogDtEDyvsBG38tzlj1Zkd0PLxgZwXV>

Pedagogy

Chalk and Talk, Power point presentation, Group Discussion, Seminar, Assignment and Quiz.

Course Designer

1. Dr.L.Mahalakshmi



Semester	Part	Course		Course Code	Inst.Hours/ Week	Credit	Exam Hours rWeek	Marks		Total
								Inter nal	Exter nal	
V	III	CoreCourse -V (CC)	Web Programming withPHP	19UCA5CC5	5	5	3	25	75	100
		CoreCourse - V (CP)	Practical V -PHP withMySQL	19UCA5CC5P	4	3	3	40	60	100
		CoreCourse - VI (CC)	Operating Systems	19UCA5CC6	5	5	3	25	75	100
		Core Course - VII (CC)	Software Engineering	19UCA5CC7	5	5	3	25	75	100
		Major Based Elective– I	Cloud Computing	19UCA5MBE1A	5	5	3	25	75	100
			Introduction to DataMining and Data Warehousing	19UCA5MBE1B						
			Artificial Intelligence	19UCA5MBE1C						
	IV	Skill Based Elective– II	Practical - PC Packages	19UCA5SBE2AP	2	2	3	40	60	100
			Practical - Corel Draw	19UCA5SBE2BP						
		Skill Based Elective – III	Mobile Applications Development Lab	19UCA5SBE3AP	2	2	3	40	60	100
			Practical-Multimedia Systems	19UCA5SBE3BP						
		UGC Jeevan Kaushal LifeSkills	Professional Skills	19UGPS	2	2	3	25	75	100
	V	Extra Credit Course	Swayam Online Course	To be Fixed Later	As per UGC Recommendation					
Total					30	29				800
	III	CoreCourse- VIII(CC)	Computer Networks	19UCA6CC8	6	5	3	25	75	100
		CoreCourse - IX (CC)	Internet of Things	19UCA6CC9	6	5	3	25	75	100
		Major Based Elective –II	Python Programming	19UCA6MBE2A	6	5	3	25	75	100
			R Programming for Data Analysis	19UCA6MBE2B						
			Digital Marketing	19UCA6MBE2C						

VI		Major Based Elective–III	Practical-Python Programming	19UCA6MBE3AP	5	5	3	40	60	100
			Practical-R Programming	19UCA6MBE3BP						
			Practical- Dot Net Programming	19UCA6MBE3CP						
			Project Work	Project Work	19UCA6PW	6	5	-	-	-
	IV	Gender Studies	Gender Studies	19UGGS	1	1	3	25	75	100
	V	Extension Activity		19UGEA	0	1	0	-	-	-
		Swayam online course	As per UGC Recommendations							
Total					30	27				600
Total					180	140				4100

CORE COURSE – V (CC)
WEB PROGRAMMING WITH PHP

SEMESTER: V

Course Code	Course Title	Category	Learnig Hours	Theoy Hour/ Week	Practical Hours/ Week	Credit
19UCA5CC5	Web Programming with PHP	Core	75	5	-	5

PREAMBLE

- To understand the fundamentals of programming such as variables, operators, flow control and to learn website creation using PHP.
- To understand the concepts of designing simple web application using PHP with MySQL.

COURSE OUTCOME:

- On successful completion of the course, students will be able to

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Describe the basic concepts of PHP	K2
CO2	Implement functions and arrays in PHP	K3
CO3	Apply OOPS concepts in PHP	K3
CO4	Demonstrate the concepts of session, cookies and FTP	K2
CO5	Execute MySQL queries using PHP	K3

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES:

	PSO1	PSO2	PSO3	PSO4
CO1	M	M	M	M
CO2	M	M	M	M
CO3	S	S	M	M
CO4	S	S	M	M
CO5	S	S	S	M

S-Strong; M-Medium; L-Low

SYLLABUS:

UNIT I: Essential PHP

(15 HOURS)

Essential PHP: Creating your Development Environment- Creating a First PHP Page-Mixing HTML and PHP - Printing Some Text- Printing Some HTML- More Echo Power- Using PHP “Here” Documents- Adding Comments to PHP - Variables - Constants - Data Types .Operators and Flow Control.

UNIT II: PHP Basics

(15 HOURS)

Strings and Arrays - Creating Functions- Reading Data in Web Pages: Setting Up Web Pages to Communicate with PHP - Handling Text Fields and Text Areas - Handling Check Boxes and Radio Buttons Handling List Boxes, Password Controls, Hidden Controls, Image Maps, File Uploads and Buttons.

UNIT III: OOPS Concepts

(15 HOURS)

Object-Oriented Programming: Creating Classes, Objects - Setting Access to Properties and Methods Using Constructors and Destructors - Inheritance - Overriding, Overloading Methods, Autoloading Classes. Advanced Object-Oriented Programming: Creating Static Methods, Abstract Classes, Interfaces and Class Constants, Supporting Object Iteration - Using Final Keyword - Cloning Objects- Reflection.

UNIT IV: File Handling

(15 HOURS)

PHP Browser-Handling Power -File Handling-Cookies and FTP: Setting, Reading, Deleting Cookies Working with FTP - Downloading, Uploading, Deleting a File with FTP - Creating and Removing Directories with FTP - Working with E-mail. Session Handlers:Session Handling - Configuration Directives Working with Sessions - Practical Session-Handling Examples - Creating Custom Session Handlers.

UNIT V: MySQL using PHP

(15 HOURS)

Introducing MySQL: Key Features of MySQL - Prominent MySQL Users.Working with Databases:Creating a MySQL Database - Creating a New Table - Putting Data into the New Database -Accessing the Database in PHP -Update Data into the Database- Insert Data into the Database - Delete Data from Database. Drawing Images on the Server.

TEXT:

1. Steven Holzner, “The Complete Reference PHP”, Tata McGraw Hill Pvt. Ltd., 2012.
2. Frank M. Kromann, “Beginning PHP and MySQL”, Novice to Professional, Fifth Edition, 2018.(Chapters 3, 17, 22)

REFERENCES:

1. Rasmus Lerdorf, Kevin Tatroe, Peter MacIntyre, “Programming PHP”, Third Edition, O’Reilly, 2013.
2. Luke Welling, Laura Thomson, “PHP and MySQL Web Development”, Fifth Edition, Pearson India Education Services Pvt. Ltd., 2017.

WEB REFERENCES:

1. <https://www.php.net/manual/en/index.php>
2. www.tutorialspoint.com/php/php_tutorial.pdf

COURSE DESIGNER

Ms.R.Brendha, Associate Professor, Department of Computer Applications.

CORE COURSE – V (CP)
PRACTICAL V –PHP WITH MySQL

SEMESTER: V

Course Code	Course Title	Category	Learning Hours	Theory Hours/ Week	Practical Hours/ Week	Credit
19UCA5CC5P	Practical V- PHP With MySQL	Core	60	–	4	3

PREAMBLE:

- To impart practical training on Programming with PHP.

COURSE OUTCOME:

- On successful completion of the course, students will be able to

CO NUMBER	CO STATEMENT	KNOWLEDG ELEVEL
CO1	Apply HTML tags and PHP coding to design an application form	K3
CO2	Implement form validation using PHP	K3
CO3	Create session for college office bearers election	K3
CO4	Create and manipulate database using MySQL	K5
CO5	Develop an application by their own	K5

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES:

CO NUMBER	PSO1	PSO2	PSO3	PSO4
CO1	S	M	M	M
CO2	S	M	M	M
CO3	S	S	L	L
CO4	S	S	M	M
CO5	S	S	S	S

S-Strong; M-Medium; L-Low

LIST OF PRACTICALS

1. Using HTML tags, create a college application form. (Note: Application form should contain the following fields Name, Father's Name, Date of Birth, Gender, Email-Address, Mobile Number, Address and Course to be Applied)
2. Apply PHP coding to print the data of the college application form.
3. Validate the application form using validator functions and display the error messages.
4. Design a HTML form to get a student's semester mark details and calculate the total, average, grade, result according to the marks.
5. Create a PHP page for the college union bearers' election using sessions.
6. Database in PHP
 - a. Get the student details, using application form insert into the database.
 - b. Design a HTML page for selecting subjects for examination and insert into database.
 - c. Based on student's selection of subjects generate hall ticket with examination date.
7. Create your own PHP applications (like Employee Management System, Library ManagementSystem, Student Management System)

COURSE DESIGNERS:

Ms. V. InfineSinduja, Assistant Professor, Department of Computer Applications.

Ms. A. Jabeen , Assistant Professor, Department of Computer Applications.

CORE COURSE – VI (CC)**OPERATING SYSTEMS****SEMESTER: V**

Course Code	Course Title	Category	Learning Hours	Theory Hours/ Week	Practical Hours/ Week	Credit
19UCA5CC6	Operating Systems	Core	75	5	-	5

PREAMBLE:

- To understand the concept of Process Management, Synchronization, Scheduling, Deadlock, Memory Management and File Systems in Operating Systems

COURSE OUTCOME:

On successful completion of the course, students will be able to

CO NUMBER	CO STATEMENT	KNOWLEDG ELEVEL
CO1	State the types of Operating System and its Structure	K1
CO2	Describe Process Management & Synchronization	K1
CO3	Explain various Scheduling and deadlock	K2
CO4	Discuss Memory Management & Mass Storage	K2
CO5	Illustrate File Systems	K3

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES:

	PSO1	PSO2	PSO3	PSO4
CO1	S	M	M	M
CO2	S	S	M	M
CO3	S	S	L	L
CO4	S	S	S	L
CO5	S	S	S	S

S – Strong; M – Medium; L - Low

SYLLABUS:

UNIT I: Introduction to Operating System

(15 HOURS)

Introduction: Objectives and Functions – Different Views of an OS – Evolution of Operating Systems - Types of Operating System – Comparison between different Operating Systems – Computer System Organization – Computer System Architecture – Operating System Operations - Operating System Structures.

UNIT II: Process Management & Synchronization

(15 HOURS)

Process Management: Introduction – Process Concept – Process Scheduling - Operations on Process – Cooperating Processes – Inter process Communication. **Process Synchronization:** Principles of Concurrency Precedence Graph – Critical regions – Synchronization: Software Approaches - Semaphores.

UNIT III: Scheduling & Deadlock

(15 HOURS)

CPU Scheduling: Introduction – Scheduling Concepts – Scheduling Criteria - Scheduling Algorithm multiprocessor Scheduling – Real-time Scheduling – Algorithm Evaluation – Thread Scheduling. **Deadlock:** System Model – Deadlock Characterization – Method for Handling Deadlock – Deadlock Prevention – Deadlock Avoidance – Deadlock Detection – Deadlock Recovery.

UNIT IV: Memory Management, I/O Systems & Mass Storage

(15 HOURS)

Memory Management Strategies: Background – Contiguous Memory Allocation – Non- Contiguous Memory Allocation – Swapping – Overlays. **Virtual Memory:** Demand Paging – Page Replacement– Thrashing. **I/O Systems:** Introduction – I/O techniques – Application I/O Interface – Kernel I/O Sub systems. **Mass Storage:** Introduction – Disk Structure- Disk Scheduling.

UNIT V: File Systems

(15 HOURS)

File Systems: Introduction – Basic concept – Directories – File System Mounting – Record Blocking- File Sharing – Protection.- **Implementation of File System:** File System Structure – File System Implementation – Allocation Methods – Implementing Directories – Shared Files – Free Space Management – Recovery– Log Structured File System.

TEXT:

1. Rohit Khurana, “Operating Systems”, Vikas Publishing House Pvt.Ltd, New Delhi, 2nd Edition, 2018.

REFERENCES:

1. “Abraham Sliberschatz, Peter Baer Galvin, Greg Gagne”, “Operating System concepts”, JohnWiley & Sons, Inc, New Delhi, 6th Edition, 2002.
2. “Ann McIverMcHoes, Ida M.Flynn”, “Understanding Operating Systems”, Cengage Learning, New Delhi, 6th Edition, 2018.

WEB REFERENCES:

1. https://www.tutorialspoint.com/operating_system/
2. <https://www.geeksforgeeks.org/operating-systems/>
3. http://www.sncwgs.ac.in/wp-content/uploads/2015/11/operating_system_tutorial.pdf

COURSE DESIGNER

Ms.P.Ranjani, Assistant Professor, Department of Computer Applications.

CORE COURSE – VII (CC)
SOFTWARE ENGINEERING

SEMESTER: V

Course Code	Course Title	Category	Learning Hours	Theory Hours/ Week	Practical Hours/ Week	Credit
19UCA5CC7	Software Engineering	Core	75	5	-	5

PREAMBLE:

- To provide knowledge of the various phases of Software Engineering Process

COURSE OUTCOME:

On successful completion of the course, students will be able to

CO NUMBER	CO STATEMENT	KNOWLEDG ELEVEL
CO1	Describe the basics of Software Engineering	K1
CO2	State the concepts of design and ArchitectureEngineering	K1
CO3	Explain object oriented analysis and designconcepts	K2
CO4	Demonstrate the design and coding of a software	K2
CO5	Make use of various types of software testing	K3

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES:

	PSO1	PSO2	PSO3	PSO4
CO1	S	S	M	S
CO2	S	L	S	S
CO3	M	S	S	S
CO4	S	S	S	L
CO5	S	S	S	M

S – Strong; M – Medium; L – Low

SYLLABUS:

Unit I: Introduction to Software Engineering (15HOURS)

Software Engineering-Introduction: Introduction to Software Engineering -Software Process - Software Process Models -Software product -**Requirements EngineeringPrinciples:** Introduction - Requirements Engineering - Importance of Requirements -Types of Requirements.

Unit II: Analysis & Design (15 HOURS)

Requirement Analysis Modeling: Analysis Modeling Approaches -Structured Analysis - Object Oriented Analysis - **Design and Architectural Engineering:** Design Process and Concepts - Basic Issuesin Software Design - Characteristics of Good Design - Software Design and Software Engineering - Function Oriented System vs Object Oriented System - Modularity, Cohesion, Coupling, Layering - Real Time Software Design -Design Models -Design Documentation.

Unit III: Object Oriented Concepts (15 HOURS)

Object Oriented Concepts: Introduction - Fundamental Parts of Object-Oriented Approach -Data Hiding and Class Hierarchy Creation -Relationships -Role of UML in OO Design -Design Patterns - Frameworks – **Object Oriented Analysis and Design:** Object Oriented Analysis - Object Oriented Design.

Unit IV: Software Design & Coding (15 HOURS)

User Interface Design: Concepts of User Interface - Elements of User Interface -Designing the User Interface -User Interface Evaluation -Golden Rules of User Interface Design -User Interface Models –Usability- **Software Coding:** Introduction – Programming Principles –Programming Guidelines –Coding Conventions – KeyConcepts in Software Coding.

Unit V: Software Testing & Maintenance (15 HOURS)

Introduction to Software Testing: Introduction – Psychology of Testing – Software Testing Scope Software Testing Objectives - Strategic Approach to Software Testing- Types of Software Testing - **Software Maintenance:** Introduction - Maintenance Activities - Maintenance Process - Maintenance Cost - Software Evolution - Reverse Engineering - Re-engineering - Re-structuring - Maintenance Strategies - Issues in Software Maintenance.

TEXT:

1. Chandramouli Subramanian, Saikat Dutt, ChandramouliSeetharaman, B.G.Geetha “Software Engineering”, Pearson Publications, 2015.

REFERENCES:

1. JibiteshMishra,”Software Engineering”, Pearson Education, 2011
2. Richard E. Fairley, “Software Engineering Concepts”, Tata McGraw-Hill Publishing CompanyLtd. 2001
3. Roger S.Pressman, Bruce R.Maxim, “Software Engineering: A Practitioner's Approach, TataMcGraw-Hill Publishing Company Ltd., 2014.

WEB REFERENCES:

1. https://www.tutorialspoint.com/software_engineering/
2. <https://www.geeksforgeeks.org/software-engineering/>
3. <https://www.slideshare.net/pashadon143/se-46394097/>

COURSE DESIGNER

Ms.A.Jabeen, Assistant Professor, Department of Computer Applications.

MAJOR BASED ELECTIVE – I (MBE)**CLOUD COMPUTING****SEMESTER: V**

Course Code	Course Title	Category	Learning Hours	Theory Hours/ Week	Practical Hours/ Week	Credit
19UCA5MBE1A	Cloud Computing	MBE-I	90	6	-	5

PREAMBLE

- To understand the concepts in Cloud Computing and its Applications

COURSE OUTCOME:

On successful completion of the course, students will be able to

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	State the Architecture of Cloud Computing	K1
CO2	Explain the Virtualization of Cloud Computing	K2
CO3	Explain the Data storage in Cloud	K2
CO4	Discuss the Applications of Cloud Computing	K2
CO5	Illustrate the Risks & Data Security	K3

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES:

	PSO1	PSO2	PSO3	PSO4
CO1	M	S	M	S
CO2	S	S	S	S
CO3	M	S	M	S
CO4	S	S	S	M
CO5	M	S	M	M

S-Strong; M-Medium; L-Low

SYLLABUS:

UNIT I: Cloud Computing& Architecture

(18 HOURS)

Cloud Computing Foundation: Cloud Computing Basics-History of Cloud Computing. **Move to Cloud Computing:** Pros and Cons of Cloud Computing-Technologies in Cloud Computing. **Types of Cloud:** Public and Private Cloud-Cloud Infrastructure. Cloud Application Architecture. **Working of Cloud Computing:** Cloud Service Models-Cloud Deployment Models-**Cloud Computing and Services:** Pros and Cons.**Cloud Computing Architecture:** Cloud Computing Technology-Cloud Lifecycle Model- Role of Cloud Modeling and Architecture-Cloud Architecture.

UNIT II: Virtualization

(18 HOURS)

Foundations: Definition of Virtualization-Adopting Virtualization-Types of Virtualization-Virtualization Architecture and Software-Virtualization Application-Pitfalls of Virtualization. **Grid, Cloud and virtualization:** Virtualization in Grid-Virtualization in Cloud-Virtualization and Cloud Security. **Virtualization and Cloud Computing:** Anatomy of Cloud Infrastructure-Virtual Infrastructures- CPU Virtualization-Network and Storage Virtualization.

UNIT III: Data Storage and Cloud Computing

(18 HOURS)

Data Storage: Introduction to Enterprise Data Storage–Data Storage Management-File Systems-Cloud Data Stores –Using Grids for Data Storage. **Cloud Storage:** Cloud Storage Introduction-Overview of Cloud Storage-Data management for Cloud Storage-Provisioning Cloud Storage-Data-intensive Technologies for Cloud Computing, **Cloud Computing Elements:** The Cloud-Value of Cloud Computing- Cloud Do's and Don'ts-Cloud Computing-Legal Implication-Overview of Amazon Web Services. **Understanding Services and Applications by Type:** Web based Application-Web Services- Infrastructure Services-On demand Computing-Web Application Framework.

UNIT IV: Cloud Services & Applications

(18 HOURS)

Cloud Services: Cloud Types and Services-Software as a Service- Platform as a Service-Infrastructure as a Service-Other Cloud Services. **Cloud Applications:** Microsoft Cloud Services. **Google Cloud Applications:** Google Applications Utilizing Cloud-Google App Engine-**Amazon Cloud Services:** Understanding Amazon Web Components and Services-Elastic Compute Cloud (EC2)-Amazon Storage System-Amazon Database Services.

UNIT V: Cloud Computing and Security

(18 HOURS)

Risk in Cloud Computing: Introduction- Risk Management-Cloud Impact-Enterprise Wide Risk Management- Types of Risks in Cloud Computing. **Data Security in Cloud:** Introduction-Current State- HomoSapiens and Digital Information-Content Level Security (CLS). **Cloud Security Services:** Objectives- Confidentiality, Integrity and Availability-Security Authorization Challenges in the Cloud-Secure Cloud Software Requirements-Secure Cloud Software Testing-Future Cloud.

TEXT:

1. A.Srinivasan, J.Suresh, “Cloud Computing: A practical approach for learning and implementation”, Pearson India Publications,2014

REFERENCES:

1. Kai Hwang Geoffrey Fox Jack J.Dongarra ,“Distributed Cloud Computing: From ParallelProcessing To Internet of Things“ ,Elsevier,2012
2. Judith S.Hurwitz,Daniel Kirsch, “Cloud Computing for Dummies”, WILEY, 2020
3. Barrie Sosinsky, “Cloud Computing Bible”,WILEY, 2011

WEB REFERENCES:

1. https://en.wikipedia.org/wiki/Cloud_computing
2. https://link.springer.com/chapter/10.1007/978-3-030-34957-8_7

COURSE DESIGNER

MsLakshna Arun, Assistant Professor, Department of Computer Applications.

SKILL BASED ELECTIVE – II (SBE)

PRACTICAL - PC Packages

Semester: V

Course Code	Course Title	Category	Learning Hours	Theory Hours/ Week	Practical Hours/ Week	Credit
19UCA5SBE2AP	PC Packages	SBE	30	-	2	2

PREAMBLE:

- To understand concepts of PC Package Programming.

COURSE OUTCOME:

- On successful completion of the course, students will be able to

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Creating documents using template in MS – word	K1
CO2	Design a worksheet in MS- Excel	K2
CO3	Demonstrate usage of slides in MS – PowerPoint	K3

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES:

	PSO1	PSO2	PSO3	PSO4
CO1	S	S	S	S
CO2	S	S	M	M
CO3	M	M	S	S
CO4	M	M	M	L

S-Strong; M-Medium; L-Low

LIST OF PRACTICALS MS – WORD

1. Text Manipulation– Change the font type and style, alignment of text and underline the text
2. Prepare a document with Bullets, Footers and Headers
3. Prepare a document in newspaper format
4. Table – Creation, insertion, deletion(Columns and rows)
 - a. Create a Mark Sheet using table and find out total of all marks for each student
5. Picture insertion and alignment: - Prepare a Greeting Card
6. Creation of documents using templates
 - a. Prepare a letter using any template
 - b. Prepare a Biodata using any kind of templates
7. Mail Merge: - Prepare Convocation invitation to be sent to specific addresses in the data source.

MS EXCEL

8. MS-Excel-Introduction: - Worksheet & Work book preparation
 - a. Entering, Editing and Deleting Text, Numbers, Dates
 - b. Moving and Copying data
 - c. Inserting, Deleting and Hiding Rows & Columns
 - d. Inserting, Deleting, Moving and Copying Sheets
 - e. Merging of cells
9. Implement built-in functions such as date, date & time, Text functions
10. Data sorting – Ascending and Descending (both numbers and alphabets)
11. Prepare worksheet
 - a. For Mark list of a class with a chart (any type)
 - b. For electricity bill
12. Implement Data filtering in the mark list
13. Implement the concept of conditional formatting and freeze panes.

MS POWER POINT

14. MS-PowerPoint: - Inserting clip and pictures

Create a slide show presentation for a seminar chooses your own topics.

 - a. Enter the text in outline view
 - b. Create non-bulleted and bulleted body text
 - c. Apply the appropriate text attributes
15. Presentation using wizards -Usage of design templates: - Creation of a slide show presentation using different presentation template and different transition effect for each slide. Use different text attributes in each slide.

COURSE DESIGNER

Ms,T. Julie Mary, Assistant Professor, Department of Computer Applications.

SKILL BASED ELECTIVE - II

PRACTICAL –COREL DRAW

Semester: V

Course Code	Course Title	Category	Learning Hours	Theory Hours/ Week	Practical Hours/ Week	Credit
19UCA5SBE2BP	COREL DRAW	SBE	30	-	2	2

PREAMBLE

- To make students familiar about CorelDraw Tools for designing a webpage.

COURSE OUTCOME:

- On successful completion of the course, students will be able to

CO NUMBER	CO STATEMENT	KNOWLEDG ELEVEL
CO1	Define usage of Corel Draw X7	K1
CO2	Describe formatting tools in CorelDraw	K2
CO3	Creating effective document	K3
CO4	Demonstrating all options in shapes tool	K3
CO5	Developing a sample webpage	K3

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES:

	PSO1	PSO2	PSO3	PSO4
CO1	S	S	S	S
CO2	S	S	M	M
CO3	M	M	S	S
CO4	M	M	M	L

S-Strong; M-Medium; L-Low

LIST OF PRACTICALS

Download & Install Corel Draw X7

1. Creating new document, adding new pages and resizing the documents using simple tools in Corel DrawX7.
2. Design a page with shapes and colours using tools in toolbox
3. Formatting & decorating text shapes using Smear tool.
4. Import an image and alter it by applying crop tool
5. Create a document with all the options in Draw tool.
6. Design a Brochure design using Artistic tool & text tool
7. Demonstrate Shadow/Contour/Blend in shapes & text.
8. Create a Poster using Transparency tool & text tool.

COURSE DESIGNER

Ms. M.Ellakkiya, Assistant Professor, Department of Computer Applications.

.

SKILL BASED ELECTIVE– III (SBE)
PRACTICAL - MULTIMEDIA SYSTEMS

SEMESTER: V

Course Code	Course Title	Category	Learning Hours	Theory Hours/ Week	Practical Hours/ Week	Credit
19UCA5SBE3BP	Practical - Multimedia Systems	SBE	30	2	-	2

PREAMBLE

- Understand the use of various components of multimedia systems.

COURSE OUTCOME:

On successful completion of the course, students will be able to

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Understand and apply the basic concepts of Multimedia	K1
CO2	Demonstrate the Animation with Music	K2
CO3	Develop logo using images and graphics	K3

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES:

	PSO1	PSO2	PSO3	PSO4
CO1	S	S	M	S
CO2	S	S	S	S
CO3	S	S	M	S

S-Strong; M-Medium; L-Low

LIST OF PRACTICALS

1. Registration of a user in www.Renderforest.com
2. Design a Multicolor Blast logo and Igniting logo Reveal
3. Create your own animation with music
4. Create mock up for any business with tag line
5. Develop a College website using the tools of render forest
6. Create a video for teacher's day celebration
7. Design flyers and posters for graduation day

COURSE DESIGNERS:

Ms.M.Ellakkiya, Assistant Professor, Department of Computer Applications

Ms.K.Akila, Assistant Professor, Department of Computer Applications

SEMESTER VI

CORE COURSE VIII– (CC)
COMPUTER NETWORKS

Semester: VI

Course Code	Course Title	Category	Learning Hours	Theory Hours/ Week	Practical Hours/ Week	Credit
19UCA6CC8	Computer Networks	Core	90	6	-	5

PREAMBLE:

- To understand the design and organization of computer networks

COURSE OUTCOME:

- On successful completion of the course, students will be able to

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Describe the design and issues of the layers	K1
CO2	State the concepts of physical layer and datalink layer	K1
CO3	Explain the various routing algorithms	K2
CO4	Demonstrate the protocols of transport layers	K2
CO5	Explain the function of application layer	K2

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES:

CO NUMBER	PSO1	PSO2	PSO3	PSO4
CO1	S	S	M	S
CO2	S	L	S	S
CO3	M	S	S	S
CO4	S	S	S	L
CO5	S	S	S	M

S – Strong; M – Medium; L – Low

SYLLABUS:

UNIT I: Introduction to Network Layers and Reference Models (18 HOURS)

Introduction – Uses of Computer Networks – Network Hardware – Network Software: Protocol Hierarchies – Design Issues for the Layers – Connection Oriented and Connectionless Services – Service Primitives **Reference models:** The OSI Reference Model – TCP/IP Reference Model.

UNIT II: Physical layer and Data link layer (18 HOURS)

The Physical Layer: Guided Transmission Media – Public Switched Telephone Network – Structure of Telephone System – Trunks and Multiplexing – Switching - **The Data link Layer:** Data link layer Design Issues – Error Detection and Correction – Stop and Wait Protocol - Sliding Window Protocol.

UNIT III: Network Layer and Routing Algorithms (18 HOURS)

The Network Layer: The Network Layer Design Issues – **Routing Algorithms:** The Optimality Principle – Shortest Path Routing – Flooding – Distance Vector Routing – Link State Routing – Hierarchical Routing – Broadcast Routing – Congestion Control Algorithms: General Principles of Congestion Control – Congestion Prevention Policies.

UNIT IV: Transport layer and Protocols (18 HOURS)

The Transport Layer: The Transport Service – Elements of Transport Protocols – **Internet Transport Protocols:** Introduction to UDP – RPC – TCP: TCP Service Model – TCP Protocol – TCP Segment Header.

UNIT V: Application Layer (18 HOURS)

The Application Layer: The DNS Name Space – E-mail: Architecture and Services – Message Formats.

TEXT:

1. Andrew S. Tanenbaum, David J. Wetherall “Computer Networks”, Pearson Prentice Hall, Fifth Edition, 2019.

REFERENCES:

1. Behrouz A. Forouzan, “Data Communications and Networking”, Tata McGraw-Hill, Fifth Edition, 2017.
2. William Stallings, “Data and Computer Communication”, PHI, Fifth Edition, 2008.

WEB REFERENCES:

1. <https://www.geeksforgeeks.org/layers-of-osi-model/>
2. <https://www.geeksforgeeks.org/classification-of-routing-algorithms/>
3. https://www.tutorialspoint.com/communication_technologies/

COURSE DESIGNER

Ms.A. Jabeen, Assistant Professor, Department of Computer Applications.

CORE COURSE IX– (CC)

INTERNET OF THINGS

Semester: VI

CourseCode	Course Title	Category	Learning Hours	Theory Hours/ Week	Practical Hours/ Week	Credit
19UCA6CC9	Internet of Things	Core	90	6	-	5

PREAMBLE

- To understand the concepts of Internet of Things and technologies involved in the connected devices

COURSE OUTCOME:

- On successful completion of the course, students will be able to

CO NUMBER	CO STATEMENT	KNOWLEDG ELEVEL
CO1	Explain IoT enabling Technologies.	K2
CO2	Analyze applications of IoT in real time scenario	K4
CO3	Design a portable IoT using Raspberrypi	K5
CO4	Expalin Data Analytics for IoT.	K2
CO5	Illustrate Tools in IoT	K3

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES:

	PSO1	PSO2	PSO3	PSO4
CO1	S	S	M	M
CO2	M	S	M	M
CO3	S	M	S	S
CO4	S	S	S	S
CO5	S	S	S	S

S – Strong; M – Medium; L – Low

SYLLABUS

UNIT I: Internet of Things & Design Principles (18 HOURS)

Internet of Things an Overview: Internet of Things-IoT conceptual framework-IoT architectural view-Technology behind IoT-Sources of IoT –M2M communication-Examples of IoT. **Design Principles for connected devices:** Introduction –IoT/M2M Systems layers & designs standardisation-communication technologies-data enrichment, data consolidation & device management at gateway-ease of designing and affordability.

UNIT II : Design & Web Connectivity Principles (18 HOURS)

Design Principles For Web Connectivity: Introduction – Web Communication Protocol for Connected Devices- Message Communication Protocol for Connected Devices-Web Connectivity for Connected Devices Network Using Gateway, SOAP,REST,HTTP Restful & Web sockets .**Internet Connectivity Principles:** Introduction-Internet Connectivity-Internet Based Communication-IP Addressing in the IoT-Media Access Control-Application Layer Protocols:HTTP, HTTPS-FTP-Telnet and Others.

UNIT III: Data Acquiring and Data Collection (18 HOURS)

Data Acquiring, Organizing, Processing and Analytics: Introduction - Data Acquiring and Storage - Organizing the Data-Transactions ,Business Process, Integrations & Enterprise Distance-Analytics-Knowledge Acquiring, Managing and Storing Processors .**Data Collection ,Storage & Computing Using Cloud Platform:** Introduction-Cloud Computing Paradigm for Data Collection ,Storage and Computing-Everything as a Service and Cloud Service Models-IoT Cloud based Services Using the Xively, Nimbits and Other Platforms.

UNIT IV: Sensors and Embedded Devices (18 HOURS)

Sensors, Participatory Sensing RFIDs and Wireless Sensor Networks: Introduction - Sensor Technology- Participating Sensing, Industrial IoT and Automotive IoT-Actuators-Sensor Data Communication Protocols-Radio Frequency Identification Technology-Wireless Sensor Network Technology. **Prototyping the Embedded Devices for IoT and M2M:** Introduction-Embedded Computing Basics –Embedded Platforms for Prototyping-Things always connected to the Internet/Cloud.

UNIT V: IoT Security (18 HOURS)

IoT Privacy, Security and Vulnerabilities Solutions : Introduction-Vulnerabilities, Security Requirements and Thread Analysis-Use Cases And Misuse Cases-IoT Security Tomography and Layered Attacker Models – Identity Management and Establishment ,Access Control and Secured Message Communication –Security Models, Profiles and Protocols for IoT.

TEXT:

1. Raj Kamal, “Internet of Things Architecture and Design Principles”, McGraw Hill Education (India)Private Limited, 2017.

REFERENCES:

1. David Hanes, Gonzalo Salgueiro, Patrick Grossette, Robert Barton, Jerome Henry, "IoT Fundamentals, Networking Technologies, Protocols and Use cases for Internet of Things", Cisco Press, 2017.
2. Olivier Hersent, David Boswarthick, Omar Elloumi, "The Internet of Things – Key applications and Protocols", Wiley, 2012.

WEB REFERENCES:

1. <https://www.tutorialspoint.com/>
2. <https://www.guru99.com/>
3. <https://www.pythonforbeginners.com/>

COURSE DESIGNER

Ms. Lakshna Arun, Assistant Professor, Department of Computer Applications.

MAJOR BASED ELECTIVE- II
PYTHON PROGRAMMING

Semester: VI

Course Code	Course Title	Category	Learning Hours	Theory Hours/Week	Practical Hours/Week	Credit
19UCA6MBE2A	Python Programming	MBE II	90	6	-	5

PREAMBLE

- To understand concepts of Python programming language.
-

COURSE OUTCOME :

- On successful completion of the course, students will be able to

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Understand Python's core data types while writing new programs	K1
CO2	Demonstrate different decision making statements	K2
CO3	Use the knowledge of file concepts	K3

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES:

	PSO1	PSO2	PSO3	PSO4
CO1	M	S	M	M
CO2	M	M	M	M
CO3	M	S	S	M

S- Strong; M-Medium; L-Low

SYLLABUS

UNIT I: Basics of Python Programming (18 HOURS)

Introduction: Python Character Set-Token-Python Core Data Type- The print() Function- Assigning value to a variable-Multiple Assignments- Writing Simple Programs in Python- The input() Function- The eval() Function- Formatting Number and Strings- Python Inbuilt Functions

UNIT II: Operators , Expressions, Decision and Loop Control Statements (18 HOURS)

Introduction: Operators and Expressions- Arithmetic Operators- Operator Precedence and Associativity- Bitwise Operator- Introduction: Boolean Operators- Using Numbers with Boolean Operators- Using String with Boolean Operators- Boolean Expressions and Relational Operators- Decision Making Statements- Conditional Expressions-Introduction: While Loop-The range() Function-The For Loop-Nested Loops-The break Statement- The continue Statement

UNIT III: Functions, Strings and Lists (18 HOURS)

Introduction: Syntax and Basics of a Function-Use of a Function-Parameters and Arguments in a Function- The Local and Global Scope of a Variable-The return Statement-Recursive Functions- The Lambda Function- Introduction-The str class-Basic Inbuilt Python Functions for String-The index[] Operator- Traversing String with for and while Loop-Immutable Strings-String Operations-Introduction: Creating Lists- Accessing the Elements of a List- Negative List Indices-List Slicing-List Slicing with Step Size-Python Inbuilt Functions for Lists- The List Operator- List Methods- List and Strings- Splitting a String in List-Passing List to a Function-Returning List from a Function

UNIT IV: List Processing, Object-Oriented Programming (18 HOURS)

Introduction: Searching Techniques-Introduction to Sorting-Introduction: Defining Classes-The Self- parameter and Adding Methods to a Class-Display Class Attributes and Methods-Special Class Attributes- Accessibility-The init-Method-Passing an Object as Parameter to a Method- -del()-Class Membership Tests- Method Overloading in Python-Operator Overloading-Inheritance-Types of Inheritance-Inheritance in Detail- Subclass Accessing Attributes of Parent Class-Multilevel Inheritance and Multiple Inheritance in Detail- Using super()-Method Overriding

UNIT V: Tuples, Sets, Dictionaries, Graphics Programming, File handling (18 HOURS)

Introduction to Tuples- Sets- Dictionaries-Introduction-Getting Started with the Turtle Module-Moving Turtle to Any Location-The color , bgcolor ,circle and Speed Method of Turtle-Drawing with Colors- Drawing Basic Shapes using Iterations-Changing Color Dynamically Using List-Turtles to Create Bar Charts- Introduction- Need of File Handling-Text Input and Output-The seek() Function- Binary Files

TEXT:

1. Ashok Namdev Kamthane, Amit Ashok Kamthane, “Programming and Problem Solving with Python” ,McGraw Hill Education, 2018.

REFERENCES:

1. Jeeva Jose and P. Sojan Lal, “Introduction to Computing and Problem Solving with Python”,KhannaBook Publisig Co. (P) Ltd., 2016.
2. Ch. Satyanarayana, M Radhika Mani & B N Jagadesh, “Python Programming”, Universities Press, 2018.

WEB REFERENCES:

1. www.learnpython.org/
2. <https://www.codecademy.com/learn/python>
3. <https://www.Codementor.io>
4. <https://www.Python.org>

COURSE DESIGNER

Ms.K.Akila, Assistant Professor, Department of Computer Applications.

MAJOR BASED ELECTIVE - III
PRACTICAL - PYTHON PROGRAMMING

Semester: VI

Course Code	Course Title	Category	Learning Hours	Theory Hours/ Week	Practical Hours/ Week	Credit
19UCA6MBE 3AP	Practical - Python Programming	MBE III	75	-	5	5

PREAMBLE:

- To impart the practical training on Python programming

COURSE OUTCOME:

- On successful completion of the course, students will be able to

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Understand and apply the basic concepts of Python	K1
CO2	Demonstrate the basic concepts of OOPS	K2
CO3	e the knowledge of file concepts	K3

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES:

	PSO1	PSO2	PSO3	PSO4
CO1	M	S	M	M
CO2	M	M	M	M
CO3	S	S	S	M

S- Strong; M-Medium; L-Low

LIST OF PRACTICALS

1. Types of Operators
2. Numbers
3. Strings
4. List & Dictionaries
5. Tuples & Set
6. Flow Control
7. Functions
8. Modules and Packages
9. File Handling
10. Exception Handling

COURSE DESIGNER

Ms. K. Akila, Assistant Professor, Department of Computer Applications.

ANNEXURE M

CAUVERY COLLEGE FOR WOMEN(AUTONOMOUS)

Nationally Accredited with 'A' Grade by NAAC

ISO 9001:2015 Certified

TIRUCHIRAPPALLI

DEPARTMENT OF INFORMATION TECHNOLOGY

SYLLABUS

2023 - 2024 and 2022 -2023 Onwards



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)

Nationally accredited (III Cycle) with “A” Grade

ISO 9001:2015 Certified

Annamalai Nagar, Tiruchirappalli – 18

DEPARTMENT OF INFORMATION TECHNOLOGY

Vision

The Department of Information Technology envisions to create technically competent, skilled intellectual IT professionals, efficient problem solvers, innovators and entrepreneurs to meet the current challenges of the modern computing industry.

Mission

- To provide quality education and elevate the students towards higher educational programs
- To encourage and guide the students to improve their competency skills in information technology market

To equip the students to cater the industrial demands through providing advance training



UG Programme Structure (Science)

Cauvery College for Women (Autonomous)

Department of Information Technology

B.Sc Information Technology

LEARNING OUTCOME BASED CURRICULUM

FRAMEWORK (CBCS – LOCF)

(For the Candidates admitted from the Academic year 2023-2024 and onwards)

Sem	Part	Course	Course Title	Course Code	Inst. Hrs.	Credits	Exam			Total	
							Hr	Marks			
								Int.	Ext		
I	I	Language Course -I (LC)	பொதுத்தமிழ் - 1	23ULT1	6	3	3	25	75	100	
			Hindi Ka Samanya Gyan aur Nibandh	23ULH1							
			Poetry, Grammar and History of Sanskrit Literature	23ULS1							
			Foundation Course: Paper I- French – I	23ULF1							
	II	English Language Course-I(ELC)	General English -I	23UE1	6	3	3	25	75	100	
	III	Core Course – I(CC)	Programming in C	23UIT1CC1	5	5	3	25	75	100	
			Core Practical - I (CP)	C Programming (P)	23UIT1CC1P	3	3	3	25	75	100
			First Allied Course-I(AC)	Numerical Methods	23UIT1AC1	4	3	3	25	75	100
			First Allied Course-II(AC)	Graph theory and its Applications	23UIT1AC2	4	3	3	25	75	100
	IV	Ability Enhancement Compulsory Course-I (AECC)	Value Education	23UGVE	2	2		100		100	
	Total				30	22				700	

Semester I	Internal Mark: 25		External Mark: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs/Week	CREDITS
23UIT1CC1	PROGRAMMING IN C	CORE COURSE –I (CC)	5	5

Course Objectives

- To familiarize the students with the understanding of code organization
- To improve the programming skills
- Learning the basic programming constructs.

Course Outcomes and Cognitive Level Mapping

CO. NO	COURSE OUTCOME	Cognitive Level
CO1	Outline the fundamental concepts of C programming languages, and its features	K1
CO2	Demonstrate the programming methodology.	K2
CO3	Identify suitable programming constructs for problem solving.	K3
CO4	Select the appropriate data representation, control structures, functions and concepts based on the problem requirement.	K4
CO5	Evaluate the program performance by fixing the errors.	K5

Mapping of CO with PO and PSO

	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	2	3	2	1	2	2	2	3	2
CO2	3	2	3	2	2	3	3	2	3	2
CO3	3	3	3	2	2	3	3	2	3	3
CO4	3	2	3	2	3	2	2	2	3	3
CO5	3	3	3	2	3	3	3	2	2	3

“1” – Slight (Low) Correlation “2” – Moderate (Medium) Correlation
“3” – Substantial (High) Correlation “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Studying Concepts of Programming Languages- Language Evaluation Criteria - Language design - Language Categories - Implementation Methods – Programming Environments - Overview of C: History of C- Importance of C- Basic Structure of C Programs- Executing a C Program- Constants, Variables and Data types - Operators and Expressions - Managing Input and Output Operations	15	CO1 , CO2 , CO3 , CO4 , CO5	K1, K2, K3, K4, K5
II	Decision Making and Branching: Decision making with If, simple IF, IF ELSE, nested IF ELSE , ELSE IF ladder, switch, GOTO statement. Decision Making and Looping: While, Do-While, For, Jumps in loops. Arrays - Character Arrays and Strings	15	CO1 , CO2 , CO3 , CO4	K1, K2, K3, K4, K5
III	User Defined Functions: Elements of User Defined Functions- Definition of Functions- Return Values and their Types- Function Call- Function Declaration- Categories of Functions- Nesting of Functions-Recursion	15	CO1 , CO2 , CO3 ,	K1,K2, K3,K4, K5
IV	Structures and Unions: Introduction- Defining a Structure- Declaring Structure Variables Accessing Structure Members- Structure Initialization- Arrays of Structures- Arrays within Structures- Unions- Size of Structures.	15	CO1 , CO2 , CO3 , CO4	K1,K2, K3,K4,K 5
V	Pointers: Understanding Pointers- Accessing the Address of a Variable- Declaring Pointer Variables- Initializing of Pointer Variables- Accessing a Variable through its Pointer- Chain of Pointers- Pointer Expressions- Pointer and Scale Factor- Pointer and Arrays- Pointers and Character Strings- Array of Pointers- Pointer as Function Arguments- Functions Returning Pointers- Pointers to Functions- Memory model-File Management in C	15	CO1 , CO2 , CO3 , CO4 , CO5	K1,K2, K3,K4, K5

VI	Self Study for Enrichment (Not included for End Semester Examinations) Algorithm- Flowchart- Develop algorithms for real time scenario- Simple expressions- Conversion programs- swapping numbers (with and without using temporary variable). Programs for checking eligibility-Triangle formation-Sum of series-Array manipulations (Sorting, searching, insert, delete and merging)-String handling programs- Dynamic memory management using pointers-Employee pay bill preparation, Student mark list using Files.	-	CO1 , CO2 , CO3 , CO4 , CO5	K1,K2, K3,K4, K5
----	--	---	---	------------------------

Textbook

1. Robert W. Sebesta, (2012), —Concepts of Programming Languages, Fourth Edition, Addison Wesley (Unit I : Chapter – 1)
1. E. Balaguruswamy, (2010), —Programming in ANSI C, Fifth Edition, Tata McGraw Hill Publications.

References

1. Ashok N. Kamthane, Amit Ashok Kamthane (2015). Programming in C, 3rd Edition, Pearson India Education Services Pvt. Ltd.
2. Byron Gottfried, (2010), —Programming with C, Schaums Outline Series, Tata McGraw Hill Publications

Web References

1. <https://www.learn-c.org/>
2. <https://www.cprogramming.com/>
3. <https://www.tutorialspoint.com/cprogramming/index.html>
4. <http://www.programiz.com/c-programming>
5. <http://www.programmingsimplified.com/c-program-examples>

Pedagogy

Chalk and Talk, PPT, Discussion, Assignment, Demo, Quiz and Seminar.

Course Designers

1. Dr. M. Anandhi, Associate Professor, Department of Information Technology.

Semester I	Internal Mark: 25		External Mark: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs/Week	CREDITS
23UIT1CC1P	C PROGRAMMING (P)	CORE COURSE- I(CP)	3	3

Course Objectives:

- The Course aims to provide exposure to problem-solving through C programming
- It aims to train the student to the basic concepts of the C -Programming language
- Apply different concepts of C language to solve the problem

Course Outcomes and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	Demonstrate the understanding of syntax and semantics of C programs.	K1
CO2	Identify the problem and solve using C programming techniques.	K2
CO3	Identify suitable programming constructs for problem solving.	K3
CO4	Analyze various concepts of C language to solve the problem in an efficient way.	K4
CO5	Develop a C program for a given problem and test for its correctness.	K5

Mapping with Programme Outcomes

COs\ POs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	2	2	3	1	2	3
CO2	3	2	3	2	3	3	2	2	2	3
CO3	3	2	2	2	2	3	3	2	3	2
CO4	3	3	2	3	2	3	3	2	3	3
CO5	3	3	3	2	3	3	3	3	2	3

“1” – Slight (Low) Correlation “2” – Moderate (Medium) Correlation
“3” – Substantial (High) Correlation “-” indicates there is no correlation.

Syllabus

1. Programs using Input/ Output functions
2. Programs on conditional structures
3. Command Line Arguments
4. Programs using Arrays
5. String Manipulations
6. Programs using Functions
7. Recursive Functions
8. Programs using Pointers
9. Files
10. Programs using Structures & Unions

Text Books :

1. E. Balagurusamy, Programming in ANSI C, Fifth Edition, Tata McGraw-Hill, 2010.

Reference Books :

- 1 Byron Gottfried, Schaum's Outline Programming with C, Fourth Edition, Tata McGraw-Hill, 2018.
2. Kernighan and Ritchie, The C Programming Language, Second Edition, Prentice Hall, 1998.
3. Yashavant Kanetkar, Let Us C, Eighteenth Edition, BPB Publications, 2021

Web References

1. <https://www.tutorialspoint.com/cprogramming>
2. <https://www.javatpoint.com/c-programming-language-tutorial>
3. <https://www.w3schools.in/category/c-tutorial>

Course Designers

Dr. M. Anandhi, Associate Professor, Department of Information Technology.

FIRST ALLIED COURSE – I**NUMERICAL METHODS**

(For B.Sc Computer Science, BCA, Information Technology &
Computer Science with Cognitive Systems)

(2023 – 2024 ONWARDS)

Semester I	Internal Marks:25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs/Week	CREDITS
23UCG1AC1/ 23UCS1AC1/ 23UCA1AC1/23UIT1AC1	NUMERICAL METHODS	ALLIED	4	3

Course Objective

- **Learn** the various topics in Numerical methods.
- **Understand** the fundamentals of algebraic equations, interpolation, numerical differentiation and integration.
- **Develop** skills in solving problems of numerical techniques.

Course Outcomes**Course Outcome and Cognitive Level Mapping**

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Remember the basic concepts of numerical methods.	K1
CO2	Illustrate the various notions of computational numerical streams.	K2
CO3	Apply the different techniques of numerical problems	K3
CO4	Classify the methods of numerical techniques.	K4
CO5	Examine the solutions of numerical problems.	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	3	3	3	3	3	3	2	3
CO2	3	2	3	3	3	3	3	3	3	2
CO3	3	2	3	3	3	3	3	3	2	2
CO4	3	2	2	3	3	3	3	3	3	2
CO5	3	2	3	3	3	3	3	3	2	2

“1” – Slight (Low) Correlation → “2” – Moderate (Medium) Correlation →

“3” – Substantial (High) Correlation → “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Solution of Algebraic and Transcendental Equations: Introduction – Bisection Method – The Iteration Method – The Method of False Position – Newton Raphson Method. (Simple Problems Only).	12	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4
II	Interpolation: Finite differences – Forward differences – Backward differences – Central differences – Newton's Formulae for interpolation–Interpolation with Unevenly Spaced Points – Lagrange's Interpolation Formula. (Simple Problems Only)	12	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4
III	Numerical Differentiation and Integration: Introduction – Numerical Differentiation – Numerical Integration – Trapezoidal Rule – Simpson's 1/3 Rule – Simpson's 3/8 Rule (Simple Problems Only)	12	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4
IV	Numerical Linear Algebra: Solution of Linear Systems – Direct Methods – Gauss - Elimination – Gauss -Jordan method. Solution of Linear Systems – Iterative Methods. (Simple Problems Only)	12	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4
V	Numerical Solution of Ordinary Differential Equations: Introduction – Solution by Taylor's Series – Euler's Method – Modified Euler's Method – Runge-Kutta Method–Predictor-Corrector Methods – Adams-Moulton Method – Milne's Method(Simple Problems Only)	12	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4
VI	Self-Study for Enrichment (Not included for End Semester Examination) Ramanujan's Method – Bessel's Formula – Newton-Cotes Integration Formulae –The QR Method – Picard's Method of Successive Approximations	-	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4

Text Books

Sastry.S.S (2004), *Introductory Methods of Numerical Analysis* (Third Edition), Prentice Hall of India Private Ltd, New Delhi.

Chapters and Sections

UNIT-I Chapter 2: Sections: 2.1 – 2.5 (Omit 2.3.1 & 2.5.1)

UNIT II Chapter 3: Sections: 3.3 : 3.3.1 – 3.3.3, 3.6, 3.9 : 3.9.1

UNIT-III Chapter 5: Sections: 5.1, 5.2 (only), 5.4 : 5.4.1 – 5.4.3

UNIT-IV Chapter 6: Sections: 6.3: 6.3.2, 6.4

UNIT-V Chapter 7: Sections: 7.1,7.2, 7.4: 7.4.2, 7.5,7.6

Reference Books

1. Venkataraman, M.K. (2003). *Numerical Methods in Science and Engineering*, The National Publishing Company.
2. Iyengar S.R.K, Jain R.K, (2009). *Numerical Methods*, New Age International Publishers.
3. Subramanian,N. (2007). *Numerical Methods*, SCM Publisher, Erode.

Web References

1. <https://tinyurl.com/4v7knvm9>
2. <https://tinyurl.com/t29njcy5>
3. <https://www.youtube.com/watch?v=TIWRyzzFUYQ>
4. <https://www.youtube.com/watch?v=iviiGB5vxLA>
5. https://www.youtube.com/watch?v=j_4MVZ3VADU

Pedagogy

Assignment, Seminar, Lecture, Quiz, Group discussion, Brain storming, e-content.

Course Designer

1. Dr. V. Geetha
2. Dr. S. Sasikala

FIRST ALLIED COURSE - II
GRAPH THEORY AND ITS APPLICATIONS
(2023-2024 Onwards)

Semester I	Internal Marks: 25		External Marks:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs /Week	CREDITS
23UCS1AC2/ 23UIT1AC2	GRAPH THEORY AND ITS APPLICATIONS	ALLIED	4	3

Course Objective

- **Introduce** the notion of graph theory and its application.
- **Understand** the fundamental concepts in graph theory.
- **Explore** some of the most important notions of graph theory and develop their skills and solving basic exercise.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Define basic definitions of graphs.	K1
CO2	Describe the concepts and Characterization of Graphs.	K2
CO3	Explain the notion of Spanning Trees.	K2
CO4	Compute the properties of Planar Graphs.	K3
CO5	Analyze the concept of graphs in Matrix Representation.	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	2	2	3
CO2	3	2	3	3	3	3	3	3	2	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	2	3	3	2	3	3	2	2	3
CO5	3	2	3	3	2	3	3	3	3	2

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –

“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	INTRODUCTION: Definition of a Graph – Application of Graphs – Finite and Infinite Graphs – Incidence and Degree – Isolated Vertex, Pendant Vertex and Null Graph. PATHS AND CIRCUITS: Isomorphism – Subgraphs – Walks, Paths and Circuits – Connected Graphs, Disconnected Graphs and Components.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	PATHS AND CIRCUITS: Euler Graphs – Operation on Graphs – More on Euler Graphs – Hamiltonian Paths and Circuits – The Traveling Salesman Problem.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	TREES AND FUNDAMENTAL CIRCUITS: Trees – Some Properties of Trees – Pendant Vertices in a Tree – Distance and Centers in a Tree – Rooted and Binary Trees – On Counting Trees – Spanning Trees.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	CUT - SETS AND CUT - VERTICES: Cut-Sets – Some Properties of a Cut-Set – All Cut-Sets in a Graph – Fundamental Circuits and Cut-Sets – Connectivity and Separability.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	PLANAR GRAPHS: Planar Graphs – Kuratowski's Two Graphs – Different Representations of a Planar Graph. MATRIX REPRESENTATION OF GRAPHS: Incidence Matrix – Submatrices of $A(G)$ – Circuit Matrix.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
VI	Self Study for Enrichment: (Not included for End Semester Examination) Brief History of Graph Theory – A Puzzle with Multicolored Cubes – Finding All Spanning Trees of a Graph – Network Flows – Combinatorial Vs. Geometric Graphs – An Application to a switching network.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

Text Books

1. Narsingh Deo, "Graph Theory with Application to Engineering and Computer Science"

Prentice Hall of India 2010(Reprint).

Chapters and Sections

UNIT-I	Chapter 1: Sections 1.1 – 1.5 Chapter 2: Sections 2.1, 2.2, 2.4, 2.5
UNIT-II	Chapter 2: Sections 2.6 – 2.10
UNIT-III	Chapter 3: Sections 3.1 – 3.7
UNIT- IV	Chapter 4: Sections 4.1 – 4.5
UNIT- V	Chapter 5: Sections 5.2 – 5.4 Chapter 7: Sections 7.1 – 7.3

Reference Books

1. Arumugam S and Ravichandran S, “Invitation to Graph Theory”, Scitech Publications (India) Private Limited.
2. Gary Chartrand and Ping Zhang, “Introduction to Graph Theory”, Tata McGraw-Hill Edition, 2004.

Web References

1. <https://youtu.be/S1Zwhz-Mhcs>
2. <https://youtu.be/R5LZIpz-oIE>
3. https://youtu.be/X2B_J1ajsIY
4. <https://youtu.be/5M7bOXrn54A>
5. <https://youtu.be/QwX1ncB13B0>

Pedagogy

Power point presentations, Group Discussions, Seminar, Quiz, Assignment.

Course Designer

Dr. P. SHALINI



Cauvery College for Women (Autonomous)
Department of Information Technology
B.Sc Information Technology LEARNING OUTCOME BASED CURRICULUM
FRAMEWORK (CBCS – LOCF)
(For the Candidates admitted from the Academic year 2022-2023 and onwards)

Semester	Part	Course	Course Title	Course Code	Inst. Hrs. / week	Credits	Exam			Total		
							Hrs	Marks				
								Int.	Ext			
III	I	Language Course-III (LC)	காப்பியமும் நாடகமும்	22ULT3	5	3	3	25	75	100		
			Hindi Literature & Grammar - III	22ULH3								
			Prose, Textual Grammar and Vakyarachana	22ULS3								
			Intermediate French - I	22ULF3								
	II	English Language Course- II(ELC)	Learning Grammar Through Literature- I	22UE3	6	3	3	25	75	100		
	III	Core Course– IV(CC)	Relational Database Management Systems	22UIT3CC4	6	6	3	25	75	100		
				Core Practical - III(CP)	RDBMS (P)	22UIT3CC3P	3	3	3	40	60	100
				Second Allied Course- I(AC)	Financial Accounting	22UIT3AC4	4	3	3	25	75	100
				Second Allied Course-II(AP)	Computer Applications in Business (P)	22UIT3AC5P	4	3	3	40	60	100
	IV	Generic Elective Course-I(GEC)	Web Design	22UIT3GEC1	2	2	3	25	75	100		
			Basic Tamil - I	22ULC3BT1								
			Special Tamil - I	22ULC3ST1								
		Extra Credit Course	SWAYAM		As per UGC Recommendation							
Total					30	23				700		

Semester III	Internal Mark: 25		External Mark: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs/Week	CREDITS
22UIT3CC4	Relational Database Management Systems	CORE COURSE – III(CC)	6	6

Course Objectives

- To provide a sound introduction to DBMS
- To present SQL and Procedural interfaces to SQL comprehensively
- To present the concepts and techniques related to query processing by SQL engines
- To provide a overview of the concepts of NOSQL

Course Outcomes and Cognitive Level Mapping

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge level
CO1	Outline the terminology, features, classifications, characteristics and benefits embodied in database systems	K1
CO2	Formulate using relational algebra solutions to a broad range of query problems	K2
CO3	Demonstrate a broad range of SQL query and its application	K3
CO4	Design an information model expressed in the form of an Entity relation diagram	K3
CO5	Apply normalization in relational database design and demonstrate PL/SQL program interfaces	K3

Mapping of CO with PO and PSO

	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	2	2	2	3	2	2	3	2
CO2	2	2	3	2	3	3	3	2	3	2
CO3	3	3	3	2	3	3	3	2	3	3
CO4	3	3	3	2	3	2	3	2	3	3
CO5	3	3	3	2	3	3	3	2	2	3

“1” – Slight (Low) Correlation “2” – Moderate (Medium) Correlation
“3” – Substantial (High) Correlation “-” indicates there is no correlation.

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	<p>Introduction to Databases: Databases and Database Users - D Database System Concepts and Architecture-</p> <p>Conceptual Data Modeling and Database Design - Data Modeling Using the Entity–Relationship (ER) Model-The Enhanced Entity–Relationship (EER)-Subclasses, Superclasses, and Inheritance-Specialization and Generalization- Constraints and Characteristics of Specialization and Generalization Hierarchies</p>	18	CO1, CO2, CO3, CO4, CO5	K1,K2, K3,K4,K5
II	<p>The Relational Data Model and Relational Database Constraints</p> <p>Relational Model Concepts -Relational Model Constraints and Relational Database Schemas - Update Operations, Transactions, and Dealing with Constraint Violations -The Relational Algebra and Relational Calculus-Unary Relational Operations: SELECT and PROJECT-Relational Algebra Operations from Set Theory-Binary Relational Operations: JOIN and DIVISION - Additional Relational Operation.</p>	18	CO1, CO2, CO3, CO4, CO5	K1,K2, K3,K4,K5
III	<p>Basic SQL: SQL Data Definition and Data Types - Specifying Constraints in SQL - Basic Retrieval Queries in SQL -INSERT, DELETE, and UPDATE Statements in SQL -Additional Features of SQL</p> <p>More SQL: Complex Queries, Triggers, Views and Schema Modification - More Complex SQL Retrieval Queries- Specifying Constraints as Assertions and Actions as Triggers -Views (Virtual Tables) in SQL - Schema Change Statements in SQL</p>	18	CO1, CO2, CO3, CO4, CO5	K1,K2, K3,K4,K5
IV	<p>Database Design Theory and Normalization : Basics of Functional Dependencies and Normalization for Relational Databases- Informal Design Guidelines for Relation Schemas- Functional Dependencies - Normal Forms Based on Primary Keys - General Definitions of Second and Third Normal Forms - Boyce-Codd Normal Form-Multivalued Dependency and Fourth Normal Form -Join Dependencies and Fifth Normal Form</p> <p>Relational Database Design Algorithms and Further Dependencies</p> <p>Further Topics in Functional Dependencies: Inference Rules, Equivalence, and Minimal Cover - Properties of Relational Decompositions- Algorithms for Relational Database Schema Design - About Nulls, Dangling Tuples, and Alternative Relational Designs</p>	18	CO1, CO2, CO3, CO4, CO5	K1,K2, K3,K4,K5

V	PL/SQL Concepts: Cursors, Stored Procedures, Stored Function, Database Triggers- Introduction to NOSQL Systems	18	CO1, CO2, CO3, CO4, CO5	K1,K2, K3,K4,K5
VI	Self Study for Enrichment (Not included for End Semester Examinations) <ul style="list-style-type: none"> • Design a ER model for Banking transactions • Write query to Create schemas related to bank • Normalize the schema with applying the normal forms • Perform transactions such as Deposit, Withdraw using sub queries • Apply PL/SQL concept to validate the data 	-	CO1, CO2, CO3, CO4, CO5	K1,K2, K3,K4,K5

Textbook

1. Elamsri and Navathe,(2016).Fundamentals of database systems, Pearson Education
2. Ivan Bayross ,SQL & PL/SQL, BPB publications.

References

1. C.J.Date,(2003). An Introduction To Database Systems, Pearson.
2. J.D.Ullaman,(2010).Principles of Database Systems, Mc-Graw Hill Education, Galgotia Publishers
3. Abraham Silberschatz, Henry F. Korth & S. Sudarshan (2011).Database System Concepts Mc-Graw Hill Education.

Web References

1. <https://beginnersbook.com/2015/04/rdbms-concepts>
2. <https://www.javatpoint.com/dbms-tutorial>
3. <https://www.tutorialspoint.com/dbms/>

Pedagogy

Chalk and Talk, PPT, Discussion, Assignment, Demo, Quiz and Seminar.

Course Designer

- 1.Dr.S.Suguna Devi, Associate Professor, Department of Information Technology.

Semester III	Internal Marks:25	External Marks: 75		
COURSE CODE	COURSE TITLE	CATEGORY	Hrs. / Week	CREDITS
22UIT3AC4	FINANCIAL ACCOUNTING	ALLIED	4	3

Course Objective

- To equip the students with fundamental knowledge and acquire analytical skills on the accounting concepts.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Define the basic concepts of Accounting	K1
CO2	Explain the accounting rules required for business enterprise	K2
CO3	Make use of accounting concepts to interpret the performance of business	K3
CO4	Analyze the financial statement of the firm	K4

Mapping of CO with PO and PSO

COs/ PSOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	3	3	3	2	3	3	2
CO2	2	3	3	3	3	3	2	3	3	2
CO3	3	3	3	3	2	3	2	3	3	2
CO4	2	3	3	3	3	3	2	3	3	2
CO5	2	3	3	3	3	3	2	3	3	2

“1”–Slight(Low)Correlation “2”–Moderate(Medium)Correlation □
 “3”–Substantial (High)Correlation “-”indicate there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Accounting Meaning – Definition of Accounting- Need for Accounting – Meaning of Book Keeping – Book Keeping Vs Accounting- Accounting Principles – Accounting Cycle – Accounting Equation. Double Entry: Meaning – Nature and Principle of Double Entry. Journal: Meaning and Need – Steps in Journalizing.	12	CO1, CO2, CO3, CO4	K1,K2,K3,K4
II	Ledger: Meaning – Utility – Format – Posting – Balancing an Account – Preparation of Trial Balance – Total Method – Balance Method.	12	CO1, CO2, CO3, CO4	K1,K2,K3,K4
III	Subsidiary Books – Meaning – Cash Book – Simple cash book – Two Column cash book with Bank and Discount Columns – Three Column cash book – Petty Cash Book – Imprest System – Analytical petty cash book.	12	CO1, CO2, CO3, CO4	K1,K2,K3,K4
IV	Pass Book – need for Bank Reconciliation statement – Methods of Preparation of Bank Reconciliation Statement – Favorable and Unfavorable Balances. Depreciation – Meaning –Straight Line Method, Diminishing Balance Method and Annuity Method. (Simple Problems only)	12	CO1, CO2, CO3, CO4	K1,K2,K3,K4
V	Meaning – Need for Preparation – Components of Final Accounts – Trading	12	CO1, CO2, CO3, CO4	K1,K2,K3,K4

	Account – Profit and Loss Account – Balance sheet – Adjustments.			
IV	Self Study for Enrichment (Not to be included for External Examination) Distinction between Journal and Ledger – Objective of Preparing Trial Balance – Benefits of subsidiary book System – Causes for the differences between cash book and pass book- Differences Between Trial Balance and Balance sheet – Need for Providing Depreciation		CO1, CO2, CO3, CO4	K1,K2,K3,K4

Text Book

1. S.P.Jain and K.L.Narang (2016), Fundamentals of Accounting, Kalyani Publishers, 2017
2. T.S. Reddy & Murthy (2020), Financial Accounting, Margham Publications, 2017

Reference Books

1. Dalston L. Cecil and Jenitra L.Merwin. (2015). Business Accounting. 4th Edition, Learn Tech Publishers.
2. R.L. Gupta & Radhaswamy M. (2018). Financial Accounting. 8th Edition, Sultan Chand Sons
3. Shukla & Grewal. (2018). Advanced Accountancy. Sultan Chand Sons.

Web Reference

1. www.accountingcoach.com
2. www.accountingstudyguide.com
3. www.futureaccountant.com
4. www.onlinelibrary.wiley.com

Pedagogy

Chalk and Talk, PPT, Discussion, Assignment, Demo, Quiz and Seminar.

Course Designer

Ms. G. Kanagavalli

Semester III	Internal Marks:40	External Marks:60		
COURSE CODE	COURSE TITLE	CATEGORY	Hrs. /Week	CREDITS
22UIT3AC5P	COMPUTER APPLICATIONS IN BUSINESS (P)	ALLIED	4	3

Course Objective

- The primary objective of this course is to expose the students with the Accounting Software Tally ERP9 with GST

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Recall the basic concepts of components of computer	K1
CO2	Understand the basic features of Tally ERP9	K2
CO3	Prepare different types of financial reports	K3
CO4	Analyse stock group, stock category, stock item and compare stock category summary with godown summary.	K4
CO5	Explain the procedure for GST Registration and Bank Reconciliation Statement.	K5

Mapping of CO with PO and PSO

COs/ PSOs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	2	3	3	2
CO2	3	3	2	3	3	3	2	3	3	2
CO3	2	3	3	2	3	3	2	3	3	2
CO4	2	3	3	3	3	3	2	3	3	2
CO5	3	3	3	3	3	3	2	3	3	2

“1”–Slight(Low)Correlation “2”–Moderate(Medium)Correlation–

“3”–

Substantial(High)Correlation “-”indicatesthereisnocorrelation

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Introduction to computerized Accounting – Features – Advantages –Manual Accounting Vs .Computerized Accounting – Accounting transaction.	9	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
II	Introduction to Tally ERP 9 – Features of Tally – Creation of Company – Selecting a Company – Altering / Modifying existing company – Configuration of Tally – Tally screen and Menu – Accounting Features – Accounting Groups – User defined groups – Ledger creation, alteration and deletion	9	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
III	Accounting vouchers – inventory vouchers – invoicing – optional & non-accounting voucher – order processing – advanced voucher entry.	9	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
IV	Introduction to Cost – Creation of cost Categories – Creation of Cost Centre–Editing – Deleting – Usage of Cost Category and Cost Centres in voucher entry – Inventory Information: Stock Groups – Stock Categories – Godowns – Unit Of Measure – Stock Items – Purchase orders and Sales orders processing – Recording Transactions using Orders.	9	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
V	Goods and Service Tax (GST): GST Concepts – Enabling GST – Configuring Master with GST Details – GST Reports – Bank Reconciliation Statement	9	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5

IV	Self-Study for Enrichment	-	CO1,CO2, CO3,CO4, CO5	K1, K2, K3, K4, K5
	(Not to be included for End Semester Examination) Journal Entry – Ledgers – Trial Balance – Balance, Adjustments			

LIST OF PRACTICALS:

1. Creation, alteration and deletion of companies and user defined accounting groups.
2. Creation, alteration and deletion of ledger Accounts.
3. Preparation of Final Accounts with adjustments.
4. Voucher entries in double entry mode.
5. Creation, alteration and deletion of inventory masters.
6. Creation of Inventory Reports
7. Creation of Bank Reconciliation Statement
8. Creation of GST Registration

Text Book

1. V. Srinivasa Vallabhan (2014). *Computer Applications in Business*, Sultan Chand & Sons
2. A.K. Nadhani(2015), *Computer Application by Implementing Tally ERP*, BPB Publications, Chennai.

Reference Books

1. Asok K. Nadhani, “TALLY ERP 9 TRAINING GUIDE - 4TH REVISED & UPDATED EDITION”, January 2018.
2. Official guide to financial accounting using TALLY ERP 9 with GST, Tally Education P. Ltd.
3. Chadwick, L, “The Essence of Financial Accounting”, PHI, 2nd Edition.

Web Reference

<https://www.youtube.com/watch?v=s-r7hNyfuJs>

Pedagogy

Lecture and Lab demonstration

Course Designer

Ms. S. Praveen

Semester III	Internal Mark:40		External Mark: 60	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs/Week	CREDITS
22UIT3CC3P	RDBMS(P)	CORE COURSE - III(CP)	3	3

Course Objectives

- Creating and Altering Tables with necessary constraints, keys and data types
- Inserting data and manipulating data as per needs
- Writing SQL Queries to retrieve required information from single/multiple tables.
- Creating views and manipulating them as needed

Course Outcomes

On the successful completion of the course, Students will be able to

CO Number	CO Statement	Knowledge level
CO1	Design and implement a database schema for a given problem	K1
CO2	Create and maintain tables using PL/SQL	K2
CO3	Populate and query a database	K3
CO4	Prepare reports	K3
CO5	Application development using PL/SQL	K3

Course Outcomes and Cognitive Level Mapping

COs\ POs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3	3	3	1	3	3
CO2	3	2	3	2	3	3	3	1	3	3
CO3	3	2	2	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	2	2	3
CO5	3	3	3	2	3	3	3	3	3	3

Syllabus

1. Draw ER diagram for Banking transaction

Using MYSQL execute the following

2. Creation of college database and establish relationships between tables
3. Create a view to extract details from two or more tables
4. To demonstrate Joins
5. To demonstrate Aggregate functions
6. To implement String functions.
7. To demonstrate various nested queries.

With the help of PL/SQL

8. Write a stored procedure and Function to process student's results.
9. Write a program to implement Trigger.
10. Write a program to generate employee pay slip using PL/SQL.

Web References

<https://www.w3schools.com/mysql/>

<https://towardsdatascience.com/practical-sql-create-and-query-a-relational-database-8bac84d78703>

Course Designer

1. Dr. S. Suguna Devi, Associate Professor, Department of Information Technology.

GENERIC ELECTIVE COURSE – I (GEC)

(For BCA, B.Sc Computer Science with Cognitive, B.Sc IT)

MATHEMATICS FOR COMPETITIVE EXAMINATIONS-I

Semester III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs /Week	CREDITS
22UMA3GEC1	MATHEMATICS FOR COMPETITIVE EXAMINATIONS-I	GENERIC ELECTIVE COURSE – I	2	2

Course Objective

- **Explain** many short tricks to solve the mathematical problems easily.
- **Apply** the knowledge to **interpret** and **solve** the problems.
- **Explore** the ideas and to solve the Mathematical problems.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Knowledge Level
	On the successful completion of the course, students will be able to	
CO1	Explain the knowledge of the various techniques of Quantitative Aptitude and Reasoning.	K1, K2
CO2	Apply the concepts in solving mathematical problems to succeed in various Competitive examinations.	K3
CO3	Examine various types of Problems using Arithmetic and Reasoning test.	K3
CO4	Apply the different concepts of Arithmetic and Reasoning test to solve the problems.	K3
CO5	Analyze real-life problems and finding solutions.	K4

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	2	2	2	3	2	3	3	3
CO2	3	2	2	2	2	2	3	3	3	3
CO3	3	2	2	2	2	3	3	2	2	3
CO4	3	2	2	2	2	3	3	2	2	2
CO5	3	2	2	2	2	3	3	3	3	2

“1” – Slight (Low) Correlation – “2” – Moderate (Medium) Correlation –

“3” – Substantial (High) Correlation – “-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Problems on Numbers – Problems on Ages.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	Time & Distance – Calendar – Clocks.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	Data Interpretation: Bar Graphs – Pie Charts – Line Graphs.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	Reasoning (Including Mathematical): Series – Codes – Relationship – Classification.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	Logical Reasoning.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
VI	Self -Study for Enrichment: (Not included for End Semester Examination) Numbers -HCF and LCM of Numbers - Time and Work- Tabulation – Analogy.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

Text Book

1. Aggarwal. R.S . (2015). *Quantitative Aptitude For Competitive Examinations (Fully Solved)*. S.Chand & Company Pvt.Ltd.
2. Dr.Kautilya.K. (2018). *UGC NET/JRF/SET Teaching & Research Aptitude (General Paper - I)*. UPKAR PRAKASHAN, AGRA – 2, Sixth Edition.

Chapters and Sections

UNIT-I	Chapter 7,8	: Pg.No 161 – 181,182-194 [1]
UNIT-II	Chapter 17, 27,28	: Pg.No 384 – 404 ,593 – 596,597-604 [1]
UNIT-III	Chapter 37,38,39	: Pg.No 676 –694,695-708,709-726 [1]
UNIT- IV	Unit-5	: Sections 1-3,5 [2]
UNIT- V	Unit-6	: Pg.No 162 – 190 [2]

Reference Books

1. Edgar Thorpe. (2000). *Test of Reasoning for Competitive Examinations*. Tata McGraw-Hill Publishing Company Limited, New Delhi, 2nd Edition.
2. Sinha. T.K. (2002). *80+ Practice Sets of Quantitative Aptitude for Bank PO Exams*. Arihant Publication (India) limited.
3. Abhijit Guha.(2014). *Quantitative Aptitude for Competitive Examinations*. McGraw-Hill Publishing Company Limited, New Delhi, 5 th Edition.

Web References

1. https://www.youtube.com/watch?v=viKaYznFJbw&list=PL5cSYiJ8KoWGqLLS_w6_G80U5FUEl0T39 .
2. <https://www.youtube.com/watch?v=ufbDCFUn6PY>
3. <https://www.youtube.com/watch?v=hGFGybSQDxQ>
4. https://www.youtube.com/watch?v=_up3mXnsVEc&list=PLOoogDtEDyvs3Qznc3-1DnlpbQSRuWP-z
5. https://www.youtube.com/watch?v=MV00SQU_f7E&list=PLOoogDtEDyvvDNHO_Ba58OrE567nCzzl2
6. <https://www.youtube.com/watch?v=31qZR-BbPIs>
7. <https://www.youtube.com/watch?v=ev2SkXJVAbA&list=PLOoogDtEDyvsBG38tzlj1Zkd0PLxgZwXV>

Pedagogy

Chalk and Talk, Power point presentation, Group Discussion, Seminar, Assignment and Quiz.

Course Designer

1. Dr.L.Mahalakshmi

Semester III
<div> <div></div> <div></div> <div>L</div> <div></div> </div>
22ULC3BT1

க :

த

த

Course Outcomes

இ

CO No.	CO Statement	Cognitive Level
CO 1	த த	K 1
CO 2	ப க	K 2
CO 3	க க	K 3
CO 4	ப க	K 4
CO 5	த	K 2

ய

Mapping of CO with Po and PSO

த.

த.

க

Web Resources

- <https://in.pinterest.com/pin/634515034997518843/>
- <https://www.learntamil.com/part1/intro/thamil-alphabet/>

த

க

ப

ஃ

஄

அ

ஆ

இ

ஈ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

஌

஍

எ

ஏ

உ

ஊ

஋

ANNEXURE N

**B.SC.,
MICROBIOLOGY**

SYLLABUS

**FROM THE ACADEMIC YEAR
2023-2024**



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)
PG & RESEARCH DEPARTMENT OF MICROBIOLOGY
B.Sc., MICROBIOLOGY – Programme Structure

LEARNING OUTCOME BASED CURRICULUM FRAMEWORK (CBCS-LOCF)

(For the Candidates admitted from the Academic year 2023-2024 and onwards)

SEMESTER I

Semester	Part	Course	Title	Subject Code	Inst. Hrs/Week	Credits	Exam			Total
							Hrs	Marks		
								Int.	Ext.	
I	I	Language Course–I (LC) Tamil*/Other Languages	பொதுத் தமிழ்	23ULT1	6	3	3	25	75	100
			Poetry, Grammar and History of Sanskrit Literature	23ULS1						
			Hindi Ka Samanya Gyan aur Nibandh	22ULH1						
			Foundation Course: Paper I- French-I	22ULF1						
	II	English Language Course-I(ELC)	General English -I	23UE1	6	3	3	25	75	100
	III	Core Course–I (CC)	Fundamentals of Microbiology and Microbial Diversity	23UMB1CC1	5	5	3	25	75	100
		Core Practical–I (CP)	Fundamentals of Microbiology and Microbial Diversity (P)	23UMB1CC1P	3	3	3	25	75	100
		First Allied Course–I (AC)	Biochemistry I	23UMB1AC1	4	3	3	25	75	100
		First Allied Course- II (AC)	Biochemistry I (P)	23UMB1AC1P	4	3	3	25	75	100
	IV	UGC Jeevan Kaushal life skills	Value Education	23UGVE	2	2	3	25	75	100
				TOTAL	30	22				700

Semester: I	Internal Marks : 25		External Marks : 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs./ Week	CREDITS
23UMB1CC1	Fundamentals of microbiology and Microbial diversity	CORE	5	5

Course Objective

- This subject aims to introduce the history and development of Microbiology. The contents of this course will help students understand history, biology of microorganisms, growth and control of microbes.
- Thus, the beginners are rightly exposed to foundation of Microbiology which would lead them towards progressive advancement of the subject.

Course Outcome and Cognitive level Mapping

CO Number	CO Statement	Cognitive level
CO 1	Remember and understand the Development of Microbiology	K1, K2
CO 2	Analyze the Size and Shape of Microorganisms using Microscope	K3
CO 3	Evaluate the knowledge about Bacteria and Viruses	K4
CO 4	Compare the various Preservation Methods for preserving Microbes.	K5
CO 5	Summarize various modes of classification of microbes	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	1	2	3	3	3	3	2	3
CO2	3	2	3	3	2	2	3	2	3	3
CO3	3	2	2	3	3	3	2	3	3	2
CO4	2	3	3	2	3	3	3	2	3	2
CO5	3	3	2	3	2	3	3	3	2	2

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“-“ indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	Cos	COGNITIV ELEVEL
I	History and scope of Microbiology - Contributions of Anton von Leeuwenhoek, Louis Pasteur, Robert Koch, Joseph Lister, Alexander Flemming. Role of microorganisms in fermentation, Germ theory of disease, Development of various microbiological techniques and golden era of microbiology. Microscopy: Principles and applications of bright field, dark field, phase contrast, fluorescent SEM and TEM.	15	CO1, CO2, CO3, CO4, CO5.	K1, K2, K3, K4, K5.
II	General characteristics of cellular microorganisms (Bacteria, Algae, Fungi and Protozoa) and acellular microorganisms - (Viruses, Viroids, Prions), Differences between prokaryotic and eukaryotic microorganisms. Structure of Bacterial cell wall, cell membrane, capsule, flagella, pili, mesosomes, spores, and gas vesicles.	15	CO1, CO2, CO3, CO4 CO5.	K1, K2, K3, K4, K5.
III	Sterilization: Principles and methods – physical methods- moist heat, dry heat, filtration and media preparation. Cultivation of microbes- Types of culture media-Stab, slant, broth, semisolid, solid media. Aerobic and Anaerobic culture techniques- Pure culture techniques – Maintenance and preservation of microbes. Principles and types of staining– Simple, differential, Capsule staining.	15	CO1, CO2, CO3, CO4, CO5.	K1, K2, K3, K4, K5.
IV	Introduction to microbial biodiversity-. Classification – Three kingdom, five kingdom, six kingdom and eight kingdom. Ecological niche. Basic concepts of Eubacteria, Archaeobacteria and Eucarya. Conservation biodiversity	15	CO1, CO2, CO3, CO4, CO5.	K1, K2, K3, K4, K5.

V	International codes of nomenclature. Binomial nomenclature – species concept – Kingdom, division, class, order, family, and genus. Principles of classification – morphological, physiological biochemical basis of classification. Molecular basis of classification – chemotaxonomy & numerical taxonomy.	15	CO1, CO2, CO3, CO4, CO5.	K1, K2, K3, K4, K5.
VI	Self Study for Enrichment (Not to be included for External Examination) Microscopic operations, Criteria for Classification of Microorganisms, cellular organizations, Isolation and identification of Microorganisms,	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Books

1. Dubey RC and Maheswari DK. (2015). *A Text Book of Microbiology*. 5th Edition. S Chand, New Delhi.
2. Ananthanarayan Paniker (2020). *A Text book of Microbiology*. 11th Edition. University Press. Singapore.
3. Madigan MT, Martinko JM, and Parker J. (2019). *Biology of Microorganisms*. 12th Edition, MacMillan Press. England.
4. Pelczar MJ, Chan ECS and Kreig NR. (2015). *Microbiology*, 5th edition. McGraw-Hill. Book Co. Singapore.
5. Atlas RA and Bartha R. (2019). *Microbial Ecology. Fundamentals and Application*. 4th edition Benjamin Cummings, New York.

Reference Books

1. Prescott L.M, Harley, J.P. and Helin, D.A. (2017). *Microbiology*, 5th Edition. McGraw Hill.
2. Tortora GJ, Funke BR and Case CL. (2020). *Microbiology: An Introduction*. 9th Edition, Pearson Education, Singapore.
3. Black JG. (2018). *Microbiology-principles and explorations*, 6th edition. John Wiley and Sons, Inc. New York.
4. Moselio Schaechter and Joshua Leaderberg (2019). *The Desk encyclopedia of Microbiology*. 2nd edition. Elsevier Academic press, California.
5. Madigan MT, Martinko JM, and Parker J. (2019). *Biology of Microorganisms*, 12th Edition. MacMillan Press, England.

Web Reference

1. <https://microbenotes.com/history-of-microbiology/>
2. <https://byjus.com/biology/prokaryotic-and-eukaryotic-cells/>
3. <https://byjus.com/biology/archaeobacteria/>
4. <https://thebiologynotes.com/sterilization-physical-and-chemical-methods/>
5. <https://microbenotes.com/microbiology-of->

extreme-environments/

Pedagogy

Chalk and talk, PPT, Discussion, Assignment, Demo, Quiz, Seminar.

Course Designer

Dr.P.Bhuvaneswari

Semester : I	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
23UMB1CC1P	Fundamentals of Microbiology and Microbial Diversity (P)	CORE PRACTICAL	3	3

Course Objective

- To understand the rules and procedures to be observed in a laboratory.
- To know and familiarize with equipment and apparatus used in microbiology practical exercises.
- To familiarize and understand the parts and use of microscopes.
- To appreciate the abundance and diversity of microorganisms in different habitats

Course Outcome and Cognitive Level Mapping

On the successful completion of the course, students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Recall the safety practice in microbiological laboratory	K1
CO2	Demonstrate the pure culture technique	K2
CO3	Develop the microscopic techniques and staining methods	K3
CO4	Determine about preparation of different media	K4
CO5	Discuss different microorganisms in different media	K6

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	3	3	3	3	3	3	2	3
CO2	2	3	2	2	2	3	3	2	3	3
CO3	3	2	3	3	2	2	3	3	3	2
CO4	3	3	3	3	3	3	3	2	2	3
CO5	2	3	2	2	3	3	2	3	2	2

1- Slight (Low) correlation 2- Moderate (Medium) correlation

3- Substantial (High) correlation “-” indicates there is no correlation

Syllabus

1. Cleaning of glass wares, Microbiological good laboratory practice and safety. Sterilization and assessment of sterility – Autoclave, hot air oven, and membrane filtration.
2. Media preparation: liquid media, solid media, semi-solid media, agar slants and agar plates.
3. Preparation of basal, differential, enriched, enrichment, transport, and selective media preparation-quality control of media, growth supporting properties, sterility check of media.
4. Pure culture techniques: Spread plate, streak plate and pour plate, decimal dilution.
5. Culture characteristics of microorganisms: growth on different media, growth characteristics, and description. Demonstration of pigment production.
6. Microscopy: light microscopy and bright field microscopy.
7. Staining techniques: smear preparation, simple staining, Gram's staining and endospore staining.
8. Study on Microbial Diversity using Hay Infusion Broth-Wet mount to show different types of microbes, hanging drop method.

Text Books

1. Saha, R (2022).Microbiology Practical Manual (2nd edition) CBS Publishers & Distributors Pvt. Ltd.India.
2. Das, S (2020).Microbiology Practical Manual (1st edition) CBS Publishers & Distributors Pvt. Ltd.India.
3. Gunasekaran, P. (2018). Laboratory manual in Microbiology. New Age International Ld., Publishers, New Delhi.
4. R C Dubey and D K Maheswari (2010). Practical Microbiology. S. Chand Publishing.
5. James G Cappucino and N. Sherman MB(2013). A lab manual Benjamin Cummins, New York.

Reference Books

1. Atlas.R (1997). Principles of Microbiology, 2nd Edition, Wm.C.Brown publishers.
2. Amita J, Jyotsna A and Vimala V (2018). Microbiology Practical Manual. (1st Edition). Elsevier India
3. Talib VH (2019). Handbook Medical Laboratory Technology. (2nd Edition). CBS
4. Wheelis M, (2010). Principles of Modern Microbiology, 1st Edition. Jones and Bartlett Publication.
5. Lim D. (1998). Microbiology, 2nd Edition, WCB McGraw Hill Publications.

Web References

1. <http://www.biologydiscussion.com/micro-biology/sterilisation-and-disinfection-methods-and-principles-microbiology/24403>.
2. <https://www.ebooks.cambridge.org/ebook.jsf?bid=CBO9781139170635>
3. https://www.grsmu.by/files/file/university/cafedry//files/essential_microbiology.pdf
4. <https://microbiologyinfo.com/top-and-best-microbiology-books/>

Pedagogy

Chalk and talk, Power Point Presentation and Group Discussions

Course Designer

Dr. E.Priya

Semester : I	InternalMarks:25		ExternalMarks:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
23UMB1AC1	Biochemistry I	First Allied Course - I	4	3

Course Objective

- To understand the structure, functions of various biomolecules and consequences of deviation from normal

Course Outcome and Cognitive Level Mapping

On the successful completion of the course, students will be able to

CO Number	CO Statement	Cognitive level
CO1	Remember and understand the concept of macromolecules	K1,K2
CO2	Illustrate an idea about structure and function macromolecules	K2,K3
CO3	Categorize the sources of macromolecules	K4
CO4	Classify and relate properties o macromolecules	K3,K4
CO5	Recommend the daily allowances of vitamins and its Significance	K5

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	2	3	3	3	2	2	3	2	3
CO2	3	3	2	3	3	2	2	3	3	3
CO3	2	3	3	2	3	3	3	2	3	3
CO4	2	3	3	3	2	3	2	3	3	3
CO5	3	3	2	3	3	3	3	2	3	3

“1”–Slight (Low) Correlation

“2” – Moderate

(Medium) Correlation“3”–Substantial (High) Correlation

“-

“indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	Carbohydrates: Definition, sources, classification-monosaccharide, disaccharide, oligosaccharide and Polysaccharide, biological significance, digestion and absorption of carbohydrates	12	CO1, CO2, CO3, CO4	K1, K2, K3, K4
II	Proteins: Definition, sources, classification and structure of proteins - structural and nonstructural proteins, Amino acids–structure classification - essential and nonessential, protein and non-protein amino acids. Biological Significance of Proteins.	12	CO1, CO2, CO3, CO4	K1, K2, K3, K4
III	Lipids: Definition, Properties, Sources, Classification of lipids and fatty acids-saturated, unsaturated and polyunsaturated. Compound lipids - Structure and functions of phospholipids and glycolipids. Biological significance of lipids	12	CO1, CO2, CO3, CO4	K1, K2, K3, K4
IV	Vitamins: Definition, sources and functions of Fat soluble vitamins (A, D, E and K) and Water soluble vitamins (B complex and C).	12	CO1, CO2, CO3, CO4	K1, K2, K3, K4
V	Disorders of Metabolism: Disorders of carbohydrate metabolism: diabetes mellitus, hypoglycemia, Disorders of amino acid metabolism: alkaptonuria, phenylketonuria, Disorders of lipid metabolism: hyperlipidemia, hyperlipoproteinemia and hypercholesterolemia. Disorders of vitamin metabolism – Night blindness, Ricketts, Scurvy, sterility, beriberi and anemia	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self Study for Enrichment (Not to be included for External Examination) Lactose intolerance - Inborn errors in amino acid metabolism- Atherosclerosis – Myocardial infarction	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Books

1. AmbikaShanmugam(2016).Fundamentals of Biochemistry for Medical students. 8th Edition, Wolters Kluwer (India) Pvt Ltd.
2. Rafi MD, (2014) Textbook of Biochemistry for medical students, 2nd edition, Universities Press, (India) Pvt. Ltd, Hyderabad, India.
3. Charlotte W Pratt and Sathyanarayana U and Chakrapani U (2013) Biochemistry, 4th edition, Elsevier publishers.
4. Deb AC (2011). Fundamentals of Biochemistry, 10th edition, New Central Book Agency (p) ltd, London
5. Rajagopal G (2010). Concise textbook of biochemistry, 2nd edition, Ahuja Publishing House.

Reference Books

1. Lubert Stryer; Jeremy Berg; John Tymoczko; Gregory Gatto (2019). *Biochemistry*, 9th Edition. Macmillon Publication.
2. Denise R Ferrier, (2013) *Biochemistry*, 6th edition, LWW publishers.
3. Reginald H Garrett and Charles M Grisham (2012). *Biochemistry*, 5th edition. Brooks Cole publishers.
4. Albert L Lehninger, David L Nelson and Michael M Cox, (2010). *Lehninger Principles of Biochemistry*, 2nd edition, Wiley publisher

Web References

1. <https://www.slideshare.net/namarta28/monosaccharides>
2. <https://www.tuscany-diet.net/proteins/classification/#:~:text=egg%20yolk%20phosvitin.>
3. <http://www.Protein%20classification%20based%20on%20shape,two%20classes%3A%20fibrous%20and%20globular.>
4. <https://byjus.com/biology/lipids/#:~:text=There%20are%20two%20major%20types,than%20alcohol%20and%20fatty%20acids.>
5. <https://www.thoughtco.com/dna-versus-rna-608191>

Pedagogy

Chalk and talk, PPT, Discussion, Assignment, Quiz, Seminar

Course Designer

Dr.B.Thamilmaraiselvi

Semester I	Internal mark:25		External mark:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEKS	CREDITS
23UMB1AC1P	Biochemistry I (P)	ALLIED	4	3

Course Objective

- This course enables the students to explore the basic biochemistry practical skills.

Course Outcome and Cognitive Level Mapping

On the successful completion of the course, students will be able to

CO NUMBER	CO STATEMENT	Cognitive level
CO 1	Acquire knowledge about preparation of Buffer, principle of colorimeter	K4
CO 2	Analyse the constituents of carbohydrates and proteins	K1
CO 3	Analyse the constituents of lipids, Titrimetric estimation of Glucose	K6
CO 4	Titrimetric estimation Ascorbic acid and colorimetric estimation of DNA	K6
CO 5	Determination of Amino acids by Paper chromatography & Thin layer chromatography	K5

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO 1	3	3	3	3	3	3	3	3	3	3
CO 2	3	3	3	3	2	1	3	3	3	3
CO 3	3	3	1	3	3	3	2	2	2	3
CO 4	3	3	2	3	3	3	3	1	3	2
CO 5	3	3	3	2	2	3	3	2	2	3

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-“ indicates there is no correlation

Syllabus

1. Preparation of Buffer & estimation of pH
2. Verification of Beer Lambert's Law
3. Qualitative Analysis of Carbohydrates
4. Qualitative Analysis of Proteins
5. Qualitative Analysis of Lipids
6. Quantitative estimation of Glucose by Benedict's method
7. Quantitative estimation of Ascorbic acid
8. Qualitative estimation of DNA by Diphenyl amine method
9. Separation of Amino acids by paper chromatography (Demonstration)
10. Separation of Amino acids by Thin layer chromatography (Demonstration)

Text Books

1. Vasudevan and Sabir Kumar Doss (2022). Practical Text book of Biochemistry for Medical students.
2. Damodaran Geetha K.(2016), Practical Biochemistry, JB brother medical publisher.
3. Ranjna Chawla. (2014). Practical clinical Biochemistry, JB brother medical publisher.
4. Manipal manual of clinical Biochemistry.(2013), JB brother medical publisher.
5. Shawn O' Farrell and Ryan T Ranallo (2006). Experiments in Biochemistry: A Hands on Approach-A manual for the undergraduate laboratory, Thomson Learning, Inc., Australia.

Reference Books

1. Vasudevan and Sabir Kumar Doss (2022). Practical Text book of Biochemistry for Medical students.
2. Damodaran Geetha K.(2016), Practical Biochemistry, JB brother medical publisher.
3. Ranjna Chawla.(2014). Practical clinical Biochemistry, JB brother medical publisher.
4. Manipal manual of clinical Biochemistry.(2013), JB brother medical publisher.
5. Shawn O' Farrell and Ryan T Ranallo (2006). Experiments in Biochemistry: A Hands on Approach-A manual for the undergraduate laboratory, Thomson Learning, Inc., Australia.

Web References

1. <https://www.youtube.com/watch?v=wmhmAESv72E>
2. <https://www.youtube.com/watch?v=VzYDk4t97Ok>
3. <https://www.youtube.com/watch?v=JdXbTWfOc18>
4. https://www.youtube.com/watch?v=2LiA_yNMIVs

Pedagogy

Chalk and talk, PPT, Discussion, Assignment, Quiz, Seminar

Course Designer

Dr. N.Pushpa

CAUVERYCOLLEGE FOR WOMEN(AUTONOMOUS)

Nationally Accredited with 'A' Grade by NAAC

ISO 9001:2015Certified

TIRUCHIRAPPALLI

PG AND RESEARCH DEPARTMENT OF MICROBIOLOGY



B.Sc.,MICROBIOLOGY

SYLLABUS

2022 -2023 and Onwards



**CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)
PG AND RESEARCH DEPARTMENT OF MICROBIOLOGY**

VISION

Our vision is to encourage eminent research work through the conception of an attractive and vibrant environment to achieve goals of our department.

MISSION

- To impart relevant, ultimate, principle-oriented education and practical expertise in the field of Microbiology.
- To strive to provide quality education conjugated with innovative technology so as to be able to gain technical and educational expertise locally, nationally, internationally.
- Our prime focus is to enrich the ambitions of our students, staff and steer with constructive collaboration towards excellence.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEOs	Statements
PEO1	LEARNING ENVIRONMENT To facilitate value-based holistic and comprehensive learning by integrating innovative learning practices to match the highest quality standards and train the students to be effective leaders in their chosen fields.
PEO2	ACADEMIC EXCELLENCE To provide a conducive environment to unleash their hidden talents and to nurture the spirit of critical thinking and encourage them to achieve their goal.
PEO3	EMPLOYABILITY To equip students with the required skills in order to adapt to the changing global scenario and gain access to versatile career opportunities in multidisciplinary domains.
PEO4	PROFESSIONAL ETHICS AND SOCIAL RESPONSIBILITY To develop a sense of social responsibility by formulating ethics and equity to transform students into committed professionals with a strong attitude towards the development of the nation.
PEO5	GREEN SUSTAINABILITY To understand the impact of professional solutions in societal and environmental contexts and demonstrate the knowledge for an overall sustainable development.

PROGRAMME OUTCOMES FOR B.Sc., MICROBIOLOGY PROGRAMME

PONO.	On completion of B.Sc., Microbiology, the students will be able to
PO1	Academic Excellence and Competence: Elicit firm fundamental knowledge in theory as well as practical for coherent understanding of academic field to pursue multi and interdisciplinary science careers in future.
PO2	Holistic and Social approach: Create novel ideas related to the scientific research concepts through advanced technology and sensitivity towards sustainable Environmental practices as well as social issues.
PO3	Professional ethics and Team Work: Explore professional responsibility through projects, internships, field trip/industrial visits and mentorship Programmes to transmit communication skills.
PO4	Critical and Scientific thinking: Equip training skills in Internships, Research Project to do higher studies in multidisciplinary path with higher level of specialization to become professionals of high-quality standards.
PO5	Social Responsibility with ethical values: Ensure ethical, social and holistic values in the minds of learners and attain ender parity for building a healthy nation.

PROGRAMME SPECIFIC OUTCOMES FOR B.Sc., MICROBIOLOGY

PSO NO.	Students of B.Sc., Microbiology will be able to	Pos Addressed
PSO1	Improve their knowledge on the basic concepts for retaining competence and confidence which enables them to develop interest in the new arena of Microbiology	PO1, PO5
PSO2	Acquire expertise in practical work within dependent equipment Handling skill along with collection and interpretation of scientific data	PO2, PO3
PSO3	Legitimize knowledge by emerging multiple aspects of current research.	PO3, PO5
PSO4	Pursue the importance of substantial original Research to meet the current and future expectation.	PO4, PO1
PSO5	Be aware of the ethical issues for the benefit of the society by adding skilled scientific work for across the country.	PO5, PO2



Cauvery College for Women (Autonomous)
PG & Research Department of Microbiology

B.Sc., Microbiology

Learning Outcome Based Curriculum Framework (CBCS-LOCF)
(For the Candidates admitted from the Academic year 2022-2023 and onwards)

Semester	Part	Course	Title	Course Code	Inst. Hrs.	Credits	Exam			Total
							Hrs.	Marks		
								Int	Ext	
I	I	Language Course-I (LC) Tamil / other languages	இக்கால இலக்கி□□	22ULT1	6	3	3	25	75	100
			Hindi Literature & Grammar-I	22ULH1						
			Basic French-I	22ULF1						
			History of Popular Tales Literature and Sanskrit Story	22ULS1						
	II	English Language Course- I(ELC)	Functional English for Effective Communication-I	22UE1	6	3	3	25	75	100
	III	Core Course – I(CC)	General Microbiology	22UMB1CC1	5	5	3	25	75	100
		Core Practical - I (CP)	General Microbiology (P)	22UMB1CC1P	3	3	3	40	60	100
		First Allied Course- I (AC)	Fundamentals of Biochemistry	22UMB1AC1	5	3	3	25	75	100
		First Allied Course- II (AC)	Fundamentals of Biochemistry (P)	22UMB1AC2P	3	3	3	40	60	100
	IV	Ability Enhancement Compulsory Course-I (AECC)	UGC Jeevan Kaushal-Universal Human Values	22UGVE	2	2	-	100	-	100
TOTAL					30	22				700
II	I	Language Course-II(LC)Tamil / Other languages	இடைக்கால இலக்கி□மு□ புதினமு□	22ULT2	5	3	3	25	75	100
			Hindi Literature & Grammar-II	22ULH2						
			Basic French-II	22ULF2						
			Poetry, Textual Grammar and Alankara	22ULS2						
	II	English Language Course- II(ELC)	Functional English for Effective Communication-II	22UE2	6	3	3	25	75	100
	III	Core Course – II (CC)	Microbial Physiology	22UMB2CC2	5	5	3	25	75	100
		Core Practical - II (CP)	Microbial Physiology (P)	22UMB2CC2P	3	3	3	40	60	100
		Core Course -III (CC)	Microbial Diversity	22UMB2CC3	3	3	3	25	75	100
		First Allied Course – III (AC)	Applied Biochemistry	22UMB2AC3	4	3	3	25	75	100
		Ability Enhancement Compulsory Course-II (AECC)	Environmental Studies	22UGEVS	2	2	-	100	-	100

V	III	Core Course –VI(CC)	Medical Microbiology	22UMB5CC6	6	6	3	25	75	100
		Core Course -VII(CC)	Agricultural and Environmental Microbiology	22UMB5CC7	6	6	3	25	75	100
		Core Course – VIII(CC)	Molecular Biology	22UMB5CC8	6	6	3	25	75	100
		Core Practical – V(CP)	Medical Microbiology, Agricultural and Environmental Microbiology and Molecular Biology (P)	22UMB5CC5P	3	3	3	40	60	100
		Discipline Specific Elective – I (DSE)	A. Organic Farming	22UMB5DSE1A	5	4	3	25	75	100
			B. Medical Parasitology	22UMB5DSE1B						
			C. Fundamentals of Botany and Zoology	22UMB5DSE1C						
	IV	Ability Enhancement Compulsory Course-IV(AECC)	UGC Jeevan Kaushal - Professional Skills	22UGPS	2	2	-	100	-	100
		Skill Enhancement Course –II(SEC)	Biofertilizer Technology (P)	22UMB5SEC2P	2	2	3	40	60	100
	Extra Credit Course			SWAYAM	As Per UGC Recommendation					
TOTAL					30	29				700
VI	III	Core Course – IX(CC)	Fermentation Technology	22UMB6CC9	6	6	3	25	75	100
		Core Course –X(CC)	Food and Dairy Microbiology	22UMB6CC10	5	5	3	25	75	100
		Core Course –XI (CC)	Cyber security	22UGCS	5	4	3	25	75	100
		Core Practical – VI(CP)	Fermentation Technology and Food and Dairy Microbiology (P)	22UMB6CC6P	3	3	3	40	60	100
		Discipline Specific Elective – II (DSE)	A. Microbial Genetics	22UMB6DSE2A	5	4	3	25	75	100
			B. Microbial Biotechnology	22UMB6DSE2B						
			C. Biological Techniques	22UMB6DSE2C						
		Project	Project Work	22UMB6PW	5	4	-	-	100	100
	V	Gender Studies	Gender Studies	22UGGS	1	1	-	-	-	100
		Extension activity		22UGEA	0	1	0	-	-	-
TOTAL					30	28				700
GRANDTOTAL					180	150				4400

Courses & Credits for UG Science Programmes

Part	Course	No. of Courses	Credits	Total Credits
I	Tamil/ Other Language	4	12	12
II	English	4	12	12
III	Core (Theory& Practical)	17	77	109
	Project Work	1	4	
	Internship	1	2	
	First Allied	3	9	
	Second Allied	3	9	
	DSE	2	8	
IV	GEC	2	4	15
	SEC	2	4	
	AECC-I -Universal Human Values	1	2	
	AECC-II-Environmental Studies	1	2	
	AECC-III-Innovation and Entrepreneurship	1	1	
	AECC-IV Professional Skills	1	2	
V	Gender Studies	1	1	02
	Extension Activities	—	1	
		44		150

Internal and external marks for theory and practical papers are as follows:

Subject	Internal Marks	External Marks
Theory	25	75
Practical	40	60

For Theory:

- The passing minimum for CIA shall be 40% out of 25 marks (i.e. 10 marks)
- The passing minimum for End Semester Examination shall be 40% out of 75 marks (i.e. 30 marks)

For Practical:

- The passing minimum for CIA shall be 40% out of 40 marks (i.e. 16 marks)
- The passing minimum for End Semester Examinations shall be 40% out of 60 marks (i.e., 24 marks)

Internal Component (Theory)

Component	Marks
Quiz	10
Assignment & Seminar	10
CIA -I	05
Total	25

Internal Component (Practical)

Component	Marks
Record Note	10
Continuous Performance in Practical (Attendance and Observation)	15
CIA	15
	40

Question Paper Pattern for different courses +



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS) TRICHY
PG AND RESEARCH DEPARTMENT OF MICROBIOLOGY
B.SC., MICROBIOLOGY

Learning Outcome Based Curriculum Framework (CBCS-LOCF)

(For the candidates admitted from the Academic year 2022-2023 and onwards)

Semester	Part	Course	Title	Course Code	Inst. Hrs. / week	Credits	Exam			Total
							Hrs.	Marks		
								Int	Ext	
III	I	Language Course-III(LC) Tamil*/Other Languages*	காப்பி முந்நாைகமு	22ULT3	5	3	3	25	75	100
			Hindi Literature & Grammar-III	22ULH3						
			Intermediate French-I	22ULF3						
			Prose, Textual Grammarand Vakyarachana	22ULS3						
	II	English Language Course-II(ELC)	Learning Grammar Through Literature-I	22UE3	6	3	3	25	75	100
	III	Core Course–IV(CC)	Virology	22UMB3CC4	6	6	3	25	75	100
		Core Practical –III(CP)	Virology (P)	22UMB3CC3P	3	3	3	40	60	100
		Second Allied Course-I (AC)	Biostatistics	22UMB3AC4	4	3	3	25	75	100
		Second Allied Course-II (AP)	Biostatistics (P)	22UMB3AC5P	4	3	3	40	60	100
	IV	Generic Elective Course- I (GEC)	A. Mushroom Technology	22UMB3GEC1	2	2	3	25	75	100
			B. Basic Tamil-I	22ULC3BT1						
			C. Special Tamil-I	22ULC3ST1						
Extra Credit Course			SWAYAM		As Per UGC Recommendation					
TOTAL					30	23				700

15 Days INTERNSHIP during Semester Holidays

Semester : III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22UMB3CC4	VIROLOGY	CORE	6	6

Preamble:

To enable the students to understand the basic knowledge about Viruses and their Specific Isolation, Cultivation Techniques. To provide the students awareness about the etiology, Pathogenesis, Treatment and prophylaxis of some Plant and Animal viral diseases.

Course Outcome and Cognitive Level Mapping:

CO Number	CO Statement	Cognitive Level
CO 1	Define the basic knowledge of Viruses	K1,K2, K4
CO 2	Select the suitable Purification and Characterization methods of Viruses	K1,K2, K3
CO 3	Compare and Contrast Bacteriophages Life cycle	K1,K2, K3
CO 4	Illustrate impacts of the Plant Viral diseases	K1,K2, K4
CO 5	Organised views of Animal Viruses	K1,K2, K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	3	3	3	3	3	3	3	3
CO2	2	3	2	3	3	3	3	2	3	3
CO3	3	2	3	3	2	2	3	3	3	2
CO4	3	3	3	3	3	3	3	3	2	3
CO5	2	3	2	2	3	3	2	3	3	2

1- Slight (Low) correlation 2- Moderate (Medium) correlation

3- Substantial (High) correlation “-” indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	Introduction – Definition, History of virology. General properties of viruses– Cultivation of Viruses– Structure and replications of viruses–classification of Viruses (ICTV classification).	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Purification and Characterization of Viruses, Separation and Characterization of Viral Components and quantification of viruses. Assay of viruses – physical and chemical methods (protein, nucleic acid, radioactivity tracers, electron microscopy). Infective assay of Bacteriophages (plaque method, end point method). Infective assay of Plant Viruses.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Bacterial Viruses–Classification and structure of Bacteriophage, The Lytic life cycle (T- Even coli phages) – Lysogenic life cycle (Escherichia coli, Phage Lambda). Bacteriophage typing, Phage therapy (Bacteriophage therapy).	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Plant Viruses: Common Plant Viral Diseases: TMV, Bunchy top of Banana, Cauliflower Mosaic Virus, Potato Leaf Roll Virus, and Rice Tungro Virus. Satellite Viruses, Viroid. Transmission of Plant Viruses with Vectors - Insects, Nematodes, Fungi - without vectors (Contact, Seed and Pollens). Control Measures of Plant Viruses- Generation of Virus- Virus free planting material, Vector Control.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	Animal viruses: Common Animal Viral Diseases: Prions, Rinder pest, Blue tongue, Raniketdion, Foot and Mouth Disease. Human Viruses– Retro, Hepatitis Pox, Polio, Rabies, Dengue, SARS – COVID and Oncogenic Viruses. Viral Vaccines. Prevention and Treatment of Viral Diseases. Antiviral agents.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

VI	Self Study for Enrichment (Not included for End Semester Examination) Baltimore Classification and LHT viral classification. Study of Animal and Plant viral Replications. Visit to Virology Labs.	-	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4, K5, K6
----	--	---	-------------------------------------	--------------------------------------

Text Books:

1. Geo. Brooks, Karen C. Carroll, Janet Butel, Stephen Morse. Jawetz Mel nick & Adelbergs Medical Microbiology. 28th Edition, McGraw-Hill Education. 2019.
2. Mahendra Pal Yadav, Raj Kumar Singh, Yashpal Singh Malik. Recent Advances in Animal Virology. Springer. 2020
3. P. Saravanan. Virology. 1st edition, MJP Publishers, Delhi 2021.
4. Ananthanarayan and Paniker's Textbook of Microbiology. 12th E-edition, UniversitiesPress .United States. 2022.
5. Bajjayantimala Mishra. Textbook of Medical Virology. 2nd Edition, CBS Publishers & Distributors Pvt Ltd, India. Churchill Livingstone. 2022.

References:

1. Apurba S Sastry, Sandhya Bhat.Essentials of Medical Microbiology 4th edition. Jaypee brothers med Pub Pvt Ltd 2022.
2. Patrick R. Murray, Ken S. Rosenthal, Michael A. Pfaller MD. Medical Microbiology, 9th edition. Elsevier Publishers 2020.
3. Levinson. Review of Medical Microbiology and Immunology. Mc Graw Hill / Medical Publishers 2021
4. Yi-Wei Tang, Charles W. Stratton. Advanced Techniques in Diagnostic Microbiology. 3rd edition. Springer Publishers 2018.
5. Abbas. Cellular and Molecular Immunology, 10th edition, Elsevier Publishers 2021

Web links:

1. <http://www.bocklabs.wisc.edu/ed/virustax.html>
2. <http://www.bocklabs.wisc.edu/ed/genomes.html>
3. http://www.virology.net/Big_Virology/BVHomePage.html
4. <https://www.youtube.com/watch?v=Iy-kidfj7Wc>
5. <https://www.youtube.com/watch?v=Kt0miFrXMaY>
6. <https://www.youtube.com/watch?v=zw4jydUY1S8>
7. <https://www.youtube.com/watch?v=Y5XU61wQS6E>
8. <https://www.youtube.com/watch?v=4ua3qf1tj8>

Pedagogy

Chalk and talk, Power Point Presentation, Quiz, Assignments, Group Discussions, Seminar and Assignment.

Course Designer

Dr. S. Jeyabharathi

Semester : III	Internal Marks: 40		External Marks: 60	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22UMB3CC3P	VIROLOGY (P)	CORE PRACTICAL	3	3

Course Objective

The practical aims to engage the students with virus detection, diagnosis and laboratory methods that are used in a wide range of Virology and biomedical research settings. To enable the students to perform hands-on training experience on methods and techniques used in virology. The practicals are also designed to offer an alternative learning situation for the ideas that underlie both the virus detection and the techniques.

Course Outcome and Cognitive Level Mapping:

CO Number	CO Statement	Knowledge level
CO 1	Define the basic knowledge of Viral sample collections	K1,K2, K4
CO 2	Select the suitable isolation and Characterization methods of Bacteriophages	K1,K2, K3
CO 3	Illustrate impacts of the Plant Viral transmission methods	K1,K2, K3
CO 4	Understand the suitable Animal virus transmission methods	K1,K2, K4
CO 5	Demonstration of Plant, Animal and Bacterial Viruses	K1,K2, K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	3	3	3	3	3	3	3	3
CO2	2	3	2	3	3	3	3	2	3	3
CO3	3	2	3	3	2	2	3	3	3	2
CO4	3	3	3	3	3	3	3	3	2	3
CO5	2	3	2	2	3	3	2	3	3	2

1- Slight (Low) correlation 2- Moderate (Medium) correlation

3- Substantial (High) correlation “-” indicates there is no correlation

Syllabus:

1. Laboratory detection of viral samples (Collection and transport of samples).
2. Isolation of Bacteriophage from sewage.
3. Demonstration of Phage Titration.
4. Demonstration of mechanical transfer of viruses in plants.
5. Cultivation of Viruses in Embryonated eggs – Amniotic, Allantoic, Yolk sac routes and Chorio-allantoic membrane.
6. Observation of selected bacterial, plant and animal viruses – T4 and M13 Phage, TMV, CaMV, HIV, Influenza, HSV, HBV, Rabies and Blue tongue virus
7. Visit to Hospitals, Viral Research Institutes and Clinical laboratories.

References:

1. Ananthanarayan and Paniker's Textbook of Microbiology. 12th E-edition, Universities Press .United States. 2022.
2. Yi-Wei Tang, Charles W. Stratton. Advanced Techniques in Diagnostic Microbiology. 3rd edition. Springer Publishers 2018.
3. Baijayantimala Mishra. Textbook of Medical Virology. 2nd Edition, CBS Publishers & Distributors Pvt Ltd, India. Churchill Livingstone. 2022.
4. Geo. Brooks, Karen C. Carroll, Janet Butel, Stephen Morse. Jawetz Mel nick & Adelbergs Medical Microbiology. 28th Edition, McGraw-Hill Education. 2019.
5. Apurba S Sastry, Sandhya Bhat. Essentials of Medical Microbiology 4th edition. Jaypee brothers med Pub Pvt Ltd 2022.

Web links:

6. <https://www.youtube.com/watch?v=Iy-kidfj7Wc>
7. <https://www.youtube.com/watch?v=Kt0miFrXMaY>
8. <https://www.youtube.com/watch?v=zw4jydUY1S8>
9. <https://www.youtube.com/watch?v=Y5XU61wQS6E>
10. <https://www.youtube.com/watch?v=4ua3qf1tij8>

Pedagogy

Power point presentations, Group Discussion, Quiz, Brain Storming Activity.

Course Designer

Dr. S. Jeyabharathi

Semester : III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22UMB3GEC1	MUSHROOM TECHNOLOGY	GENERIC ELECTIVE COURSE	2	2

Course Objective

To enable the students to identify the edible and poisonous mushrooms. To provide the students awareness about the marketing trends of Mushrooms. To give the students exposure to the experiences of experts in the field and to functioning mushroom farms.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	Differentiate edible and Poisonous mushrooms	K5
CO2	Examine Spawn preparation	K4
CO3	Illustrate the cultivation of mushroom	K6
CO4	Discuss about nutritional value of mushroom	K6
CO5	Determine medicinal value of mushroom	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	3	3	3	3	3	3	3	3
CO2	2	3	2	3	3	3	3	2	3	3
CO3	3	2	3	3	2	2	3	3	3	2
CO4	3	3	3	3	3	3	3	3	2	3
CO5	2	3	2	2	3	3	2	3	3	2

1- Slight (Low) correlation 2- Moderate (Medium) correlation

3- Substantial (High) correlation “-” indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	Introduction – History of mushroom cultivation; Classification and distribution of mushroom; life cycle of mushroom. Identification of poisonous mushrooms.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Spawn preparation - Isolation of pure culture; Nutrient media for pure culture; layout of spawn preparation room; raw material of spawn; sterilization; preparation of mother spawn and multiplication.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Cultivation of mushroom, layout of mushroom shed - small scale and large scale production unit. Types of raw material – preparation and sterilization; Mushroom bed preparation – maintenance of mushroom shed; harvesting method and preservation of mushrooms. short and long term storage of mushroom;	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Cultivation of following types of mushroom – milky mushroom, oyster mushroom, button mushroom and medically valuable mushroom - shiitake mushroom and Reishi mushroom. Spent mushroom compost.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	Nutrient values of mushroom – protein, carbohydrate, fat, fibre, vitamins and minerals. Preparation of various dishes - soup, sauce, cutlet, omelette, samosa, pickles, curry & biriyani. Pharmacological and economic values of mushroom.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self Study for Enrichment (Not included for End Semester Examination) Visit to relevant Labs/Field Visits of mushroom cultivation	-	CO1, CO2, CO3, CO4,	K1, K2, K3, K4,

			CO5	K5, K6
--	--	--	-----	-----------

Text Books

1. Paul Stamets, J.S. and Chilton, J.S (2019) Mushroom cultivation A practical guide to growing mushrooms at home, Agarikon Press.
2. Tewari and Pankaj Kapoor S.C. (2020) Mushroom cultivation. Mittal Publication. Delhi.
3. Nita Bahl. 2016. Hand book of Mushrooms, 2nd Edition, Vol I & II.
4. Shu Fing Chang, Philip G. Miles and Chang, S.T. (2004) Mushrooms Cultivation, nutritional value, medicinal effect and environmental impact. 2nd ed., CRC press.
5. R.Gogoi, Y.Rathaiah, T.R.Borah (2019) Mushroom Technology Cultivation, Scientific Publisher.

Reference Books

1. Russell, Stephan(2018) The Essential Guide to Cultivating Mushrooms: Simple and Advanced Techniques for Growing Shiitake, Oyster, Lion's Mane and Maitake Mushroom at Home. Storey Publishing.
2. B.C.Suman, Sharma V.P(2017) Mushroom India Cultivation in India. Daya Publishing House.
3. Marimuth, (1991) Oyster Mushrooms. Dept. of Plant pathology, TNAU, Coimbatore.

Web References

1. <http://www.fungi.com>
2. <http://www.mushworld.com/home>
3. <http://forums.mycotopia.net/faq-frequently-asked-questions/5594-mushroom-growershandbook-1-mushworld-com.html>.
4. <http://forums.mycotopia.net/faq-frequently-asked-questions/6556-mushroom-growershandbook-2-mushworld-com.html>
5. <http://www.americanmushroom.org/news.html>
6. https://www.brainkart.com/article/Mushroom-Cultivation_39985/

Pedagogy

Chalk and talk, Power Point Presentation, Quiz, Assignments, Group Discussions, Seminar, and Assignment.

Course Designer

Dr. E.Priya

**M.SC.,
MICROBIOLOGY**

SYLLABUS

FROM THE ACADEMIC YEAR

2023-2024



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)
PG & RESEARCH DEPARTMENT OF MICROBIOLOGY
M.Sc., MICROBIOLOGY – Programme Structure

LEARNING OUTCOME BASED CURRICULUM FRAMEWORK (CBCS-LOCF)

(For the Candidates admitted from the Academic year 2023-2024 and onwards)

SEMESTER I

Semester	Course	Title	Course Code	Inst. Hrs/ Week	Credits	Exam			Total
						Hrs	Marks		
							Int.	Ext.	
I	Core Course – I (CC I)	General Microbiology and Microbial Diversity	23PMB1CC1	6	5	3	25	75	100
	Core Course – II (CC II)	Biological Macromolecules	23PMB1CC2	6	5	3	25	75	100
	Core Course – III (CC III)	Molecular Biology and Microbial Genetics	23PMB1CC3	6	5	3	25	75	100
	Core Practical – I (CP)	General Microbiology and Microbial Diversity, Biological Macromolecules, Molecular Biology and Microbial Genetics(P)	23PMB1CC1P	8	5	3	25	75	100
	Discipline Specific Elective Course – I	A. Biological Instrumentation	23PMB1DSEC1A	4	3	3	25	75	100
		B. Microalgal Technology	23PMB1DSEC1B						
		C. Molecular Taxonomy and Phylogeny	23PMB1DSEC1C						
			Total	30	23				500

15 Days INTERNSHIP during Semester Holidays

Semester: I	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS./WEEK	Credits
23PMB1CC1	General Microbiology and Microbial Diversity	Core	6	5

Course Objectives

To enable the students to understand the history, biology of microorganisms, growth and control of microbes the diversity of microbes

Prerequisites

Basic knowledge and concepts of microbiology

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	Define and understand the history and principles of Microscopy	K1, K2
CO2	Analyze and explain bacteria, fungi, algae, protozoa and virus	K3, K4
CO3	Determine and apply pure culture techniques and sterilization methods.	K3, K4
CO4	Evaluate and categorize microbial biodiversity and kingdom concepts	K4, K5
CO5	Criticize and manage Extremophiles and conservation of microbial diversity.	K5, K6

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	1	3	2	3	3	2
CO2	2	2	2	2	2	3	2	3	2	2
CO3	2	3	1	2	3	3	2	3	2	2
CO4	3	2	3	2	2	3	2	3	2	1
CO5	3	3	3	3	2	3	2	3	3	2

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“-“ indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	History and Scope of Microbiology. Microscopy– Principles and applications. Types of Microscopes - Bright field, Dark-field, Phase-contrast, Fluorescence microscope, Transmission electron microscope (TEM) and Scanning electron microscope (SEM). Sample preparation for SEM & TEM. Atomic force, Confocal microscope. Micrometry – Stage, Ocular and its applications.	20	CO1, CO2, CO3	K1, K2, K3, K4
II	Bacteria – Size, shape and arrangements, cell wall of Gram positive and Gram negative bacteria, Structure and function of flagella, fimbriae and pili, gas vesicles, chlorosomes, carboxysomes, magnetosomes and phycobilisomes. General characteristics and nature of Archaeobacteria, Cyanobacteria, Mycoplasma, Rickettsiae, Chlamydia, Spirochaetes, Actinobacteria, Protozoa, Algae, Fungi, lichens and Viruses.	20	CO1, CO2, CO3, CO4	K1, K2, K3, K4, K5
III	Microbial techniques - Safety guidelines in Microbiology Laboratories. Sterilization, Disinfection and its validation. Staining methods–Simple, Differential and Special staining. Pure cultures techniques, Maintenance and preservation of pure cultures. Growth and nutrition - Nutritional requirements, Growth curve, Kinetics of growth, Batch culture, Synchronous growth, Measurement of growth and factors affecting growth.	15	CO1, CO2, CO3, CO4,	K1, K2, K3, K4, K5,
IV	Microbial Biodiversity - Introduction to microbial biodiversity, kingdom concepts- Haeckel's three kingdom concept, Whittaker's five kingdom concept, Carl Woese three domain system, Cavalier - smith eight kingdom concept. Major characteristics used in microbial taxonomy – morphological, physiological, metabolic, serological and molecular. Bacterial classification (outline) according to Bergey's manual of systemic Bacteriology. Basic understanding of classification of algae-Fritch, fungi-Alexopoulos, viruses- ICTV and protozoa.	20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6,
V	Extremophiles- Thermophiles, Mesophiles, Psychrophiles, Acidophilic, Alkalophilic and Halophilic microorganisms- habitats and biotechnological applications. Conservation of microbial biodiversity.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self Study for Enrichment (Not included for End Semester Examinations)	-	CO1, CO2,	K1, K2,

	Giant bacteria, Cultivation of Anaerobic organisms. Modern methods and Nomenclature of microbial taxonomy		CO3, CO4, CO5	K3, K4, K5, K6
--	---	--	---------------------	-------------------------

Text Books

1. Dave Wessner, Christine Dupont, Trevor Charles, Josh Neufeld. Microbiology (3rd Edition), Wiley, 2020.
2. Bhagwan Rekadwad. Microbial Systematics: Taxonomy, Microbial Ecology, Diversity (1st Edition), CRC Press, 2020.
3. Michael J. Le Boffe, Burton E. Pierce. Microbiology: Laboratory Theory & Application (1st Edition), Morton Publishing Company, 2019.
4. Jeffrey C. Pommerville. Fundamentals of Microbiology (12th Edition), Jones & Bartlett Learning, 2021.
5. Bhagwan Rekadwad. Microbial Systematics: Taxonomy, Microbial Ecology, Diversity (1st Edition), CRC Press, 2020.
6. Anita Pandey, Avinash Sharma. Extreme Environments: Unique Ecosystems – Amazing Microbes (1st Edition), CRC Press, 2021.
7. Ravi V. Durvasula and D. V. Subba Rao. Extremophiles: From Biology to Biotechnology (1st Edition), CRC Press, 2018.

Reference Books

1. Gerard Tortora, Berdell Funke, Christine Case, Derek Weber, Warner Bair. Microbiology: An Introduction (12th Edition), Pearson, 2020.
2. Barry Chess. Talaro's Foundations in Microbiology: Basic Principles (7th Edition), Mc Graw Hill, 2020.
3. Lourdes Norman-McKay. Microbiology: Basic and Clinical Principle, (1st Edition), Pearson, 2018.
4. [Joanne Willey](#), [Kathleen Sandman](#), [Dorothy Wood](#). Prescott's Microbiology (12th edition), Mc Graw Hill, 2022.
5. Richa Salwan and Vivek Sharma. Physiological and Biotechnological Aspects of Extremophiles (1st Edition), Academic Press, 2020.
6. [Satyanarayana](#), T, [Johri](#), B. N. Microbial Diversity: Current Perspectives and Potential Applications (1st Edition), Dream tech Press, 2021.
7. Masrura Alam and Biprakash Tiwary. Extremophiles: Diversity, Adaptation and Applications, Bentham Science Publishers, 2023.

Web References

1. <https://microbenotes.com/category/basic-microbiology/>
2. <https://microbiologyinfo.com/>
3. <https://www.biologydiscussion.com/notes/microbiology-notes/notes-microbiology-biology/34235>

4. <https://www.britannica.com/science/microbiology>
5. <https://byjus.com/neet/classification-of-microorganisms-notes/>
6. <https://microbenotes.com/microbiology-of-extreme-environments/>

Pedagogy

Power point presentations, Group Discussion, Seminar, Quiz, Assignment, Brain Storming Activity.

Course Designer

Dr. S. Jenny

SEMESTER I	INTERNAL MARKS :25		EXTERNAL MARKS: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDIT
22PMB1CC2	Biological Macromolecules	CORE COURSE – II (CC II)	6	5

Course Objective : This course is designed to provide comprehensive knowledge to the students regarding the structure and functions biological molecules.

Prerequisites

To Comprehend and analyze the basics of biological molecules.

Course Outcome:

COs	CO Statement	Knowledge level
CO1	Define the structure and functions biological molecules.	K1
CO2	Recite the interrelationship between various biomolecules and consequences of any deviation from normal.	K1
CO3	Critique knowledge about the structure and functions of blood, hormones and phytohormones.	K4
CO4	Generalize the basic idea of metabolic regulators' characteristic features.	K6
CO5	Expand the interrelationships among biological energy, functions and health.	K6

Mapping with Programme Outcomes:

Cos	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	S	S	M
CO3	S	S	M	L	M
CO4	S	S	S	S	M
CO5	S	M	M	M	M

“1” – Slight (Low) Correlation “2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation “-“ indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	Carbohydrate: Definition, sources, classification, structure of glucose, biological significance, digestion and absorption. Proteins: Definition, sources, classification and structure of proteins (Primary, secondary, tertiary), Amino acids—structure- classification - essential and nonessential, protein and non-protein amino acids.	18	CO1, CO2, CO4, CO5	K1, K2, K3, K4, K5
II	Lipids: Definition, sources, classification, structure, properties and functions, Fatty acids—saturated, unsaturated and essential fatty acids. Nucleic acids: Definition, structure, forms and functions of DNA. Types, structure and functions of RNA (mRNA, tRNA, rRNA).	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Hormones: Definition, classification of hormones, Human- Endocrine glands – Pituitary, thyroids, Para thyroid, pancreas, adrenal, testis and ovary. Phytohormones: Structure and functions of auxin, gibberellins, cytokinins and abscissic acid.	18	CO1, CO2, CO3, CO4	K2, K3, K4, K5
IV	Vitamins – Definition, sources, deficiency syndromes and functions of Fatsoluble vitamins (A, D, E and K) and Water-soluble vitamins (B complex and C). Minerals Zn, Ca, Iodine, Fe, and Mg.	18	CO1, CO2, CO3, CO4	K2, K4, K5, K6

V	Blood: Introduction, origin, composition, characterization, functions and coagulation of blood. General account and secondary metabolites. Major and accessory microbial pigments – chlorophylls, carotenoids, phycobilins and anthocyanins.	18	CO1, CO4 , CO5	K1, K2, K3, K4, K5
VI	Self-Study for Enrichment (Not included for End Semester Examinations) Diseases associated with deficiency of endocrine hormones- hypo and hyper secretions. Life style diseases and metabolic diseases. Dietbiochemical-health. Food as drug.	-	CO1, CO2, CO3, CO4	K2, K3, K4, K5

Text Books:

1. Chandrabhan Verma, Dakeshwar Kumar Verma (2023). Handbook of Biomolecules, Fundamentals, Properties and Applications 1st Edition. Elsevier publishers.
2. Shikha Kaushik and Anju Singh (2023) Biomolecules from Genes to Proteins. De Gruyter.
3. AmbikaShanmugam (2016). Fundamentals of Biochemistry for Medical students. 8th Edition, WoltersKluwer(India) Pvt ltd.
4. Rafi (2014). Textbook of Biochemistry for medical students, 2nd edition, Universities Press, (India) Pvt. Ltd, Hyderabad, India.
5. Charlotte W Pratt and Sathyanarayana U and Chakrapani U (2013) Biochemistry, 4th edition, Elsevier publishers.

Reference Books:

1. Prof. P.K. Gupta (2022). Biomolecules and cell biology. 1st Edition. Rastogi Publications.
2. Devasena (2021). Biomolecules. Mjp Publishers.
3. Dr. Swapnil Yadav (2020). Biomolecules and Cell Biology. Mahaveer Publications.
4. Lubert Stryer; Jeremy Berg; John Tymoczko; Gregory Gatto (2019). Biochemistry, 9th Edition. Macmillon Publication.
5. Mohammad Fahad Ullah (2016). Illustrated Notes on Biomolecules. Partridge Singapore.

Web links:

1. <https://byjus.com/biology/biomolecules/>
2. <https://en.wikipedia.org/wiki/Biomolecule>
3. <https://www.sciencedirect.com/topics/engineering/biomolecule>

4. <https://ncert.nic.in/textbook/pdf/lech205.pdf>
5. <https://ncert.nic.in/textbook/pdf/kebo109.pdf>

Pedagogy

Power point presentations, Group discussion, Seminar, Quiz, Assignment, Brain storming activity.

Course Designer

Dr.P.F.Steffi

Semester : III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
23PMB1CC3	Molecular Biology and Microbial Genetics	CORE COURSE-III (CC III)	6	5

Course Objective

- To impart the current updated knowledge on molecular genetics of prokaryotes.
- To understand the Genetic replication and repair mechanisms
 - To learn about gene transfer mechanisms and their importance in natural evolution
- To provide the required fundamental details on prokaryotic and eukaryotic molecular genetics.

Prerequisites

To obtain basic knowledge in the field of molecular biology.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	Explain about molecular genetics of prokaryotes.	K2
CO2	Illustrate transcription and translation.	K3
CO3	Summarize about organization of gene in prokaryotes and eukaryotes.	K4
CO4	Illustrate fundamental details on gene transfer mechanisms.	K5
CO5	Discuss about the processes behind mutations and other genetic changes.	K6

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	2	3	2	3	3	3	3	3	3	3
CO3	3	2	3	3	2	3	3	3	3	2
CO4	3	3	3	3	3	3	3	3	2	3
CO5	3	3	3	2	3	3	2	3	3	3

1- Slight (Low) correlation 2- Moderate (Medium) correlation

3- Substantial (High) correlation “-” indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	Identification of genetic material (Griffith, Avery and Hershey and Chase experiments). Organization of genetic material: Bacteria – Eukaryotes: nucleus and nucleosomes, lamp brush and giant chromosomes. DNA replication - Meselson – Stahl experiment, Molecular mechanisms of DNA Replication – bidirectional and rolling circle replication. Differences between prokaryotic and eukaryotic replication. Pi X 174 replication. Plasmids – types, structure and replication. Inhibitors of DNA replication - DNA repair – mechanism of excision repair, SOS repair and mismatch repair.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Process of transcription – initiation, elongation – termination. Synthesis of mRNA in prokaryotes and eukaryotes. RNA splicing. Synthesis of rRNA and tRNA. RNA processing – capping and polyadenylation. Inhibitors of transcription. Genetic code, process of translation – initiation, elongation and termination. Signal sequences and protein transport. Inhibitors of translation.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Organization of Genes in Prokaryotes and Eukaryotes - Introduction - Operon concept, lac, trp, arabinose operons, promoters and repressors. Regulation of gene expression – Transcriptional control – promoters, terminators, attenuators and anti-terminators; Induction and repression; The lac operon – catabolite repression; trp operon, two component regulatory system. Translational control – ribosome binding, codon usage, antisense RNA; post-transcriptional gene silencing – RNAi.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Transformation – competence cells, regulation, general process; Transduction – general and specialized; Conjugation – Discovery, mechanism of F+ v/s F-, Hfr+ v/s F-, F' v/s F-, triparental mating, self-transmissible and mobilizable plasmids, pili.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	Types and molecular basis of mutation– Agents of mutation - Importance of mutations in evolution of species. Discovery of insertion sequences, complex and compound transposons – T10, T5, and retroposon – Nomenclature- Insertion sequences	18	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4, K5,

	– Mechanism – Transposons of E. coli, Bacteriophage and Yeast. Isolation, analysis and detection methods of Mutants. Uses of Mutants. Importance of transposable elements in horizontal transfer of genes and evolution. Mobile genetic Elements – IS elements.			K6
VI	Self Study for Enrichment (Not included for End Semester Examination) Discuss gene-therapy workflow from production to quality control	-	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4, K5, K6

Text Books

1. Krishnaiah G.R. (2019). Microbial Genetics & Molecular Biology (1st edition) Blue Rose Publisher
2. Verma P. S. and Agarwal A. K. Cell Biology, (2018). Genetics, Molecular Biology, Evolution and Ecology S. Chand Publishing.
3. Primrose S.B. and Twyman R.M. (2016). Principles of Gene Manipulation and Genomics (8th edition) Wiley-Blackwell Publisher.
4. Gerald Karp, Janet Iwasa,(2015). Wallace Marshall Karp's Cell and Molecular Biology: Concept and Experiments (8th edition) Wiley Publisher.
5. David Freifelder, John E. Cronan and Stanley R Maloy (2014). Microbial Genetics (2nd edition) Jones & Bartlett Publishers.

Reference Books

1. Hartl, Daniel L.(2019). Genetics: Analysis of genes and genomes. (9th Edition) Jones & Bartlett Learning.
2. Peter Snustad D and Michael J. Simmons, (2015). Principles of Genetics (7th Edition) Wiley.
3. Bruce Alberts, Alexander D. Johnson, Julian Lewis, David Morgan, Martin Raff, Keith Roberts, Peter,(2014). Walter Molecular Biology of the Cell (6th Edition) Garland Science, W. W. Norton &Company.
4. Krebs J. E., Kilpatrick T. and Goldstein E. S. Lewins,(2014). Genes IX Viva Books Pvt Ltd. 2014
5. Larry Snyder, Joseph E. Peters, Tina M. Henkin, Wendy Champness,(2014). Molecular Genetics of Bacteria (4th Edition) ASM Press.

Web References

- 1.<https://books.google.co.in> > books
- 2.<http://www.freebookcentre.net/Biology/Molecular-Biology-Books.html>
- 3.http://www.freebookcentre.net/medical_text_books_journals/genetics_ebooks_online_texts_download.html

4.<https://www.nature.com/scitable/ebooks/>

5. <http://www.digitalbookindex.org/search/search010biolmolecularcellbiologya.asp>

Pedagogy

Chalk and talk, Power Point Presentation, Quiz, Assignments, Group Discussions, Seminar, and Assignment.

Course Designer

Ms.S.Sathya

Semester: I	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS./WEEK	CREDITS
23PMB1CC1P	General Microbiology and Microbial Diversity, Biological Macromolecules, Molecular Biology and Microbial Genetics (P)	CORE PRACTICAL	8	5

Course objective

To educate hands-on skills on the first-line experimental methods of General Microbiology and Microbial Diversity, Biological Macromolecule, Molecular Biology and Microbial Genetics.

Prerequisites

The stakeholders will acquire a strong basic knowledge in common microbiology laboratory procedures.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	Understand fundamental techniques of microscopy, staining and sterilization.	K1, K2
CO2	Illustrate the preparation of bacterial growth media, plating and growth measurement techniques.	K2, K3
CO3	Analyze and quantify the biological macromolecules.	K2, K3, K4
CO4	Interpret DNA extraction and gene transfer mechanisms, analyze and identify by gel electrophoresis.	K3, K4, K5
CO5	Discuss isolation of mutants and separation of proteins.	K4, K5, K6

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2	3	3	3	3	3
CO2	3	3	2	3	3	3	3	2	3	3
CO3	3	3	3	3	3	3	2	3	3	2
CO4	3	2	3	2	3	3	3	3	2	3
CO5	3	3	3	3	2	3	3	3	3	3

“1” - Slight (Low) correlation

“2” - Moderate (Medium) correlation

“3” - Substantial (High) correlation

“-” - indicates there is no correlation

Syllabus

I. General Microbiology and Microbial Diversity

1. Washing and cleaning of glass wares: Sterilization methods – moist heat, dry heat, and filtration.
2. Light microscopic techniques: Wet mount to show different types of microbes and hanging drop method.
3. Staining techniques - Simple staining, Gram's staining, Acid fast staining, Meta chromatic granule staining, Spore and Capsule staining.
4. Media Preparation: Preparation of liquid, solid and semisolid media.
5. Preparation of Agar deeps, Slants and Plates and Biochemical test media.
6. Pure culture techniques: Spread Plate, Pour plate, and Streak plate.
7. Fungal slide culture technique.
8. Direct counts – Total cell count, Turbidometry and Viable count method.
9. Determination of Bacterial growth curve.
10. Effect of physical and chemical factors on growth.

II. Biological Macromolecules

1. Preparation of buffer (Tris, Phosphate, Acetate buffer).
2. Determination of (H⁺) ion concentration.
3. Carbohydrate reducing sugars - Anthrone method/Benedicts method.
4. Estimation of Aminoacids - Ninhydrin method.
5. Protein–Lowry's method/Biuret method/ Bradford assay.
6. Estimation of Nucleic acid - DNA (diphenyl amine method) and RNA (Orcinol method).

III. Molecular Biology and Microbial Genetics

1. Isolation of Plasmid and genomic DNA from *E. coli*.
2. Characterization of DNA/plasmid by agarose gel electrophoresis and molecular weight determination.
3. Isolation of antibiotic resistant microbes.
4. Isolation of mutants by spontaneous mutation – Gradient plate technique.
5. Replica plating technique.
6. Transformation: Competent cell preparation.
7. Separation of proteins by polyacrylamide gel electrophoresis (SDS-PAGE)
8. Demonstration of PCR.

Reference Books:

1. Dubey R.C. and Maheshwari D. K. (2023). *Practical Microbiology*, 4th Edition. S. Chand Publisher.
2. James G. Cappuccino and Chad T. Welsh. (2023). *Microbiology: A Laboratory Manual, Global Edition*, 11th Edition. Pearson Education, Publication.
3. Collee J. G., Fraser A.G., Marmion B. P. and Simmons A. (2023). *Mackie & McCartney Practical Medical Microbiology*. 14th Edition Reprint. Elsevier.
4. [Saha R.](#) (2022). *Microbiology Practical Manual*, 2nd edition. CBS Publishers & Distributors.
5. Prem Prakesh Sharma and Abhay Dashora. (2021). *Practical: Fundamentals of Genetics*. 1st Edition. Himanshu Publications.
6. Sinha K P. (2020). *Manual of Practical Biochemistry*, 1st Edition. Scientific Book Company.
7. Rafi Mohammed. (2020). *Manual of Practical Biochemistry*, 3rd Edition. Orient Blackswan Pvt. Ltd.
8. Brown T.A. (2020). *Gene Cloning and DNA Analysis: An Introduction*. 8th Edition. John Wiley and Jones, Ltd.
9. Soundravally Rajendiran, Pooja Dhiman. (2019). *Biochemistry Practical Manual*, 1st Edition. Elsevier.
10. [Ashwani Kumar](#), [Gakhar S K](#) and [Monika Miglani](#). (2019). *Molecular Biology: A Laboratory Manual*. Dreamtech Press.

Web References

1. <https://ttk.elte.hu/dstore/document/893/book.pdf>
2. https://webstor.srmist.edu.in/web_assets/downloads/2021/18BTC103J-lab-manual.pdf
3. <https://microbenotes.com/gene-cloning-requirements-principle-steps-applications/>
4. <https://www.slideshare.net/PatriciaCosta17/practical-handbook-of-microbiology>
5. https://www.researchgate.net/publication/320508474_Molecular_Biology_Laboratory_manual

Pedagogy

Chalk and talk, Power Point Presentation, Demo Video and Group Discussions.

Course Designer

Dr. N. Jeenathunisa

Semester: I	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS./WEEK	Credits
23PMB1DSEC1A	Biological Instrumentation	Elective Course-I	4	3

Course Objectives

To educate the students with the basic principles of biological instruments so as to develop their research aptitude and career prospects.

Prerequisites

Basic understanding of experimental protocols on biological research.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	Explain the principles and working mechanisms of laboratory instruments.	K1, K2
CO2	Discuss chromatography techniques and molecular biology techniques.	K3, K4
CO3	Illustrate molecular techniques in biological applications.	K4, K5
CO4	Acquire knowledge on spectroscopic techniques	K5, K6
CO5	Demonstrate the use of radio isotopes in various techniques.	K5, K6

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	2	3	2	2	3	1
CO2	3	3	3	2	2	3	2	3	2	3
CO3	3	3	2	2	3	3	2	3	2	2
CO4	3	2	3	2	2	3	2	3	2	1
CO5	3	3	3	3	2	3	2	3	3	3

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“-“ indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	Basic laboratory Instruments. Aerobic and anaerobic incubator – Biosafety Cabinets - Fume Hood, pH meter, Lyophilizer, Flow cytometry. Centrifugation techniques: Basic principles of centrifugation: Principles, methodology and applications of differential, rate zonal and density gradient centrifugation	12	CO1, CO2, CO3, CO4	K1, K2, K3, K4
II	General principles of chromatography - Chromatographic Performance parameters; Types- Thin layer chromatography, Paper Chromatography, Liquid chromatography (LPLC &HPLC), Adsorption, ion exchange, Gel filtration, affinity, Gas liquid (GLC).Two dimensional chromatography.	12	CO1, CO2, CO3, CO4	K1, K2, K3, K4, K6
III	Electrophoresis: General principles - moving boundary electrophoresis - two dimensional electrophoresis- Principle and applications - Disc gel, Agarose gel, SDS – PAGE, Immuno electrophoresis. PCR and its application-Thermocycler. Auto analyzer, Next-generation sequencer and Molecular Dogging. Blotting techniques -Southern, northern and western blotting.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K6,
IV	Spectroscopic techniques: Principle, simple theory of absorption of light by molecules, electromagnetic spectrum, instrumentation and application of UV-visible, Raman, FTIR spectrophotometer, spectrofluorimetry, Atomic Absorption Spectrophotometer, NMR, GC-MS.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6,
V	Radio isotopic techniques: Principle and applications of tracer techniques in biology. Radioactive isotopes - radioactive decay; Detection and measurement of radioactivity using ionization chamber, proportional chamber, Geiger- Muller and Scintillation counters, auto radiography and its applications.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self Study for Enrichment (Not included for End Semester Examinations) DNA Finger printing, RFLP, RAPD and AFLP application.	-	CO1, CO2, CO3, CO4, CO5	K4, K5, K6

Text Books

1. Gurdeep R. Chatwal and Sham K. Anand. (2022). Instrumental Method of Chemical Analysis. Himalaya Publishing House.
2. Kour H. (2021.) Instrumental Methods of Chemical Analysis. Pragati Prakashan.
3. Mitchell G. H. (2017). Gel Electrophoresis: Types, Applications and Research. Nova Science Publishers Inc.
4. Mohammad Raies, Asima Hamid, Gulzar Ahmad, Holme D and Peck H. (2019). Analytical Biochemistry. Book Enclave.
5. Jayaraman J. (2020). Laboratory Manual in Biochemistry. (2nd Edition). New Age International (P) Ltd., Publishers.

Reference Books

1. Kaur H (2021) Spectroscopy. Pragati Prakashan.
2. Douglas A. Skoog, James Holler, Stanley R. Crouch. (2020). Principles of Instrumental Analysis (7th edition). Cengage India Private Limited.
3. Raymond P.W. Scott. (2020) Techniques and Practice of Chromatography. CRC Press.
4. Gurumani N. (2019). Research Methodology for Biological Sciences. (Kindle Edition) MJP Publishers.
5. Ponmurugan P. and Gangathara P. B. (2021). Biotechniques. (1st Edition). MJP Publishers.

Web References

1. <https://norcaloa.com/BMIA>
2. <http://www.biologydiscussion.com/biochemistry/centrifugation/centrifuge-introduction-types-uses-and-other-details-with-diagram/12489>
3. <https://www.watelectrical.com/biosensors-types-its-working-and-applications>.
4. <http://www.wikiscales.com/articles/electronic-analytical-balance/>
5. <https://study.com/academy/lesson/what-is-chromatography-definition-types-uses>.

Pedagogy

Power point presentations, Group Discussion, Seminar, Quiz, Assignment, Brain Storming Activity.

Course Designer

Dr. N.Sathammai Priya

Semester: I	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS./WEEK	Credits
23PMB1DSEC1B	Microalgal Technology	Elective Course I	4	3

Course Objectives

To enable the students to understand the Principles and techniques of microalgae

Prerequisites

Basic knowledge and concepts of microalgal Technology

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	Define and understand the different groups of algae	K1, K2
CO2	Analyze and explain about the cultivation and harvesting of algae	K3, K4
CO3	Determine and apply commercial applications of various algal products	K3, K4
CO4	Evaluate and categorize microalgae for environmental applications	K4, K5
CO5	Criticize and manage microalgae as alternate fuels	K5, K6

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	1	3	2	3	3	2
CO2	2	2	2	2	2	3	2	3	2	2
CO3	2	3	1	2	3	3	2	3	2	2
CO4	3	2	3	2	2	3	2	3	2	1
CO5	3	3	3	3	2	3	2	3	3	2

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

Syllabus

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	Introduction to Algae - General characteristics. Classification of algae according to Fritsch. Salient features of different groups of algae. Distribution - Freshwater, brackish water and marine algae. Identification methods. Economically important microalgae.	12	CO1, CO2, CO3	K1, K2, K3, K4
II	Cultivation of freshwater and marine microalgae - Growth media. Isolation and enumeration of microalgae. Laboratory cultivation and maintenance. Outdoor cultivation - Photobioreactors - construction, types and operation; raceway ponds - Heterotrophic and mixotrophic cultivation - Harvesting of microalgae biomass.	12	CO1, CO2, CO3, CO4	K1, K2, K3, K4, K5
III	Microalgae in food and nutraceutical applications - Algal single cell proteins. Cultivation of <i>Spirulina</i> , <i>Chlorella</i> and <i>Dunaliella</i> . Microalgae as aquatic, poultry and cattle feed. Microalgal biofertilizers. Value-added products from microalgae. Pigments - Production of microalgal carotenoids and their uses. Phycobiliproteins - production and commercial applications. Polyunsaturated fatty acids as active nutraceuticals. Microalgal secondary metabolites - Pharmaceutical and cosmetic applications. Macroalgae-seaweeds as a source of polysaccharides.	12	CO1, CO2, CO3, CO4,	K1, K2, K3, K4, K5,
IV	Microalgae in environmental applications. Phycoremediation - Domestic and industrial waste water treatment. Sequestration of carbon dioxide. Scavenging of heavy metals by microalgae. Negative effects of algae. Algal blooms, algicides for algal control.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6,
V	Microalgae as feed stock for production of biofuels - Carbon-neutral fuels. Lipid-rich algal strains - <i>Botryococcus braunii</i> . Drop-in fuels from algae - hydrocarbons and biodiesel, bioethanol, biomethane, biohydrogen and syngas from microalgae biomass. Life cycle analysis of algae biofuels.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

VI	Self Study for Enrichment (Not included for End Semester Examinations) Bio-remediation – waste water treatment-organic manure for sustainable agriculture.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
----	--	---	-------------------------------------	---------------------------------------

Text Books

1. Sharma O.P. (2021). Algae. Tata McGraw-Hill Education
2. Shekh A., Schenk P., Sarada R. (2021). Microalgal Biotechnology. Recent Advances, Market Potential and Sustainability. Royal Society of Chemistry.
3. Asraful Alam., Jing-Liang Xu. Microalgae Biotechnology for Food, Health and High Value Products. (2020). Springer.
4. Bhagwan Rekadwad. Microbial Systematics: Taxonomy, Microbial Ecology, Diversity (1st Edition), CRC Press, 2020.

Reference Books

1. Gerard Tortora , Berdell Funke, Christine Case, Derek Weber, Warner Bair. Microbiology: An Introduction (12th Edition), Pearson, 2020.
2. Barry Chess. Talaro's Foundations in Microbiology: Basic Principles (7th Edition), McGraw Hill, 2020.
3. Satyanarayana, T, Johri, B. N. Microbial Diversity: Current Perspectives and Potential Applications (1st Edition), Dream tech Press, 2021.
4. Lele. S.S., Jyothi Kishen Kumar (2018). Algal bio process technology. New Age International P(Ltd)

Web References

1. <https://www.classcentral.com/course/algae-10442>
2. https://onlinecourses.nptel.ac.in/noc19_bt16/preview
3. <https://freevidelectures.com/course/4678/nptel-industrial-biotechnology/46>
4. <https://nptel.ac.in/courses/103103207>
5. <https://www.sciencedirect.com/topics/earth-and-planetary-sciences/microalgae>

Pedagogy

Power point presentations, Group Discussion, Seminar, Quiz, Assignment, Brain Storming Activity.

Course Designer

Dr. R. Nithyatharani

Semester: I	InternalMarks:25		ExternalMarks:75	
COURSECODE	COURSE TITLE	CATEGORY	HRS./WEEK	Credits
23PMB1DSEC1C	Molecular Taxonomy and Phylogeny	Elective	4	3

Course Objectives:

To gain knowledge about combination of molecular and statistical techniques.

Course Outcome and Cognitive Level Mapping

COs	CO Statement	Cognitive level
CO1	Define and Understand the basics of taxonomy	K1, K2
CO2	Analyze the Chemotaxonomy	K3, K4
CO3	Determine and Explain the DNA hybridization	K3, K4
CO4	Evaluate and categorize the Sequence alignment	K4, K5
CO5	Criticize and manage Sequence alignment	K5, K6

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	2	2	2	3	2	3	2	2	1
CO2	3	3	2	3	3	2	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	2	3	2	2	3	2	2	2	3
CO5	3	3	3	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-“ indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	Introduction to Microbial Taxonomy Introduction to microbial taxonomy – biological classification – Three Domain Concept, morphological taxonomy, biochemical taxonomy, molecular taxonomy, numerical taxonomy – basic concepts of taxonomy. Positive and negative aspects of each taxonomical method	12	CO1, CO2, CO3	K1, K2, K3, K4
II	Chemotaxonomy Chemotaxonomy – aspects, significance- primary – proteins, nucleic acid, chlorophyll, polysaccharides and secondary constituents- phenolic compounds, flavonoids, terpenoids. Finger printing, Isozyme typing, pigments & polyamines. Molecular Phylogeny-use of proteins and fatty acids.	12	CO1, CO2, CO3, CO4	K1, K2, K3, K4, K5
III	Molecular taxonomy Molecular taxonomy – G + C content, DNA – DNA hybridization, DNA- RNA hybridization, Plasmid profiles, RFLP, RAPD, AFLP, STRR & LTRR.- PCR, Real Time-PCR, PFGE (Pulse Field Gel Electrophoresis); Indirect analysis - SDSPAGE, Western blotting, ELISA, 2D-gel electrophoresis. DNA sequencing – Sanger's Dideoxy sequencing and automated sequencing.	12	CO1, CO2, CO3, CO4,	K1, K2, K3, K4, K5,
IV	Types of rRNA Types of rRNA, Importance of 16S rRNA in microbial identification and taxonomy. Methods of 16S rRNA / rDNA fingerprinting, Isolation of DNA, amplification of 16S rDNA using PCR, Cloning, transformation, Blue-white screening, Plasmid isolation, Dot Blot/Southern blot hybridization using specific probes. Sequencing of 16S rDNA using chain termination method.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6,
V	Introduction to Sequence alignment Introduction to Sequence alignment. Substitution matrices, Scoring matrices – PAM and BLOSUM. Submission of rDNA sequences in GenBank – BankIt & Sequin guidelines. NCBI, EMBL, PDB, DDBJ – retrieving sequences. In silico RNA structure prediction, Restriction enzyme patterns. Ribosomal Database Project - Designing primers, probes and in silico PCR. Evolutionary analysis: distances, Cladistic and Phenetic methods. Sequence comparison, alignment and database	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

	searching – ClustalW, FASTA & BLAST. DNA barcoding			
VI	Self Study for Enrichment (Not included for End Semester Examinations) Field trip and Hands on training on algae sample collection, monitoring algal diversity.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Books

1. Andréa D, Baxevanis BF, Francis O. (2004). Bioinformatics: A Practical Guide to the Analysis of Genes and Proteins. 3rd Edition. Wiley Publications.
2. Brendan Wren and Nick Dorrell. (2002). Functional Microbial Genomics (Volume 33) (Methods in Microbiology), Academic Press, UK.
3. Brown TA. (2006). Genomes, John Wiley and Sons, Pvt. Ltd., Singapore.

Reference Books

1. Campbell A, Heyer. 2004, Discovering Genomics, Proteomics and Bioinformatics, Pearson Education, New Jersey
2. Huson DH and Scornavacca C. (2012). Dendroscope: An Interactive Tool for Rooted Phylogenetic Trees and Networks. Syst. Biol: 1–7.
3. Kenneth WA. (1996). Microbial Genome Methods - Boca Raton : CRC Press, Masatoshi N and Sudhir K. (2000). Molecular Evolution and Phylogenetics - Oxford University press, Inc.
4. Molecular Phylogeny of Microorganisms. (2010). by Aharon O and Thane P. Academic Press,

Web References

1. <https://www.youtube.com/watch?v=8IJRzcPC9wg>
2. <https://www.youtube.com/watch?v=ZWnKemKaEWA>
3. <https://www.youtube.com/watch?v=vqeZBEJyXx4>

Pedagogy

Power point presentations, Group Discussion, Seminar, Quiz, Assignments.

Course Designer

Dr.V.Aruna

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)

Nationally Accredited with 'A' Grade by NAAC

ISO 9001:2015 Certified

TIRUCHIRAPPALLI

PG AND RESEARCH DEPARTMENT OF MICROBIOLOGY



M.Sc., MICROBIOLOGY

SYLLABUS

2022 -2023 and Onwards



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)
PG AND RESEARCH DEPARTMENT OF MICROBIOLOGY

VISION

Our vision is to encourage eminent research work through the conception of an attractive and vibrant environment to achieve goals of our department.

MISSION

- To impart relevant, ultimate, principle-oriented education and practical expertise in the field of Microbiology.
- To strive to provide quality education conjugated with innovative technology so as to be able to gain technical and educational expertise locally, nationally, internationally.
- Our prime focus is to enrich the ambitions of our students, staff and steer with constructive collaboration towards excellence.

PROGRAMME EDUCATIONAL OBJECTIVES(PEOs)

PEOs	Statements
PEO1	LEARNING ENVIRONMENT To facilitate value-based holistic and comprehensive learning by integrating innovative learning practices to match the highest quality standards and train the students to be effective leaders in their chosen fields.
PEO2	ACADEMIC EXCELLENCE To provide a conducive environment to unleash their hidden talents and to nurture the spirit of critical thinking and encourage them to achieve their goal.
PEO3	EMPLOYABILITY To equip students with the required skills in order to adapt to the changing global scenario and gain access to versatile career opportunities in multidisciplinary domains.
PEO4	PROFESSIONAL ETHICS AND SOCIAL RESPONSIBILITY To develop a sense of social responsibility by formulating ethics and equity to transform students into committed professionals with a strong attitude towards the development of the nation.
PEO5	GREEN SUSTAINABILITY To understand the impact of professional solutions in societal and environmental contexts and demonstrate the knowledge for an overall sustainable development.

PROGRAMME OUTCOMES FOR M.Sc., Microbiology PROGRAMME

PO NO	On completion of M.Sc., Microbiology, the students will be able to
PO1	Scientific Management and Career Opportunities: Master the scientific and applied aspects of the subject for employment opportunities.
PO2	Explore Creativity and Intelligence: Employ novel ideas with conceptual thinking to secure self-discipline and independence to foster scientific attitude by exploration of Science.
PO3	Team Building and Scientific Temperament: Inculcate training, internships and team spirit with leadership skills through academic projects and transmit complex scientific and technical information and contribute to the scientific community.
PO4	Innovative Learning and Technological Advancement: Perceive research in the specialized areas and to engage in life-long learning to keep pace with emerging trends in academics, research and technology.
PO5	Personality Development with Social Responsibility: Achieve ethical, social and holistic values with social responsibility to develop a healthy life.

PROGRAMME SPECIFIC OUTCOMES FOR M.Sc., MICROBIOLOGY

PSO NO.	Students of M.Sc., Microbiology will be able to	POs Addressed
PSO 1	Understand the applied sciences to engage them life long learning to foster their successful carrier and educational goals.	PO1 PO5
PSO 2	Focus perceptive in the subject of Microbiology to apply its principles and its applications by adding broad range of scientific knowledge.	PO2 PO3
PSO 3	Acquire contextual knowledge on basis and modern concepts in current areas with contemporary technologies and multidisciplinary domains	PO3 PO4
PSO 4	Instill to work independently identify appropriate resources; enable individual, institutional and national values to understand the impact of innovation and applications.	PO4 PO1
PSO 5	Ability to imbibe moral and ethical values to formulate effective research grants and experimental designs	PO5 PO2

Cauvery College for Women (Autonomous), Trichy-18

PG & Research Department of Microbiology

M.Sc., Microbiology

Learning Outcome Based Curriculum Framework (CBCS-LOCF)

(For the Candidates admitted from the Academic year 2022-2023 onwards)

Semester	Course	Title	Course Code	Inst./Hrs/Wee	Credit	Hrs	Marks		Total
							Int.	Ext.	
I	Core Course– I (CC)	Essentials of Microbiology	22PMB1CC1	6	5	3	25	75	100
	Core Course– II (CC)	Biological Macromolecules	22PMB1CC2	6	5	3	25	75	100
	Core Course – III (CC)	Clinical Virology	22PMB1CC3	6	5	3	25	75	100
	Core Practical–I (CP)	Essentials of Microbiology, Biological Macromolecules and Clinical Virology (P)	22PMB1CC1P	6	5	3	40	60	100
	Discipline Specific Elective Course – I(DSE)	A. Biological Techniques	22PMB1DSE1A	6	3	3	25	75	100
		B. Organic Farming	22PMB1DSE1B						
		C. Microbial Cytology	22PMB1DSE1C						
TOTAL				30	23	-	-	-	500
15 Days INTERNSHIP during Semester Holidays									
II	Core Course- IV (CC)	Bacteriology and Mycology	22PMB2CC4	6	5	3	25	75	100
	Core Course – V(CC)	Immunology and Immunotechnology	22PMB2CC5	6	5	3	25	75	100
	Core Choice Course – I (CCC)	A. Microbial Metabolism	22PMB2CCC1A	6	4	3	25	75	100
		B. Environmental and Agricultural Microbiology	22PMB2CCC1B						
		C. Microbial Ecology	22PMB2CCC1C						
	Core Practical–II (CP)	Bacteriology ,Mycology,Immunology and Immuno technology (P)	22PMB2CC2P	6	5	3	40	60	100
	Discipline Specific Elective Course – II (DSE)	A. Biofertilizer Technology	22PMB2DSE2A	6	3	3	25	75	100
		B. Public Health Microbiology	22PMB2DSE2B						
		C. Marine Microbiology	22PMB2DSE2C						

	Internship	Internship	22PMB2INT	-	2	-	-	100	100
	Extra Credits Course	SWAYAM	As Per UGC Recommendation						
	TOTAL			30	24	-	-	-	600
III	Core Course-VI (CC)	Molecular Biology and Microbial Genetics	22PMB3CC6	6	5	3	25	75	100
	Core Course-VII(CC)	Food and Dairy Microbiology	22PMB3CC7	6	5	3	25	75	100
	Chore Choice Course- II(CCC)	A. Cyber security	22PGCS3CCC2A	5	4	3	25	75	100
		B. Microbial Gene Technology	22PMB3CCC2B						
		C. Biosafety and Intellectual Property Rights	22PMB3CCC2C						
	Core Practical-III (CP)	Molecular Biology and Microbial Genetics, Food and Dairy Microbiology (P)	22PMB3CC3P	6	5	3	40	60	100
	Discipline Specific Elective Course – III (DSE)	A. Microbiology for Competitive Examination	22PMB3DSE3A	4	3	2	-	100	100
		B. Food Adulteration	22PMB3DSE3B			3	25	75	
		C. Biomedical Laboratory Technology	22PMB3DSE3C						
	Generic Elective Course - I (GEC)	Food Quality Testing	22PMB3GEC1	3	2	3	25	75	100
	Extra Credit Course	SWAYAM	As per UGC Recommendation						
	TOTAL			30	24	-	-	-	600
IV	Core Course – VIII (CC)	Bioprocess Technology	22PMB4CC8	6	5	3	25	75	100
	Core Choice Course– III (CCC)	A. Bioinformatics and Biostatistics	22PMB4CCC3A	6	4	3	25	75	100
		B. Computational Biology	22PMB4CCC3B						
		C. Microbial Nanotechnology	22PMB4CCC3C						
	Core Practical-IV (CP)	Bioprocess Technology (P)	22PMB4CC4P	6	5	3	40	60	100
	Generic Elective Course -II (GEC)	Entrepreneurial Microbiology	22PMB4GEC2	3	2	3	25	75	100
	Project	Project Work	22PMB4PW	9	5	-	-	100	100
	TOTAL			30	21	-	-	-	500
	GRAND TOTAL			120	92	-	-	-	2200

Courses & Credits for PG Science Programmes

Sl. No	Courses	No of Courses	No of Credits	Marks
1.	Core Course – (CC)	08	40	800
2.	Core Choice Course– (CCC)	3	12	300
3.	Core Practical-(CP)	4	20	400
4.	Discipline Specific Elective- (DSE)	3	9	300
5.	Generic Elective Course - (GEC)	2	4	200
6.	Project	1	5	100
7.	Internship	1	2	100
	Total	22	92	2200

The internal and external marks for theory and practical papers are as follows:

Subject	Internal Marks	External Marks
Theory	25	75
Practical	40	60

Separate passing minimum is prescribed for Internal and External

For Theory:

- a) The passing minimum for CIA shall be 40% out of 25 marks (i.e. 10 marks)
- b) The passing minimum for End Semester Examinations shall be 40% out of 75marks (i.e. 30 mark
- c) The passing minimum not less than 50% in the aggregate.

For Practical:

- a) The passing minimum for CIA shall be 40% out of 40 marks (i.e. 16 marks)
- b) The passing minimum for End Semester Examinations shall be 40% out of 60marks (i.e. 24 mark
- c) The passing minimum not less than 50% in the aggregate.

For PROJECT:

Marks for Dissertation: 80 Marks

Marks for Viva Voce: 20 Marks

Total Marks: 100 Marks



Cauvery College for Women (Autonomous), Trichy
PG & Research Department of Microbiology
M.Sc., Microbiology

Learning Outcome Based Curriculum Framework (CBCS-LOCF)

(For the candidates admitted from the Academic year 2022-2023 and onwards)

Semester	Course	Title	Course Code	Inst./ Hrs/Week	Credits	Exam			Total
						Hrs	Marks		
							Int.	Ext.	
III	Core Course-VI (CC)	Molecular Biology and Microbial Genetics	22PMB3CC6	6	5	3	25	75	100
	Core Course-VII(CC)	Food and Dairy Microbiology	22PMB3CC7	6	5	3	25	75	100
	Core Choice Course-II(CCC)	A. Cyber security	22PGCS3CCC2A	5	4	3	25	75	100
		B. Microbial Gene Technology	22PMB3CCC2B						
		C. Biosafety and Intellectual Property Rights	22PMB3CCC2C						
	Core Practical-III (CP)	Molecular Biology and Microbial Genetics, Food and Dairy Microbiology (P)	22PMB3CC3P	6	5	3	40	60	100
	Discipline Specific Elective Course – III (DSE)	A. Microbiology for Competitive Examination	22PMB3DSE3A	4	3	2	-	100	100
		B. Food Adulteration	22PMB3DSE3B			3	25	75	
		C. Biomedical Laboratory Technology	22PMB3DSE3C						
	Generic Elective Course - I (GEC)	Food Quality Testing	22PMB3GEC1	3	2	3	25	75	100
Extra Credit Course	SWAYAM	As per UGC Recommendation							
Total				30	24	-	-	-	600

Semester: III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS./WEEK	Credits
22PMB3CC6	MOLECULAR BIOLOGY AND MICROBIAL GENETICS	CORE	6	5

Course Objectives:

This course deals with the knowledge on the genetic material of microorganisms and its replication process and to impart conceptual idea about the molecular biology concepts, central dogma, gene expression and its regulations.

Prerequisites

Basic knowledge and concepts of Molecular biology and Microbial Genetics

Course Outcome and Cognitive Level Mapping

Cos	CO Statement	Cognitive level
CO1	Define and Understand the basics of molecular biology	K1, K2
CO2	Analyze and apply central dogma of molecular biology	K3, K4
CO3	Determine and Explain the nucleotide sequence change and repair mechanism	K3, K4
CO4	Evaluate and categorize the significance of vectors and bacterial genetics	K4, K5
CO5	Criticize and manage gene expression and transposons	K5, K6

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	2	2	2	3	2	3	2	2	1
CO2	3	3	2	3	3	2	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	2	3	2	2	3	2	2	2	3
CO5	3	3	3	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-“ indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	Nucleic acid Composition & Replication Introduction to molecular biology- central dogma of molecular biology. Nucleic acids as genetic information carriers: experimental evidence. DNA- Structure, Properties, Types, Forms, Functions. DNA replication: general principles and Enzymology, various modes of replication. Inhibitors of DNA replication. Structure of RNA - replication -types of RNA: tRNA, mRNA, rRNA and siRNA. Introduction to PNA (Peptide Nucleic Acid).	18	CO1, CO2, CO3	K1, K2, K3, K4
II	Transcription and Translation Transcription steps - initiation, elongation and termination, Transcriptional factors, types of RNA polymerases, Inhibitors of transcription - Polycistronic and monocistronic RNAs. Post – transcriptional modifications. Translation - Basic features of genetic code, Protein synthesis - initiation, elongation and termination, inhibitors of protein synthesis. Post translation modifications- Wobble hypothesis.	18	CO1, CO2, CO3, CO4	K1, K2, K3, K4, K5
III	DNA Mutation, Damage & Repair Mutation & its types, Mutagens: Types - physical, chemical, biological agents. DNA damages: Deamination, methylation, alkylation, UV damage. DNA repair pathways: mismatch, Nucleotide and Base excision, recombinational and SOS repair.	18	CO1, CO2, CO3, CO4	K1, K2, K3, K4, K5
IV	Microbial Genetics Gene transfer mechanisms- Bacterial transformation: detection, development of competence, mechanism, transfection. Conjugation: mechanism, F-factor, high frequency recombination (Hfr); Transduction: generalized, abortive, specialized transduction. Sexduction.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	Regulation of Gene Expression Regulation of gene expression: Operon concept, lac, trp, arabinose operons, promoters and repressors. Organization of Genes in Prokaryotes and Eukaryotes. Transposons: structure, types and mechanism of transposable elements.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self Study for Enrichment (Not included for End Semester Examinations) Gene cloning in bacteria, Construction of genomic and cDNA libraries, Gene silencing – Gene knockouts and gene therapies.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Books

1. Krishnaiah G.R. Microbial Genetics & Molecular Biology (1st edition), Blue Rose Publisher, 2019.
2. David P. Clark, Nanette J. Pazdernik, Michelle R. McGehee. Molecular Biology (3rd edition), Academic Cell, 2019.
3. Lizabeth A. Allison. Fundamental Molecular Biology (3rd Edition). Wiley-Blackwell, 2021.
4. Bruce Alberts, Rebecca Heald, Alexander Johnson, David Morgan, Martin Raff, Keith Roberts, Peter Walter, John Wilson, Tim Hunt. Molecular Biology of the Cell (7th edition) W. W. Norton & Company, 2022.
5. Rupal Sengar. Textbook of Microbial Genetics (1st edition), LAP LAMBERT Academic Publishing, 2021.
6. Pradeep D. Devkate, Samina R. Khan, Dipak G. Puri, Sachin S. Shinde. A Textbook of Microbial Genetics (1st edition), Booksclinic Publishing, 2023.

Reference Books

1. Hartl, Daniel L. Genetics: Analysis of genes and genomes. (9th Edition), Jones & Bartlett Learning, 2019
2. Arumugam N. Cell Biology and Molecular Biology (9th Edition), Saras Publication, 2019.
3. Poonam Agrawal, Lippincott Illustrated Reviews: Cell and Molecular Biology (SAE- 2nd edition), Wolters Kluwer India Pvt Ltd, 2022.
4. Jordanka Zlatanova. Molecular Biology: Structure and Dynamics of Genomes and Proteomes (2nd Edition), Garland Science, 2023.
5. Joanne Willey, Kathleen Sandman, Dorothy Wood. Prescott's Microbiology (12th edition), Mc Graw Hill, 2022.
6. Bernard R. Glick, Cheryl L. Patten. Molecular Biotechnology: Principles and Applications of Recombinant DNA (ASM Books) (6th Edition). ASM Press, 2022.

Web References

1. <http://www.freebookcentre.net/Biology/Molecular-Biology-Books.html>
2. http://www.freebookcentre.net/medical_text_books_journals/genetics_ebooks_online_texts_download.html
3. <https://www.nature.com/scitable/ebooks/>
4. http://www.digitalbookindex.org/_search/search010biolmolecularcellbiologya.asp
5. <https://microbenotes.com/dna-structure-properties-types-and-functions/#types-of-dna>
6. <https://www.biologydiscussion.com/dna/dna-damage-types-and-repair-mechanisms-with-diagram/16332>
7. <https://www.biologydiscussion.com/gene/transposons-or-jumping-genes-types-structure-mechanism-and-functions/16499>

Pedagogy

Power point presentations, Group Discussion, Seminar, Quiz, Assignment, Brain Storming Activity.

Course Designer

Dr. S. Jenny

Semester: III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS./WEEK	Credits
22PMB3CC7	FOOD AND DAIRY MICROBIOLOGY	CORE	6	5

Course Objectives:

This course deals with the knowledge on the food and dairy products and disease-causing microorganism and their toxins which may contaminate the food and its quality control.

Prerequisites

Basic knowledge and concepts of food and dairy Microbiology

Course Outcome and Cognitive Level Mapping

Cos	CO Statement	Cognitive level
CO1	Define and Understand the basics of food microbiology	K1, K2
CO2	Analyze the food borne diseases	K3, K4
CO3	Determine and Explain the food contamination and preservation	K3, K4
CO4	Evaluate and categorize the microbial products	K4, K5
CO5	Criticize and manage quality control and assurance of products	K5, K6

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	2	2	2	3	2	3	2	2	1
CO2	3	3	2	3	3	2	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	2	3	2	2	3	2	2	2	3
CO5	3	3	3	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-“ indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	Introduction to Food Microbiology General Introduction of Foods and Related Microorganisms. Intrinsic Factors- Nutrient Content, pH and Buffering Capacity, Redox Potential, Antimicrobial Barriers and Constituents and Water Activity. Extrinsic Factors- Relative Humidity, Temperature and Gaseous Atmosphere.	18	CO1, CO2, CO3	K1, K2, K3, K4
II	Food Borne Diseases Definition of food poisoning, food infections and toxications. Causative agents, foods involved, symptoms and preventive measures. Food intoxications: Staphylococcus aureus, Clostridium botulinum and mycotoxins; Food infections: Bacillus cereus, Escherichia coli, Shigella, Listeria monocytogenes.	18	CO1, CO2, CO3, CO4	K1, K2, K3, K4, K5
III	Food Contamination and Methods of Food Preservation Contamination and Spoilage of Cereals, Cereal Products, Fruits, Vegetables, Meats, Meat Products, Fish, Sea Foods, Eggs, Poultry and Canned Foods. General Principles, physical methods of food preservation: temperature, Pasteurization, types (canning, drying); High pressure and Irradiation; chemical methods of food preservation: salt, sugar, organic acids, SO ₂ and antibiotics.	18	CO1, CO2, CO3, CO4,	K1, K2, K3, K4, K5,
IV	Dairy Microbiology, Microbial Products Dairy Microbiology- Normal Flora of Milk and Milk Products, Spoilage of Milk and Milk Products. Fermented Milk Products- Acidophilus Milk, Bifidus Milk, Yoghurt Manufacture of Cheese and Evolution of Quality Milk. Microbial Food Fermentation- Fermentation in Food Processing, Role of Microorganisms in Food Fermentation. Microbial Products of Food; SCP, Mushrooms, Oriental Foods Fermented Beverages (Fruit and Cereal Based).	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6,
V	Microbial Enzymes, Quality Control And Quality Assurance Industrial Production of Enzymes- Cellulases, Amylases, Proteases, Phytases, Pectinases, Lipases and Glucose Isomerases. Food Sanitation – Microbiology of Food Plant Sanitation, Water and Milk Testing. Food Laws and Quality Control – HACCP, Codex Alimentarius, PFA, FPO, MFPO, BIS and AGMARK.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self Study for Enrichment (Not included for End	-	CO1,	K1,

	Semester Examinations) Food Borne Disease Outbreaks - Objectives of Investigation, Field Investigation, Lab Testing and Preventive Measures.		CO2, CO3, CO4, CO5	K2, K3, K4, K5, K6
--	--	--	-----------------------------	--------------------------------

Text Books

1. Adams MR and Moss MO. (2012). Food Microbiology, The Royal Society of Chemistry, Cambridge.
2. Biotechnology by R.C. Dubey. (2014). A Textbook of Biotechnology. S. Chand publishers.
3. Frazier WC and West off DC. (2017) Food microbiology, TATA McGraw Hill Publishing Company Ltd. New Delhi.

Reference Books

1. Bibek Ray, Arun Bhunia. (2013). Fundamental Food Microbiology. CRC Press.
2. Foster W M. (2015). Food Microbiology. CBS Publication.
3. Karl R. Mathews. (2017). Food Microbiology an Introduction. ASM Press.
4. Charlene Wolf Hall. (2017). Microbial Food Safety A Food Systems Approach.

Microbial Food Safety A Food Systems Approach.

5. Dongyou Liu. (2018). Handbook of food borne diseases. CRC Press.

Web References

1. https://asutoshcollege.in/new-web/Study_Material/SM_16062020.pdf
2. https://www.who.int/health-topics/food-safety#tab=tab_1
3. <https://www.sciencedirect.com/topics/food-science/food-borne-disease>
4. <https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/dairy-microbiology>
5. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5956270/>

Pedagogy

Power point presentations, Group Discussion, Seminar, Quiz, Assignments.

Course Designer

Dr. R. Nithyatharani

Semester : III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22PMB3CCC2B	MICROBIAL GENE TECHNOLOGY	CORE CHOICE COURSE- II	5	4

Course Objective

To enable the students to understand various tools and techniques for microbial gene manipulation.

Prerequisites

To obtain basic knowledge in the field of gene technology.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	Explain the gene analysis and Techniques	K2,K3
CO2	Illustrate Restriction enzymes	K3,K4
CO3	Summarize the DNA sequence analysis	K4,K5
CO4	Intrepret Nature of vectors	K5,K6
CO5	Discuss about application of gene	K5,K6

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	2	3	2	3	3	3	3	3	3	3
CO3	3	2	3	3	2	3	3	3	3	2
CO4	3	3	3	3	3	3	3	3	2	3
CO5	3	3	3	2	3	3	2	3	3	3

1- Slight (Low) correlation 2- Moderate (Medium) correlation

3- Substantial (High) correlation “-” indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	Gene Analysis and Techniques : Isolation of DNA and RNA from microbes. Handling & Quantification of Nucleic acids - Radiolabelling of Nucleic acids - End labeling - Nick translation - Labelling by primer extension - PFGE and its applications - Blotting techniques - Nucleic acid hybridization	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Restriction enzymes : Nomenclature - Classification - restriction and Methylation - Type II restriction endonuclease - use of restriction endonucleases - Restriction mapping and its applications - DNA modifying enzymes - nucleases - polymerases - DNA ligases.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	DNA sequence analysis ; Maxam - Gilbert (Chemical) sequencing - Sangar - Coulson (DiDeoxy/enzymatic) sequencing . Automated DNA sequencing. Genome sequencing and Physical Mapping of genomes. PCR - methods and its application, Advantages. DNA fingerprinting in forensic application. Microarray and its applications	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Vectors - nature - uses of vectors- types of vectors - Plasmids, Bacteriophages - Cosmid - Shuttle vectors; cloning strategies - cloning and selection of individual genes. Gene libraries; cDNA and genomic libraries - artificial chromosomes - BAC and YAC.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	Applications : Gene Annotations; Gene silencing; Human Genome Project; Legal aspects of rDNA technology and cloning. Development of gene functions. Recombinant DNA products and applications - Insulin, Hepatitis B antigen vaccine, Growth hormones.	15	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4, K5, K6
VI	Self Study for Enrichment (Not included for End Semester Examination) Nanobiologics - Bioactive peptides as hormones, a	-	CO1, CO2, CO3,	K1 K2, K3,

	ntimicrobials, vaccines, drug carriers and therapeutics.		CO4, CO5	K4, K5, K6
--	--	--	-------------	------------------

Text Books

1. Chaudhuri, Keya (2012) Microbila genetics, The Energy And Resources Institute
2. Brown.T.A(2016) Gene Cloning and DNA Analysis An Introduction,Wiley-Blackwell.
3. Jodgand.S.N. (2016) Gene Biotechnology. Himalaya Publishing House
4. Somnath De, (2017) Basic Concept of Recombinant DNA Technology, Edupedia Publications Pvt Ltd
5. Monika Jain. Recombinant DNA Techniques: A Textbook (2020) [Narosa Publication](#)

Reference Books

1. Kumar, Ashok, (2011) Molecular Biology and Recombinant DNA Technology: A Practical BookJain Book agency
2. Rajagopal.K, (2012) Recombinant Dna Technology and Genetic Engineering McGraw Hill Education.
3. Bal Ram Singh, Raj Kumar,(2022)Practical Techniques in Molecular Biotechnology, Cambridge University Press.

Web References

1. <https://download.e-bookshelf.de/download/0007/2863/08/L-G-0007286308-0008738665.pdf>
2. [https://bio.libretexts.org/Bookshelves/Microbiology/Microbiology_\(OpenStax\)/12%3A_Modern_Applications_of_Microbial_Genetics/12.01%3A_Microbes_and_the_Tools_of_Genetic_Engineering](https://bio.libretexts.org/Bookshelves/Microbiology/Microbiology_(OpenStax)/12%3A_Modern_Applications_of_Microbial_Genetics/12.01%3A_Microbes_and_the_Tools_of_Genetic_Engineering)
3. <https://www.slideshare.net/lanimanahan/microbial-genetics-and-genetic-engineering>
4. <https://www.heavenlyfuel.com/jbframework/uploads/2017/06/Molecular-Biotechnology.pdf>
5. https://portal.abuad.edu.ng/lecturer/documents/1585662755MICROBIAL_BIOTECHNOLOGY__Fundamentals_of_Applied_Microbiology,_Second_Edition.pdf

Pedagogy

Chalk and talk, Power Point Presentation, Quiz, Assignments, Group Discussions, Seminar, and Assignment.

Course Designer

Ms.S.Sathya

Semester III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22PMB3CCC2C	BIOSAFETY AND INTELLECTUAL PROPERTY RIGHTS	CHORE CHOICE COURSE- II (CCC)	5	4

Course Objective

The course is intended to make the students to develop and apply a personal understanding of biosafety and Intellectual property rights, and their impact on day-to-day life.

Prerequisites

Creates awareness on biosafety and intellectual property rights in the field of biological research.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	Describe fundamentals of biosafety	K1,K2
CO2	Illustrate guidelines of biosafety	K2,K3
CO3	Explain importance of Intellectual rights	K3,K4
CO4	Interpret basics of patents and concept of prior art	K4,K5
CO5	Discuss patent filling code of conduct	K5,K6

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	2	3	2	3	3	3	3	3	3	3
CO3	3	2	3	3	2	3	3	3	3	2
CO4	3	3	3	3	3	3	3	3	2	3
CO5	3	3	3	2	3	3	2	3	3	3

1- Slight (Low) correlation

2- Moderate (Medium) correlation

3- Substantial (High) correlation

“-” indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	Biosafety: Historical Background, Introduction to Biological Safety Cabinets, Good manufacturing practice and Good lab practices (GMP and GLP)., Primary Containment for Biohazards, Biosafety Levels, GMOs, LMOs and their environmental impact.	15	CO1, CO2, CO3, CO4	K1, K2, K3, K4
II	Biosafety Guidelines: Biosafety guidelines and regulations (National and International) – operation of biosafety guidelines and regulations of Government of India; Roles of Institutional Biosafety Committee – RCGM and GEAC; Risk Analysis and Assessment; Risk management and communication; Overview of National Regulations and relevant International Agreements including Cartagena Protocol.	15	CO1, CO2, CO3, CO4	K1, K2, K3, K4
III	Introduction to Intellectual Property: Concept of Intellectual Property, Kinds of Intellectual Property: Patents, Copyrights, Designs, Trademarks, Geographical Indication. Protection of GMOs IP as a factor in R&D. Introduction to GATT & TRIPS Agreement, Indian Patent Act 1970 & recent amendments.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Basics of Patents and Concept of Prior Art: Introduction to Patents; Types of patent applications: Ordinary, PCT, Conventional, Divisional and Patent of Addition; Specifications: Provisional and complete; Patent databases; Searching International Databases; Country-wise patent searches (USPTO, esp@cenet (EPO), PATENTScope (WIPO), IPO)	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	Patent filing procedures: National & PCT filing procedure; Time frame and cost; Status of the patent applications filed; Precautions while	15	CO1, CO2, CO3,	K1, K2, K3,

	patenting–disclosure/non-disclosure; Financial assistance for patenting-introduction to existing schemes, Patent licensing and agreement Patent infringement- meaning, scope, litigation, case studies.		CO4, CO5	K4, K5, K6
VI	UNIT VI – Self study for Enrichment (Not included for End Semester Examination) Biosafety assessment procedures in India and abroad, Web based information of biosafety on GMO, IPR agencies, Biological Patentability and Patent agent.	-	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4, K5, K6

Text Books

1. Usharani B., Anbazhagi S. and Vidya C. K. (2019). *Biosafety in Microbiological Laboratories*. 1st Edition. Notion Press.
2. Sateesh M.K. (2020). *Bioethics and Biosafety*. Dreamtech Press.
3. Chawla H.S. (2020). *Introduction to Intellectual Property Rights*. Oxford & IBH publishing.
4. Verkey E. and Isaac J.S. (2021). *Intellectual Property*. Eastern Book Company.
5. Reddy G.B. (2023). *Intellectual Property Rights and the Law*. Gogia Law Agency.

Reference Books

1. Damodar Reddy S.V. (2019). *Intellectual Property Rights - Law and Practice*. 1st Edition. Asia Law House.
2. Nithyananda K. V. (2019). *Intellectual Property Rights: Protection and Management*. Cengage Learning India Private Limited.
3. Lydia Pallas L. and Joseph Scott. M. (2021). *Intellectual Property Law: Cases & Materials*. Semaphore Press, Inc.
4. Peter S. Menell, Mark A. Lemley, Robert P. Merges and Shyamkrishna Balganesh. (2021). *Intellectual Property in the New Technological Age*. Clause 8 Publishing.
5. Sibi. G. (2021). *Intellectual, Property Rights, Bioethics, Biosafety and Entrepreneurship in biotechnology*. Wiley Publications.

Web References

1. <http://www.cbd.int/biosafety/background.shtml>
2. <http://web.princeton.edu/sites/ehs/biosafety/biosafetypage/section 3.html>
3. <http://ipindia.nic.in/writereaddata/Portal/ev/rules-index.html>
4. <http://www.bdu.ac.in/cells/ipr/docs/ipr-eng-ebook.pdf>
5. https://www.wipo.int/edocs/pubdocs/en/intproperty/489/wipo_pub_489.pdf
6. World Intellectual Property Organization – www.wipo.int

7. Indian Patent Office – www.ipindia.gov.in

8. <https://dst.gov.in/sites/default/files/E-BOOK%20IPR.pdf>

Pedagogy

Chalk and talk, Power Point Presentation, Quiz, Assignments, Group Discussions, Seminar, Assignment.

Course Designer

Dr. N. Jeenathunisa

Semester III	Internal Marks : 40		External Marks : 60	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs./Week	CREDITS
22PMB3CC3P	MOLECULAR BIOLOGY AND MICROBIAL GENETICS, FOOD AND DAIRY MICROBIOLOGY (P)	CORE	6	5

Course Objective

- To enable the Students to understand the Basic Knowledge in Molecular Biology and Microbial genetics.
- To understand the production process Applications of Microbial products.
- To acquire a Skills about the various Techniques in Recombinant DNA Technology.
- To gain the brief Knowledge about Protein separation.

Course Outcome and Cognitive level Mapping

CO Number	CO Statement	Cognitive level
CO 1	Predict the application of Immobilization	K3
CO 2	Determine the Commercial production methods of Microbial Products	K4
CO 3	Compare the genomic and plasmid DNA separation methods	K5
CO 4	Expand the knowledge about PCR, Restriction digestion and ligation of DNA	K6
CO 5	Critique knowledge about microbial isolation from spoiled food	K6

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	1	2	3	3	3	3	2	3
CO2	3	2	3	3	2	2	3	2	3	3
CO3	3	2	2	3	3	3	2	3	3	2
CO4	2	3	3	2	3	3	3	2	3	2
CO5	3	3	2	3	2	3	3	3	2	2

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-“ indicates there is no correlation

Syllabus

MOLECULAR BIOLOGY AND MICROBIAL GENETICS

- Isolation of Antibiotic Resistant Microbes
- Isolation of Mutants by Spontaneous Mutation – Gradient plate technique
- Isolation of Auxotrophic and Antibiotic Resistant Mutants by Physical and Chemical Mutagens
- Competent Cell Preparation and Bacterial Transformation
- Generalized Transduction in E.coli
- Isolation and Quantification of Genomic DNA and Plasmid DNA from E.coli
- Characterization of Plasmid DNA by Agarose gel electrophoresis
- Restriction Digestion and Ligation of DNA
- Polymerase Chain Reaction
- Random Amplified Polymorphic DNA
- Restriction Fragment Length Polymorphism
- Insilico method of RFLP and Secondary Structure Prediction of RNA
- Separation of Protein by SDS PAGE
- Transfer of Protein - Western blot

FOOD AND DAIRY MICROBIOLOGY

1. Milk microbiology –Breed count, Direct microscopic count and Standard plate count, Presumptive test for coliforms.
2. Testing the quality of milk - Methylene blue reductase test, Resazurin test and alkaline phosphatase test.
3. Isolation of microbes from fermented foods (bread, cheese, yoghurt) – bacteria, fungi and yeast.
4. Isolation of bacteria, fungi and yeast from spoiled food (tomato, potato, grapes).

Reference Books:

1. Swagat Kumar Dash, Hrudayanath Thatoi, Supriya Dash (2020). Practical Biotechnology: Principles and Protocols. Dreamtech Press.
2. Siddra Ijaz & Imran UI Haq. (2019). Recombinant DNA Technology. Cambridge Scholar UK.
3. Gunasekaran, P. (2018). Laboratory Manual in Microbiology. New Age International Publishers, New Delhi.
4. Michael L. Shuler, Fikret Kargi & Matthew DeLisa. (2017). Bioprocess Engineering: Basic Concepts. Prentice Hall, US.
5. Brown TA. (2016). Gene cloning and DNA Analysis Introduction. Blackwell Science Ltd., London.

Web Reference

1. <https://www.youtube.com/watch?v=ug23mkwRylw>
2. <https://www.youtube.com/watch?v=kzJHD3KI1ck>
3. <https://www.youtube.com/watch?v=ee-h2xHt66M>
4. <https://www.youtube.com/watch?v=1B9-aGv-jro>
5. <https://www.youtube.com/watch?v=nid2fvN5L5A>

Pedagogy

Chalk and talk, PPT, Discussion, Assignment, Demo, Quiz, Seminar.

Course Designer

Dr. V. Aruna

Semester III	External Marks: 100			
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22PMB3DSE3A	MICROBIOLOGY FOR COMPETITIVE EXAMINATION	DISCIPLINE SPECIFIC ELECTIVE COURSE – III (DSE)	4	3

Course Objectives

This course provides a multidisciplinary forum for the discussion of all aspects of microbiology which helps to develop and impart knowledge for the students to appear in the competitive examination.

Prerequisites

Understand and critically analyze the literature in the field of Microbiology

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	Explain the taxonomy principles and concepts	K1, K5
CO2	Understanding the basics of inheritance biology	K2,K3
CO3	Extend the Knowledge about microbes in Agriculture	K4,K5
CO4	Understand the basic concepts of cell development and its impacts	K5,K6
CO5	Expand the knowledge about Bio-Nano-informatics	K5,K6

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	2	3	2	2	3	2
CO2	3	3	2	2	2	3	3	2	3	3
CO3	3	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	2

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-“ indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	Microbial Taxonomy: Taxonomy - Principles and methods, Concepts of species and hierarchical taxa. Levels of structural organization- Unicellular, colonial and multicellular forms; Taxa & Species concepts- Traditional, typological, evolutionary, biological, phylogenetic concepts. Phylogenetic (among species) versus Tokogenetic (within species) relationships. Taxonomic rank and names. Types of taxonomy- chemotaxonomy, numerical taxonomy and polyphasic taxonomy. Phylogenetic analysis and evolutionary relationship among taxa. Application in Taxonomy and phylogeny, Comparative genomics.	12	CO1, CO2, CO4, CO5	K1, K2, K3, K4, K5
II	Inheritance Biology: Mendelian principles, Concept of gene, Gene mapping, Human genetics - Pedigree analysis, lod score for linkage testing, karyotypes, genetic disorders. Polygenic inheritance, heritability and its measurements, QTL mapping. Structural and numerical alterations of chromosomes - Deletion, duplication, inversion, translocation, ploidy and their genetic implications. Recombination Homologous and non-homologous recombination including transposition	12	CO1, CO2, CO3, CO4	K2, K3, K4, K5
III	Agricultural Microbiology: Biogeochemical cycles -Nitrogen, Carbon, Phosphorous, Sulphur, Iron and their	12	CO1, CO2, CO3,	K2, K3, K4,

	importance. Microbial association with plants- Phyllosphere, Rhizosphere, Mycorrhizae, Nitrogen fixing organism – symbiosis, asymbiosis, associate symbiosis – phosphate solubilizers. Application of bio fertilizers in agriculture. Biology of nitrogen fixation – genes and regulations in Rhizobium. Bacterial, viral and fungal plant pathogens. Disadvantages of chemical pesticides. Microbial pesticides- types, mechanisms, advantages and limitations.		CO4	K5
IV	Developmental Biology: Basic concepts of cell development, Gametogenesis, Spermatogenesis and Oogenesis in mammals, outline of experimental embryology, Morphogenesis and organogenesis in Drosophila. Metamorphosis, Regeneration and Human development	12	CO1, CO4, CO5	K2, K4, K5, K6
V	Bio-Nano-Informatics: Introduction to Bioinformatics- Applications of Bio nanotechnology - Drug and gene delivery – protein mediated and nanoparticle mediated. Uses of nanoparticles in MRI, DNA and Protein Microarrays. Nanomedicines, Antibacterial activities of nanoparticles. Nanotechnology in agriculture. Toxicology in nanoparticles – Dosimetry. Nano therapy for cancer treatment. Nanoscience in India – Nanoscience education abroad – Looking at ethics and society.	12	CO1, CO4, CO5	K2, K4, K5, K6

VI	Self-Study for Enrichment (Not included for End Semester Examinations) Modern methods of Bacterial taxonomy, Plant growth promoting rhizobacteria (PGPR). Nanoscience in food packaging and water disinfection	-	CO1, CO2, CO3,	K2, K3, K4, K5
----	---	---	----------------------	-------------------------

Text Books

1. Bhagwan Rekadwad (2020). Microbial Systematics: Taxonomy, Microbial Ecology, Diversity, First Edition, CRC Press.
2. Kailash Choudhary, (2021). Genetics, The inheritance Biology, First Edition, IFAS Publication.
3. Subba Rao, N.S, (2020). Agricultural Microbiology, Third Edition, Med tech.
4. Michael Barresi and Scott Gilbert, (2023), Developmental Biology, Thirteenth Edition, Sinauer Associates is an imprint of Oxford University Press.
5. Charles P. Poole , Jr, Frank J., and Owens, (2020), Wiley.

Reference Books

1. Surajit Das and Hirak Ranjan Dash, (2018). Microbial Diversity in the Genomic Era, First Edition, Academic Press.
2. Hartl and Daniel L,(2019). Genetics : analysis of genes and genomes, Burlington, Massachusetts : Jones & Bartlett.
3. Bibhuti Bhusan Mishra, Suraja Kumar Nayak, Swati Mohapatra and Deviprasad Samantaray, (2021). Environmental and Agricultural Microbiology: Applications for Sustainability, First edition Wiley-Scrivener.
4. Slack J.M.W, (2021). Essential Developmental Biology, Fourth edition, Wiley-Blackwell.
5. Shah, M.A and Shah K.A, (2019). Nanotechnology, Second Edition, Wiley.

Web References

1. http://vidyamandira.ac.in/pdfs/e_learning/ds_microbio/MICROBIAL%20TAXONOMY%20MCBA%20P1%20T.pdf
2. <https://schools.aglasem.com/ncert-books-class-12-biology-chapter-5/>
3. <https://agrimoon.com/wp-content/uploads/AGRICULTURAL-MICROBIOLOGY.pdf>
4. <http://bgc.ac.in/pdf/study-material/developmental-biology-7th-ed-sf-gilbert.pdf>
5. <http://www.imedpub.com/journal-nanoscience-nanotechnology-research/>
6. <https://benthamscience.com/journals/nanoscience-and-nanotechnology-asia/>

Pedagogy

Chalk and Talk, Assignment, Seminar, Group Discussion and Quiz.

Course Designer

Dr.N.Sathammai Priya

SEMESTER III	EXTERNAL MARKS: 100			
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDIT
22PMB3DSE3B	FOOD ADULTERATION	DISCIPLINE SPECIFIC ELECTIVE COURSE – III (DSE)	4	3

Course Objective :

This course is designed to provide comprehensive knowledge to the students regarding food safety and standardization act and quality control of foods.

Prerequisites

To Comprehend and analyze the basics of food adulteration.

Course Outcome:

COs	CO Statement	Knowledge level
CO1	Define the basics of Food adulteration	K1,K2
CO2	Recite the knowledge about Food Safety and Standards	K1,K2
CO3	Critique knowledge about Standardization of Foods	K4,K5
CO4	Generalize the basic idea of Food additives	K5,K6
CO5	Expand the role of Quality control	K5,K6

Mapping with Programme Outcomes:

Cos	PO1	PO2	PO3	PO4	PO5
CO1	3	2	3	3	2
CO2	3	3	3	3	3
CO3	3	3	2	1	3
CO4	3	3	3	3	3
CO5	3	2	2	3	3

“1” – Slight (Low) Correlation “2” – Moderate (Medium) Correlation
“3” – Substantial (High) Correlation “-” – indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	Food adulteration – Introduction of food adulteration, definition. Historical food legislation in India; Central food laboratory, Municipal laboratories, Export inspection council laboratory, Central grain analysis laboratory, standards of weights and measures act, solvent extracted oil, de-oiled meal and edible flour order, export and quality control, inspection act, other acts and orders.	12	CO1, CO2, CO4, CO5	K1, K2, K3, K4, K5
II	Food Safety and Standards Act 2006.vertical standards Vs horizontal standards .Food safety officer; powers, procedures, role of food analyst most important international laws; Codex alimentarius, FDA, USDA, FAO,HACCP,FSSAI and WHO.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Standardization of Foods; Definition, Standards of Quality, for cereals, starchy foods, spices and condiments, sweetening agents, meat and meat products, vinegar, sugar and confectionary, beverages-alcoholic and non- alcoholic , carbonated water, milk and milk products , oils and fats , canned foods , fruits and vegetables products.	12	CO1, CO2, CO3, CO4	K2, K3, K4, K5

IV	Food additives – classification, nature and characteristics and use of additives in food such as antioxidants, chelating agents, coloring agents - algal colorants (natural & artificial), curing agents, emulsions, flavors and flavor enhancers, flour improvers, humectants and anti-caking agents, nutrient supplements, non-nutritive sweeteners, pH control agents, stabilizers and thickeners.	12	CO1, CO2, CO3, CO4	K2, K4 K5, K6
V	Consumer protection; role of voluntary agencies such as, Agmark, I.S.I. Quality control laboratories for companies ,private testing laboratories, Quality control laboratories of consumer co-operatives. Consumer education, consumer problems rights and responsibilities, Consumer protection act (COPRA 1986), tips for wise purchasing, redressal measures how to give complaints and proforma of complaints.	12	CO1, CO4 , CO5	K1, K2, K3, K4, K5
VI	Self-Study for Enrichment (Not included for End Semester Examinations) New adulterants in foods, National and International regulatory bodies. Raising agents – types and their role in food processing.	-	CO1, CO2, CO3, CO4	K2, K3, K4, K5

Text Books:

1. Mousumi Sen (2021). Food Chemistry: Role of Additives, Preservatives and Adulteration, John Wiley and Sons.
2. Jonathan Rees (2020). Food Adulteration and Food Fraud (Food Controversies). Reaktion Books
3. Fredric Accum (2019). A Treatise on Adulterations of Food, And Culinary Poisons, Lector House LLP
4. Rowland J. Atcherley (2019). Adulteration of Foods. Wentworth Press.
5. Mason (2019). Adulteration of Foods. Forgotten Books.

Reference Books:

1. Rosalee S. Hellberg Karen Everstine Steven A. Sklare (2020). Food Fraud: A Global Threat with Public Health and Economic Consequences. Academic Press Inc.
2. James Bell (2019). The Analysis and Adulteration of Foods. Forgotten Books.
3. Harvey Washington Wiley (2019). Foods and Food Adulterants, Vol. 4. Forgotten Books.
4. John W. (2019). Spink Food Fraud Prevention: Introduction, Implementation, and Management (Food Microbiology and Food Safety). Springer
5. William Ernest Mason (2018). Adulteration of Food Products. Forgotten Books.

Web links:

1. <https://www.vedantu.com/biology/food-adulteration>
2. <https://www.publichealthnotes.com/food-adulteration-types-of-food-adulteration-and-mitigation-measures/>
3. https://en.wikipedia.org/wiki/Adulterated_food
4. <https://www.slideshare.net/SurajPanpatte1/different-methods-of-food-adulteration>
5. <https://www.sciencedirect.com/topics/food-science/food-adulteration>

Pedagogy

Power point presentations, Group discussion, Seminar, Quiz, Assignment, Brain storming activity.

Course Designer

Dr.P.F.Steffi

Semester III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22PMB3DSE3C	BIOMEDICAL LABORATORY TECHNOLOGY	Discipline Specific Elective Course – III (DSE)	4	3

Course Objective

Biomedical Laboratory Technology is a laboratory science effectively and comprehensively meets the requirements of students to develop manpower for health sector by providing them the necessary knowledge and skill to ensure the quality services in health care sector.

Prerequisites

To provide the fundamental laboratory skills that students need to prepare for a career in the biomedical sciences.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Knowledge level
CO1	Understand the basic human biology	K1, K2
CO2	Interpret the features of basic equipment's of laboratory	K2, K3
CO3	Analyze the metabolism and classification of biomolecules	K3, K4
CO4	Interpret the significance of hematology and blood bank	K4, K5
CO5	Discuss the significance of microbiology, clinical pathology and histopathology	K5, K6

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	2	3	2	3	3	3	3	3	3	3
CO3	3	2	3	3	2	3	3	3	3	2
CO4	3	3	3	3	3	3	3	3	2	3
CO5	3	3	3	2	3	3	2	3	3	3

1- Slight (Low) correlation

2- Moderate (Medium) correlation

3- Substantial (High) correlation

“-” indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	Anatomy and Physiology: Definitions and Terms in Anatomy and Physiology. Structure and function of human cell - Elementary tissues of human body. Organ Systems: Cardio Vascular, Respiratory, Digestive, Urinary, Reproductive, Musculoskeletal, Nervous and Endocrine.	12	CO1, CO2, CO3, CO4	K1, K2, K3, K4
II	Instrumentation: Autoclave, Hot Air Oven, Incubators, Laminar Air Flow, Filtration, colony counter, Centrifuge, pH meter, Colorimeter, Spectrophotometer and Microscopy. Glassware – Description of Glassware, its use, handling and care.	12	CO1, CO2, CO3, CO4	K1, K2, K3, K4
III	Biochemistry: Glucose and Glycogen Metabolism, Classification of proteins and functions, Classification of lipids and functions. Enzymes: Definition, Nomenclature, Classification and Factors affecting enzyme activity. Vitamins & Minerals, Acids and bases. LFT, RFT, GFT.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Hematology and Blood Bank: Origins, development and morphology of blood cells, composition of blood and its functions. Basic concepts of anemia, leukemia and hemorrhagic disorder. Methods of estimation of hemoglobin, determination of PCV. Blood group - methods and typing, Blood transfusion and hazards.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Microbiology, Clinical Pathology and Histopathology: Principles and methods of sterilization, disinfection, antiseptics. Culture media, Methods of maintenance and preservation of microbes. Principles and types of staining. Collection, Transportation and processing of clinical samples for Microbiological investigations. Analysis of urine, sputum, semen, gastric and stool samples. Histopathology - methods of examination of tissues and cell, Fixation of tissues, tissues	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

	processing, section cutting, staining cytology.			
VI	UNIT VI – Self study for Enrichment (Not included for End Semester Examination) Management of Biomedical Waste, Technologies and Treatment for Biomedical Waste.	-	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4, K5, K6

Text Books

1. Kanai L. Mukherjee. (2023). Medical Laboratory Technology. 4th Edition. Mc Graw Hill India.
2. Nanda M. (2021). Clinical Pathology Hematology and Blood Banking (For DMLT Students). Jaypee Brothers Medical Publishers (P) Ltd.
3. Satish G. (2021). The Short Textbook of Medical Laboratory for Technicians. Jaypee Brothers Medical Publishers (P) Ltd.
4. Arora D.R. and Arora B.B. (2020). Textbook of Microbiology. CBS Publishers & Distributors.
5. Chaurasia B.D. (2019). Human Anatomy. 8th Edition. CBS publishers.
6. Vasudevan D.M., Sreekumari S. and Vidhyathan K. (2019). Textbook of Biochemistry for Medical students. 9th Edition. Jaypee Brothers Medical Publishers (P) Ltd.

Reference Books

1. Kanai L. Mukherjee and Anuradha Chakravarthy. (2022). Medical Laboratory Technology, Procedure Manual for Routine Diagnostic Tests. 4th Edition. Mc Graw Hill India.
2. Jamie A. Davies. (2021). Human Physiology: A Very Short Introduction. Oxford University Press.
3. Harsh M. (2021). Practical Pathology. Jaypee Brothers Medical Publishers (P) Ltd.
4. Gary W Procop and Elmer W. Koneman. (2020). Koneman's Color Atlas and Textbook of Diagnostic Microbiology. Jones and Bartlett Learning.
5. Elaine N. Marieb and Katja Hoehn. (2019). Human Anatomy & Physiology. Pearson Education.
6. Talib V.H. (2019). Handbook Medical Laboratory Technology. CBS Publishers & Distributors.

Web links:

1. <https://www.pdfdrive.com/medical-laboratory-technician-hematology-serology-blood-banking-and-immunohematology-e21321666.html>
2. <https://www.pdfdrive.com/medical-laboratory-technician-microbiology-afsc-90470-e17289142.html>
3. <https://www.pdfdrive.com/introduction-to-medical-laboratory-technician-e184576491.html>
4. <http://downloadinfobook1.firebaseio.com/Medical-Laboratory-Technology-Kanai-Mukherjee-PDF-c3f0077fe.pdf>
5. <https://www.cdc.gov/labtraining/index.html>

Pedagogy

Power point presentations, Group discussion, Seminar, Quiz, Assignment, Brain storming activity.

Course Designer

Dr. N. Jeenathunisa

Semester : III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22PMB3GEC1	FOOD QUALITY TESTING	GENERIC ELECTIVE COURSE	3	2

Course Objective

Food testing is an important part to ensure food safety through surveillance and enforcement.

Prerequisites

Safety of food is a basic requirement governing the quality of food found anywhere along the food chain.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	Explain the basics of food quality	K2,K3
CO2	Illustrate the nutritional value of foods	K3,K4
CO3	Summarize the Concepts of quality management	K4,K5
CO4	Intrepret Food Quality Laws and Regulations	K5,K6
CO5	Discuss about HACCP system	K5,K6

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	2	3	2	3	3	3	3	3	3	3
CO3	3	2	3	3	2	3	3	3	3	2
CO4	3	3	3	3	3	3	3	3	2	3
CO5	3	3	3	2	3	3	2	3	3	3

1- Slight (Low) correlation 2- Moderate (Medium) correlation

3- Substantial (High) correlation “-” indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	Human nutrition, Basic food groups, Balanced diet. Food processing, preservation and storage. Physico-chemical properties of food, enzymes in food. The various factors contributing towards quality of food - Appearance, Color, Taste, Odour, Nutritional value, Adulterants. Concept of quality: Quality attributes- physical, chemical, nutritional, microbial, and sensory; Their measurement and evaluation; Sensory instrumental methods for testing quality.	9	CO1, CO2, CO3, CO4,CO5	K1, K2, K3, K4,K5
II	Food adulteration, toxication of food, prevention of food borne diseases. Fermented food products. Production of nutrient rich foods. Agro-product preservation methods. Quality of animal feed and poultry feed. Quality control in food processing. Quality control for exportable foods.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Concepts of quality management: Objectives, importance and functions of quality control, Quality management systems in India, Sampling procedures and plans, Food Safety and Standards Act 2006, Domestic regulations, Global Food safety Initiative, Various organizations dealing with Inspection, traceability and authentication, certification and quality assurance –PFA, FPO, MMPO, MPO, AGMARK, BIS; Labeling issues, International food standards.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Food Quality Laws and Regulations: Quality assurance, Total Quality Management,	9	CO1, CO2,	K1, K2,

	GMP/GHP, GLP, GAP, Sanitary and hygienic practices, documentation and audits; Indian & International quality systems and standards like ISO and Food Codex, Export Import policy, export documentation.		CO3, CO4, CO5	K3, K4, K5, K6
V	HACCP system: Hazard analysis Critical Control Point: Definition, principles, Guidelines for the application of HACCP system. HACCP Quality manuals. Quality Improvement Techniques: Quality Improvement Plans (QIP); Quality Control Circles (QCC) and Total quality management (TQM).	9	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4, K5, K6
VI	Self Study for Enrichment (Not included for End Semester Examination) Laboratory quality procedures and assessment of laboratory performance, Applications in different food industries, Food adulteration and food safety.	-	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4, K5, K6

Text Books

1. Bhatia, R. and Ichhpujan, R.L. (2014) Quality assurance in Microbiology. CBS Publishers and Distributors, New Delhi. .
2. Kher, C.P. (2000) Quality control for the food industry. ITC Publishers, Geneva.
3. Philip, A.C. Reconceptualising quality (2001) New Age International Publishers, Bangalore.
4. Jood, S. and N. Khetarpaul, (1991) Food Preservation. Agrotech Publishing Academy. Jaipur.
5. Manay, S. N. and M. Shadaksharawamy, (2001) Foods, Facts and Principles. 3rd Edition, New age International. New Delhi.

Reference Books

1. Yong-Jin Cho, Sukwon Kang. (2011) Emerging Technologies for Food Quality and Food Safety Evaluation, CRC Press.
2. Alli Inteaz, (2003) Food Quality Assurance: Principles and Practices, CRC Press.
3. Vasconcellos J. Andres, (2003) Quality Assurance for the Food Industry: A Practical Approach, CRC Press.

Web References

1. https://en.wikipedia.org/wiki/Quality_assurance<https://www.omicsonline.org/scholarly/food-quality-assurance-journals-articles-pptslist.php><http://www.fao.org/3/v5380e/V5380E05.htm>
2. <https://www.aaps.ca/principles-of-qaqc-in-the-food-industry.php>
3. <http://ecoursesonline.iasri.res.in/mod/page/view.php?id=1019>
4. <http://egyankosh.ac.in/bitstream/123456789/11486/5/Unit-1.pdf>
5. https://www.researchgate.net/publication/304351925_Relationship_between_sensory_and_instrumental_measurement_of_texture

Pedagogy

Chalk and talk, Power Point Presentation, Quiz, Assignments, Group Discussions, Seminar, and Assignment.

Course Designer

Dr. E.Priya

ANNEXURE O

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)
NATIONALLY ACCREDITED (III CYCLE) WITH “A” GRADE BY NAAC
ISO 9001:2015 CERTIFIED
TIRUCHIRAPPALLI – 620 018

DEPARTMENT OF BIOTECHNOLOGY



B.Sc., BIOTECHNOLOGY
SYLLABUS
2023 – 2024 and Onwards



Cauvery College for Women (Autonomous), Trichy -18
Department of Biotechnology
B.Sc., Biotechnology
Learning Outcome Based Curriculum Framework (CBCS – LOCF)
(For the Candidates admitted from the Academic year 2023-2024 and onwards)

SEMESTER I

Semester	Part	Course	Course Title	Course Code	Inst. Hrs. / week	Credits	Exam			Total
							Hrs.	Marks		
								Int	Ext	
I	I	Language Course-I (LC)	Podhu Tamil – 1	23ULT1	6	3	3	25	75	100
			Hindi ka Samanya Gyan aur Nibandh	23ULH1						
			Poetry, Grammar and History of Sanskrit Literature	23ULS1						
			Foundation Course: Paper I - French I	23ULF1						
	II	English Language Course - I (ELC)	General English -I	23UE1	6	3	3	25	75	100
	III	Core Course – I (CC)	Cell and Molecular Biology	23UBT1CC1	5	5	3	25	75	100
		Core Practical - I (CP)	Cell and Molecular Biology (P)	23UBT1CC1P	3	3	3	25	75	100
		First Allied Course- I (AC)	Biological Chemistry	23UBT1AC1	4	3	3	25	75	100
		First Allied Course- II (AP)	Biological Chemistry (P)	23UBT1AC2P	4	3	3	25	75	100
	IV	Ability Enhancement Compulsory Course-I (AECC)	Value Education	23UGVE	2	2	-	100	-	100
	Total				30	22				700

Semester – I	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HOURS/WEEK	CREDITS
23UBT1CC1	CELL AND MOLECULAR BIOLOGY	CORE	5	5

Course Objectives

- To learn about the fundamentals of cell and its structure.
- To study the cellular organelles and membrane
- To understand the molecular structure and functions of DNA and RNA
- To evaluate the mechanism of transcription and translational process

Course Outcome and Cognitive Level Mapping

Upon successful completion of the course, the students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Understand the basic knowledge about cell and to compare the structure of prokaryotic cell with eukaryotic cell	K1, K2
CO2	Illustrate the fundamentals about the structural and functional aspects of cell organelles and cell membrane	K2
CO3	Categorize the importance of cells to the intra and extracellular environment by discussing about the intracellular signaling pathways	K3
CO4	Analyze the structure and functions of nucleic acid and acquire knowledge about the molecular mechanism of DNA and RNA	K4
CO5	Analyze the molecular mechanism of transcription, translation and post translational modifications of proteins	K4

Mapping of CO with PO and PSOs

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	2	1	3	2	2	2	1
CO2	3	3	3	2	1	3	3	2	2	1
CO3	3	3	3	3	2	3	3	3	3	2
CO4	3	3	3	3	2	3	3	3	2	1
CO5	3	3	3	2	2	3	3	3	2	1

“1” – Slight (Low) Correlation, “2” – Moderate (Medium) Correlation,
“3” – Substantial (High) Correlation, “-” indicates there is no Correlation.

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	Cell Structure: Discovery and diversity of cells - Cell theory - Structure of prokaryotic (bacteria) and eukaryotic cells (plant and animal cells).	10	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	Introduction to Cellular Organelles: Biomacromolecules and Biomicromolecules (Primary functions in the cell). Structure and Functions of Cell Organelles: Cell wall - Cell membrane - Cytoplasm - Nucleus - Endoplasmic reticulum - Ribosomes - Golgi bodies - Plastids - Vacuoles - Lysosomes - Mitochondria - Flagella - Cilia - Centrosome and Centrioles - Cytoskeleton.	17	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	Cell Division and Cell Signalling: Cell cycle - Cell cycle check points - Cell division - Mitosis and Meiosis - Cellular differentiation - Cell junctions - Cell Adhesion - Extra Cellular Matrix - Cell to cell communications - Signal transduction - G - Protein Coupled Receptors Signal transduction pathways.	16	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	Structure and Functions of DNA and RNA: Structure and functions of DNA- Types of RNA - Central Dogma of the cell: DNA - Replication in prokaryotes and eukaryotes - Enzymes and Proteins involved in Replication - Inhibitors of DNA Replication.	16	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	Introduction to Transcription and Translation: Transcription - Transcription in prokaryotes and eukaryotes - initiation, elongation, termination and Post Transcriptional Modifications. Translation in prokaryotes and eukaryotes - Similarities and differences in prokaryotic and eukaryotic translation - Post Translational Modifications - Protein Sorting - Protein degradation	16	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
VI	Self-Study for Enrichment (Not Included for End Semester Examination) Eukaryotic rRNA genes, formation of eukaryotic tRNA molecules.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

Text books

1. Harvey, L., Arnold, B., Lawrence, Z., Paul, M., David, B., James, D. (2020). *Molecular Cell biology*. 5th Edition. W. H. Freeman Publishers.
2. Bruce, A. (2014). *Molecular Biology of the cell*. 6th Edition. W. W. Norton Publishing Company.
3. Devasena, T. (2012). *Cell Biology*, Oxford University Press.
4. Robert, W. (2012). *Molecular Biology*. 5th Edition. McGraw Hill.
5. James Watson, D. (2011). *The Double Helix: A personal account of the Discovery of the Structure of DNA*. Touchstone Publishers.

Reference books

1. Brown, T. A. (2021). *Gene Cloning and DNA Analysis: An Introduction*. 8th Edition. Wiley and Sons.
2. Cooper, G. (2018). *The Cell: A Molecular Approach*, 8th Edition. Oxford University Press.
3. Thomas Pollard, D., William Earnshaw, C., Jennifer Lippincott, S., Graham Johnson, T. (2017). *Cell Biology*. 3rd Edition. Elsevier publishers.
4. James Watson, D., Baker Tania, A., Bell Stephen, P., Alexander, G., Michael, L., Losick, R. (2016). *Molecular Biology of the gene*. 7th Edition. Pearson Publishers.
5. Walker John, M. & Ralph, R. (2015). *Molecular Biology and Biotechnology*. 6th Edition. RSC Publishing.

E – Books

1. <https://www.pdfdrive.com/molecular-cell-biology-molecular-cell-biology-e7302545.html>
2. <https://www.pdfdrive.com/cell-division-genetics-and-molecular-biology-cell-division-genetics-and-molecular-biology-e22406140.html>
3. <https://www.pdfdrive.com/molecular-cell-biology-e187264624.html>
4. <https://www.pdfdrive.com/dna-replication-recombination-and-repair-molecular-mechanisms-and-pathology-e187695166.html>
5. <https://www.pdfdrive.com/a-characterization-of-the-role-of-post-translational-modifications-in-transcriptional-regulation-by-e74315851.html>

Web References

1. https://www.lehigh.edu/~inbios21/PDF/Fall2008/Lopresti_11142008.pdf
2. <https://www.genome.gov/geneticsglossary/Organelle.pdf>
3. http://kea.kar.nic.in/vikasana/bridge/biology/chap_14.pdf
4. <http://ncbr.muni.cz/~martinp/C3210/StructBioinf3.pdf>
5. <https://sites.engineering.ucsb.edu/~shell/che170/DNA-notes.pdf>

Pedagogy

Chalk and Talk, PPT, Animation and Videos

Course Designer

Dr. R. RAMESHWARI

Semester – I	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HOURS/WEEK	CREDITS
23UBT1CC1P	CELL AND MOLECULAR BIOLOGY (P)	CORE	3	3

Course Objectives

- To perform experiments using microscopes and micrometry.
- To study about cells and their morphology by appropriate techniques.
- To gain knowledge in cell division and their stages.
- To develop skills related to the Isolation and Separation Techniques of Nucleic acids.

Course Outcome and Cognitive Level Mapping

Upon the successful completion of the course, students will be able to

CO Number	CO Statement	Cognitive Level
CO 1	Define and describe the basic instruments involved in Biology.	K1, K2
CO 2	Discuss and differentiate the morphology of various types of cells.	K2
CO 3	Classify and illustrate the different cellular organelles.	K3
CO 4	Categorize the different types and stages of cell division.	K4
CO 5	Illustrate the techniques involved in size analysis of macromolecules.	K4

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2	3	2	3	3	1
CO2	3	3	3	3	2	3	2	3	3	1
CO3	3	2	3	3	2	3	2	3	3	1
CO4	3	2	3	3	1	3	2	2	3	1
CO5	3	3	3	3	1	3	2	2	3	2

“1” – Slight (Low) Correlation, “2” – Moderate (Medium) Correlation, “3” – Substantial (High) Correlation, “-” indicates there is no correlation.

Syllabus

1. Laboratory rules, regulations and safety measures.
2. Components of a Compound / Light Microscope.
3. Blood smear preparation and Identification of Blood cells.
4. Measurement of Cell Size by Micrometry.
5. Morphological Characterization of various types of Plant tissue cells.
6. Cell fractionation and Identification of cell organelles (Demo)
7. Barr body identification from Buccal Smear.
8. Observation of Mitosis in Onion root tip cells.
9. Observation of Binary fission in Yeast Cells.
10. Cell Counting and viability in Yeast Cells
11. Enumeration of Eukaryotic Cells - Red Blood Cells
12. Enumeration of Eukaryotic Cells - White Blood Cells
13. Isolation and purification of Genomic DNA from Human Cheek Cells.
14. Separation of DNA by using AGE
15. Separation of Protein by using SDS – PAGE

Reference Books

1. Trigunayat, M. M., Trigunayat, K. (2019). *A Manual of Practical Zoology: Biodiversity, Cell Biology, Genetics & Developmental Biology Part-1*. Scientific Publishers.
2. Amit, G., Bipin Kumar, S. (2019). *Practical Laboratory Manual – Cell Biology*. Lambert Academic Publishing.
3. Hubel, A. (2018). *Preservation of cells: a practical manual*. John Wiley & Sons.
4. Das, D. (2017). *ESSENTIAL PRACTICAL HANDBOOK OF CELL BIOLOGY & GENETICS, BIOMETRY & MICROBIOLOGY: A LABORATORY MANUAL*. Academic Publishers.
5. Rybicki, E. (2014). *A Manual of Online Molecular Biology Techniques*. University of Cape Town.

E - Books

1. https://www.google.co.in/books/edition/CELL_AND_MOLECULAR_BIOLOGY/Qy7IoupYJacC?hl=en&gbpv=1&printsec=frontcover
2. https://www.academia.edu/71052580/Techniques_in_Molecular_Biology_Lab_Manual_2
3. https://www.deanza.edu/faculty/heyerbruce/b6b_pdf/Bio6B-Manual_W19.pdf
4. https://www.researchgate.net/publication/330654692_Cell_Biology_Practical_Manual
5. <https://onlinelibrary.wiley.com/doi/book/10.1002/0470033487>
6. <https://www.bioscience.com.pk/topics/zoology/item/614-chick-embryo-at-24-hours>

Pedagogy

Practical Observation, Video and Demo

Course Designer

Ms. P. ILAMATHY

Semester – I	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HOURS/WEEK	CREDITS
23UBT1AC1	BIOLOGICAL CHEMISTRY	ALLIED	4	3

Course Objectives

- To learn about the fundamentals of atoms and periodic table classification.
- To study the concepts of acids and bases.
- To understand the fundamentals of carbohydrates, lipids, fatty acids and nucleic acids.
- To evaluate the structural properties of proteins, amino acids, vitamins and hormones.

Course Outcome and Cognitive Level Mapping

Upon successful completion of the course, the students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Understand the basic knowledge about structure of atoms, periodic properties of elements and differentiate the properties of chemical substances	K1, K2
CO2	Illustrate the types of chemical reactions and to calculate the stoichiometry and rate	K2
CO3	Categorize the importance of classification, properties, structure of carbohydrates and various biochemical cycles involved in carbohydrate metabolism	K3
CO4	Analyze the classification and structural properties of lipids, fatty acids and nucleic acids	K4
CO5	Determine the chemistry, classification, structural properties of proteins, amino acids, vitamins and hormones	K4

Mapping of CO with PO and PSOs

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	2	1	3	3	2	2	1
CO2	3	3	3	2	2	3	3	3	2	2
CO3	3	3	3	2	1	3	3	3	2	1
CO4	3	3	3	3	2	3	3	3	3	3
CO5	3	3	3	3	2	3	3	3	3	3

“1” – Slight (Low) Correlation, “2” – Moderate (Medium) Correlation,
“3” – Substantial (High) Correlation, “-” indicates there is no Correlation.

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	Basics of Biological Chemistry: Acids & Bases properties and differences, Concepts of acids and bases. pH of solution, pH scale, measurement of pH. Buffer solutions, properties of buffers, Henderson - Hasselbalch equation. The chemical foundation of life. Water: its unique properties, ionization of water, buffering action in biological system, properties and characteristics of water.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	Fundamentals of Carbohydrates and Biochemical Cycles: Classification of carbohydrates. Properties of carbohydrates. Ring structure of sugars and conformation of sugars. Metabolism of Carbohydrates – Glycogenesis, Glycolysis, Glycogenolysis, TCA cycle.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	Classification of Lipids and Nucleic acids: Classification of Lipids. Properties and Biological importance of lipids. Metabolism of Fatty acids, triglycerides, phospholipids, cholesterol. β -oxidation of fatty acids. Classification of nucleic acids. Classification of DNA & RNA.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	Introduction to Proteins and Amino acids: Classification and structure of amino acids. Structural conformation of proteins. Classification of proteins. Properties and biological importance of amino acids and proteins. Degradation of Amino acids and Urea Cycle. ATP production. Oxidative phosphorylation, Electron transport chain and Photophosphorylation.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	Vitamins and Minerals: Vitamins: Definition, Classification. Fat soluble vitamins-sources, structure and physiological functions; Water soluble vitamins-sources, structure and physiological functions. Vitamin deficiency diseases. Minerals: Macro minerals and micro minerals - sources and functions	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
VI	Self-Study for Enrichment (Not Included for End Semester Examination) Weak interactions in aqueous systems, water as a reactant and fitness of the aqueous environment. Lipids as signals, cofactors and pigments.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

Text books

1. Singh, S. P., Singh, A. N. (2021). *Textbook of Biochemistry*. CBS Publishers.
2. Gupta, S. N. (2020). *Concepts of Biochemistry*. Rastogi Publications.
3. Sathyanarayana, U., Chakrapani, U. (2020). *Biochemistry*, 5th Edition. Elsevier Publishers.
4. Seema Pavgi, U. (2020). *Textbook of Biochemistry*. 1st Edition. Dreamtech Press.
5. Padmaja Agarkar, H., Yogesh, K. & Rammohan, R. (2020). *Biochemistry*. Nirali Prakashan Publishers.

Reference books

1. Manzoor Malik, M. (2021). *Fundamentals of Biochemistry*. LAP Lambert Academic Publishing.
2. Vikrant, V. (2021). *Biochemistry*. Discovery Publishing House Pvt Ltd.
3. Brailsford Robertson, T. (2020). *Principles of Biochemistry*. MJP Publishers.
4. Jeremy Berg, M., Stryer, L., Tymoczko, J., Gatto, G. (2019). *Biochemistry*. Freeman and Company.
5. Dean Appling, R., Spencer Anthony, J., Cohill, C., Christopher Mathews, K. (2017). *Biochemistry Concepts and Connections*. Pearson Education.

E – Books

1. <https://www.pdfdrive.com/lehninger-principles-of-biochemistry-d158404366.html>
2. <https://www.pdfdrive.com/biochemistry-d196362531.html>
3. <https://www.pdfdrive.com/biochemistry-genetics-molecular-biology-d18198970.html>
4. <https://www.pdfdrive.com/marks-basic-medical-biochemistry-a-clinical-approach-5th-edition-e158491166.html>
5. <https://www.pdfdrive.com/biochemistrystryer-e25312085.html>

Web References

1. <http://ecoursesonline.iasri.res.in/course/view.php?id=422>
2. <https://nptel.ac.in/courses/102105034/>
3. <https://youtu.be/DhwAp6yQHQI>
4. <https://agrimoon.com/fundamentals-of-biochemistry-pdf-book/>
5. <http://courseware.cutm.ac.in/courses/fundamentals-of-biochemistry/>

Pedagogy

Chalk and Talk, PPT, Animation and Videos

Course Designer

Ms.P. ILAMATHY

Semester–III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HOURS/ WEEK	CREDITS
23UBT1AC2P	BIOLOGICAL CHEMISTRY (P)	ALLIED	4	3

Course Objectives

- To acquire skills about the various techniques in Biochemical Analysis
- To understand the basic concepts of Chemical preparations.
- To study about the qualitative and quantitative analysis of various chemical compounds.
- To perform experiments on detection of chemicals present in unknown solutions.

Course Outcome and Cognitive Level Mapping

Upon successful completion of the course, students will be able to

CO Number	CO Statement	Cognitive Level
CO 1	Demonstrate and discuss the genomic DNA and protein isolation method from different sources	K1, K2
CO 2	Describe and outline the method of qualitative and quantitative analysis of organic compounds.	K2, K3
CO 3	Classify and categorize the organic compound according to the experimental analysis	K3, K4
CO 4	Analyse and estimate the quantity of compounds in unknown given sample	K4, K5
CO 5	Analyze, compare and distinguish the nature of various organic classes of compounds qualitatively.	K4, K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2	3	2	3	3	1
CO2	3	3	3	3	2	3	3	3	3	1
CO3	3	2	3	3	2	3	2	3	3	1
CO4	3	2	3	3	2	3	2	2	3	3
CO5	3	3	3	3	2	3	3	2	3	2

“1” – Slight (Low) Correlation, “2” – Moderate (Medium) Correlation,
 “3”–Substantial (High) Correlation, “-” indicates there is no Correlation.

Syllabus

1. Units and Measurements.
2. Preparation of Molarity, Normality solutions and Buffers.
3. Determination of pH and use of pH meter.

Qualitative Analysis

4. Qualitative analysis of carbohydrates - Glucose, sucrose and starch.
5. Qualitative analysis of amino acids - Tyrosine, Tryptophan, Arginine, Proline and Cysteine.

Quantitative Analysis

6. Analyse Blood Glucose Level

Volumetric Analysis

7. Estimation of Glycine- Formal Titration.
8. Determination of Ascorbic acid – DCPIP method.
9. Estimation of Ferrous sulphate using standard Mohr's salt.

Colorimetric Analysis

10. Estimation of glucose - DNS method.
11. Estimation of Cholesterol- Zak's method
12. Estimation of proteins – Bradford's method

Chromatographic Analysis

13. Separation of plant pigments using Paper chromatography

Reference Books

1. Evangeline, J. (2022). *Manual of Practical Medical Biochemistry*. 3rd edition. Jaypee Brothers Medical Publishers.
2. Chawla, R. (2020). *Practical Clinical Biochemistry: Methods and Interpretations*. JP Medical Ltd.
3. Kaushik, G.G., Neha, S., Sabira, D., Ruchi, J. (2020). *Practical Manual of Biochemistry*. CBS Publishers and Distributors
4. Gupta, R.C., Bhargava, S. (2018). *Practical Biochemistry*. 5th Edition. CBS Publishers.
5. Plummer, D. T. (2017). *An Introduction to Practical Biochemistry*. 3rd Edition. Tata McGraw-Hill Education.
6. Jayaraman, J. (2011). *Laboratory Manual in Biochemistry*, New Age International Pvt Ltd Publishers.

E-Books

1. <https://skyfox.co/wp-content/uploads/2020/12/Practical-Manual-of-Biochemistry.pdf>
2. <https://www.pdfdrive.com/practical-biochemistry-e187196416.html>
3. <https://www.pdfdrive.com/practical-clinical-biochemistry-e187182591.html>
4. <https://www.pdfdrive.com/marks-basic-medical-biochemistry-a-clinical-approach-5th-edition-e158491166.html>
5. https://www.researchgate.net/publication/313745155_Practical_Biochemistry_A_Student_Companion

Web References

1. <https://biotech01.vlabs.ac.in/List%20of%20experiments.html>
2. <https://vlab.amrita.edu/?sub=3&brch=63&sim=156&cnt=1>
3. <https://www.vrlabacademy.com/Experiments/501/Medical-Biochemistry-Laboratory.html>
4. <https://www.asbmb.org/education/online-teaching/online-lab-work>

Pedagogy

Practical Observation and Demo

Course Designer

Dr. M. KEERTHIGA

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)
NATIONALLY ACCREDITED (III CYCLE) WITH “A” GRADE BY NAAC
ISO 9001:2015 CERTIFIED
TIRUCHIRAPPALLI – 620 018

DEPARTMENT OF BIOTECHNOLOGY



B.Sc., BIOTECHNOLOGY
SYLLABUS
2022 – 2023 and Onwards



Cauvery College for Women (Autonomous), Trichy -18

Department of Biotechnology

B.Sc., Biotechnology

Learning Outcome Based Curriculum Framework (CBCS - LOCF)

(For the Candidates admitted from the Academic year 2022-2023 and onwards)

SEMESTER III

Semester	Part	Course	Course Title	Course Code	Inst. Hrs. / week	Credits	Exam			Total	
							Hrs.	Marks			
								Int	Int		
III	I	Language Course-III (LC)	Kappiyamum Nadagamum	22ULT3	5	3	3	25	75	100	
			Hindi Literature & Grammar – III	22ULH3							
			Prose, Textual Grammar and Vakyarachana	22ULS3							
			Intermediate French – I	22ULF3							
	II	English Language Course-III(ELC)	Learning Grammar Through Literature - I	22UE3	6	3	3	25	75	100	
	III	Core Course– IV(CC)	rDNA Technology	22UBT3CC4	6	6	3	25	75	100	
		Core Practical - III(CP)	rDNA Technology(P)	22UBT3CC3P	3	3	3	40	60	100	
		Second Allied Course-I (AC)	Bioinformatics	22UBT3AC4	4	3	3	25	75	100	
		Second Allied Course- II (AP)	Bioinformatics (P)	22UBT3AC5P	4	3	3	40	60	100	
	IV	Generic Elective Course- I (GEC)	Chemistry in Everyday Life	22UCH3GEC1	2	2	3	25	75	100	
			Basic Tamil -I	22ULC3BT1							
			Special Tamil - I	22ULC3ST1							
		Extra Credit Course	SWAYAM	As per UGC Recommendation							
		Total				30	23				700

Semester – III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HOURS/WEEK	CREDITS
22UBT3CC4	rDNA TECHNOLOGY	CORE	6	6

Course Objectives

- To upskill students in rDNA technology and their application in the field of genetic engineering
- To illustrate the use of modern tools and techniques for gene manipulation and gene expressional analysis for further studies in the area of genetic engineering.
- To expose students to the applications of rDNA technology in biotechnological research.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Knowledge Level
CO1	Utilize and infer the knowledge on principles of Genetic Engineering in application of biotechnological research	K1, K2
CO2	Illustrate the knowledge on various tools and the genetic engineering strategies for transgenic products and its applications.	K2
CO3	Develop the Genomic and cDNA libraries and compare the tools such as Enzymes, Vectors, Gene transfer and selection techniques in the rDNA Technology.	K3, K4
CO4	Classify the versatile techniques in rDNA Technology and to explain the concepts of genetic transformation, gene sequencing, gene manipulation and genetically modified organisms.	K4, K5
CO5	Elaborate the applications of Genetic engineering in basic and applied biology, proficiency in designing and conducting experiments involving genetic manipulation for societal applications.	K6

Upon the successful completion of the course, students will be able to

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	2	1	3	2	2	2	1
CO2	2	3	3	3	2	3	2	2	1	1
CO3	3	2	3	2	2	3	2	2	2	1
CO4	3	2	3	2	2	3	2	2	1	1
CO5	2	2	3	3	3	2	2	3	3	3

“1” – Slight (Low) Correlation, “2” – Moderate (Medium) Correlation,
“3” – Substantial (High) Correlation, “-” indicates there is no correlation.

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	Introduction to recombinant DNA (rDNA) technology: Milestones in genetic engineering, Tools of recombinant DNA technology: Enzymes - Restriction endonucleases: Type I & II properties and its applications. DNA modifying enzymes and their applications: DNA & RNA polymerase, reverse transcriptase, terminal transferase; nucleases (S1 nucleases) T ₄ polynucleotide kinase, Alkaline Phosphatase and ligase (<i>E.coli</i> & T ₄).	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	Vectors - Definition and properties. Plasmid vectors-pBR and pUC series, Bacteriophage vectors - lambda and M13, Viral vectors-Animal viral vectors - SV40 and Retrovirus. Plant viral vectors - CaMV vector and TMV vector. Cosmids, Shuttle vectors. BACs, YACs, MACs.	16	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	Molecular Cloning: Cloning strategies. Cloning System for amplifying different sized fragments, Cloning System for producing single-stranded and mutagenized DNA. Methods of Gene transfer Microinjection, Electroporation, gene gun, CaCl ₂ mediated and Polyethylene Glycol Mediated.	20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
IV	Construction of Genomic and cDNA libraries. Recombinant selection and Screening: Selection methods - Antibiotics, GUS expression, Blue White Selection and colony hybridization. Principle of Nucleic acid hybridization assays, and microarrays.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	DNA amplification using PCR – principle, types and Applications. Real Time PCR, Nested PCR, Assembly PCR, and Asymmetric PCR. DNA Fingerprinting. Principles and applications of RFLP, AFLP, RAPD and DGGE. DNA Sequencing - Chemical degradation, Chain termination, Automated sequence and Next Generation Sequencing, Site Directed Mutagenesis	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	Self-Study for Enrichment (Not Included for End Semester Examination) Nick translation – Klenow enzyme, Ti Plasmid, lipofection, Probe construction, Chromosome walking and jumping.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Books

1. Bernard, R.G., Cheryl, L.P. (2022). *Molecular Biotechnology: Principles and Applications of Recombinant DNA*. 6th Edition. ASM Press, Washington DC.
2. Brown, T. A. (2020). *Gene Cloning and DNA Analysis: An Introduction*. 8th Edition. Wiley-Blackwell book.
3. Jogdand, S.N, (2019). *Gene biotechnology*. Fourth edition. Himalaya Publishing House.
4. Jocelyn, E. K., Elliott, S.G., Stephen T.K. (2018). *Lewin's Genes XII*. Jones & Bartlett Learning.
5. David, I. (2018). *An Introduction to Genetic Engineering*. Syrawood Publishing House.

Reference Books

1. Vineet, K., Muhammad, B., Luiz Fernando, R.F., Hafiz, M.I. (2023). *Genomics Approach to Bioremediation: Principles, Tools, and Emerging Technologies*. Wiley- Blackwell book.
2. Santosh, K.U. (2021). *Genome Engineering for Crop Improvement*, Wiley- Blackwell book.
3. Muhammad Sarwar, K.I., Ahmad Khan, D.B. (2016). *Applied Molecular Biotechnology The Next Generation of Genetic Engineering*. CRC Press, Taylor and Francis Group.
4. Old, R. W., Primrose, S. B., Twyman, R. M. (2001). *Principles of Gene Manipulation: an Introduction to Genetic Engineering*. Oxford: Blackwell Scientific Publications.
5. Green, M. R., Sambrook, J. (2012). *Molecular Cloning: a Laboratory Manual*. Cold Spring Harbor, NY: Cold Spring Harbor Laboratory Press

E books

1. https://youtube.be/Yh9w_fyvpUk
2. https://www.bx.psu.edu/~ross/workmg/Isolat_analyz_genes_Chpt3.htm
3. www.biologydiscussion.com/essay/tools-of-recombinant-dna-technology-essay-tools-biotechnology/75954
4. <https://youtube.be/D3If9ycpyXM>

Web links

1. <https://www.pdfdrive.com/molecular-biotechnology-principles-and-applications-of-recombinant-dna-4th-edition-d162050162.html>
2. <https://www.pdfdrive.com/modern-tools-for-genetic-engineering-d187396945.html>
3. <https://www.pdfdrive.com/biotechnology-molecular-biology-and-genetic-engineering-of-plants-d50502615.html>
4. <https://www.pdfdrive.com/applied-molecular-biotechnology-the-next-generation-of-genetic-engineering-d42102084.html>
5. <https://www.pdfdrive.com/gene-cloning-and-dna-analysis-d33417027.html>

Pedagogy

Power point presentation, Group Discussion, Seminar, Assignment, Animations.

Course Designers

1. Ms. P. ILAMATHY
2. Dr. M. KEERTHIGA

Semester–III	Internal Marks: 40		External Marks: 60	
COURSE CODE	COURSE TITLE	CATEGORY	HOURS/ WEEK	CREDITS
22UBT3CC3P	rDNA TECHNOLOGY (P)	CORE	3	3

Course Objectives

- To acquire skills about the various techniques in recombinant DNA technology.
- To understand the types of enzymes used to produce recombinants.
- To study about the experiments involving genetic manipulation.
- To perform experiments on crime detection.

Course Outcome and Cognitive Level Mapping

Upon the successful completion of the course, students will be able to

CO Number	CO Statement	Cognitive Level
CO 1	Demonstrate and discuss the genomic DNA and protein isolation method from different sources	K1, K2
CO 2	Describe and outline the method of Agarose Gel Electrophoresis and SDS PAGE for DNA and Protein identification	K2, K3
CO 3	Classify and categorize the restriction digestion and ligation of DNA	K3, K4
CO 4	Analyse the working principles of PCR, RFLP and other important Genetic Engineering techniques.	K4
CO 5	Analyze, compare and distinguish the recombinant DNA products.	K4, K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2	3	2	3	3	1
CO2	3	3	3	3	2	3	2	3	3	1
CO3	3	2	3	3	2	3	2	3	3	1
CO4	3	2	3	3	1	3	2	2	3	1
CO5	3	3	3	3	1	3	2	2	3	2

“1” – Slight (Low) Correlation, “2” – Moderate (Medium) Correlation,
“3”–Substantial (High) Correlation, “-” indicates there is no Correlation.

Syllabus

1. Isolation of genomic DNA from plant tissue.
2. Isolation of genomic DNA from Animal cells.
3. Isolation of genomic DNA from Bacteria.
4. Isolation of Plasmid DNA.
5. Protein Precipitation.
6. Protein Quantification by Spectrophotometer Method.
7. Size analysis of protein by SDS PAGE.
8. Size analysis of DNA by Agarose Gel Electrophoresis.
9. RFLP.
10. DNA Restriction Digestion and Ligation.
11. PCR amplification.
12. RAPD.
13. Preparation of competent cells *E. coli* cells.
14. Transformation of *E. coli* with Plasmid DNA using CaCl₂.

Reference Books

1. Siddra, I., Imran, U.L.H. (2019). *Recombinant DNA Technology*. 1st Edition. Cambridge Scholar.
2. Tiwari, S., Sharma, M. (2018). *Recombinant DNA Technology in the synthesis of Human Insulin*. LAP LAMBERT Academic Publishing.
3. Roebbe, W. (2021). *Genetic Engineering*. Springer Nature B.V.
4. Punia, M.S. (2018). *A Laboratory Manual of Plant Biotechnology and Molecular Biology "Plant Biotechnology and Molecular Biology : A Laboratory Manual*. Scientific Publishers.
5. Khalid, Z. M., Sameena, M.L, Rovidh Saba, R. (2020). *Advanced Methods in Molecular Biology and Biotechnology. A Practical Lab Manual*. Elsevier, Science Publishers.

E-Books

1. https://books.google.co.in/books?id=WTv5Bte1R7YC&pg=PP9&source=gbs_selected_pages&cad=3#v=onepage&q&f=false
2. https://www.google.co.in/books/edition/Genetic_Engineering_of_Horticultural_Cro/fSk0DwAAQBAJ?hl=en&gbpv=1&dq=genetic+engineering&printsec=frontcover
3. https://www.google.co.in/books/edition/An_Introduction_to_Genetic_Engineering/5qixMSCEAhAC?hl=en&gbpv=1&dq=genetic+engineering&printsec=frontcover
4. https://www.google.co.in/books/edition/Genetic_Engineering/8DFIDwAAQBAJ?hl=en&gbpv=1&dq=genetic+engineering&printsec=frontcover
5. <https://www.cshlpress.com/pdf/sample/2013/MC4/MC4FM.pdf>

Web Links

1. [https://www.idosi.org/wjms/16\(3\)19/8.pdf](https://www.idosi.org/wjms/16(3)19/8.pdf)
2. <https://www.ndvsu.org/images/StudyMaterials/Biotech/Recombinant-DNA-Technology.pdf>
3. https://chaudhary.kau.edu.sa/files/0030235/files/19046_lect%20recombinant%20dna%20techmolecular%20genetics%20lect%202nd%20yr%20mt-1st%20semester.pdf
4. [https://bio.libretexts.org/Bookshelves/Genetics/Genetics_Agriculture_and_Biotechnology_\(Suz_a_and_Lee\)/01%3A_Chapters/1.11%3A_Recombinant_NA_Technology](https://bio.libretexts.org/Bookshelves/Genetics/Genetics_Agriculture_and_Biotechnology_(Suz_a_and_Lee)/01%3A_Chapters/1.11%3A_Recombinant_NA_Technology)

Pedagogy

Practical Observation and Demo

Course Designer

Dr. R. UMA MAHESWARI

Semester – III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HOURS/WEEK	CREDITS
22UBT3AC4	BIOINFORMATICS	ALLIED	4	3

Course Objectives

- To learn about the fundamentals of Bioinformatics
- To become familiarize with the databases for structure prediction and sequence analysis of macromolecules.
- To understand the usage of basic online bioinformatics tools and techniques
- To apply bioinformatics concepts and tools in various fields

Course Outcome and Cognitive Level Mapping

Upon successful completion of the course, the students will be able to

CO Number	CO Statement	Cognitive Level
CO1	Acquire knowledge about the developments and applications of Bioinformatics	K1, K2
CO2	Gain knowledge about the importance of bioinformatics, databases, tools, software of bioinformatics and different types of biological databases	K2
CO3	Understand the basics of sequence alignment, sequence analysis and protein structure prediction method.	K2
CO4	Introduce the importance of drug designing and apply the bioinformatics tools in medicine for drug discovery and identification of novel drugs	K3
CO5	Analyze the different applications of bioinformatics in various fields and explore upcoming areas of interest in bioinformatics	K4

Mapping of CO with PO and PSOs

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	2	1	3	3	2	2	1
CO2	3	3	3	3	1	3	3	3	3	1
CO3	3	3	3	3	1	3	2	2	2	2
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	2	3	3	2	3	2

**“1” – Slight (Low) Correlation, “2” – Moderate (Medium) Correlation,
“3” – Substantial (High) Correlation, “-” indicates there is no Correlation.**

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	Bioinformatics: Fundamentals of Bioinformatics - Introduction to concepts and terminology of Internet, Search engines, Databases and Softwares	10	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	Introduction to Tools and Databases: Review of basics about structure of macromolecules - DNA, RNA and Proteins. Online resources for Bioinformatics – Biological Databases – NCBI, Genbank, Swissprot. Sequence alignment – Multiple sequence alignment – CLUSTALW – Pairwise alignment – BLAST	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	Sequence Analysis and Alignment: Bioinformatics in genomics and proteomics – gene sequencing tools traditional methods – Maxam and Gilbert's method, Sanger's sequencing – structure prediction tools – Gene and protein expression analysis – similarity search databases – FASTA. Analysis of Phylogeny – Phylogenetic tree construction, computational analysis tools (SCHRODINGER) and visualization tools (RASMOL).	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	Introduction to Drug Discovery: History of drug discovery, Steps in drug design - Role of molecular docking in drug design. Introduction to Simulation softwares in biology – High throughput screening, AutoDock, ChemDraw, ADMET, PubMed and MEDLINE.	13	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	Applications of Bioinformatics in various fields: Applications of Bioinformatics in different fields – Genomics, Proteomics, Molecular medicine, Drug development, Forensic analysis, Evolutionary studies, Crop improvement and Environmental monitoring.	10	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
VI	Self-Study for Enrichment (Not Included for End Semester Examination) Bioinformatics in India, Emerging areas in bioinformatics, Importance of Quantitative Structure Activity Relationship (QSAR).	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

Text Books

1. Manoj, K. (2020). *Introduction to Bioinformatics*. Notion Press.
2. Noor, A.S., Khalid, R.H., Babajan, B., Ramu E. (2019). *Essentials of Bioinformatics, Volume I: Understanding Bioinformatics: Genes to Proteins*. MJP Publisher.
3. Shuba, G. (2010). *Bioinformatics*. Tata McGraw Hill publishing. India.
4. Rastogi, S.C., Mendiratta, N.R.P. (2004). *Bioinformatics methods and application*. Prentice-Hall of India private limited, New Delhi.
5. Pennington, S.R., Pun, M.J. (2002). *Proteomics: from protein sequence to function*. Viva books Pvt. Ltd.

Reference Books

1. Attwood, T.K., Parry - Smith, D.J. (2008). *Introduction to Bioinformatics*. Pearson Education.
2. Arthur, L. (2019). *Introduction to Bioinformatics*. Oxford University Press
3. Paola, L. (2011). *Systemic Approaches in Bioinformatics and Computational Systems Biology: Recent Advances*. Business Science Reference.
4. David, M. (2009). *Bioinformatics: sequence and genome analysis*. second edition., Taylor & Francis, UK;
5. Westhead, D.R. *Instant Notes in Bioinformatics.*, second edition. Taylor & Francis, UK; 2009.

E Books

1. <https://www.pdfdrive.com/introduction-to-bioinformatics-oxford-university-press-inc-e33405190.html>
2. <https://www.pdfdrive.com/essential-bioinformatics-e156837150.html>
3. <https://www.pdfdrive.com/bioinformatics-sequence-and-genome-analysis-e158336165.html>
4. <https://www.pdfdrive.com/bioinformatics-sequence-and-genome-analysis-e158336165.html>
5. <https://www.pdfdrive.com/bioinformatics-algorithms-techniques-and-applications-wiley-series-in-bioinformatics-e185077187.html>

Web Links

1. https://www.lehigh.edu/~inbios21/PDF/Fall2008/Lopresti_11142008.pdf
2. <https://pages.cs.wisc.edu/~bsettles/ibs08/lectures/01-intro.pdf>
3. https://www.eurl-ar.eu/CustomerData/Files/Folders/34-wgs/534_6-engage-list-of-online-bioinformatics-tools-and-software.pdf
4. <https://www.ks.uiuc.edu/Training/Tutorials/science/bioinformatics-tutorial/bioinformatics.pdf>
5. https://www.imsc.res.in/~kabru/parapp/bioinformatics_notes.pdf

Pedagogy

Chalk and Talk, PPT, Videos and Animations

Course Designer

Dr. M. AZEERA

Semester–III	Internal Marks: 40		External Marks: 60	
COURSE CODE	COURSE TITLE	CATEGORY	HOURS/ WEEK	CREDITS
22UBT3AC5P	BIOINFORMATICS (P)	ALLIED	4	3

Course Objectives

- To learn and execute various molecular analysis using bioinformatics tools.
- To study the basic concepts of Bioinformatics and its significance in Biological data analysis.
- To study about the different types of Biological databases.

Course Outcome and Cognitive Level Mapping

Upon successful completion of the course, the students will be able to

CO Number	CO Statement	Knowledge Level
CO 1	Demonstrate nucleotide analysis from various databases	K1
CO 2	Analyze various sequence format from different database	K2
CO 3	Perform basic phylogenetic analysis for species identification	K2
CO 4	Apply the sequencing skills in various molecular analysis	K3
CO 5	Identify and analyze Structural classifications of Proteins	K3

Mapping of CO with PO and PSOs

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2	3	2	3	3	2
CO2	3	3	3	3	2	3	2	3	3	2
CO3	3	2	3	3	2	3	2	3	3	1
CO4	3	2	3	3	1	3	2	2	3	1
CO5	3	3	3	3	2	3	2	1	3	2

“1” – Slight (Low) Correlation, “2” – Moderate (Medium) Correlation,
“3”–Substantial (High) Correlation, “-”indicates there is no Correlation.

Syllabus

1. Retrieval of Nucleotide Sequence from GenBank, EMBL, DDBJ database.
2. Retrieval of Protein Sequences from PIR, Swissprot/ Uniprot database.
3. Sequence file formats GenBank, FASTA and PIR.
4. Structure database –PDB and Pubchem.
5. Motif and domain analysis using PROSITE and SMART Motif database.
6. Pairwise Sequence analysis using BLAST.
7. Multiple Sequence analysis using ClustalW.
8. Construction of Phylogenetic tree.
9. Structural Databases of Proteins-SCOP and CATH
10. Pathway search using KEGG database.
11. Molecular visualization using Rasmol.
12. Homology Modeling using SWISS – MODEL Workspace.

Reference Books

1. Sofi, M. Y., Shafi, A., Masoodi, K. Z. (2021). *Bioinformatics for everyone*. Academic Press.
2. Shaik, N. A., Hakeem, K. R., Banaganapalli, B., Elango, R. (2019). *Essentials of Bioinformatics, Volume II*. Springer International Publishing.
3. Lassez, J. L., Rossi, R., Sheel, S. (2016). *Introduction to Bioinformatics using Action Labs*. Lulu. com.
4. Ranganathan, S., Nakai, K., Schonbach, C. (2018). *Encyclopedia of bioinformatics and computational biology: ABC of bioinformatics*. Elsevier.
5. Su, C. (2006). *Bioinformatics: A Practical Guide to the Analysis of Genes & Proteins*. Third edition. John Wiley & Sons.

E- Books

1. https://books.google.co.in/books?hl=en&lr=&id=RQcPBAAQBAJ&oi=fnd&pg=PP1&dq=bioinformatics+practical+&ots=ShaasZise2&sig=l-M9XZr8TWA5zHy5o3YY2C420nQ&redir_esc=y#v=onepage&q=bioinformatics%20practical&f=false
2. <https://link.springer.com/book/10.1007/978-3-540-74268-5>
3. <https://link.springer.com/article/10.1385/MB:23:2:139>

Web Links

1. <https://www.youtube.com/watch?v=rhCGy2ZndYo>
2. <https://www.youtube.com/watch?v=cq5lpR2Hqgw>
3. <https://www.youtube.com/watch?v=CBi0mXsG70s>
4. <https://www.youtube.com/watch?v=LokO-iFJdqc>

Pedagogy

Practical Observation and Demo

Course Designer

Ms. R. NEVETHA

Semester III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs. / Week	CREDITS
22UCH3GEC1	CHEMISTRY IN EVERYDAY LIFE	GENERIC ELECTIVE COURSE	2	2

Course Objectives

- To know about the importance of Chemistry in everyday life.
- To gain knowledge in food and nutrition.
- To learn the Chemistry of building materials and plastics.
- To learn about the role of chemicals in cosmetics.
- To gain knowledge about dyeing processes.

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Recognize and account the importance of role of chemistry in industry and pollution control.	K1 & K2
CO2	Exemplify the chemistry of materials used in everyday life.	K3
CO3	Categorize the chemistry of materials used in everyday life.	K4
CO4	Interpret the uses of chemicals in day today life and its impact.	K5
CO5	Illustrate and classify the importance of chemistry used in commercial and daily life.	K6

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	2	2	3	2	1	3	2
CO2	3	2	1	2	2	3	3	1	1	2
CO3	3	2	2	3	3	3	3	2	2	3
CO4	3	1	2	3	2	3	3	2	1	2
CO5	3	1	2	3	2	3	3	2	1	2

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” Indicates there is No Correlation.

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Chemistry of Air and Water: Air - components and their importance; photosynthetic reaction, air pollution, green - house effect, ozone layer depletion and the impact on our life style. Water - sources of water, qualities of potable water, soft and hard water, methods of removal of hardness - water pollution.	15	CO1, CO2, CO3, CO4	K1, K2, K3, K4, K5
II	Food and Nutrition: Carbohydrates, proteins, fats - definition and their importance as food constituents - balanced diet - calories minerals and vitamins (sources and their physiological importance). Chemicals in food production - fertilizers - need, natural sources; urea - NPK fertilizers and super phosphate.	15	CO1, CO2, CO3, CO4	K1, K2, K3, K4, K5
III	Building materials: Cement, ceramics, glass and refractories - definition - composition and application - plastics - polythene - PVC - bakelite - polyesters - melamine - formaldehyde resins - preparation and uses - merits and demerits of plastics - environmental impact and awareness. Biodegradable polymers.	15	CO1, CO2, CO3	K1, K2, K3, K4
IV	Chemistry of Cosmetics: Cosmetics - tooth paste - face powder - face cream - lip stick - hair dye - soaps (natural soaps, baby soap, and transparent soap) and detergents - shampoos, nail polish - perfumes - general formulation and preparations - possible hazards of cosmetic use.	15	CO1, CO2, CO3, CO4	K1, K2, K3, K4, K5

V	Dye Chemistry: Dyes - classification of dyes - based on mode of application - acid - basic - direct - mordant - vat - sulphur. Pigment - solvent and food dye - based on chemical constitution - nitroso dye - nitro dye - azo dye - thiazole dye - methods of dyeing - direct dyeing - vat dyeing - mordant dyeing and disperse dyeing.	15	CO1, CO2, CO3	K1, K2, K3, K4
VI	Self-Study for Enrichment (Not to be included for External Examination) Reverse osmosis - desalination of water - refining and bleaching agents - types of dyes and pigments - importance of pollution control.	-	CO1, CO2, CO3	K1, K2, K3, K4

Text Books

1. Vaithyanathan, S. (2006). Textbook of Ancillary Chemistry; Priya Publications, Karur.
2. Sharma, B. K. (2014). Industrial Chemistry; GOEL publishing house, Meerut, 16th edition.
3. Jayashree Ghosh. (2006). Fundamental Concepts of Applied Chemistry, S. Chand & Co. Publishers, 2nd edition.

Reference Books

1. Billmeyer, F. N. (1971). Textbook of Polymer Science, Wiley Interscience.
2. Prakash. (2011). Comprehensive Industrial Chemistry, Pragati Prakashan, Meerut.
3. Poucher, W. A., Joseph, A., & Brink. (2000). Jr. Perfumes, Cosmetics and Soaps, Springer.
4. De, A. K. (1990). Environmental Chemistry, New Age International Public Co.

Web References

1. https://www.educationusingpowerpoint.co.uk/preview-278-Chemistry_1_Air_and_Water.html.
2. <https://www.slideshare.net/harikafle944/food-and-nutrition-general-concept>.

3. <https://slideplayer.com/slide/261357/>.
4. <https://www.slideshare.net/amirhamza1234/presentation-on-dye>.

Pedagogy

Chalk and talk, PPT, Discussion, Assignment, Demo, Quiz, Seminar.

Course Designer

- Dr. K. Uma Sivakami

ANNEXURE P

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)

NATIONALLY ACCREDITED (IICYCLE) WITH “A” GRADE BY NAAC

ISO 9001:2015 Certified

TIRUCHIRAPPALLI

DEPARTMENT OF FOOD SERVICE MANAGEMENT AND DIETETICS



B.Sc., NUTRITION AND DIETETICS

SYLLABUS

2023-2024 and Onwards



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY-18

DEPARTMENT OF FOOD SERVICE MANAGEMENT AND DIETETICS

B.Sc., NUTRITION AND DIETETICS

LEARNING OUTCOME BASED CURRICULUM FRAME WORK (CBCS-LOCF)

(For the Candidates admitted from the Academic year 2023-2024 onwards)

Semester	Part	Course	Title	Course Code	Inst .Hrs. / week	Credits	Exam			Total
							Hrs.	Marks		
								Int	Ext	
I	I	Language Course – I (LC) – Tamil * / Other Languages *	Podhu Tamil -1	23ULT1	6	3	3	25	75	100
			Hindi ka Samanya Gyan aur Nibandh	23ULH1						
			Poetry, Grammar and History of Sanskrit Literature	23ULS1						
			Foundation Course: Paper I- French I	23ULF1						
	II	English Language Course-I (ELC)	General English– I	23UE1	6	3	3	25	75	100
	III	Core Course –I (CC)	Human Physiology	23UND1CC1	5	5	3	25	75	100
		Core Practical-I (CP)	Human Physiology (P)	23UND1CC1P	3	3	3	25	75	100
		First Allied Course –I (AC)	Food Chemistry	23UND1AC1	4	3	3	25	75	100
		First Allied Course –II (AP)	Food Chemistry (P)	23UND1AC2P	4	3	3	25	75	100
	IV	Ability Enhancement Compulsory Course– I (AECC)	Value Education	23UGVE	2	2	-	100	-	100
		TOTAL			30	22				700

SEMESTER I	INTERNAL MARKS: 25		EXTERNAL MARKS:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
23UND1CC1	HUMAN PHYSIOLOGY	CORE	5	5

Course Objectives

- To augment knowledge on anatomical perception of organs and its co-ordination with other organs.
- To understand the functions of the human organs.
- To study the structure of human organs.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO 1	Define the main structures composing human body	K1
CO 2	Explain process of the system in the body	K2
CO 3	Relate organ structure with function	K3
CO 4	Determine functions of cells, tissues and organs	K4
CO 5	Ascertain physiological adaptations	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3	3	3	2	3	2
CO2	3	3	3	2	3	3	3	2	3	2
CO3	3	3	3	2	3	3	3	2	3	2
CO4	3	3	3	2	3	3	3	2	3	2
CO5	3	3	3	2	3	3	3	2	3	2

“1” – Slight (Low) Correlation “2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation “-” indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	<p>a. Cell : Structure of organelles and functions. Tissues– Structure, classification and functions.</p> <p>b. Blood : Composition, functions, coagulation, factors affecting coagulation, blood groups.</p> <p>c. Immune system : Innate, acquired and active immunity, cell mediated immunity, humoral immunity and complement system</p>	15	CO1, CO2, CO3, CO4, CO5	K1,K2,K3,K4
II	<p>a. Heart and Circulatory system: Structure, cardiac cycle, cardiac output, factors affecting cardiac output, normal ECG, heart failure, blood pressure, control and factors affecting blood pressure.</p> <p>b. Respiratory system : Structure and functions, Lung volumes and lung capacities, Factors affecting efficacy of respiration.</p>	15	CO1, CO2, CO3, CO4, CO5	K1,K2,K3,K4
III	<p>a. Nervous System: General classification of nervous system-, Structural organization of nervous system – neuron, ganglion, neuroglia, nerves – classification - motor, sensory and mixed, Structure and functions - spinal cord, brain - anatomy and functions of cerebrum, cerebellum, brain stem and medulla oblongata.</p> <p>b. Sense Organs : Structure and function of eye, ear, nose and tongue.</p>	15	CO1, CO2, CO3, CO4, CO5	K1,K2,K3,K4
IV	<p>a Gastrointestinal and Hepato biliary system : Digestive system- Anatomy, Structure and Functions of mouth, pharynx, esophagus, stomach, Small intestine and large intestine. Digestive gland – salivary, liver, gall bladder and pancreas. Digestion in the mouth, stomach and intestines.</p> <p>b. Excretory system : Urinary System-Structure and functions of organs of urinary system, Mechanism of urine formation. micturition Skin- Structure and functions, Regulation of body temperature.</p>	15	CO1, CO2, CO3, CO4, CO5	K1,K2,K3,K4

V	<p>a. Endocrine system : Thyroid, Parathyroid, Adrenal gland, Pituitary and Sex glands – Structure and functions</p> <p>b. Reproductive system : Female reproductive system--Structure and functions, menstrual cycle, menarche and menopause. Male Reproductive system - Structure and functions.</p>	15	CO1, CO2, CO3, CO4, CO5	K1,K2,K3,K4
VI	<p>SELF STUDY FOR ENRICHMENT (Not to be included for External Examination) Functions of hemoglobin, Artificial respiration, Errors of refraction, Movements of the intestine Menstrual disorders.</p>	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

Text Books

1. Sembulingam. (2016). *Essentials of Medical Physiology*. Health Sciences Publisher. New Delhi.
2. Subramanyam., Sarada. (2018). *Textbook of Human Physiology*. S.Chand and company Ltd, New Delhi.
3. Randhawa.S.S., Atul Kabra.(2017). *Human Anatomy and Physiology-I*. S.Vikas and Company, India.

Reference Books

1. Guyton (2000). Guyton and Hal *Textbook of Medical Physiology*, Saunders, United States of America.
2. Waugh Anne Ross and Wilson (2003). *Anatomy and Physiology in Health and Illness*. Churchill Livingstone. New York.
3. Muruges. N (2011). *Anatomy and Physiology*, Sathya Publishers, Madurai.
4. Wilson Ross (2014). *Anatomy and Physiology in Health and Illness*, Reed Elsevier India Private Limited. New Delhi.
5. Chatterjee .C.2016). *Human Physiology Volume I*, Medical Allied Agency. Kolkata.

Web Link:

1. <https://www.khanacademy.org/science/health-and-medicine/human-anatomy- andphysiology>
2. <https://www.biologyonline.com/tutorials/the-human-physiology>
3. <https://digitaleditions.library.dal.ca/intropsychneuro/chapter/hunger-and-eating/>
4. <https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=NuAs6SreCGryddEfs4kkB A==>

Journals:

1. Human Physiology, Maik Nauka / Interperiodica Publishing, Russian Federation.
2. Indian Journal of Clinical Anatomy and Physiology, Innovative publication Pvt. LTD, India.
3. American Journal of Physiology - Endocrinology and Metabolism, American Physiological Society, United States.
4. Canadian Journal of Physiology and Pharmacology, Canadian Science Publishing, Nrc Research Press, Canada.

Pedagogy

Chalk and talk, PPT, Discussion, Assignment, Demo, Quiz, Seminar.

Course Designers

- Ms. S.FATHIMA

SEMESTER I	INTERNAL MARKS: 25		EXTERNAL MARKS:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
23UND1CC1P	HUMAN PHYSIOLOGY (P)	CORE PRACTICAL	3	3

Course Objectives

- To acquire knowledge on cellular arrangements
- To understand the components present in blood
- To learn methods to be adopted for the measurement of various blood parameters

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO 1	Identify cells present in the body	K1
CO 2	Explain cellular adaptations related to physiological changes	K2
CO 3	Illustrate the methods to be adapted for the measurement of various blood parameters	K2
CO 4	Predict number of cells present in blood	K3
CO 5	Dissect various cellular arrangement in tissues and organs	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3	3	3	2	3	2
CO2	3	3	3	2	3	3	3	2	3	2
CO3	3	3	3	2	3	3	3	2	3	2
CO4	3	3	3	2	3	3	3	2	3	2
CO5	3	3	3	2	3	3	3	2	3	2

“1” – Slight (Low) Correlation “2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation “-” indicates there is no correlation.

List of Experiments

1. Microscopic study of tissues- epithelial, connective and muscular.
2. Collection of blood sample-Capillary blood from finger tips and venous blood.
3. Separation of blood components (Centrifugation).
4. Estimation of hemoglobin-Sahli's Acid hematin method.
5. Determination of Hematocrit (Wintrobe method).
6. Preparation and examination of stained blood smear (Wedge or glass slide method).
7. Determination of Erythrocyte Sedimentation Rate (Wintrobe method).
8. Determination of blood group.
9. Determination of bleeding time (Duke method) and coagulation time (Capillary tube method).
10. Platelet count (Rees Ecker method by hemocytometry).
11. Clinical examination of radial pulse (pulse rate).
12. Measurement of blood pressure (Sphygmomanometry).
13. Effect of exercise on blood pressure and heart rate.
14. Microscopic structure of heart, digestive system and kidney.
15. Microscopic structure of reproductive organs-ovary, uterus, mammary glands and testis.
16. Microscopic structure of endocrine glands-thyroid, pituitary and adrenal.

Text Books

1. G.K.Pal and Parvati Pal.(2001) *Text book of practical physiology*. Orient Longman Ltd.

Reference Books

- 1.Sembulingam. (2016). *Essentials of Medical Physiology*. Health Sciences Publisher. New Delhi.
2. Subramanyam., Sarada. (2018). *Textbook of Human Physiology*. S.Chand and Company Ltd, New Delhi

Web Links:

1. <https://www.khanacademy.org/science/health-and-medicine/human-anatomy-andphysiology>
2. <https://www.biologyonline.com/tutorials/the-human-physiology>
3. <https://digitaleditions.library.dal.ca/intropsychneuro/chapter/hunger-and-eating/>
4. <https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=NuAs6SreCGryddEfs4kkB A==>

Pedagogy

Chalk and talk, PPT, Discussion, Assignment, Demonstration

Course Designers

- MS. S.FATHIMA

SEMESTER I	INTERNAL MARKS:25		EXTERNAL MARKS:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
23UND1AC1	FOOD CHEMISTRY	ALLIED	4	3

Course Objectives

- To gain insight into the chemistry of foods
- To understand the scientific principles involved in food preparation
- To understand the various properties exhibited by foods

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the Successful completion of the course, students will be able to	
CO1	Define physical and chemical properties of food	K1
CO2	Explain the structural changes of food during cooking	K2
CO3	Predict the cooking quality of food	K3
CO4	Classify plant pigments	K3
CO5	Examine the uses of food additives and leavening agent	K4

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	2	1	1	3	3	1	1	1
CO2	3	2	2	1	1	3	2	1	1	1
CO3	3	3	2	2	1	3	3	1	1	1
CO4	3	3	2	2	1	3	3	1	2	1
CO5	3	2	1	-	-	3	3	2	1	1

“1” – Slight (Low) Correlation “2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation “-” indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	<p>Introduction to Food Science, Physiochemical properties of food and water</p> <p>a) Introduction to Food Science – Definition of Food Science, Basic Five Food Groups and its components, Nutritional classification of food.</p> <p>b) Introduction to physiochemical properties of food - Physical Properties of water and ice, hydrogen bonding, bound water, water activity, determination of moisture content.</p> <p>c) Types of colloidal system - Colloids, sol, gel, emulsion and foam.</p>	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	<p>Starch and Sugar</p> <p>a) Starch- Structure, characteristics, components and types, swelling of starch granules, gel formation, gelatinization, retrogradation, effect of sugar, acid, alkali, fat and surface-active agents on starch.</p> <p>b) Sugar - Stages of sugar, artificial sweeteners, solubility and crystallization, factors affecting crystallisation – crystalline and non-Crystalline candies, caramelization, chemistry of milk sugar, non-enzymatic browning and its preventive measures.</p>	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	<p>Protein</p> <p>a) Properties and components of protein - Coagulation and denaturation of protein, protein concentrates, isolates and hydrolysate and their application, effect of soaking, fermentation and germination on pulse protein.</p> <p>b) Chemistry of protein-Action of heat, acid, and alkali on vegetable and animal protein.</p>	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	<p>Fats and oils</p> <p>a) Physical and chemical properties of fats and oils - Hydrogenation, winterization, decomposition of triglycerides, shortening power of fats.</p> <p>b) Changes in fats and oils–Changes during cooking, factors affecting absorption of fat in foods.</p>	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

V	Pigments, Food additives and Leavening agents a) Pigments - Types of plant pigments, water and fat soluble pigments, natural colours used in foods, pectins, phenolic components, enzymatic browning in fruits and vegetables. volatile compounds in fruits and vegetables. b) Food additives -Classification and its uses. c) Leavening agents - Types, physical, chemical and biological leavening agents, mechanism of action.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
VI	SELF STUDY FOR ENRICHMENT (Not to be included for External Examination) Types of emulsion, Factors affecting gelatinization, Chemistry of coagulation of egg, Types and prevention of rancidity, Uses of Leavening agents.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

Text Books

1. Shakuntala Manay. N. (2013). *Foods: Facts and Principles*. (3rd ed.). New Age International Publishers, New Delhi.
2. Swaminathan, M. (2019). *Advanced Text Book on Food and Nutrition*. (2nd ed.). Bangalore Printing and Publishing Co. Ltd, Bangalore.
3. Srilakshmi.B.(2020). *Food Science*. (8th ed). New Age International Publishers, New Delhi.
4. Iqbal, Syed Aftab. (2011). *Advanced Food Chemistry*. Discovery Publishing House, New Delhi.
5. Chopra H,K and Panesar P,S. (2015). *Food Chemistry*. Narosa Publishing House(P) Ltd, New Delhi.

Reference Books

1. Vickie, A., Vaclavik Elizabeth, W.Christian. (2014). *Essentials of Food Science*.(4th ed.). Springer Science and Business Media, New York.
2. Raheena Begum, M. (2015). *Textbook of Foods. Nutrition and Dietetics*. (3rd ed.), Sterling Publishers Pvt. Ltd, New Delhi.
3. Avantina Sharm. (2019). *Textbook of Food Science and Technology*. (3rd ed.). CBS Publishers and Distributors.

Web Links

- <https://www.sciencedirect.com/journal/food->
- <https://www.eolss.net/sample-chapters/c10/e5-08-07-00.pdf>
- <http://egyankosh.ac.in/handle/123456789/69055>

Journals

1. Journal of food chemistry and nutrition science, Pakistan.
2. Food chemistry, Elsevier, United Kingdom.

Pedagogy

E-content, Lecture, Power point presentation, Seminar, Assignment, Group Discussion

Course Designer

Ms.N.GANGA DEVI

SEMESTER I	INTERNAL MARKS:25		EXTERNAL MARKS:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
23UND1AC2P	FOOD CHEMISTRY (P)	ALLIED PRACTICAL	4	3

Course Objectives

- To gain the knowledge on chemistry of various nutrients present in food.
- To understand the physical and chemical changes during cooking.
- To develop skills to judge the quality of food.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On successful completion of the course, students will be able to	
CO1	Identify the structure of starch molecules	K1
CO2	Describe the factors affecting the cooking quality of food	K2
CO3	Predict enzymatic browning in fruits and vegetables	K3
CO4	Infer the changes of fats and oils during temperature modifications	K4
CO5	Determine the role of food additives	K4

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	2	1	2	3	3	1	1	1
CO2	3	2	2	1	1	3	2	1	1	1
CO3	3	2	2	1	1	3	3	1	1	1
CO4	3	2	2	1	1	3	3	1	2	1
CO5	3	2	2	1	1	3	3	2	1	1

“1” – Slight (Low) Correlation “2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation “-” indicates there is no correlation.

List of Experiments

1. **Chemistry of starch** - Properties of food starches, microscopic examination of uncooked and cooked gelatinized starch, dextrinization.
2. **Chemistry of sugar** - Stages of sugar cookery, sugar crystallization in preparation of fondant, fudge, and caramel, browning reaction in milk sugar.
3. **Chemistry of proteins in cereals and pulses** - Gluten formation, factors influencing texture, digestibility of pulses - soaking, germination, addition of sodium bicarbonate, addition of salt, water quality- hard and soft water, pressure cooking, and malting of pulses.
4. **Chemistry of proteins in milk and egg** - Curdling of milk using lime juice, butter milk, tomato juice. Coagulation of egg white and egg yolk (boiled egg, poached egg, omelete), prevention of Ferrous sulphide formation on the yolk, factors affecting whipping quality of egg white – effect of salt, sugar, vinegar, fat and milk
5. **Chemistry of Fats and Oils** - Determination of smoking temperature of different fats and oils, effect of temperature of oil on texture and palatability of foods - Frying pooris at different temperatures.
6. **Chemistry of Plant Pigments** - Changes in colour and texture of vegetables due to different methods of cooking, cooking medium and addition of acid/alkali on water-soluble and fat-soluble pigments, enzymatic browning in apples, banana, brinjal and raw banana and its preventive measures.
7. **Food additives and Raising agents** - Role of MSG (Mono Sodium Glutamate), sodium benzoate and KMS (Potassium bi sulphate) in food preparation and preservation, use of baking soda, baking powder, yeast in baking and food preparation- prepare one dish with each of these, uses of herbs and spices to enhance flavour.

Text Books

1. Shakuntala ManayN. (2013). *Foods: Facts and Principles*. (3rd ed). New Age International Publishers, New Delhi.
2. Swaminathan M. (2019). *Advanced Text Book on Food and Nutrition*. (2nd ed). Bangalore Printing and Publishing Co. Ltd, Bangalore.

Reference Books

1. Krishna Arora.(2008). *Theory of cookery*. Frank Brothers & Co.
2. Penfield MP and Ada Marie C.(2012). *Experimental Food Science*. Academic Press, San Diego

Web Links

- https://www.ihmnotes.in/assets/Docs/Books/Theory_of_Cookery.pdf
- <http://staffnew.uny.ac.id/upload/132318572/pendidikan/buku-esp.pdf>
- <https://www.scienceofcooking.com/>

Journals

1. Journal of food chemistry and nanotechnology, United Scientific Group, USA
2. Journal of Agricultural and Food chemistry, American chemical society, United States.

Pedagogy:

E-content, Lecture, Power Point presentation, Seminar, Assignment, Demonstration

Course Designer:

Ms. N.GANGA DEVI

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)

NATIONALLY ACCREDITED (IHCYCLE) WITH “A” GRADE BY NAAC

ISO 9001:2015 Certified

TIRUCHIRAPPALLI

DEPARTMENT OF FOOD SERVICE MANAGEMENT AND DIETETICS



B.Sc., NUTRITION AND DIETETICS

SYLLABUS

2022-2023 and Onwards



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY-18
DEPARTMENT OF FOOD SERVICE MANAGEMENT AND DIETETICS
B.Sc., NUTRITION AND DIETETICS
LEARNING OUTCOME BASED CURRICULUM FRAME WORK (CBCS-LOCF)
(For the Candidates admitted from the Academic year 2022-2023 onwards)

Semester	Part	Course	Title	Course Code	Inst.Hrs./week	Credits	Exam			Total
							Hrs	Marks		
								Int	Ext	
III	I	Language Course – III (LC) – Tamil * / Other Languages*	Kaapiyamum, Nadagamum	22ULT3	5	3	3	25	75	100
			Hindi Literature & Grammar-III	22ULH3						
			Prose, Textual Grammar and Vakyarachana	22ULS3						
			Intermediate French-I	22ULF3						
	II	English Language Course- III(ELC)	Learning Grammar Through Literature – I	22UE3	6	3	3	25	75	100
	III	Core Course– IV(CC)	Diet Therapy I	22UND3CC4	6	6	3	25	75	100
		Core Practical - III(CP)	Diet Therapy I (P)	22UND3CC3P	3	3	3	40	60	100
		Second Allied Course- I (AC)	Nutritional Biochemistry	22UND3AC4	4	3	3	25	75	100
		Second Allied Course – II (AP)	Nutritional Biochemistry (P)	22UND3AC5P	4	3	3	40	60	100
	IV	Generic Elective Course– I (GEC)	Basics in Nutrition	22UND3GEC1	2	2	3	25	75	100
			Basic Tamil - I	22ULC3BT1						
			Special Tamil - I	22ULC3ST1						
	Extra Credit Course	SWAYAM ONLINE COURSE		As per UGC Recommendation						
		TOTAL			30	23				700

SEMESTERIII	INTERNAL MARKS:25		EXTERNAL MARKS:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
22UND3CC4	DIET THERAPY I	CORE	6	6

Course Objectives

- To know the principles of diet therapy
- To study the metabolic changes of disease conditions
- To understand the modification of normal diet for therapeutic purposes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO 1	Identify the role and responsibilities, skills, ethics and opportunities for a dietitian	K1
CO 2	Explain the principles of diet therapy, drug nutrient interaction and special feeding methods	K2
CO 3	Relate the causes, symptoms and complications of diseases	K3
CO 4	Compute nutritional care for food allergy and children with special needs	K3
CO 5	Ascertain dietary principles in planning and preparing diet for various diseases and compute nutritive value	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	-	3	2	-	-	-
CO2	3	3	3	-	-	3	2	-	-	-
CO3	3	3	3	-	-	3	2	-	-	-
CO4	3	3	3	-	-	3	2	-	-	-
CO5	3	3	3	-	-	3	2	-	-	-

“1” – Slight (Low) Correlation “2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation “-” indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	<p>a) Dietitian Definition and classification of dietitian. Qualities and responsibilities of dietitian. Role of dietitian in hospitals and community. Professional ethics and code of conduct of dietitian.</p> <p>b) Diet therapy Definition, principles of a therapeutic diet. Routine Hospital diets and progressive modifications - Clear fluid diet, Full fluid diet, Soft diet, regular normal diet, bland diet. Specially modified therapeutic diets – High and low calorie, high and low protein, high and low residue diets, high and low fat diets.</p>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	<p>a) Drug nutrient interaction Modification of diet according to medical prescription – Diet effects on drug disposition, drug effects on nutrients and interaction of drugs.</p> <p>b) Special feeding methods Enteral and Parenteral feeding- Indications, types (oral supplements, tube feeding, parenteral feeding, TPN, pre and post-operative diets) methods of administration, monitoring and associated complications.</p>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	<p>a) Nutritional care for diseases of gastro intestinal tract Peptic ulcer, Diarrhoea, Constipation, Haemorrhoids and Malabsorption syndrome – aetiology, symptoms, clinical findings and dietary modifications.</p> <p>b) Nutritional care for febrile condition Metabolic changes during fever and types of fever (acute and chronic), causes, clinical features and dietary management of Typhoid, Influenza , Malaria, Tuberculosis and HIV.</p>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

IV	<p>a) Nutritional care for diseases of biliary system Jaundice, Fatty liver, hepatitis, cirrhosis and Hepatic coma- etiology, symptoms and clinical findings and dietary management. Cholelithiasis and Cholecystitis- etiology, symptoms and dietary management.</p> <p>b) Nutritional care for obesity and underweight Obesity and overweight- Definition, etiology, theories of obesity, types, metabolic changes, assessment, complications, prevention and dietary treatment Underweight-Definition, etiology, prevention and dietary treatment.</p>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	<p>a) Nutritional care for allergy Definition, food allergens, clinical manifestations, diagnosis of food allergy and dietary advice.</p> <p>b) Nutritional care for the children with special needs Down's syndrome, Cerebral Palsy, Autism, Attention Deficit Hyperactivity Disorder - Overview of the disability and nutritional care, feeding difficulties and special feeding equipment.</p>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
VI	<p>SELF STUDY FOR ENRICHMENT (Not to be included for External Examination) Indian Dietetic Association-Activities, Comparison of enteral and parenteral nutrition, Nutritional care for pandemic fevers, Grading of obesity, Food induced anaphylaxis.</p>	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

Text Books

1. Srilakshmi B.(2019). *Dietetics*.(8th ed)New Age International. New Delhi.
2. Sangeetha Karnik. (2010). *Nutrition and Diet Therapy*.Biotech Pharma Publications.
3. Sumati R Mudambi. (2012).*Fundamentals of Foods, Nutrition and Diet Therapy*. (6th ed).New Age International, New Delhi.
4. De Bruyne, Pinna, Whitney. (2012).*Nutrition and Diet Therapy*. (8th ed). Library of Congress.
5. Avantina Sharma. (2017).*Principles of Therapeutic Nutrition and Dietetics*.CBS Publishers and Distributors.

Reference Books

- 1.Mahatb, S., Bamji., Kamala Krishnasamy, Brahman, G.N.V., (2020).*Textbook of Human Nutrition*. (3rd ed.). Oxford and IBH Publishing Co. P. Ltd., New Delhi.
- 2.Raheena Begum, M. (2015). *Textbook of Foods, Nutrition and Dietetics*. (3rd ed.). Sterling Publishers Pvt. Ltd. New Delhi.
- 3.Krause, M. V. Hunesher, M. A. (2013). *Food, Nutrition and Diet Therapy*. W. B. Saunders Company. Philadelphia. London.
- 4.Kathleen ML. and Escott S.(2000) .*Krause's Food, Nutrition and Diet Therapy*. (9thed.). W.B. Saunders Company Pennsylvania.

Web links

- <https://www.sciencedirect.com/topics/medicine-and-dentistry/full-liquid-diet>
- <https://www.webmd.com/allergies/allergies-elimination-diet>
- <https://www.iffgd.org/upper-gi-disorders.html>
- <https://pinnt.com/Enteral-Nutrition.aspx>
- <https://www.urmc.rochester.edu/childrens-hospital/nutrition/special-needs.aspx>

Journals

- 1.Canadian Journal of Dietetic Practice and Research, Dieticians Canada, Canada
- 2.Journal of Human Nutrition and Dietetics, Wiley-Blackwell, England
- 3.Journal of the Academy of Nutrition and Dietetics, Elsevier
- 4.Journal of Human Nutrition and Dietetics, Wiley online library, UK
- 5.Nutrition and Health-SAGE Journals

Pedagogy

Lecture, Chalk and Talk, Seminar, Assignment, E-Content, PowerPoint Presentation, Quiz.

Course Designers

- Ms.B.THANUJA
- Ms.C.NIVETHA

SEMESTER III	INTERNAL MARKS:40	EXTERNAL MARKS:60		
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22UND3CC3P	DIET THERAPY I (P)	CORE PRACTICAL	3	3

Course Objectives

- To understand the modification of normal diet for therapeutic purpose
- To calculate nutritive value based on therapeutic modification
- To acquire the skills of preparing diet for various disease conditions

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO 1	Define therapeutic diet and state characteristics of routine hospital diets such as clear liquid diet, full liquid diet and soft diet	K1
CO 2	Explain the basic principles involved in planning diets for different disease conditions.	K2
CO 3	Relate practical knowledge of therapeutic diet to meet the requirement of diet therapy	K3
CO 4	Prepare diets to meet out the quality and quantity requirements for specific disease conditions	K3
CO 5	Infer dietary principles in planning and preparing diet for various diseases and compute nutritive value	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	1	-	3	2	1	2	-
CO2	3	3	3	1	-	3	2	1	2	-
CO3	3	3	3	1	-	3	2	1	2	-
CO4	3	3	3	1	-	3	2	1	2	-
CO5	3	3	3	1	-	3	2	1	2	-

“1” – Slight (Low) Correlation “2” – Moderate (Medium) Correlation
“3” – Substantial (High) Correlation “-” indicates there is no correlation.

List of Experiments

1. Planning and Preparation of Therapeutic diets
 - Clear liquid diet
 - Full liquid diet
 - Soft diet
2. Planning and Preparation of diet for
 - Peptic ulcer
 - Diarrhoea
 - Constipation
3. Planning and Preparation of diet for Fevers
 - Typhoid
 - Tuberculosis
4. Planning and Preparation of diet for
 - Obesity
 - Under weight
5. Planning and Preparation of diet for
 - Hepatitis
 - Cirrhosis
6. Visit to hospital dietary units

Text Books

1. Srilakshmi B. (2019). *Dietetics*. (8th ed) New Age International, New Delhi.
2. F. P. Antia & Philip Abraham. (2002). *Clinical Dietetics and Nutrition*. (4th ed). Oxford University Press.

Reference Books

1. Barasi, Mary E, Great Britain (2002). *Human Nutrition: Health Perspective* Hodder and Stoughton.
2. Gopalan.C. Rama Sastri.V.B and Balasubramanian.S.C. (2017). *Nutritive Value of Indian Foods* National Institute of Nutrition (ICMR) Hyderabad.

Web links

- <https://vikaspedia.in/health/nutrition/dietary-guidelines-1/avoid-overeating-to-prevent-overweight-and-obesity>
- <https://www.youtube.com/watch?v=aa9bvQtJv6s>
- <https://www.youtube.com/watch?v=9EUFrKdmd5U>

Pedagogy

Lecture, Chalk and Talk, Demonstration, Practical, E-Module, Visit to hospital dietary unit.

Course Designers

- Ms. B.THANUJA
- Ms.C.NIVETHA

SEMESTER III	INTERNAL MARKS: 25	EXTERNAL MARKS:75		
COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
22UND3AC4	NUTRITIONAL BIOCHEMISTRY	ALLIED	4	3

Course Objectives

- To acquire knowledge on basic concepts of biochemical reactions
- To understand the biochemical reactions involved in the metabolism of various nutrients in the body
- To comprehend the mode of action of different enzymes in cell

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On Successful Completion of the course, students will be able to	
CO1	State the structure, classification, properties and functions of macro and micro nutrients	K1
CO2	Illustrate on the cellular functions for maintaining the homeostasis	K2
CO3	Describe enzyme activity in the metabolic action	K2
CO4	Predict the anabolic and catabolic mechanism of nutrients	K3
CO5	Associate the effect of free radicals and gene on nutrient metabolism	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	3	-	2	3	3	-	2	-
CO2	3	2	3	-	2	3	3	-	2	-
CO3	3	2	3	-	2	3	3	-	2	-
CO4	3	2	3	-	2	3	3	-	2	-
CO5	3	2	3	-	2	3	3	-	2	-

“1” – Slight (Low) Correlation, “2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation , “-” indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	<p>a) Cell</p> <p>Introduction, cell organelles, cell membrane, movement of the substances and water through the cell membrane, bioelectric potentials.</p> <p>b) Enzymes</p> <p>Definition, classification of enzymes, Coenzyme, Role of B-vitamins as coenzyme, factors affecting enzyme activity, enzyme inhibition.</p> <p>c)Hormones</p> <p>Protein hormones , steroid hormones.</p>	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	<p>a) Protein</p> <p>Amino acids classification, structure, properties, protein structure, peptide linkage, covalent backbone, three-dimensional conformation, quaternary structure of oligomeric proteins. Determination of –N and –C terminal amino acids, protein functions. Hormonal regulation of protein metabolism. Protein metabolism-synthesis of proteins and metabolism of amino acids.</p> <p>b) Nucleotides and nucleic acids</p> <p>Structure of purine and pyrimidines nucleotides, DNA, RNA – structure and types, biosynthesis and catabolism of purine and pyrimidine nucleotide</p>	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	<p>a) Carbohydrates</p> <p>Classification, structure, properties and functions. Hormonal regulation of carbohydrate metabolism. Carbohydrate metabolism – glycolysis, HMP shunt pathway, TCA cycle, gluconeogenesis from TCA intermediates/ amino acids/ acetyl CoA, concept of glycogenesis and glycogenolysis. Glucose homeostasis.</p>	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

	b) Lipids Classification, structure, properties, biological significance, Bioenergetics – electron transport and oxidative phosphorylation, redox potential, high energy compounds. Hormonal regulation of lipid metabolism. Lipid metabolism – Alpha, omega, beta oxidation of fatty acids, biosynthesis of fatty acids.			
IV	a) Vitamins Fat Soluble Vitamins – A,D,E,K and its metabolism. Water Soluble – B,C and its metabolism. b) Minerals -Macro Minerals – Calcium, Phosphorus, Sodium, Potassium, Magnesium and its metabolism. Micro Minerals – Iron, Fluorine, Zinc, Iodine, Selenium and its metabolism.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	a) Free radicals and antioxidants Definition, Formation in biological systems. Antioxidants– definition, classification – enzymatic and non-enzymatic. b) Nutrigenomics Definition, Scope, effects of nutrients on gene expression – direct interactions, epigenetic interactions, genetic variations.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
VI	SELF STUDY FOR ENRICHMENT (Not to be included for External Examination) Functions of enzymes, Role of hormones in nutrient metabolism, Classification of fatty acids, Synergetic mechanism of nutrients, Functions of antioxidants.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

Text Books

1. Sucheta PDandekai.(2000).*Medical Biochemistry*.B.I.Churchill Livingstone.
2. Lauralee Sherwood.(2007). *Human Physiology*(6th Ed). Brooks Cole Publishing Co.
3. AmbikaShanmugam.(2008).*Fundamentals of Biochemistry for Medical students*.Lippincott Williams & Wilkins.
4. Rafi MD.(2015).*Textbook of Biochemistry for Medical Students*. University of Health Sciences. University Press.

Reference Books

1. Patricia Trueman.(2007).*Nutritional Biochemistry*. MJP Publishers.
2. Mallikarjuna Rao N.(2008).*Medical Biochemistry*.S.Chandand Company Ltd. NewDelhi.
3. Jain J L.(2008).*Fundamentals of Biochemistry*.S.Chandand Company Ltd.New Delhi.
4. Robert k Murray.(2009).*Harper's Illustrated Biochemistry*.McGraw Hill.
5. John E Hall.Guyton&Hall.(2013).*Text Book of Medical Physiology*.Elsevier India Private Limited. New Delhi.
6. Agarwal G R Meerut.(2014).*Text Book of Biochemistry*.Krishnaprakashan Media (P) Ltd.
7. SatyanarayananU.(2014).*Biochemistry*. Elsevier India Private Limited.New Delhi.

Web links

- <https://opentextbc.ca/anatomyandphysiology/chapter/24-4-lipid-metabolism/>
- <https://www.ncbi.nlm.nih.gov/books/NBK9921/>
- <https://vikaspedia.in/health/nutrition/antioxidants/antioxidant-and-their-medicinal-applications>

Journals

1. Journal of Nutritional Biochemistry, Elsevier Science Inc, United States
2. Biochemistry, American Chemical Society, United States

Pedagogy

E-content, Lecture, Power point presentation, Seminar, Assignment.

Course Designers

- Ms. S.FATHIMA
- Ms. M.VINOTHINI

SEMESTER III	INTERNAL MARKS: 40		EXTERNAL MARKS: 60	
COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
22UND3AC5P	NUTRITIONAL BIOCHEMISTRY (P)	ALLIED PRACTICAL	4	3

Course Objective

- To develop skills in handling analytical equipment
- To understand the procedures of qualitative analysis
- To learn the analytical techniques of quantitative analysis

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On Successful Completion of the course, students will be able to	
CO1	Identify the chemicals used for qualitative and quantitative analysis	K1
CO2	Illustrate qualitative and quantitative analysis	K2
CO3	Prepare reagents for qualitative and quantitative analysis	K3
CO4	Predict the procedure involved in qualitative and quantitative analysis	K3
CO5	Infer the results	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	3	-	2	3	3	-	2	-
CO2	3	2	3	-	2	3	3	-	2	-
CO3	3	2	3	-	2	3	3	-	2	-
CO4	3	2	3	-	2	3	3	-	2	-
CO5	3	2	3	-	2	3	3	-	2	-

“1” – Slight (Low) Correlation “2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation “-” indicates there is no correlation.

List of Experiments

1. Qualitative tests for Sugars -Glucose, Fructose, Lactose, Maltose, Sucrose, Starch.
2. Qualitative tests for Proteins.
3. Qualitative tests for Minerals.
4. Quantitative estimation of Glucose – Benedicts method
5. Quantitative estimation of Iron – Titration method
6. Quantitative estimation of Calcium – Titration method
7. Quantitative estimation of Ascorbic acid- Colorimetry
8. Technique of Chromatography (Paper)
9. Electrophoretic pattern of blood proteins (Demonstration)

Text Books

1. Ambika Shanmugam(2008).*Fundamentals of Biochemistry for Medical students*. Lippincott Williams Wilkins
2. Pattabiraman .N.T(2001).*Laboratory Manual in Biochemistry*.All India Publishers and Distributors Regd,Chennai

Reference Books

1. Shanmugam.S, Sathishkumar,T, PanneerSelvam. K.(2010).*Laboratory handbook on biochemistry*. PHI learning Private Ltd,Chennai.
2. Evangeline Jones.(2016). *Manual of Practical Medical Biochemistry*,(2nd ed).Jaypee Brothers Medical Publishers(p) Ltd.

Web links

- <https://opentextbc.ca/anatomyandphysiology/chapter/24-4-lipid-metabolism/>
- <https://www.ncbi.nlm.nih.gov/books/NBK9921/>

Pedagogy

E-content, Lecture, Demonstration, Power point presentation.

Course Designers

- Ms. S.FATHIMA
- Ms. M.VINOTHINI

Semester : III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22UMB3GEC1	Mushroom Technology	Generic Elective Course	2	2

Course Objective

To enable the students to identify the edible and poisonous mushrooms. To provide the students awareness about the marketing trends of Mushrooms. To give the students exposure to the experiences of experts in the field and to functioning mushroom farms.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	Differentiate edible and Poisonous mushrooms	K5
CO2	Examine Spawn preparation	K4
CO3	Illustrate the cultivation of mushroom	K6
CO4	Discuss about nutritional value of mushroom	K6
CO5	Determine medicinal value of mushroom	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	3	3	3	3	3	3	3	3
CO2	2	3	2	3	3	3	3	2	3	3
CO3	3	2	3	3	2	2	3	3	3	2
CO4	3	3	3	3	3	3	3	3	2	3
CO5	2	3	2	2	3	3	2	3	3	2

1- Slight (Low) correlation 2- Moderate (Medium) correlation

3- Substantial (High) correlation “-” indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	Introduction – History of mushroom cultivation; Classification and distribution of mushroom; life cycle of mushroom. Identification of poisonous mushrooms.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Spawn preparation - Isolation of pure culture; Nutrient media for pure culture; layout of spawn preparation room; raw material of spawn; sterilization; preparation of mother spawn and multiplication.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Cultivation of mushroom, layout of mushroom shed - small scale and large scale production unit. Types of raw material – preparation and sterilization; Mushroom bed preparation – maintenance of mushroom shed; harvesting method and preservation of mushrooms. short and long term storage of mushroom;	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Cultivation of following types of mushroom – milky mushroom, oyster mushroom, button mushroom and medically valuable mushroom - shiitake mushroom and Reishi mushroom. Spent mushroom compost.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	Nutrient values of mushroom – protein, carbohydrate, fat, fibre, vitamins and minerals. Preparation of various dishes - soup, sauce,	6	CO1, CO2, CO3,	K1 K2, K3,

	cutlet, omelette, samosa, pickles, curry & biriyani. Pharmacological and economic values of mushroom.		CO4, CO5	K4, K5, K6
VI	Self Study for Enrichment (Not included for End Semester Examination) Visit to relevant Labs/Field Visits of mushroom cultivation	-	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4, K5, K6

Text Books

1. Paul Stamets, J.S. and Chilton, J.S (2019) Mushroom cultivation A practical guide to growing mushrooms at home, Agarikon Press.
2. Tewari and Pankaj Kapoor S.C. (2020) Mushroom cultivation. Mittal Publication. Delhi.
3. Nita Bahl. 2016. Hand book of Mushrooms, 2nd Edition, Vol I & II.
4. Shu Fing Chang, Philip G. Miles and Chang, S.T. (2004) Mushrooms Cultivation, nutritional value, medicinal effect and environmental impact. 2nd ed., CRC press.
5. R.Gogoi, Y.Rathaiah, T.R.Borah (2019) Mushroom Technology Cultivation, Scientific Publisher.

Reference Books

1. Russell, Stephan(2018) The Essential Guide to Cultivating Mushrooms: Simple and Advanced Techniques for Growing Shiitake, Oyster, Lion's Mane and Maitake Mushroom at Home. Storey Publishing.
2. B.C.Suman, Sharma V.P(2017) Mushroom India Cultivation in India. Daya Publishing House.
3. Marimuth, (1991) Oyster Mushrooms. Dept. of Plant pathology, TNAU, Coimbatore.

Web References

1. <http://www.fungi.com>
2. <http://www.mushworld.com/home>
3. <http://forums.mycotopia.net/faq-frequently-asked-questions/5594-mushroom-growershandbook-1-mushworld-com.html>.
4. <http://forums.mycotopia.net/faq-frequently-asked-questions/6556-mushroom-growershandbook-2-mushworld-com.html>

5. <http://www.americanmushroom.org/news.html>
6. https://www.brainkart.com/article/Mushroom-Cultivation_39985/

Pedagogy

Chalk and talk, Power Point Presentation, Quiz, Assignments, Group Discussions, Seminar, and Assignment.

Course Designer

Dr. E.Priya

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)

NATIONALLY ACCREDITED (IHCYCLE) WITH “A” GRADE BY NAAC

ISO 9001:2015 Certified

TIRUCHIRAPPALLI

DEPARTMENT OF FOOD SERVICE MANAGEMENT AND DIETETICS



M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS

SYLLABUS

2023-2024 and Onwards



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY-18
DEPARTMENT OF FOOD SERVICE MANAGEMENT AND DIETETICS
M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS
LEARNING OUTCOME BASED CURRICULUM FRAME WORK (CBCS-LOCF)
(For the Candidates admitted from the Academic year 2023-2024 onwards)
Semester I

Semester	Course	Course Title	Course Code	Inst. Hrs. /week	Credits	Exam			Total
						Hrs.	Marks		
							Int.	Ext.	
I	Core Course -I(CC)	Food Service Management	23PFS1CC1	6	5	3	25	75	100
	Core Course –II(CC)	Food Science	23PFS1CC2	6	5	3	25	75	100
	Core Course–III(CC)	Human Physiology	23PFS1CC3	6	5	3	25	75	100
	Core Practical-I(CP)	Food Science (P)	23PFS1CC1P	6	5	3	25	75	100
	Discipline Specific Elective Course-I(DSE)	A. Food Microbiology, Safety and Quality Control	23PFS1DSE1A	6	3	3	25	75	100
		B. Nutrition Through Life Cycle	23PFS1DSE1B						
		C.Front Office Operations	23PFS1DSE1C						
	Total			30	23				500

SEMESTER I	INTERNAL MARKS: 25		EXTERNAL MARKS:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
23PFS1CC1	FOOD SERVICE MANAGEMENT	CORE	6	5

Course Objectives

- Understand principles of organization and management in food service units
- Understand and apply current concepts in equipment design, selection and use, hygiene, safety and sustainability of food services
- Develop skills required for managing a food service unit

Pre requisites

- Basic knowledge on principles of management
- Fundamentals of tools of management

Course Outcome

CO Number	CO Statement	Cognitive Level
	On Successful Completion of the course, students will be able to	
CO 1	Recall the classification of food services, distinguish between different food service systems, relate the food production systems to the relevant food service operations, explain current trends in food service facility design and regulations for specific food service types.	K1, K2
CO 2	Define the different types of organization; Explain the approaches, principles, functions and tools of management, apply the tools of management to the various management functions.	K1,K2, K3
CO 3	Classify equipment based on type and order of use, explain the different finishes, design and construction features of equipment, develop SOP for selection, operation and care of major equipment.	K2, K3,
CO 4	Ascertain the principles of cleaning and sanitation, create a checklist to ensure personal hygiene of food handlers, evaluate the causes of food hazards and suggest solutions based on principles of HACCP	K4, K5
CO 5	Identify the causes for accidents and suggest methods for prevention; Analyze methods of conserving energy, conserving resources and ensure zero waste. Evaluate strategies for conserving natural resources, energy saving and facility waste assessment and management.	K1, K3, K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3	3	3	2	3	1
CO2	3	3	3	2	3	3	3	2	3	1
CO3	3	3	3	2	3	3	3	2	3	1
CO4	3	3	3	1	3	3	3	2	3	1
CO5	3	3	3	2	3	3	3	2	3	1

“1” – Slight (Low) Correlation “2” – Moderate (Medium) Correlation
“3” – Substantial (High) Correlation “-” indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Food Service Industry- Classification and regulatory requirements <ol style="list-style-type: none"> Classification of food services based on food production systems: (i) Conventional (ii) Commissary (iii) Ready prepared (Cook chill/ cook freeze) (iv) Assembly/ serve foods service systems (v) Cloud kitchens. Classification based on market segment/ Food service style Commercial and non commercial food services. Catering in hotels and specialty restaurants, clubs, café/coffee shop, dhaba, fast food outlets (Quick Serve Restaurants) food trucks, food carts and stands, meals on wheels, food vending machines, take away, online app – based delivery. Catering transport services – Air, railway, cruise ships, space missions. Catering in hospital and educational institutions. Industrial catering and community feeding (Places of worship), Social catering (weddings, functions). Franchise, chain, contract and outdoor catering services. Current trends in facility design, regulatory requirements and special considerations for each specific type of food services. 	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Organization and Management <ol style="list-style-type: none"> Organization – Definition and types. Approaches to management – classical, neo classical, systems approach, behavioral and human relations approach, contingency approach, JIT (Just in time) approach. Principles, functions and tools of management and their application in the food service industry. 	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Equipment design, selection, installation and use <ol style="list-style-type: none"> Classification of equipment – equipment for food storage, pre-preparation, cooking, holding, serving, dishwashing and auxiliary equipment. Equipment design, construction and finishes. Factors influencing selection of equipment; Trends in equipment available in the market. Installation, principles of operation and care of major equipment. 	20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Hygiene and Sanitation in the Food Service Unit <ol style="list-style-type: none"> Personal hygiene of employees Employee health and personal hygiene, proper food handling – precautions for safe food production. Hygiene of plant and equipment Principles of cleaning and sanitation. Dishwashing 	25	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

	<p>– types and uses.</p> <p>c) Food hygiene</p> <ul style="list-style-type: none"> • Infestation of foods – signs of infestation, control of infestation. • Time – Temperature relationships, potential hazards in food production. • The seven principles of Hazard Analysis Critical Control Points (HACCP) and their application in ensuring food safety and quality. • Introduction to ISO specifications; COVID Protocol according to FSSAI for food production. 			
V	<p>Safety and Sustainability</p> <p>a) Safety in Food Service Units – causes and prevention of accidents, 3Es of safety and action for emergencies.</p> <p>b) Sustainable practices and green initiatives</p> <p>i. Conservation of natural resources – water and energy conservation.</p> <p>ii. Green design and energy saving in electrical equipment.</p> <p>iii. Integrated solid waste management – sources, reduction, reuse/up cycle and recycle; facility waste assessment; pest control.</p>	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	<p>SELF STUDY FOR ENRICHMENT (Not to be included for External Examination) Difference between commercial and non commercial food services, Relate functions of management with food industries, Difference between electrical and nonelectrical equipment used in food service institution, Hygienic practices to be followed by food handlers, Methods of pest control.</p>	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Books

1. Arora R K. (2007). *Food Service and Catering Management*. A.P.H Publishing Corporation. New Delhi.
2. Malhotra R.K.(2005). *Food Service and Catering Management*. Anmol publications Pvt Ltd. New Delhi.

Reference Books

1. West B.B, Wood L, Harger V.P. (2006). *Food Service in Institutions*. John Wiley and Sons, Inc., New York
2. Sethi, M. (2016). *Institutional Food Management*, (2nd ed). New Age International Pvt. Ltd., New Delhi.
3. Payne-Palacio J and Theis M. (2019). *Food Service Management-Principles and Practices*. Pearson India Education Services Pvt. Ltd. Noida, India.
4. Negi J. (2006). *Food and Beverage: Management and Cost control*. Kanishka publishers distributors

Web links

- <https://legaldocs.co.in/blog/food-safety-and-hygiene-norms-in-india>
- https://www.brainkart.com/article/Definition-and-Types-of-Equipment_35155/
- <https://www.mooc-list.com/course/innovation-food-industry-futurelearn>
- https://www.tutorialspoint.com/food_and_beverage_services/food_and_beverage_services_hygiene_and_safety.htm

Journals

1. The Journal of Food Service Management and Education, published by Food Service systems management education council
2. Journal of Food Service Business Research, Taylor & Francis

Pedagogy

Chalk and talk, Power Point Presentation, Discussion, Assignment, Quiz, Seminar

Course Designer

- MS. C. NIVETHA

SEMESTER I	INTERNAL MARKS:25		EXTERNAL MARKS:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
23PFS1CC2	FOOD SCIENCE	CORE	6	5

Course Objectives

- Learn the basic scientific principles underlying food preparation, processing, storage and preservation
- Comprehend the Nutritional significance of various food groups
- Get acquainted with the recent trends and novel concepts in food science

Pre requisites

- Basic knowledge about food groups and nutritional composition
- Fundamentals of food chemistry

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Understand the basic nutrition facts of different food groups and state the best cooking practices to retain the nutrients	K1, K2
CO2	Illustrate the chemistry of foods	K2
CO3	Apply the scientific principles underlying food preparation, processing, storage and assess innovative practices to retain the quality of food	K3, K5
CO4	Identify and apply the appropriate subjective and objective methods while evaluating food quality	K3,
CO5	Analyze the role of nutraceuticals, functional foods and alternative protein sources and evaluate their potential as indispensable future foods	K4, K5

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3	3	3	1	3	1
CO2	3	3	3	2	3	3	3	1	3	1
CO3	3	3	3	2	3	3	3	1	3	1
CO4	3	3	3	2	3	3	3	1	3	1
CO5	3	3	3	2	3	3	3	1	3	1

“1” – Slight (Low) Correlation “2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation “-” indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Evaluation of food quality, Food adulteration and Food additives a) Physical Characteristics of Foods-Colour, appearance, density, volume, viscosity, tenderness and loss of weight. Microscopic Examination, Chemical and physico - chemical methods. Sensory characteristics of food. b) Subjective techniques- Sensitivity tests, Difference tests, Rating tests and Descriptive tests. Selection of taste panel members. Objective Techniques- Measurement of colour, texture, viscosity and consistency. Factors affecting the acceptability of foods. c) Food adulteration- types, adulterants, and ways to detect them. d) Food additives- role in cooking- FSSAI-regulations.	20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Cereals and Pulses a) Cereals- Rice, Wheat, Millets-structure, composition, nutritive value, and processing- cereal products. Storage of grains. Nutritional significance of pseudocereals- quinoa, amaranth seeds, and buckwheat. b) Cereal cookery-Starch- Gelatinisation, factors affecting gelatinisation - changes in cooked starches-gel formation, retrogradation and syneresis. Cereal protein-gluten, factors affecting gluten formation, nutrient changes during different processing methods of cereals. Dextrinization. c) Pulses-composition, nutritive value, and processing methods-pulse products, TVP, toxins in pulses- Pulse cookery-soaking, germination, fermentation, roasting and puffing process of pulses. Effect of cooking on nutritive value, quality, and quantity of legumes.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

III	Animal Foods a) Milk and milk products-composition, nutritive value, physical and chemical characteristics-effect of heat, acid, enzymes and tannins. Milk cookery- problems in milk cookery. Processing of milk. Milk products. Milk storage. b) Meat- structure, composition, nutritive value, post-mortem changes in meat, rigormortis, ageing, tenderisation of meat. Meat cookery-selection of meat and methods of cooking, changes in meat during cooking. Poultry-classification, composition, nutritive value, selection of poultry and methods of cooking. Storage and preservation of meat. Fish-classification, composition, nutritive value, selection of fish, methods of cooking, storage and preservation of fish. c) Egg-structure, composition and nutritive value. Grading and selection. Egg cookery-coagulation of egg protein- factors influencing coagulation-role of egg in cookery. Egg white foam- factors influencing foam formation. Storage and preservation of egg.	25	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Vegetables, Fruits, and Beverages a) Vegetables- classification, composition, nutritive value, selection, storage and preservation. Pigments- classification- effect of cooking on pigments, flavour compounds, texture. b) Fruits- classification, composition, nutritive value, selection, storage, and preservation. Enzymatic browning and its prevention. Physico-chemical changes in vegetables and fruits-ripening, respiration and textural changes. Changes in nutritive value due to cooking and processing. c) Beverages- classification, types of beverages-fermented, non- fermented beverages, fruit beverages, malted beverages. Coffee, tea and cocoa processing.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Nuts, oilseeds, Fats, sugar and spices, Recent concepts in food science a) Nuts and oilseeds- composition and nutritive value, toxicants present. Fats and oils-sources and processing- fat cookery- fat as emulsifying, leavening, shortening agent, factors affecting fat absorption- rancidity, its types. b) Sugar- crystallisation and factors affecting crystallisation, caramelisation- Stages of sugar cookery and its role in Indian sweet preparations. Spices, herbs, and condiments used in cookery- its medicinal value. c) Recent concepts in Food Science- Nutraceuticals, Functional foods, sustainable	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

	alternative proteins (plant proteins, algae, and microalgae, mycoprotein), biofortification, organic food.			
VI	SELF STUDY FOR ENRICHMENT (Not to be included for External Examination) Role of food additives in food industry, Benefits of Sprouting, Coagulation of egg protein, Reactions of enzymatic browning, Processing methods of nuts and oilseeds.		CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Books

1. Shakuntala Manay, N. (2013). *Foods: Facts and Principles*. (3rded.). New Age International Publishers, New Delhi.
2. Swaminathan. M. (2019). *Advanced Text Book on Food and Nutrition*. (2nded.). Bangalore Printing and Publishing Co. Ltd, Bangalore.
3. Srilakshmi.B. (2020). *Food Science*. (8thed). New Age International Publishers, New Delhi.
4. Avantika Sharma. (2019). *Textbook of Food Science and Technology*. (3rded.). CBS Publishers and Distributors, New Delhi.
5. Iqbal, Syed Aftab. (2011). *Advanced Food Chemistry*. Discovery Publishing House, New Delhi.
6. Chopra H,K and Panesar P,S.,(2015). *Food Chemistry*. Narosa Publishing House (P) Ltd, New Delhi.

Reference Books

1. Norman N.Potter, (2007). *Food Science*, (5th ed). CBS Publishers and Distributors Pvt.Ltd.
2. Sadasivam.S.A,Manickam, (2008). *Biochemical methods for agricultural sciences*. New Age International Publishers, New Delhi.
3. Vickie, A., Vaclavik Elizabeth, W., Christian, (2014). *Essentials of Food Science*, (4th ed.), Springer Science and Business Media, New York.
4. Raheena Begum, M., (2015). *Textbook of Foods, Nutrition and Dietetics*, (3rd ed.), Sterling Publishers Pvt. Ltd, New Delhi.
5. Rick Parker, Miriah Pace (2020), *Introduction to Food Science and Food Systems* (2nd ed.), CBS Publishers

Web Links:

- <https://epgp.inflibnet.ac.in/>
- <https://www.ifst.org/lovefoodlovescience/resources>
- <https://libguides.reading.ac.uk/food/e-resources>
- <https://libguides.ntu.edu.sg/food-science-technology/eresources>
- <https://foodresearchgh.org/e-resources>

Journals

1. Food Chemistry, Elsevier Sci. Ltd, England
2. Food Science and Technology, Soc Brasileira Ciencia Tecnologia Alimentos, Brazil
3. Food Research International, Elsevier Science Bv, United States
4. Journal of Food and Agriculture, Wiley-Blackwell, England
5. Journal of Food Science and Technology, Scientific Publishers, India

Pedagogy

Chalk and talk, E-content, Lecture, Power point presentation, Seminar, Assignment.

Course Designers

- Ms.T.R.REVATHI

SEMESTER I	INTERNAL MARKS: 25		EXTERNAL MARKS: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
23PFS1CC3	HUMAN PHYSIOLOGY	CORE	6	5

Course Objective

- Gain basic understanding of human anatomy and physiology.
- Understand the integrated functioning of cells, tissues, organs and systems to maintain life.
- Describe the structure of major human organs and explain their role in maintenance of health

Pre requisites

- Prior knowledge on human physiology
- Fundamentals of structure and function of human organs.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Label composition and functions of blood and physiology of cell	K1
CO2	Interpret physiological of circulatory and respiratory system	K2
CO3	Predict various homeostasis of human body.	K3
CO4	Ascertain regulation of digestive and excretory system	K4
CO5	Evaluate structure and function of endocrine and reproductive system	K5

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	-	3	1	-	3	-	3	3	2
CO2	3	-	3	1	-	3	-	3	3	2
CO3	3	-	3	1	-	3	-	3	3	2
CO4	3	-	3	1	-	3	-	3	3	2
CO5	3	-	3	1	-	3	-	3	3	2

“1” – Slight (Low) Correlation “2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation “-” indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	Physiology of Cell, Cell Membrane, Nerve and Muscle. a. Internal Environment - The Concept of Homeostasis. b. Cellular level of organization – Review of structure and function of cell and its organelles. Cell division, control of cell growth and reproduction; cell differentiation; c. Membrane physiology – Transport of substance – diffusion, facilitated diffusion, Active Transport. Membrane Potential and Action Potential- Resting Membrane Potential. d. Excitation of Skeletal Muscle Neuromuscular Junction; Neuromuscular Transmission, Excitation and Contraction Coupling.	20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Digestive system a. Review of structure and function - Secretory, Digestive and Absorptive functions - Role of liver, pancreas and gallbladder. b. Motility and hormones of GIT. c. Regulation of food intake –role of hunger and satiety centres, effect of nutrients.	16	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Circulatory, Cardio-Vascular and Respiratory system a. Blood composition, functions, clotting and haemostasis. Normal levels and functions of plasma proteins, RBC"s, WBC"s and platelets; Erythropoiesis; Blood groups and histocompatibility. b. Structure and function of heart and blood vessels –Regulation of cardiac output and blood pressure; heart failure; hypertension. c. Respiratory system: Review of structure and function. Role of lungs in the exchange of gases. Transport of oxygen and Co2. Exchange of gases at the lungs and tissues. Regulation of Respiration.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

IV	Excretory and Nervous system a. Structure and function of nephron - Urine formation; Excretion of a concentrated and dilute urine; Role of kidney in maintaining pH of blood. b. Water, electrolyte and acid base balance – diuretics c. Organization of Central and Peripheral nervous system - Structure and functions of the brain, spinal cord; ANS.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Immune, Endocrine and Reproductive system a. Cell-mediated and humoral Immunity Activation of WBC and production of antibodies. Role in inflammation and defence. b. Endocrine glands (Pituitary gland, Thyroid, parathyroid, Islets of Langerhans, Adrenals, Ovary and Testis, Thymus, Pineal gland – structure, function, role of hormones, regulation of hormonal secretion.) c. Reproductive System – Review of male and female reproductive system; spermatogenesis, ovulation, menstruation, pregnancy and lactation; menopause	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	SELF STUDY FOR ENRICHMENT (Not to be included for External Examination) Types of active transport, Role of Ghrelin, Cardiac Index, Functions of Neuro transmitters, Importance of Interferon.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

TextBooks

1. Sembulingam.(2016).*EssentialsofMedicalPhysiology*.HealthSciencesPublisher.New Delhi.
2. Subramanyam.,Sarada.(2018).*TextbookofHumanPhysiology*.S.ChandandcompanyLtd, NewDelhi.
3. Randhawa.S.S.,AtulKabra.(2017).*HumanAnatomyandPhysiology*-I.S.VikasandCompany,India.
4. Muruges.N.(2010).*AnatomyPhysiologyandHealthEducation*.(6thed.).

ReferenceBooks

1. Guyton (2000). Guyton and Hal *Textbook of Medical Physiology*. Saunders.UnitedStates ofAmerica.
2. WaughAnneRossandWilson(2003).*AnatomyandPhysiologyinHealthand Illness*. Churchill Livingstone. New York.
3. Muruges.N(2011).*AnatomyandPhysiology*. SathyaPublishers. Madurai.
4. Wilson,Ross(2014).*AnatomyandPhysiologyinHealthandIllness*. ReedElsevierIndiaPrivate Limited. NewDelhi.

Weblinks

- <https://www.khanacademy.org/science/health-and-medicine/human-anatomy-and-physiology>
- <https://www.biologyonline.com/tutorials/the-human-physiology>
- <https://digitaleditions.library.dal.ca/intropsychneuro/chapter/hunger-and-eating/>
- <https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=NuAs6SreCGryddEfs4kkBA==>

Journals

- 1.Human Physiology, Maik Nauka/Interperiodica Publishing, Russian Federation.
- 2.Indian Journal of Clinical Anatomy and Physiology, publication Pvt. LTD, India.
- 3.American Journal of Physiology- Endocrinology and Metabolism, American Physiological Society, United States.
- 4.Canadian Journal of Physiology and Pharmacology, Canadian Science Publishing, NrcResearch Press, Canada.

Pedagogy

E-content,Lecture,Powerpointpresentation,Seminar,Assignment,Practical.

CourseDesigners

- Ms. ARTHY . R

SEMESTER I	INTERNAL MARKS:25		EXTERNAL MARKS:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
23PFS1CC1P	FOOD SCIENCE (P)	CORE PRACTICAL	6	5

Course Objective

- Learn the basic scientific principles underlying food preparation, processing, storage and preservation
- Comprehend the nutritional significance of various food groups
- Get acquainted with the recent trends and novel concepts in food science

Pre requisites

- Basic skills on preparation of various recipes
- Fundamentals of food chemistry

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Identify the common food adulterants and additives	K1
CO2	Explain the factors affecting cooking quality of foods	K2
CO3	Prepare various food items by applying innovative practices	K3
CO4	Determine the suitable cooking practices to retain the nutrients	K4
CO5	Evaluate the scientific principles involved in food preparation, processing and storage	K5

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3	3	3	1	3	1
CO2	3	3	3	2	3	3	3	1	3	1
CO3	3	3	3	2	3	3	3	1	3	1
CO4	3	3	3	2	3	3	3	1	3	1
CO5	3	3	3	2	3	3	3	1	3	1

“1” – Slight (Low) Correlation “2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation “-” indicates there is no correlation.

List of Experiments

1. Evaluation of food quality, Food adulteration and Food additives

- a) Identify and detect Common food adulterants in foods.
- b) Carryout a Market survey on food additives present in processed foods.

2. Cereals and Pulses

- a) Study the factors affecting gelatinization and prepare recipes where gelatinisation is hastened and retarded.
- b) Interpret the factors influencing the quality of chapathis.
- c) Prepare any two recipes to show the impact of dextrinization.
- d) Find the factors affecting cooking quality of pulses, prepare recipes which enhance nutritional quality of pulses.

3. Animal Foods

- a) Determine the factors affecting coagulation of milk proteins.
- b) List the problems in milk cookery and find ways to prevent them.
- c) Find the optimum temperature and time for boiling egg.
- d) Study the factors influencing egg white foam formation.

4. Vegetables, Fruits, and Beverages

- a) Determine the various factors influencing the changes in vegetables with respect to colour, texture and flavour compounds during cooking.
- b) Observe enzymatic browning reactions in vegetables and fruits and ways to overcome them.
- c) Determine the best method of preparing coffee and tea.
- d) Prepare one nourishing, soothing, refreshing and appetizing beverage.

5. Nuts, oilseeds, Fats, sugar and spices, Recent concepts in food science

- a) Find the smoking point of oils.
- b) Determine the factors affecting oil absorption
- c) Observe the different stages in sugar cookery and prepare crystalline and non- crystalline candies.

Text Books

1. Shakuntala Manay, N. (2013). *Foods: Facts and Principles*. (3rded.). New Age International Publishers, New Delhi.
2. Swaminathan. M. (2019). *Advanced Text Book on Food and Nutrition*. (2nded.). Bangalore Printing and Publishing Co. Ltd, Bangalore.
3. Srilakshmi.B. (2020). *Food Science*. (8thed). New Age International Publishers, New Delhi.
4. Avantika Sharma. (2019). *Textbook of Food Science and Technology*. (3rded.). CBS Publishers and Distributors, New Delhi.
5. Iqbal, Syed Aftab. (2011). *Advanced Food Chemistry*. Discovery Publishing House, New Delhi.
6. Chopra H,K and Panesar P,S.,(2015). *Food Chemistry*. Narosa Publishing House (P) Ltd, New Delhi.

Reference Books

6. Norman N.Potter, (2007). *Food Science*, (5th ed). CBS Publishers and Distributors Pvt.Ltd.
7. Sadasivam.S.A,Manickam, (2008). *Biochemical methods for agricultural sciences*. New Age International Publishers, New Delhi.
8. Vickie, A., Vaclavik Elizabeth, W., Christian, (2014). *Essentials of Food Science*, (4th ed.), Springer Science and Business Media, New York.
9. Raheena Begum, M., (2015). *Textbook of Foods, Nutrition and Dietetics*, (3rd ed.), Sterling Publishers Pvt. Ltd, New Delhi.
10. Rick Parker, Miriah Pace (2020), *Introduction to Food Science and Food Systems* (2nd ed.), CBS Publishers

Web Links:

- <https://epgp.inflibnet.ac.in/>
- <https://www.ifst.org/lovefoodlovescience/resources>
- <https://libguides.reading.ac.uk/food/e-resources>
- <https://libguides.ntu.edu.sg/food-science-technology/eresources>
- <https://foodresearchgh.org/e-resources>

Pedagogy

Chalk and talk, E-content, Lecture, Power point presentation, Seminar, Assignment, Demonstration

Course Designer

- Ms.N.GANGA DEVI

SEMESTER I	INTERNAL MARKS: 25		EXTERNAL MARKS: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
23PFS1DSE1A	FOOD MICROBIOLOGY, SAFETY AND QUALITY CONTROL	DISCIPLINE SPECIFIC ELECTIVE	6	3

Course Objectives

- To identify the beneficial effects of the microorganisms
- To evaluate the principles of sanitation
- To apply the laws and regulations related to food safety and quality control

Pre requisites

- Basic Knowledge on Food Science, Food chemistry
- Fundamentals of Food Microbiology

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	On the successful completion of the course, students will be able to Recall the important genera of microorganisms associated with food. Understand the Scope of food microbiology and food safety.	K1
CO2	Explain the suitable techniques for enumeration of microbes and methods (traditional to advanced) for preserving food	K2
CO3	Compute the role of different micro organisms in food spoilage, food fermentation and food-borne diseases and suggest ways to prevent food spoilage and food borne diseases	K3
CO4	Determine and recommend methods for microbiological quality control. Create investigation procedures for ensuring food safety and Hygiene	K4
CO5	Assess the food safety rules and regulations, Comprehend the use of Food Safety Management System (FSMS), and conduct Microbiological Risk Assessment.	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	1	3	2	2	3	2	2	3	1
CO2	2	1	3	2	3	3	2	2	3	1
CO3	2	1	3	2	2	3	2	2	3	1
CO4	2	1	3	2	2	3	2	2	3	2
CO5	2	1	3	2	2	3	2	2	3	1

“1”–Slight (Low) Correlation “2” Moderate (Medium) Correlation

“3”–Substantial (High) Correlation “-” indicates there is no correlation

SYLLABUS

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	<p>Determination of microorganisms and their relevance in food</p> <p>a) Importance and significance of microorganisms in food. Factors affecting the growth of microorganisms in food – Intrinsic and Extrinsic parameter.</p> <p>b) Sampling, sample collection, transport and storage, sample preparation for analysis. Microscopic and culture dependent methods- ,culture, enumeration and isolation methods.</p> <p>c) Chemical and Physical methods-Chemical ,immunological and nucleic acid based methods; Culture independent techniques – PCR Based, DGGE, Meta genomics, etc.; Analytical methods for microbial metabolites-microbial toxins and metabolites.</p>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	<p>Spoilage and Preservation of Foods from microbial contamination</p> <p>a) Characteristic features, dynamics and significance of spoilage of different groups of foods - Cereal and cereal products, vegetables and fruits, meat poultry and sea foods, milk and milk products, packed and canned foods.</p> <p>b) Chemical, Modified atmosphere, Radiation of foods from the microbiological angle.</p> <p>c) Indicators of water and food safety and quality: Microbiological criteria of foods and their Significance. ISO systems for food safety.</p>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	<p>Food borne diseases and food safety concept</p> <p>a) Bacterial food borne diseases (Staphylococcal intoxicification, Botulism, Salmonellosis, Shigellosis, Bacillus cereus Gastroenteritis) Food (Norovirus, Reovirus, Rotavirus, Astrovirus, Adenovirus, Parvovirus, Hepatitis A Virus) Food Borne Animal Parasites Protozoa–Giardiasis, Amebiasis, Taeniasis. Roundworm– Trichinosis, Mycotoxins: Aflatoxicosis, Ergotism. Drug resistance-phenomena and mechanism.</p> <p>b) Food safety concept- Importance of food safety in the food processing industry Risk classification, National and international food regulatory agencies,</p>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

	General food laws and food safety regulations, Nutritional labeling regulation (mandatory and optional nutrients, nutritional descriptors and approved health claims); Microbial contamination (including cross-contamination/indirect contamination) Chemical contamination, Physical contamination, Allergen contamination.			
IV	Food Safety Programs a) Definitions and importance of Good Manufacturing Practices (GMPs), Facility Maintenance, Personal Hygiene and Supplier Control. b) Sanitary Design of Equipment and Infrastructure, Procedures for Raw Material Reception, Storage and Finished Product Loading. c) Sanitation Program Sanitation Standard Operating Procedures (SSOPs), Product Identification, Tracking and Recalling Program, Preventive Equipment Maintenance Program, Education and Training Program.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Food Safety Regulation for Quality Control a) An overview of Food Regulation in India; Food Laws and Regulations; Structure, organization and duties of regulatory system. b) Duties and responsibilities of food business operator; Registration and Licensing process and requirements; Traceability; Import and Export of Foods; Liability for Defective Products; Food safety management systems and certifications. c) Regulation of special category Foods: Regulation of Irradiated foods; Regulation of Biotechnology and Genetic Modifications; Regulation of Dietary Supplements, Functional Foods and Nutraceuticals.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	SELFSTUDYFORENRICHMENT (Not to be Included for External Examination) Morphological characteristics of Microorganisms, Application of HACCP principles for food safety, Bacterial food borne diseases –Clostridium Perfringens gastroenteritis, Components of Pest Control Program, Uses of food Labeling.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Books

1. Frazier William, C. (2014). *Food Microbiology*. (5th ed) McGraw Hill Irwin Companies. New York
2. Adams. (2018) *Food Microbiology*. (2nd ed).New Age International Publishers. New Delhi.
3. Pelczar Jr Michael, J. (2014) *Microbiology*. McGraw Hill Education (India) Private Ltd, New Delhi.

Reference Books

1. Sugandhar Babu R P. (2008) *Food Microbiology*. Adhyayan Publishers and distributors, New Delhi.
2. Vijaya Ramesh k. (2007) *Food Microbiology*. (1st ed).New Age International Publishers. New Delhi.
3. Bohra and Parihar. (2012) *Food Microbiology*. Student edition, Jodhpur
4. Anathanarayan, (2013) *Textbook of Microbiology*. University Press (India) Pvt. Ltd, Hyderabad.

Web Links

- <https://egyankosh.ac.in/bitstream/123456789/61874/1/UNIT%201%20Introduction%20to%20Food%20Microbiology%20Microbiology.pdf>
- <https://egyankosh.ac.in/bitstream/123456789/35007/1/Unit2.pdf><https://egyankosh.ac.in/bitstream/123456789/12424/1/Unit-3.pdf>
- <https://egyankosh.ac.in/bitstream/123456789/33296/1/Unit-4.pdf>

Journals :

1. Journal of Microbiology and Infectious Disease, Turkey.
2. Journal of Basic Microbiology, Wiley-Blackwell, Germany.
3. Journal of Microbiology, Microbiological Society Korea, South Korea.
4. Journal Applied Microbiology, Cardiff, U K.

Pedagogy

E-content, Lecture, Power point presentation, Seminar, Assignment

Course Designer

- Ms. M.VINOTHINI

SEMESTER I	INTERNAL MARKS : 25		EXTERNAL MARKS : 75	
COURSE CODE	COURSE TITLE	CATEGORY	HOURS / WEEK	CREDIT
23PFS1DSE1B	NUTRITION THROUGH LIFE CYCLE	DISCIPLINE SPECIFIC ELECTIVE	6	3

Course Objectives

- Understand the importance of nutrition through various life stages.
- Determine nutrient needs for all age groups and calculate the basic nutritional requirements.
- Develop a plan of action and implement nutritional care plan for every age group.

Pre requisites

- Principles of nutrition and application of meal planning guidelines throughout life cycle.
- Fundamentals of community nutrition.

Course Outcomes

CO Number	CO statement On the successful completion of the course, students will be able to	Cognitive level
CO 1	Identify national nutritional guidelines for various life stages	K1
CO 2	Interpret nutritional care plan for all age groups	K2
CO 3	Predict physiological changes in various stages of life cycle	K3
CO 4	Ascertain nutritional strategies to combat the infections, deficiencies and disorders	K4
CO5	Conclude menu and develop diet charts according to nutritional requirements of different age groups	K5

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	-	3	3	-	3	3
CO2	3	3	3	3	-	3	3	-	3	3
CO3	3	3	3	3	-	3	3	-	3	3
CO4	3	3	3	3	-	3	3	-	3	3
CO5	3	3	3	3	-	3	3	-	3	3

“1” – Slight (Low) Correlation “2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation “-” indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Pre natal and Infant nutrition <ol style="list-style-type: none"> Foetal origins of adult disease, intrauterine growth retardation, low birthweight, cleft palate, foetal alcohol syndrome—causes and consequences. Infancy – current feeding practices and nutritional concerns, guide lines for feeding normal and low birth weight infants. Growth and nutritional assessment – Growth chart, LBW babies – characteristics and nutritional care. Nutritional assessment, nutrient needs, lactose intolerance, 	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Nutrition during childhood <ol style="list-style-type: none"> Childhood – Growth and development, food and nutrient needs, dietary adequacy. Factors influencing food choices, food acceptance, parental influences. Development of healthy gut microbiome. Aetiology and treatment of PEM, Vitamin A Deficiency, Anaemia. Planning meals for children with Attention-deficit/hyperactivity disorder (ADHD), autism and dyslexia. Immunization schedule for children. School age - Growth and development, food and nutrient needs, dietary adequacy. Food choices, meal patterns, prevention of nutrition and health problems. Causes and consequences of stunting, underweight, wasting, overweight, obesity and dental caries. Packed lunch-Dietary guidelines and nutritional requirements. Planning packed lunch for various income groups. 	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Nutrition during adolescence <ol style="list-style-type: none"> Growth and development, food and nutrient requirements Food habits, irregular meal pattern, peer pressure, eating disorders. Pros and cons of popular fad diets. Planning balanced diets for adolescents. 	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

	c. Causes, consequences and treatment of adolescent pregnancy, PCOD, hormonal imbalance, premenstrual syndrome, anaemia, underweight, obesity.			
IV	Nutrition during pregnancy and lactation a. Lactation and breast milk – Physiology of lactation. Nutritive value and composition of breast milk - Colostrum. Food and nutrient requirements for nursing mother, advantages of breast feeding, importance of breastfeeding over formula feeds. Public health measures for pregnant and lactating women. Complications during lactation. b. COVID protocols for pregnant and lactating women. Planning balanced diets for pregnant and lactating women	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Nutrition in Adulthood and Old Age a. Food and nutrient requirements during adulthood. Nutritional concerns in adulthood related to nutrient deficiencies. Signs and symptoms of menopause. Effect of occupational hazards, stress related disorders and lifestyle modifications to overcome them. b. Geriatric nutrition - Food and Nutritional requirements - Nutritional care of the elderly. Physiological changes affecting digestion and absorption. Food selection patterns of the elderly. Nutritional problems of old age. c. Planning balanced diets for adults and elderly based on special needs and requirements.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	SELF STUDY FOR ENRICHMENT (Not to be included for External Examination) Classification of weaning foods, Menu planning for PEM, Theories of obesity, Examples of lactogogues foods, Palliative care for elderly people.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Books

1. Brown Judith, E.(2008) *Nutrition*.(3rd ed.)Thomson Wadsworth USA.
2. Park, K. (2008) *Essentials of Community Health Nursing*(5th ed.).M/s Banarsidas Bhanot Publishers.Jabalpur.
3. Josephine Martin and Charlotte Beckett Oakley, (2008).*Managing Child Nutrition Programs*.(2nd ed.) Jones& Bartlett Publishers.
4. Seema Sonkar and Doreas L. Essiamah, (2008) *Food and Nutrition Security challenges towards combating malnutrition*.Chandralok Prakashan. Kanpur.
5. Bamji M.S, PrahladRao N, Reddy. (2016)*Textbook of Human Nutrition*.(4th ed.).Oxford and PBH Publishing Co. Pvt. Ltd. New Delhi.

Reference Books

1. Prakash Shetty,(2002).*Nutrition through the life cycle*.(1st ed.). Leatherhead publishing. Leather head International Ltd. UK.
2. Gibney, M.J.,Margetts, B.M.,Kearney, J.M.,Arab, L., (2004).*Public Health Nutrition*. (2nd ed.).UK.Blackwell PublishingCo.
3. Carolyn D. Berdanice., (2009), *Advanced Nutrition*, (2nd ed.). CRC Press.
4. M.Swaminathan., (2012), *Advanced Textbook on Food and Nutrition*. (2nd ed). Bangalore Printing and Publishing Co. Ltd., Bangalore,
5. Raheena Begum. M., (2015), *A textbook of Foods, Nutrition and Dietetics*.(3rd ed.).Sterling Publishers Pvt. Ltd., New Delhi.
6. Park K.,(2021), *Park's Textbook of Preventive and Social*.(26th ed.). M/S Banarasidas, Bharat Publishers, Jabalpur, India.

Web Links

- <https://www.who.int/>
- <https://www.encyclopedia.com/food/encyclopedias-almanacs-transcripts-and-maps/assessment-nutritional-status>
- <https://www.fao.org/about/en/>
- <https://www.nin.res.in/downloads/NNMBREPORT2001-web.pdf>
- <https://www.icmr.gov.in/>

Journals

1. Society for Nutrition Education and Behavior, Elsevier Sci. Ltd, England
2. Journal of the Academy of Nutrition and Dietetics, Elsevier Science Inc publishing, United States.
3. Public Health Nutrition, Cambridge University, England
4. Food Research International, Elsevier Science Inc, United States.
5. Journal of Food and Agriculture, Wiley-Blackwell, England

Pedagogy

Chalk and talk, PPT, Discussion, Assignment, Demo, Quiz, Seminar, Visit to ICDS

Course Designers

- Ms.E.AGALYA

SEMESTER I	INTERNAL MARKS: 25		EXTERNAL MARKS:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
23PFS1DSE1C	FRONT OFFICE OPERATIONS	DISCIPLINE SPECIFIC ELECTIVE	6	3

Course Objectives

- To gain knowledge on role of front office as functional area.
- To understand the functions of front office.
- To study the operational aspects of front office.

Pre -requisites

- Fundamentals of hotel functional areas.
- Basics of front office operations.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Illustrate operations of hospitality sector	K2
CO2	Classify hotels on the basis of various criteria	K3
CO3	Predict functionalities of all departments in the industry	K3
CO4	Devise strategies for the profitability of the hotel	K4
CO5	Plan check in and check out of guest	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	-	3	3	3	3	-	3	3
CO2	3	3	-	3	3	3	3	-	3	3
CO3	3	3	-	3	3	3	3	-	3	3
CO4	3	3	-	3	3	3	3	-	3	3
CO5	3	3	-	3	3	3	3	-	3	3

“1” – Slight (Low) Correlation “2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation “-” indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVEL EVEL
I	Hotel Industry Hotel - Definition, Classification based on star Category, size and location. Hotel Organization - Organization Pattern in a large, medium and small sized hotel. Functional Department in a hotel –Front office, Housekeeping, Reservations, Night audit, Loss / Prevention, Security, Food and beverage, Engineering and Sales departments.	18	CO1, CO2, CO3, CO4, CO5	K1,K2,K3,K4,K5
II	The Guest and Guest Rooms Categorizing the guest room - Room types, Room configuration, Room Designations, Room Numbering, Room status reconciliation, Key control systems.	18	CO1, CO2, CO3, CO4, CO5	K1,K2,K3,K4,K5
III	Room Rates , Room Rate Designations and Reservation Rack rate, Corporate rate Volume account rates, Government rate, seasonal rates weekday / Weekend rates, membership rates, Industry rates, Walk in rates, Premium rates, half day rates, Advance Purchase rates, Package rates, Per person rates, group rates. Reservations – Determining occupancy and availability, Availability factors overselling and procedure.	18	CO1, CO2, CO3, CO4, CO5	K1,K2,K3,K4,K5
IV	Front Office Overview The Arrival Chronology - Greeting, Transition, Registration and Completion – Group arrivals. Departure - Front desk Checkout, Guest directed Computer checkout, Automated checkout. Front office operations - Communications, staffing Values added Services – safe deposit boxes, Mail, Telephone and document handling. The Electronic Front Office (EFO).	18	CO1, CO2, CO3, CO4, CO5	K1,K2,K3,K4,K5
V	Guest Accounting and Night Audit Guest Accounting - Accounting basics, Guest history account – Guest Ledger, City ledger, Accounting entries. Night Audit - Night audit overview, Night audit reporting, Ancillary Night audit duties.	18	CO1, CO2, CO3, CO4, CO5	K1,K2,K3,K4,K5
VI	SELF STUDY FOR ENRICHMENT (Not to be included for External Examination) Pod hotel, Functioning of lost and found, Point of Sale System, Property Management System, Software and apps used for Reservation.	-	CO1, CO2, CO3, CO4, CO5	K1,K2,K3,K4,K5

Text Books

1. Ahmed Ismail. (2004). *Front office operations And Management*. Delmar Publications
2. Sudhir Andrews. (2014). *Hotel Front Office a Training Manual*, (3rd edition) McGraw Hill Education (India) Private Limited.
3. Dr. B.K. Chakravarthi. (2011). *Hotel Front Office Training Manual*. A.P.H Publishing Corporation.
4. R.K. Arora. (2009). *Hotel Organization And Front Office Management*. A.P.H Publishing Corporation.

Reference Books

1. Ahmed Ismail. (2004). *Front office operations And Management*. Delmar Publications.
2. Kyesung chon and Raymond. T. Sparrowe. (2001). *Welcome to Hospitality An Introduction* (2nd ed) Delmar publication.
3. G. Raghubalan, Smritee Raghubalan. (2015). *Hotel Housekeeping operations and Management*, Oxford University Press.
4. Tarachand. (2000). *Hotel and Restaurant Management*. Mohit Publications, New Delhi.
5. S.K. Bhatnagar (2005). *Front Office Management*. Frank Bros. & Co. (Publishers) Limited.
6. Ravi Aggarwal (2010). *Hotel Front Office – Systems & Procedures*, sublime publications.
7. M.A. Khan. (2005). *Front Office*. Anmol Publication Private Limited.

Web Links

- <https://www.ihmnotessite.net/hotel-core-areas>
- <https://www.ihmnotessite.net/classification-of-hotels>
- <https://www.ihmnotessite.net/types-of-rooms>
- <https://www.ihmnotessite.net/fo-organisation>
- https://www.bharatskills.gov.in/pdf/E_Books/FrontOffice1Sem_TP.pdf
- file:///C:/Users/Lenovo/Downloads/BHM-704ET.pdf

Journals

1. The Journal of Hospitality & Tourism Research, Sage Publication.

Pedagogy

E-content, Lecture, Power Point Presentation, Seminar, Assignment, Group discussion.

Course Designers

- Ms. S.FATHIMA
- Ms. M.VINOTHINI

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)

**NATIONALLY ACCREDITED (IHCYCLE) WITH “A” GRADE BY NAAC
ISO 9001:2015 Certified
TIRUCHIRAPPALLI**

DEPARTMENT OF FOOD SERVICE MANAGEMENT AND DIETETICS



M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS

SYLLABUS

2022-2023 and Onwards



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY-18
DEPARTMENT OF FOOD SERVICE MANAGEMENT AND DIETETICS
M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS
LEARNING OUTCOME BASED CURRICULUM FRAME WORK (CBCS-LOCF)
(For the Candidates admitted from the Academic year 2022-2023 onwards)

Semester III

Semester	Course	Title	Course Code	Inst.Hrs./week	Credits	Exam			Total
						Hrs	Marks		
							Int	Ext	
III	Core Course -VI(CC)	Food Product Development and Entrepreneurship	22PFS3CC6	6	5	3	25	75	100
	Core Course – VII (CC)	Research Methods, Statistical Techniques and Computer Applications	22PFS3CC7	6	5	3	25	75	100
	Core Choice Course– II (CCC)	A. Cyber Security	22PGCS3CCC2A	5	4	3	25	75	100
		B. Food Microbiology and Sanitation	22PFS3CCC2B						
		C. Food Service Facilities	22PFS3CCC2C						
	Core Practical - III (CP)	Research Methods, Statistical Techniques and Computer Applications (P)	22PFS3CC3P	5	5	3	40	60	100
	Discipline Specific Elective Course-III (DSE)	A. Competitive Examinations in Home Science for Professional Development	22PFS3DSE3A	5	3	2	-	100	100
		B. Waste Management in Food Industries	22PFS3DSE3B			3	25	75	
		C. Child Development	22PFS3DSE3C						
	Generic Elective Course-I (GEC)	Fundamentals of Nutrition	22PFS3GEC1	3	2	3	25	75	100
	Extra Credit Course	SWAYAM ONLINE COURSE	As per UGC Recommendation						
Total			30	24				600	

SEMESTER III	INTERNAL MARKS: 25	EXTERNAL MARKS:75		
COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
22PFS3CC6	FOOD PRODUCT DEVELOPMENT AND ENTREPRENEURSHIP	CORE	6	5

Course Objectives

- To acquire knowledge on food processing
- To understand the need for a new product through surveys and consumer data
- To know about various types of marketing strategy involved in generating sales for a new product.

Pre-requisites

- Fundamentals of food chemistry
- Basic knowledge on food science

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On Successful Completion of the course, students will be able to	
CO1	Define the principles and sketch appropriate processing technology to create a new food product	K1
CO2	Explain the evaluation procedures involved in food product development	K2
CO3	Relate the role of food packaging and importance of labeling on developed food product	K3
CO4	Determine financial sources for entrepreneurial ventures for a new product development	K4
CO5	Evaluate commercialization of a new food product	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	3	3	3	3	3	3	3
CO2	3	3	2	3	3	3	3	3	3	3
CO3	3	3	2	3	3	3	3	3	3	3
CO4	3	3	2	3	3	3	3	3	3	3
CO5	3	3	2	3	3	3	3	3	3	3

“1” – Slight (Low) Correlation “2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation “-” indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	<p>a) Food product development Principles, steps in food product development, factors influencing food product development- social concerns, impact of technology and market place influence. Market research, consumer preferences.</p> <p>b) Generation of new product ideas Internal sources of ideas-census data, magazine, reward cards, surveys. Polling, membership list, seller/retailer and distributor, telephone and mails. External sources of ideas- competitors, food conference/exhibition, tradeshow and research symposia, public libraries, trade literature, Government publications.</p>	18	CO1, CO2, CO3, CO4, CO5	K1,K2,K3,K4,K5
II	<p>a) Food processing Principle, methods of food processing. Trends in modern food processing.</p> <p>b) Recipe development Types – Fresh and processed foods. Traditional foods, weaning foods, convenience foods (RTE, RTS), extruded foods, fabricated foods, value added foods, designer foods, sports foods, space foods, functional foods. Standardization methods, portion size and portion control.</p>	18	CO1, CO2, CO3, CO4, CO5	K1,K2,K3,K4,K5
III	<p>a) Sensory evaluation Sensory evaluation, nutrient analysis, shelf life and storage stability evaluation procedure of developed food products,</p> <p>b)Objective evaluation Tests used for Objective Evaluation- Chemical methods, Physico-chemical methods, Microscopic Examination, Physical Methods.</p>	18	CO1, CO2, CO3, CO4, CO5	K1,K2,K3,K4,K5

IV	<p>a)Packaging Types of packaging, steps to determining packaging, food packaging materials and forms, package testing, packages with special features, safety of food packaging. Food labeling and nutrition labeling.</p> <p>b)Food Standards Food Standards – ISO 9000 quality management systems, FSSAI, AGMARK, FAO, WHO, ISO 2200 series.</p>	18	CO1, CO2, CO3, CO4, CO5	K1,K2,K3,K4,K5
V	<p>a)Financial management, and marketing Pricing- objectives, methods of pricing, Financial accounting procedures, food product cost calculation, profit margin. Role of advertisement in promotion of new products, marketing strategies.</p> <p>b) Entrepreneurship Introduction, concept, characteristics, entrepreneurial process, importance of entrepreneurship, factors affecting entrepreneurship. Entrepreneur – types, functions of an entrepreneur. Financial sources for entrepreneurial ventures. Role of institutions – MSME,SIDCO, SIDBI, NIESBUD, EDII, SISI, NREG, Scheme-SWARNA JAYANTHI, Rosgar Yojana Schemes, Bank/Funding agencies. Legal environment and entrepreneurship- patents, copyrights, trademarks.</p>	18	CO1, CO2, CO3, CO4, CO5	K1,K2,K3,K4,K5
VI	<p>SELF STUDY FOR ENRICHMENT (Not to be included for External Examination) Factors influencing food product development- health concerns, Types and uses of food additives, SWOT analysis, Role of FSSAI in licensing, Factors affecting pricing.</p>	-	CO1, CO2, CO3, CO4, CO5	K1,K2,K3,K4,K5

TextBooks

1. Avantina Sharma. (2012). *Textbook of Food Science and Technology*. CBS Publishers and Distributors Pvt.Ltd.
2. N.Shakunthala Manay M.Shadakshara swamy. (2008). *Food Facts and Principles*. New Age International Publishers, NewDelhi.
3. Vikas Ahluwalia. (2007). *Food Processing*. Paragon International Publishers, New Delhi.
4. Ernest R.Vieira. (2010). *Elementary Food Science*. International Thomson Publishing, New York.

ReferenceBooks

1. Gordon W.Fuller. (2011). *New Food Product Development From Concept to Market Place*, CRC Press.
2. Sunetra Roday. (2012). *Food Hygiene and Sanitation*. Tata McGraw Hill Education Private Limited, New Delhi.
3. D.G.Rao. (2016). *Fundamentals of Food Engineering*. PHI Learning Private Limited, New Delhi.

Web links

- <https://egyankosh.ac.in/bitstream/123456789/33557/1/unit-14.pdf>
- https://www.academia.edu/40644146/New_Food_Product_Development
- <https://books.google.co.in/books?id=MnGtY1PwrIoC&pg=PA161&lpg=PA161&dq=recipe+development+process+RTE+%26+RTS&source#v=onepage&q&f=false>
- <https://www.mdpi.com/2304-8158/9/9/1317>

Journals

1. International Journal of Engineering Science and Technology, Engg Journals Publications, Singapore.
2. Current Research in Nutrition and Food Science, Enviro Research Publishers, Madhya Pradesh, India

Pedagogy

E-content, Lecture, Power Point Presentation, Seminar, Assignment, Visit to Food Processing and Packaging units.

Course Designers

- Ms.M.VINOTHINI
- Ms.T.R.REVATHI

SEMESTER III	INTERNAL MARKS: 25		EXTERNAL MARKS:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
22PFS3CC7	RESEARCH METHODS, STATISTICAL TECHNIQUES AND COMPUTER APPLICATIONS	CORE	6	5

Course Objectives

- To understand the various categories of researches
- To ascertain and accomplish different research
- To apply computer techniques in data analysis

Pre – requisites

- Fundamental knowledge on nutritional problems and vital statistics
- Basic knowledge in operating systems and application of software

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On Successful Completion of the course, students will be able to	
CO1	Identify the problem and select appropriate type of research	K1
CO2	Illustrate the data processing using diagrammatic and graphical representation	K2
CO3	Apply sampling techniques and apply the same for thesis and report writing	K3
CO4	Analyze statistical distribution and apply it for tests of significance using Statistical Package for the Social Sciences (SPSS) software	K4
CO5	Assess central tendency variation and relate the results	K5

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	2	2	2	2	2	2	2	2	2
CO2	2	2	2	2	2	2	2	2	2	2
CO3	2	2	2	2	2	2	2	2	2	2
CO4	2	2	2	2	2	2	2	2	2	2
CO5	2	2	2	2	2	2	2	2	2	2

“1” – Slight (Low) Correlation “2” – Moderate (Medium) Correlation
“3” – Substantial (High) Correlation “-” indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	<p>a) Introduction to research and types of research</p> <p>Definition, Objectives, characteristics of research and criteria of good research. Different types of Research- Descriptive, Analytical, Applied, Fundamental, Quantitative, Qualitative, Conceptual and Empirical research.</p> <p>b) Nutrition research and experimental design</p> <p>Principles of Research Design, longitudinal, cross sectional, epidemiological, surveillance, retrospective, in-vivo, in- vitro. Experimental Design– Single group, pre and post design, case study, ex-post facto, time series, experiments and factorial design.</p>	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	<p>a) Sampling techniques</p> <p>Different sampling Methods-Probability and non-probability sampling methods. Sampling and non-sampling errors, sample size, sampling fundamentals and theory of sampling.</p> <p>b) Scaling techniques</p> <p>Different types – Nominal, Ordinal, Interval and ratio – attitude Scales – Rating scales, check list.</p> <p>c) Collection of data</p> <p>Primary and secondary data. Primary data collection methods - preparation of schedules and questionnaires. Interview method of enquiry, training of interviewers. Secondary data collection method- Reliability of data, suitability of data, adequacy of data.</p>	20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

III	<p>a) Processing of data Questionnaire checking, editing, coding, Classification- Geographical, chronological, qualitative, quantitative. Frequency distribution- discrete and continuous. Tabulation of data, parts of a table, rules of tabulation, types of tables-simple and complex.</p> <p>b) Diagrammatic and graphical representation of data Diagrammatic–One dimensional diagrams - Bar diagrams – simple, multiple, subdivided, deviation. Two dimensional diagrams- pie, circles, rectangles and squares- pictogram and carto graphs. Graphical, frequency graphs- Line, polygon, curve. Histogram- cumulative frequency graphs-ogives.</p> <p>c)Statistics in research Measures of central tendency -Mean, median, mode, their relative advantages and disadvantages. Measures of dispersion, mean deviation, standard deviation, coefficient of variation, percentiles and percentile ranks. Correlation and regression- Correlation, co efficient of correlation and its interpretation, rank correlation. Regression equations and predictions. (Include problems)</p>	20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	<p>a) Probability and distributions Rules of probability and its applications, importance of these distributions in research studies</p> <p>b) Tests of significance Large and small samples, “t” and F tests, tests for independence using chi square, analysis of variance (ANOVA), analysis of covariance (ANOCOVA) and applications, Parametric and Non – Parametric Test.</p> <p>c)Computer Applications Role of computers -design and planning phase, sample size calculation, data storage and data analysis.</p>	20	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

V	<p>a) Research report writing Components or layout of a thesis - Introduction, review of literature, methodology, results and discussion, summary and conclusion, bibliography, footnotes and appendix. Difference between Dissertation and thesis. Technical reports, popular reports, manuscript writing – original, review article, abstract, research article.</p> <p>b)Research ethics Principles of research ethics, scientific conduct, publication ethics, publication misconduct.</p>	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	<p>SELF STUDY FOR ENRICHMENT (Not to be included for External Examination)</p> <p>Difference between qualitative and quantitative research, Preparation of questionnaire for primary data collection, Difference between diagram and graph. Role of computers in research, Population test, Socio economic indices, KAP Surveys.</p>	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text books

1. Kothari. G.R. (2004) *Research Methodology*. New Age International (P) Ltd, New Delhi.
2. Dr. Rajamohan S., et al., (2010) *Introduction to Statistics*, (2nded). Learn tech Press.
3. Saravanavel. P.(2013) *Research Methodology* Kitab Mahal Allahabad
4. Dr.Vijay Upagade et al., (2020). *Research Mehtodology*. S.Chand and Company Ltd., New Delhi.
5. Pillai Bahavathi .R.S.N., (2021).*Statistics Theory and Practice*. (8thed) S.Chand and company Ltd., New Delhi.

Reference books

1. Vijayalakshmi.G & Sivapragasam. C. (2008).*Research Methodology*. MJP Publishers.
2. Borse. M.N.(2004).*Hand Book of Research Methodology*. Shree Niwas publications,Jaipur, India.
3. Grumani. N.(2014)*Research Methodologyfor Biological Sciences*. MJP Publishers.
4. Ramadas R and A.Wilson (2014)*Research and Writing*. MJP Publishers.
5. Gupta. S.P.(2002)*Statistical Methods*, Sultan Chand & Sons, New Delhi.

Web links

- <http://mospi.nic.in/419-market-research-surveys>
- http://shodhganga.inflibnet.ac.in/bitstream/10603/2019/8/08_chapter-1.pdf
- <https://swayam.gov.in/courses/5143-research-methodology>
- <http://icssr.org/>

Journals

1. BMC Medical Research Methodology, Biomed Central Ltd, England.
2. Health Services and outcomes Research Methodology, Kluwer Acedemic Publishers, Netherlands.
3. International Journal of Social Research Methodology: Theory and Practice, Taylor& Francis United Kingdom
4. Research Methodology in Strategy and Management, Elsevier Bv, Netherlands.

Pedagogy

E-content, Lecture, Power point presentation, Seminar, Assignment.

Course Designers

- Ms. S.FATHIMA
- Ms. E.AGALYA

SEMESTER III	INTERNAL MARKS : 25		EXTERNAL MARKS:75	
COURSE CODE	COURSE TITLE	CATEGORY	HOURS / WEEK	CREDIT
22PFS3CCC2B	FOOD MICROBIOLOGY AND SANITATION	CORE CHOICE	5	4

Course Objectives

- To understand the morphology of microorganisms
- To identify the beneficial and harmful effects of microorganisms in food
- To evaluate the principles of sanitation

Pre – requisites

- Fundamental knowledge on microorganisms and its effects
- Basic knowledge on food safety and standard

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to:	
CO1	Identify the types and morphology of microorganisms	K1
CO2	Describe the beneficial effects of microorganisms in food products.	K2
CO3	Predict the risk factors of microorganisms in food products	K3
CO4	Infer the hygiene and sanitary practices	K4
CO5	Appraise the various food standards to maintain the quality of foods	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	1	-	3	3	-	2	2
CO2	3	3	2	1	-	2	3	-	3	2
CO3	3	3	2	3	2	3	3	-	3	2
CO4	3	3	3	3	3	3	3	-	3	3
CO5	3	3	3	3	2	3	3	-	3	3

“1” – Slight (Low) Correlation “2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation “-” indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	<p>a) Introduction to microbiology Definition and history of microbiology, Different types of microscopy.</p> <p>b)General morphology of microorganisms- Bacteria, Fungi- Moulds and Yeasts, Viruses, Protozoa and Algae.</p> <p>c)Factors affecting the growth of microorganisms Intrinsic factors and extrinsic factors.</p>	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	<p>a)Contamination, spoilage and preservation of perishable foods Vegetables and fruits, milk and milk products, meat and meat products, poultry, fish.</p> <p>b)Contamination, spoilage and preservation of semi-perishable foods Egg, Roots and Tubers.</p> <p>c)Contamination, spoilage and preservation of non-perishable foods Cereal and cereal products, pulse and pulse products, fermented food products –yoghurt, cheese, soy products, sauerkraut, bread.</p>	15	CO1, CO2, CO3, CO4, CO5.	K1, K2, K3, K4, K5
III	<p>Food borne diseases Food hazards, significance of food borne diseases, risk factors associated with food borne illness. General measures to control and prevent food borne diseases.</p> <p>a)Bacterial agents of food borne illness <i>Clostridium botulinum, clostridium perfringens, Escherichia coli, salmonella, shigella, vibrio and staphylococcus aureus.</i></p> <p>b)Non-bacterial agents of food borne illness Toxigenic fungi – Mycotoxins, ergotism and aflatoxins. Food borne viruses – Polio, Hepatitis and Gastroenteritis viruses, seafood toxicants.</p>	15	CO1, CO2, CO3, CO4, CO5.	K1, K2, K3, K4, K5

IV	<p>a)Importance of personal hygiene of food handlers General principles of hygiene- personal and environmental hygiene. Hygienic practices in handling and serving of foods. Planning and implementation of training programmes for health personnels.</p> <p>b)Control of infestation and cleaning methods Importance of pest control, cleaning agents, methods to rinse and sanitize food contact surfaces, food waste treatment and disposal.</p> <p>c) Sanitation and Disinfection Water quality standards, sewage treatments, food safety guidelines for waste storage and disposal .Dengue, Swine Flu, Nipha Virus and corona virus –Overview, epidemiology, signs and symptoms, diagnosis, treatment and preventive measures.</p>	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	<p>a) Food Quality Controlling the microbiological quality of foods- quality criteria, quality control using microbiological criteria.</p> <p>b)Enforcement and Government regulatory practices and policies. – FDA (Food and Drug Administration), EPA (Environmental Protection Agency), ISI (Indian Standards Institute), HACCP (Hazard Analysis Critical Control Point) -steps in HACCP, and benefits of HACCP..</p>	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	<p>SELF STUDY FOR ENRICHMENT (Not to be included for External Examination) Beneficial effects of microorganisms, Spoilage and preservation of canned foods, Food borne Parasites, Hygiene and sanitation practices to be followed by food handlers, Applications of HACCP.</p>	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Textbooks

1. Bohra and Parihar. (2017). *Food Microbiology*. (5th ed). Sarswati Purohit.
2. Frazier. (2017). *Food Microbiology* (5th ed). McGraw Hill Irwin companies.
3. M.R. Adams. (2008). *Food Microbiology* (2nd ed). New age International (P)Ltd, New Delhi.
4. Pelczar.JR. (2014). *Microbiology* (7th ed). McGraw Hill Education(India) Private Ltd.
5. Sunetra Roday. (2017). *Food Hygiene and Sanitation with Case studies*, (2nd ed) Tata McGraw Hill companies.
6. N.Arumugam. et.al. (2018). *Food microbiology*. (5th ed) Saras Publication.

Reference Books

1. Anathanarayan.R. (2013). *Textbook of Microbiology*. Hyderabad University Press(India) Pvt. Ltd.
2. K.Vijaya Ramesh.(2009). *Food Microbiology*. New Age International Publishers.
3. Kavita Marwaha. (2007). *Food Hygiene*. Gene-Tech Books.
4. R.P.Sugandhar Babu. (2008). *Food Microbiology*. Adhyayan Publishers and Distributors.
5. Rajender Singh. (2009). *Food Microbiology and Food Processing*, Arpit printer, New Delhi.

Web Links

- <http://airccse.org/journal/ijscai/papers/3214ijscai01.pdf>
- <https://nptel.ac.in/courses/102103015/pdf/mod5.pdf>
- <https://www.fda.gov/files/food/published/Evaluation-and-Definition-of-Potentially-Hazardous-Foods.pdf>
- <https://www.ncbi.nlm.nih.gov/books/NBK216688/>
- <https://egyankosh.ac.in/handle/123456789/33298>

Journals

1. Journal of Microbiology, Biotechnology and Food Sciences, Slovak University of Agriculture in Nitra, Slovakia
2. Journal of Applied Microbiology, Wiley-Blackwell, England
3. Indian Journal of Microbiology Research, IP Innovative Publication Private Limited, New Delhi
4. Journal of Basic Microbiology, Wiley-Blackwell, Germany
5. Journal of Microbiology, Microbiological Society Korea, South Korea

Pedagogy

Lecture, Power Point Presentation, Seminar, Assignment, Group discussion.

Course Designers

- Ms. T.R. REVATHI
- Ms. N. GANGA DEVI

SEMESTER III	INTERNAL MARKS: 25		EXTERNAL MARKS: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
22PFS3CCC2C	FOOD SERVICE FACILITIES	CORE CHOICE	5	4

Course Objectives

- To understand the organization and management of Food Service Institutions
- To gain knowledge on principles and functions of management
- To study the importance of tools of management

Pre -requisites

- Principles of management
- Basics in layout designing

Course Outcome and Cognitive Level Mapping

CO number	CO statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO 1	State space allocation and layout in commercial and non-commercial establishments	K1
CO 2	Illustrate classification, selection, care and maintenance of equipment and furnishing	K2
CO 3	Predict menu planning and different types of food service systems using computers	K3
CO 4	Infer and apply computer techniques in purchase, storage, production of foods and housekeeping requirements	K4
CO 5	Assess cost control and accounting	K5

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	3	3	3	3	2	2	3
CO2	3	3	2	3	3	2	3	2	2	3
CO3	3	3	2	3	3	3	3	2	2	3
CO4	3	3	2	3	3	3	3	2	2	3
CO5	3	3	2	3	3	3	3	2	2	3

“1” – Slight (Low) Correlation “2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation “-” indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	Introduction to Food Service Review of Location, architectural considerations, space allocation, design, work flow in all types of commercial and welfare food service institutions, housekeeping requirements in relation to size, work and storage heights, sanitation and safety.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Facility planning and layout Planning and organizing space relationships and arrangement of equipment with assembly line concept. Detailed layout and location of functional areas in relation to capacity, receipt, purchase and storage of food, food production, food service, removal of soiled dishes, hand washing and dishwashing. Food safety - Sanitation of plant, garbage disposal and pest control.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Equipment Review of classification, traditional and modern equipment, Features of equipment. Equipment needs for commercial and welfare food service institutions of varying capacities. Materials used as bases and finishes of equipment construction. Factors affecting selection of equipment. Care and maintenance of equipment.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Catering Systems Recent trends versus traditional, conventional, commissary, ready prepared (cook- chill /cook - freeze systems), assembly food service systems, cloud kitchen.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

V	Automation in the Hospitality Industry Advantage of using computers in menu planning and accounting functions of food service institutions. Types of computer systems used for reservation systems, Point of sale systems (POS) and Property management systems (PMS).Room rate structure, guest accounting, night audit, kitchen audit.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	SELF STUDY FOR ENRICHMENT (Not to be included for External Examination) Classification of food service institutions, Ergonomics, Types of equipment, Concept of Heating , Ventilation and Air conditioning (HVAC) in food service facilities, Role of computers in hospitality industry.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Books

1. Ahmed Ismail.(2004).*Front Office Operations and Management*. Delmar Publications, Singapore.
2. Premavathy N.(2008).*Principles of Management (Business Management)*. Sri Vishnu Publication.
3. Raghubalan G and Smritee Raghubalan.(2009).*Hotel Housekeeping - Operations and Management*. Oxford University Press, New Delhi.
4. Mohini Sethi.(2011).*Catering Management – An Integrated approach*. New Age International Pvt Ltd, New Delhi.

Reference Books

1. West and B.B.Wood.(1996).*Food Service in Institutions*. Jonewiley and sons.
2. Malhotra R K.(1998).*Fundamentals of Hotel Management*. Anmol Publications, New Delhi.
3. Sharma Jyothi S.(2006).*Catering Management Practices*. Akansha Publishing house, New Delhi.
4. Chakravarthi B K,(2011).*Hotel and Hospitality Management*. A.P.H.Publishing Corporation.
5. Anil Bhat.(2016).*Principles of Management competencies, Practices, Processes*. Oxford University Press, NewDelhi.
6. Peter Jones.(2016).*Food service operations*. Library Cataloguing in Publishing Data, London.
7. Singaravelan R.(2016).*Food and Beverage Service*. Oxford university Press, NewDelhi.

Web Links

- <http://ncert.nic.in/textbook/pdf/lehe104.pdf>
- <https://pdfs.semanticscholar.org/18b8/eb1b94af18401e4610673e3f8bd6120f38fc.pdf>
- https://nptel.ac.in/courses/122106031/slides/1_1s.pdf
- http://shodhganga.inflibnet.ac.in/bitstream/10603/197548/5/05_chapter%202.pdf
- <https://www.manage.gov.in/studymaterial/EC.pdf>
- <https://www.food.gov.uk/sites/default/files/media/document/food-safety-checklist.pdf>

Journals

1. Journal of Industrial Engineering and Management, [OmniaScience](#).
2. Journal of Food Service Business Research, Taylor and Francis, UnitedKingdom.
3. Journal of Hotel and Business Management, Longdom Publishing,Belgium.

Pedagogy

Lecture, Assignment, Seminar, Quiz, Power point Presentation, Visit to Commercial and Non Commercial Food Service Establishments.

Course Designers

- Ms. E.AGALYA
- Ms.M.VINOTHINI

SEMESTER III	INTERNAL MARKS: 40		EXTERNAL MARKS:60	
COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
22PFS3CC3P	RESEARCH METHODS, STATISTICAL TECHNIQUES AND COMPUTER APPLICATIONS (P)	CORE PRACTICAL	5	5

Course Objectives

- To understand the various process of research.
- To ascertain and accomplish different analysis involved in research.
- To apply computer techniques in data analysis.

Pre – requisites

- Fundamental knowledge on nutritional problems and vital statistics
- Basic knowledge in operating systems and application software

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On Successful Completion of the course, students will be able to	
CO1	State the role of questionnaire and interview schedule for major and minor projects.	K1
CO2	Design effective visual representations of data using various graphical tools.	K2
CO3	Apply various statistical methods to analyze and interpret data using operating system and application software.	K3
CO4	Examine instances of plagiarism in research articles and understand the ethical implications.	K4
CO5	Evaluate research studies that utilize different statistical methods, including bivariate correlation, non-parametric tests and multiple regression analysis.	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	2	2	2	2	2	2	2	2	2
CO2	2	2	2	2	2	2	2	2	2	2
CO3	2	2	2	2	2	2	2	2	2	2
CO4	2	2	2	2	2	2	2	2	2	2
CO5	2	2	2	2	2	2	2	2	2	2

“1” – Slight (Low) Correlation “2” – Moderate (Medium) Correlation
 3” – Substantial (High) Correlation “-” indicates there is no correlation.

List of Experiments

1. Formulation of Interview schedule / Questionnaire.
2. Processing of data -editing, coding, classification and tabulation.
3. Applying Excel for nutritive value calculation and formatting chart and encryption of document.
4. Data Analysis - Computation of Mean, Median, Standard deviation.
5. Data Analysis – Graphical and diagrammatic representation of data.
6. Bi Variate correlation.
7. The t -test procedure using SPSS.
8. Non -parametric test -Chi-square test.
9. One way ANOVA procedure using SPSS.
10. Simple Regression, Multiple Regression.
11. Identification of Indexed journal.
12. Research proposal preparation.
13. Check plagiarism using software.

Text Books

1. Kothari G.R.(2004).*Research Methodology*. New Age International (P) Ltd.
2. Dr.Rajamohan.S. and Thilagaraj A.(2010).*Introduction to Statistics*(2nded). Learntech Press.
3. Saravanavel P. (2013).*Research Methodology*. Kitab Mahal Allahabad.

Reference Books

1. VijayalakshmiG. and Sivapragasam .C. (2008)*Research Methodology*. MJP Publishers.
2. Borse. M. N. (2004).*Hand Book of Research Methodology*. Shree Niwas publications,Jaipur(India).
3. Grumani N.(2014).*Research Methodology for Biological Sciences*. MJP Publishers.
4. Ramadas. R. and Wilson. A.(2014)*Research and Writing*. MJP Publishers.
5. Gupta S. P.(2002)*Statistical Methods*. Sultan Chand & Sons, New Delhi.
6. Chawla D. and Sondhi N. (2016).*Research Methodology*. Vikas.
7. Paneersevam. R. *Research Methodology*.Prentice Hall India Learning Private Limited.

Web links

- <http://mospi.nic.in/419-market-research-surveys>
- http://shodhganga.inflibnet.ac.in/bitstream/10603/2019/8/08_chapter-1.pdf
- <https://swayam.gov.in/courses/5143-research-methodology>
- <http://icssr.org/>

Pedagogy

E- Content, Power Point Presentation, Demonstration

Course Designers

- Ms. S.FATHIMA
- Ms. E.AGALYA

SEMESTER III	INTERNAL MARKS : -		EXTERNAL MARKS: 100	
COURSE CODE	COURSE TITLE	CATEGORY	HOURS / WEEK	CREDIT
22PFS3DSE3A	COMPETITIVE EXAMINATIONS IN HOME SCIENCE FOR PROFESSIONAL DEVELOPMENT	DISCIPLINE SPECIFIC ELECTIVE	5	3

Course Objectives

- To understand the basic concepts of home science
- To enable the students for competitive exams
- To enhance life skills

Pre -requisites

- Basics in Nutrition and Dietetics
- Principles of Home Science

Course Outcome and Cognitive Level Mapping

CO Number	CO statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	State the principles involved in food science, food standards and diet therapy	K1
CO2	Illustrate malnutrition, ecological factors, nutritional problems and their management	K2
CO3	Apply resource management, consumer issues, fundamentals of design in housing and apparel designing	K3
CO4	Associate appropriate communication tools with extension education	K4
CO5	Evaluate physical and physiological human development with respect to family relationship	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	1	3	-	3	2	-	2	3
CO2	3	2	1	3	2	3	2	-	2	3
CO3	3	2	1	3	3	3	2	-	2	3
CO4	3	2	1	3	-	3	2	-	2	3
CO5	3	2	1	3	2	3	2	-	2	3

“1” – Slight (Low) Correlation “2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation “-” indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	<p>Food Science, Food Service Management, Nutrition and Dietetics</p> <p>Food Science -Properties of food, quality evaluation of food, new product development, food packaging.</p> <p>Food Service Management- Menu planning, food cost analysis. Food standards, microbiological safety of food, HACCP. Perspectives of foodservice nanotechnology.</p> <p>Nutrition and Dietetics – Principles of nutrition, nutrition through lifespan, community nutrition, sports nutrition, nutrition in emergencies and disasters, nutritional intervention, clinical and therapeutic nutrition.</p>	10	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	<p>Textiles, Apparel Designing</p> <p>Textiles- Textile terminologies, classification of fibres, yarns and weaves, identification of fibres and weaves. Manufacturing process, properties and their uses. Fabric construction their properties and uses. Textiles finishes-classification, processing and purposes of finishes. Types of dyeing and printing. Textile testing and quality control, textile and environment. Traditional textiles of India. Recent developments in textiles.</p> <p>Apparel designing - Body measurements, equipment and tools used for manufacturing garments, elements and principles of design and its application to apparel. Factors affecting fashion, patternmaking, apparel manufacturing and quality testing. Care and maintenance of clothing.</p>	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	<p>Resource Management and Consumer Issues, Housing and Interior Design</p> <p>Resource Management-Management of time, energy, money, space, motivating factors, motivation theories, decision making, functions of management. Management of natural resources, money management, human resource management, ergonomics.</p>	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

	<p>Consumer Issues-Definition, role, rights and responsibilities, consumer behaviour, consumer problems, education and empowerment. Consumer protection and legislation. Entrepreneurship-concept, process, barriers, entrepreneurial motivation, challenges, enterprise setting, project planning and appraisal, enterprise management, Food economics.</p> <p>Housing and Interior Design Housing - Building regulations, Furniture and furnishing, housing finance, Housing and environment. Design – principles, elements of interior design.</p>			
IV	<p>Child / Human Development, Family Studies</p> <p>Child Development - Theories of human development and behaviour. Children and persons with special needs, care and support, special education, prevention of disabilities, rehabilitation. Children at risk-child labour, street children, children of destitute, orphans, child abuse and trafficking.</p> <p>Family Studies Family studies - Dynamics of marriage and family relationships. Role of family welfare in national development. Domestic violence, marital disharmony, resolution of conflict. Parent education, positive parenting, community education. Family disorganization.</p>	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	<p>Communication for Development, Extension Management and Community Development</p> <p>Communication for Development -Basics of communication- nature, characteristics, functions, process, models, elements, principles, barriers, perception, persuasion and empathy, types of communication, levels (settings) of communication transactions, process of listening. Communication systems and communication theories. Role of communication in development-Theories, models, need and importance. Writing for development, social marketing. Traditional, modern and new media for development. Theories in advocacy and behaviour change.</p>	17	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

	<p>Extension Management and Community Development</p> <p>Programme management, Extension methods and materials, Curriculum development and planning for extension education and development activities, Bloom's taxonomy of educational objectives and learning. Non- Formal, adult and lifelong education- perspectives, concept, theories, approaches, scope, methods and materials used, challenges of implementation and evaluation, issues to be addressed. Training, skill development and capacity building for human resource development-methods of training, entrepreneurship development. Community development, programmes for nutrition, health and education, People's participation and stakeholders perspectives, Participatory Learning and Action-methods and techniques.</p>			
VI	<p>SELF STUDY FOR ENRICHMENT</p> <p>(Not to be included for External Examination)</p> <p>Nutritional assessment-methods and techniques, Selection of clothing for different age groups. Selection of fabrics for different uses, Energy management and national efforts on energy conservation, Growth and development during pregnancy, History and objectives of extension education and extension service.</p>	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Books

1. Trueman Team. (2019). NTA–UGCNET. Home Science. Danika Publishing Company.
2. Upkar Prakasan. (2015) .Upkar’s UGCNET/JRF Exam. Solved Papers Home Science, Pratiyogita Darpan.
3. Premalatha Mullick. (2012). Textbook of Home Science.Kalyani Publishers.

Reference Books

1. Atlantic Research Division. (2014). Home Science forUGC-NET/SLET/JRF. Atlantic Publishers & Distributors PvtLtd.
2. Nandini Sharma. (2019). NTA UGCNET/JRF/SET. Home Science.Arihant publisher.
3. Editorial Board. (2019). NTAUGC-NET/JRF. Solved Papers.Home Science, Sahitya Bhawan.
4. Sunita Mishra. (2013). UGC NET Study Manual. Home Science. Selective and Scientific Books.

Weblinks

- <https://www.examrace.com/NTA-UGC-NET/NTA-UGC-NET-Previous-Years-Papers/Home-Science/>
- <http://www.deepugcnet.com/home-science.html>
- <http://www.ugcnetjrf.com/ugc-net-home-science-study-materials.htmlhttps://iasexamportal.com/Download/UGC-NET-Previous-Year-Exam-Question-Paper-Home-Science>

Journal

1. Food Science and Nutrition, John Wiley and Sons Ltd publisher, United Kingdom.
2. Nutrition in Clinical Practice, Sage Publications Inc, United States
3. Journal of Early Childhood, SAGE journal,United States.
4. International Journal of Home Science, Tirupati journal solutions, New Delhi.

Pedagogy

Lecture, Seminar, Assignment, Power Point Presentation, E-Content.

Course Designers

- Ms.S.FATHIMA
- Ms.M.VINOTHINI
- Ms.E.AGALYA

SEMESTER III	INTERNAL MARKS: 25		EXTERNAL MARKS:75	
COURSE CODE	COURSE TITLE	CATEGORY	HOURS / WEEK	CREDIT
22PFS3DSE3B	WASTE MANAGEMENT IN FOOD INDUSTRIES	DISCIPLINE SPECIFIC ELECTIVE	5	3

Course Objectives

- To know the waste emission of food industries
- To understand waste treatment method in food industries
- Importance of treating waste product from food industry

Pre -requisites

- Fundamentals of food science
- Basic knowledge on food processing

Course Outcome and Cognitive Level Mapping

CO Number	CO statement On the successful completion of the course, students will be able to:	Cognitive Level
CO1	Identify the basic principles of waste in food industries	K1
CO2	Describe the types of waste generated in various food industries	K2
CO3	Predict the methods of various waste treatment	K3
CO4	Determine the methods of utilizing wastes to make value added product	K4
CO5	Evaluate the recent trends in managing the waste food industries	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	-	3	3	-	3	3
CO2	3	3	3	2	-	3	3	-	3	3
CO3	3	3	3	2	-	3	3	-	3	3
CO4	3	3	3	2	-	3	3	-	3	3
CO5	3	3	3	2	-	3	3	-	3	3

“1” – Slight (Low) Correlation “2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation “-” indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Waste management overview Introduction, classification and characterization of food industrial wastes from fruits and vegetable processing industry, beverage industry, fish, poultry meat , sugar and dairy industry.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Waste from food processing industry Introduction and types of waste generated; bio degradable, non-degradable wastes, food industrial wastes from fruits, vegetables processing industry, fish, meat , poultry and dairy industry.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Treatment methods of waste from food industry Treatment methods for liquid waste from food industry- Design of activated sludge process, bioremediation, trickling filter process and anaerobic, design of solid waste treatment methods from food industry-drying, incineration and Solid waste storage and disposal methods- land-filling, burial, incineration, vermin composting pit, recycling. Hospital waste management-Infectious, hazardous, radioactive and general.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

IV	Emerging trends in waste management Utilization of waste- methods of utilizing wastes to make value added products; pectin, food colorants, antioxidants from fruit peels (citrus, mango, pomegranate), lycopene from tomato peels, enzymes from meat processing. Recovery and reuse of trimmings and pulps from fruit and vegetable.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Regulatory issues with food industry waste International and national scenario on disposal of waste from food industries, Regulatory issues with food industry waste. environmental impact assessment, ISO 14000.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	SELF STUDY FOR ENRICHMENT (Not to be included for External Examination) General characterization of food industry wastes, Types of waste generated from fruits and vegetables, Uses of recycling methods in food processing industry, Relate food waste management with nutraceuticals, Characterization of regulatory issues with food industry waste.	-	CO1, CO2, CO3, CO4 CO5	K1, K2, K3, K4, K5

Text Books

1. Ioannis S. Arvanitoyannis (2008). *Waste management for the food Industry*. (1sted). Elsevier Academic Press, United Kingdom
2. V. K. Joshi (2011). *Food processing waste management: Treatment and utilization*. (1sted) India Publishing Agency, New Delhi
3. Sivasankar B. "*Food processing and preservation*. (1sted) Prentice Hall of India Pvt. Ltd., New Delhi.

Reference Books

1. Keith Waldron (2009). *Hand book of waste management and co product recovery in food processing volume 2*. (1sted).CRC Press. Wood head publishing Limited. New Delhi.
2. Maria Kosseva, Colin Webb (2013). *Food industry waste assessment and recuperation of commodities*, (2nded)Elsevier, Unites States of America
3. Monika Thakur, V. K. Modi, Renu Khedkar (2021). *Sustainable food waste management: Concepts and Innovation*. (1sted).Springer.
4. Herzka A & Booth RG (1981), *Food Industry Wastes: Disposal and Recovery*. (1sted). Applied Science Pub Ltd, London

Weblinks

- <https://egyankosh.ac.in/handle/123456789/12399>
- <https://www.pdfdrive.com/waste-management-for-the-food-industries-food-science-and-technology-food-science-and-technology-e184360163.html>
- <https://swayam.gov.in/> Category: Engineering & Technology. Sub Category: Agriculture and Food Engineering

Journals

1. Journal of Material Cycles and Waste Management, Springer.
2. International journal integrated waste management, Science and Technology, Elsevier.

Pedagogy

Lecture by chalk & talk, power point presentation, e-content, group discussion, assignment, quiz, seminar.

Course Designers

- Ms. T.R. REVATHI
- Ms. R. ARTHY

SEMESTER III	INTERNAL MARKS: 25EXTERNAL MARKS: 75			
COURSE CODE	COURSE TITLE	CATEGORY	HOURS / WEEK	CREDIT
22PFS3DSE3C	CHILD DEVELOPMENT	DISCIPLINE SPECIFIC ELECTIVE	5	3

Course Objectives

- To Understand Knowledge on different stages of child development
- To acquire knowledge on growth and cognitive assessment
- To gain knowledge on theories of child development

Pre – requisites

- Basic knowledge on human development
- Fundamentals of human physiology

Course Outcome and Cognitive Level Mapping

CO Number	CO statement On the successful completion of the course, students will be able to:	Cognitive Level
CO 1	Label the stages and growth of child development	K1
CO 2	Describe the theories of child development	K2
CO 3	Apply assessment and techniques in child growth and cognitive	K3
CO 4	Analyze the nutritional programmes associated with adolescence	K4
CO5	Evaluate cognitive language, social and emotional development of child	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	2	-	3	3	-	3	3
CO2	3	3	2	2	-	3	3	-	3	3
CO3	3	3	2	2	-	3	3	-	3	3
CO4	3	3	2	2	-	3	3	-	3	3
CO5	3	3	2	2	-	3	3	-	3	3

“1” – Slight (Low) Correlation “2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation “-” indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Growth and development of the child Meaning, concepts and principles of growth and development. Classification of developmental stages. Impact of nature and nurture on child development. Factors Influencing development of children.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Infancy, Toddler and Childhood Newborn reflexes, Infant states and hazards, Infant's sensory and perceptual capacities, Infant and toddler temperament, Sensitive and critical periods in development, Cognitive and language development. Childhood - Physical and Motor development, Cognitive and Language development.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Adolescence Physiological and Psychological changes during Adolescence, Cognitive Development; Identity formation and Identity crisis, Self-regulation and Positive youth development, Factors influencing academic achievement, Career choice, Government Programmes for Adolescents in India.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Theories of child development Meaning and importance of theories, Theories in perspectives. Psycho-social stages (Erikson), Cognitive development (Piaget), Moral development (Kohlberg), Socio-cultural approach to cognitive development (Vygotsky), Ecological systems theory (Bronfenbrenner).	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

V	<p>Methods of Studying Children, Assessment of Growth in children and Cognitive Abilities</p> <p>Systematic Observation, Interview, Questionnaire, Case study, Ethnography, Social survey, Clinical Method. Assessment of Growth in children - Anthropometric measurements – Height, Weight, Mid upper arm circumference, Head circumference. Assessment of Cognitive Abilities - Binet-Kamath Intelligence Test, Weschler intelligence scales for children, Raven Progressive Matrices.</p>	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	<p>SELF STUDY FOR ENRICHMENT (Not to be included for External Examination)</p> <p>Difference between growth and development,</p> <p>Psychological needs and behavioral problems of special children,</p> <p>Peer influences in adolescence,</p> <p>Impact of theories on early childhood education,</p> <p>Case study -Anthropometric assessment of children.</p>	-	CO1, CO2, CO3, CO4, CO5.	K1, K2, K3, K4, K5

Text Books

- 1.Laura E.Berk (2005).*Child Development* (6thed). Prentice Hall of India Private limited. New Delhi.
- 2.Rajammaal P.Devadas,N.Jaya.(1984).*Textbook on Child Development*.Macmillan Publisher India limited.

Reference Books

1. Santrock, J.W (2010). *Child Development: An Introduction* (12thed). New York; McGraw Hill
2. Shaffer, D.R and Kipp, K (2007). *Developmental Psychology: Childhood and Adolescence* (7th ed).
3. Berk, L.E. (2014). *Child Development*. (7thed). PHI learning Ltd.New Delhi
4. Shaffer, D.R, and Kipp, K. (2007). *Developmental Psychology: Childhood and Adolescence* (7th ed). Australia: Thomson Wadsworth.
5. L. Kathleen Mahan,Sylvia Escort – stump. (2008). *Krause's Food and Nutrition Therapy* (12th ed). Elsevier.

Weblinks

- <https://www.cdc.gov/ncbddd/childdevelopment/facts.html>
- <http://www.psychologytoday.com/us/basics/child-development>
- http://en.m.wikipedia.org/wiki/Developmental_stages_theories

Journals

1. National library of medicine, PubMed, Medline, USA
2. International journal of sciences and research, open access, India.
3. Journal of early childhood, SAGE journal, United States.

Pedagogy

E-content, Lecture, Power point presentation, Seminar, Assignment

Course Designers

- Ms.E.AGALYA
- Ms. R.ARTHY

Semester : III	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
22PMB3GEC1	Food Quality Testing	Generic Elective Course	3	2

Course Objective

Food testing is an important part to ensure food safety through surveillance and enforcement.

Prerequisites

Safety of food is a basic requirement governing the quality of food found anywhere along the food chain.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
CO1	Explain the basics of food quality	K2,K3
CO2	Illustrate the nutritional value of foods	K3,K4
CO3	Summarize the Concepts of quality management	K4,K5
CO4	Intrepret Food Quality Laws and Regulations	K5,K6
CO5	Discuss about HACCP system	K5,K6

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	3	3	3
CO2	2	3	2	3	3	3	3	3	3	3
CO3	3	2	3	3	2	3	3	3	3	2
CO4	3	3	3	3	3	3	3	3	2	3
CO5	3	3	3	2	3	3	2	3	3	3

1- Slight (Low) correlation 2- Moderate (Medium) correlation

3- Substantial (High) correlation “-” indicates there is no correlation

Syllabus

UNIT	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	Human nutrition, Basic food groups, Balanced diet. Food processing, preservation and storage. Physico-chemical properties of food, enzymes in food. The various factors contributing towards quality of food - Appearance, Color, Taste, Odour, Nutritional value, Adulterants. Concept of quality: Quality attributes- physical, chemical, nutritional, microbial, and sensory; Their measurement and evaluation; Sensory instrumental methods for testing quality.	9	CO1, CO2, CO3, CO4,CO5	K1, K2, K3, K4,K5
II	Food adulteration, toxication of food, prevention of food borne diseases. Fermented food products. Production of nutrient rich foods. Agro-product preservation methods. Quality of animal feed and poultry feed. Quality control in food processing. Quality control for exportable foods.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Concepts of quality management: Objectives, importance and functions of quality control, Quality management systems in India, Sampling procedures and plans, Food Safety and Standards Act 2006, Domestic regulations, Global Food safety Initiative, Various organizations dealing with Inspection, traceability and authentication, certification and quality assurance –PFA, FPO, MMPO, MPO, AGMARK, BIS; Labeling issues, International food standards.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Food Quality Laws and Regulations: Quality assurance, Total Quality Management,	9	CO1, CO2,	K1, K2,

	GMP/GHP, GLP, GAP, Sanitary and hygienic practices, documentation and audits; Indian & International quality systems and standards like ISO and Food Codex, Export Import policy, export documentation.		CO3, CO4, CO5	K3, K4, K5, K6
V	HACCP system: Hazard analysis Critical Control Point: Definition, principles, Guidelines for the application of HACCP system. HACCP Quality manuals. Quality Improvement Techniques: Quality Improvement Plans (QIP); Quality Control Circles (QCC) and Total quality management (TQM).	9	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4, K5, K6
VI	Self Study for Enrichment (Not included for End Semester Examination) Laboratory quality procedures and assessment of laboratory performance, Applications in different food industries, Food adulteration and food safety.	-	CO1, CO2, CO3, CO4, CO5	K1 K2, K3, K4, K5, K6

Text Books

1. Bhatia, R. and Ichhpujan, R.L. (2014) Quality assurance in Microbiology. CBS Publishers and Distributors, New Delhi. .
2. Kher, C.P. (2000) Quality control for the food industry. ITC Publishers, Geneva.
3. Philip, A.C. Reconceptualising quality (2001) New Age International Publishers, Bangalore.
4. Jood, S. and N. Khetarpaul, (1991) Food Preservation. Agrotech Publishing Academy. Jaipur.
5. Manay, S. N. and M. Shadaksharawamy, (2001) Foods, Facts and Principles. 3rd Edition, New age International. New Delhi.

Reference Books

1. Yong-Jin Cho, Sukwon Kang. (2011) Emerging Technologies for Food Quality and Food Safety Evaluation, CRC Press.
2. Alli Inteaz, (2003) Food Quality Assurance: Principles and Practices, CRC Press.
3. Vasconcellos J. Andres, (2003) Quality Assurance for the Food Industry: A Practical Approach, CRC Press.

Web References

1. https://en.wikipedia.org/wiki/Quality_assurance<https://www.omicsonline.org/scholarly/food-quality-assurance-journals-articles-pptslist.php><http://www.fao.org/3/v5380e/V5380E05.htm>
2. <https://www.aaps.ca/principles-of-qaqc-in-the-food-industry.php>
3. <http://ecoursesonline.iasri.res.in/mod/page/view.php?id=1019>
4. <http://egyankosh.ac.in/bitstream/123456789/11486/5/Unit-1.pdf>
5. https://www.researchgate.net/publication/304351925_Relationship_between_sensory_and_instrumental_measurement_of_texture

Pedagogy

Chalk and talk, Power Point Presentation, Quiz, Assignments, Group Discussions, Seminar, and Assignment.

Course Designer

Dr. E.Priya

ANNEXURE Q

CAUVERY COLLEGE FOR WOMEN

(AUTONOMOUS)

Nationally Accredited (3rd Cycle) with 'A' Grade by NAAC
Office of the Controller of Examinations



Lr.No.028/COE/UG & PG

22.06.2023

To

Heads of the Departments
Cauvery College for Women (Autonomous)
Annamalai Nagar
Trichy - 1K.

Madam,

Sub : UG and PG Internal Components 2023 - 2024 Batch - Reg.

The following are the components of UG & PG Internal Components for Theory and Practical Courses from 2023 - 2024 onwards

THEORY	
Attendance	3
Library	3
Seminar / Quiz / Assignment	4
CIA - I	7.5
CIA - II	7.5
Total	25

PRACTICAL	
Observation	5
Record	5
Continuous Performance in Practical	5
Model Practical	10
Total	25


PRINCIPAL
CAUVERY COLLEGE FOR WOMEN
(AUTONOMOUS)
ANNAMALAI NAGAR,
TIRUCHIRAPPALLI - 620 018.


CONTROLLER OF EXAMINATIONS
CAUVERY COLLEGE FOR WOMEN
(AUTONOMOUS)
ANNAMALAI NAGAR,
TIRUCHIRAPPALLI - 620 018.
TAMILNADU.

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY - 18**END SEMESTER EXAMINATION – NOVEMBER 2022****RESULT ANALYSIS BEFORE REVALUATION****I UG**

S.NO.	DEPARTMENT	SEM	NUMBER REGISTERED	NUMBER APPEARED	NUMBER OF PASS	PASS PERCENTAGE
1	TAMIL	I	27	27	26	96.30
2	ENGLISH	I	32	32	31	96.88
3	BSW	I	24	24	21	87.50
4	BBA	I	71	71	53	74.65
5	B.COM	I	258	256	212	82.81
6	B.COM (CA)	I	69	69	52	75.36
7	MATHEMATICS	I	28	28	28	100
8	PHYSICS	I	35	33	20	60.61
9	CHEMISTRY	I	45	44	36	81.82
10	MICROBIOLOGY	I	71	71	70	98.60
11	BIOTECHNOLOGY	I	70	70	62	88.57
12	COMPUTER SCIENCE	I	152	152	108	71.05
13	COMPUTER APPLICATIONS	I	97	97	75	77.32
14	INFORMATION TECHNOLOGY	I	53	53	43	81.13
15	NUTRITION & DIETETICS	I	36	36	33	91.67
16	COGNITIVE SYSTEMS	I	37	37	34	91.89

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY - 18**END SEMESTER EXAMINATION – NOVEMBER 2022****RESULT ANALYSIS BEFORE REVALUATION****II UG**

S.NO.	DEPARTMENT	SEM	NUMBER REGISTERED	NUMBER APPEARED	NUMBER OF PASS	PASS PERCENTAGE
1	TAMIL	III	16	15	15	100
2	ENGLISH	III	36	36	35	97.22
3	BSW	III	10	10	8	80
4	BBA	III	48	48	46	95.83
5	B.COM	III	251	249	238	95.58
6	B.COM (CA)	III	65	64	63	98.44
7	MATHEMATICS	III	52	52	49	94.23
8	PHYSICS	III	19	19	19	100
9	CHEMISTRY	III	20	20	20	100
10	MICROBIOLOGY	III	51	50	49	98
11	BIOTECHNOLOGY	III	34	34	34	100
12	COMPUTER SCIENCE	III	77	77	76	98.70
13	COMPUTER APPLICATIONS	III	56	55	54	98.18
14	INFORMATION TECHNOLOGY	III	22	22	18	81.82
15	NUTRITION & DIETETICS	III	28	28	27	96.43
16	COGNITIVE SYSTEMS	III	35	35	34	97.14

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY - 18**END SEMESTER EXAMINATION – NOVEMBER 2022****RESULT ANALYSIS BEFORE REVALUATION****III UG**

S.NO.	DEPARTMENT	SEM	NUMBER REGISTERED	NUMBER APPEARED	NUMBER OF PASS	PASS PERCENTAGE
1	TAMIL	V	33	33	33	100
2	ENGLISH	V	111	109	104	95.41
3	BSW	V	35	35	33	94.29
4	BBA	V	83	83	82	98.80
5	B.COM	V	241	241	229	95.02
6	B.COM (CA)	V	65	65	61	93.85
7	MATHEMATICS	V	79	79	73	92.40
8	PHYSICS	V	43	43	42	97.67
9	CHEMISTRY	V	49	49	48	97.96
10	MICROBIOLOGY	V	74	73	71	97.26
11	BIOTECHNOLOGY	V	70	70	69	98.57
12	COMPUTER SCIENCE	V	143	143	143	100
13	COMPUTER APPLICATIONS	V	116	116	115	99.14
14	INFORMATION TECHNOLOGY	V	39	39	39	100
15	NUTRITION & DIETETICS	V	37	37	37	100

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY -18

END SEMESTER EXAMINATION RESULTS – NOVEMBER 2022

RESULT ANALYSIS BEFORE REVALUATION

I PG

S.NO.	DEPARTMENT	SEM	NUMBER REGISTERED	NUMBER APPEARED	NUMBER OF PASS	PASS PERCENTAGE
1	TAMIL	I	8	8	8	100
2	ENGLISH	I	30	29	28	96.55
3	MSW	I	21	21	19	90.48
4	COMMERCE	I	36	35	35	100
5	MATHEMATICS	I	37	37	35	94.59
6	PHYSICS	I	20	20	13	65
7	CHEMISTRY	I	27	27	18	66.67
8	MICROBIOLOGY	I	17	17	17	100
9	COMPUTER SCIENCE	I	31	30	27	90
10	FSM & D	I	26	26	23	88.46

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY -18

END SEMESTER EXAMINATION RESULTS – NOVEMBER 2022

RESULT ANALYSIS BEFORE REVALUATION

II PG

S.NO.	DEPARTMENT	SEM	NUMBER REGISTERED	NUMBER APPEARED	NUMBER OF PASS	PASS PERCENTAGE
1	TAMIL	III	9	9	9	100
2	ENGLISH	III	34	34	32	94.12
3	MSW	III	16	16	15	93.75
4	COMMERCE	III	15	15	15	100
5	MATHEMATICS	III	43	42	36	85.71
6	PHYSICS	III	29	29	28	96.55
7	CHEMISTRY	III	23	23	13	56.52
8	MICROBIOLOGY	III	19	19	19	100
9	COMPUTER SCIENCE	III	35	35	35	100
10	FSM & D	III	24	24	24	100

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY - 18**END SEMESTER EXAMINATION – NOVEMBER 2022****RESULT ANALYSIS AFTER REVALUATION****I UG**

S.NO.	DEPARTMENT	SEM	NUMBER REGISTERED	NUMBER APPEARED	NUMBER OF PASS	PASS PERCENTAGE
1	TAMIL	I	27	27	26	96.30
2	ENGLISH	I	32	32	31	96.88
3	BSW	I	24	24	21	87.50
4	BBA	I	71	71	53	74.65
5	B.COM	I	258	256	213	83.20
6	B.COM (CA)	I	69	69	54	78.26
7	MATHEMATICS	I	28	28	28	100
8	PHYSICS	I	35	33	23	69.70
9	CHEMISTRY	I	45	44	36	81.82
10	MICROBIOLOGY	I	71	71	70	98.59
11	BIOTECHNOLOGY	I	70	70	63	90
12	COMPUTER SCIENCE	I	152	152	110	72.37
13	COMPUTER APPLICATIONS	I	97	97	81	83.51
14	INFORMATION TECHNOLOGY	I	53	53	43	81.13
15	NUTRITION & DIETETICS	I	36	36	33	91.67
16	COGNITIVE SYSTEMS	I	37	37	34	91.89

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY - 18**END SEMESTER EXAMINATION – NOVEMBER 2022****RESULT ANALYSIS AFTER REVALUATION****II UG**

S.NO.	DEPARTMENT	SEM	NUMBER REGISTERED	NUMBER APPEARED	NUMBER OF PASS	PASS PERCENTAGE
1	TAMIL	III	16	15	15	100
2	ENGLISH	III	36	36	35	97.22
3	BSW	III	10	10	8	80
4	BBA	III	48	48	46	95.83
5	B.COM	III	251	249	238	95.58
6	B.COM (CA)	III	65	64	63	98.44
7	MATHEMATICS	III	52	52	49	94.23
8	PHYSICS	III	19	19	19	100
9	CHEMISTRY	III	20	20	20	100
10	MICROBIOLOGY	III	51	50	49	98
11	BIOTECHNOLOGY	III	34	34	34	100
12	COMPUTER SCIENCE	III	77	77	76	98.70
13	COMPUTER APPLICATIONS	III	56	55	55	100
14	INFORMATION TECHNOLOGY	III	22	22	18	81.82
15	NUTRITION & DIETETICS	III	28	28	27	96.43
16	COGNITIVE SYSTEMS	III	35	35	35	100

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY - 18**END SEMESTER EXAMINATION – NOVEMBER 2022****RESULT ANALYSIS AFTER REVALUATION****III UG**

S.NO.	DEPARTMENT	SEM	NUMBER REGISTERED	NUMBER APPEARED	NUMBER OF PASS	PASS PERCENTAGE
1	TAMIL	V	33	33	33	100
2	ENGLISH	V	111	109	104	95.41
3	BSW	V	35	35	33	94.29
4	BBA	V	83	83	82	98.80
5	B.COM	V	241	241	232	96.27
6	B.COM (CA)	V	65	65	63	96.92
7	MATHEMATICS	V	79	79	73	92.40
8	PHYSICS	V	43	43	42	97.67
9	CHEMISTRY	V	49	49	48	97.96
10	MICROBIOLOGY	V	74	73	71	97.26
11	BIOTECHNOLOGY	V	70	70	69	98.57
12	COMPUTER SCIENCE	V	143	143	143	100
13	COMPUTER APPLICATIONS	V	116	116	115	99.14
14	INFORMATION TECHNOLOGY	V	39	39	39	100
15	NUTRITION & DIETETICS	V	37	37	37	100

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY -18

END SEMESTER EXAMINATION RESULTS – NOVEMBER 2022

RESULT ANALYSIS AFTER REVALUATION

I PG

S.NO.	DEPARTMENT	SEM	NUMBER REGISTERED	NUMBER APPEARED	NUMBER OF PASS	PASS PERCENTAGE
1	TAMIL	I	8	8	8	100
2	ENGLISH	I	30	29	28	96.55
3	MSW	I	21	21	19	90.48
4	COMMERCE	I	36	35	35	100
5	MATHEMATICS	I	37	37	36	97.30
6	PHYSICS	I	20	20	17	85
7	CHEMISTRY	I	27	27	18	66.67
8	MICROBIOLOGY	I	17	17	17	100
9	COMPUTER SCIENCE	I	31	30	28	93.33
10	FSM & D	I	26	26	24	92.31

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY -18

END SEMESTER EXAMINATION RESULTS – NOVEMBER 2022

RESULT ANALYSIS AFTER REVALUATION

II PG

S.NO.	DEPARTMENT	SEM	NUMBER REGISTERED	NUMBER APPEARED	NUMBER OF PASS	PASS PERCENTAGE
1	TAMIL	III	9	9	9	100
2	ENGLISH	III	34	34	32	94.12
3	MSW	III	16	16	15	93.75
4	COMMERCE	III	15	15	15	100
5	MATHEMATICS	III	43	43	39	90.70
6	PHYSICS	III	29	29	28	96.55
7	CHEMISTRY	III	23	23	15	65.22
8	MICROBIOLOGY	III	19	19	19	100
9	COMPUTER SCIENCE	III	35	35	35	100
10	FSM & D	III	24	24	24	100

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY - 18**END SEMESTER EXAMINATION – APRIL 2023****RESULT ANALYSIS BEFORE REVALUATION****I UG**

S.NO.	DEPARTMENT	SEM	NUMBER REGISTERED	NUMBER APPEARED	NUMBER OF PASS	PASS PERCENTAGE
1	TAMIL	II	25	25	18	72
2	ENGLISH	II	31	31	28	90.32
3	BSW	II	24	24	23	95.83
4	BBA	II	68	68	67	98.53
5	B.COM	II	255	255	228	89.41
6	B.COM (CA)	II	69	69	65	94.20
7	MATHEMATICS	II	28	28	28	100
8	PHYSICS	II	32	32	31	96.88
9	CHEMISTRY	II	39	39	34	87.18
10	MICROBIOLOGY	II	70	70	69	98.57
11	BIOTECHNOLOGY	II	68	68	63	92.65
12	COMPUTER SCIENCE	II	150	150	142	94.67
13	COMPUTER APPLICATIONS	II	96	96	95	98.96
14	INFORMATION TECHNOLOGY	II	53	53	48	90.57
15	NUTRITION & DIETETICS	II	35	35	33	94.29
16	COGNITIVE SYSTEMS	II	37	37	34	91.89

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY - 18**END SEMESTER EXAMINATION – APRIL 2023****RESULT ANALYSIS BEFORE REVALUATION****II UG**

S.NO.	DEPARTMENT	SEM	NUMBER REGISTERED	NUMBER APPEARED	NUMBER OF PASS	PASS PERCENTAGE
1	TAMIL	IV	15	15	15	100
2	ENGLISH	IV	36	36	31	86.11
3	BSW	IV	9	9	9	100
4	BBA	IV	44	44	44	100
5	B.COM	IV	248	248	240	96.77
6	B.COM (CA)	IV	64	64	63	98.44
7	MATHEMATICS	IV	52	52	52	100
8	PHYSICS	IV	19	19	17	89.47
9	CHEMISTRY	IV	20	20	20	100
10	MICROBIOLOGY	IV	48	48	48	100
11	BIOTECHNOLOGY	IV	34	34	34	100
12	COMPUTER SCIENCE	IV	76	76	69	90.79
13	COMPUTER APPLICATIONS	IV	56	56	55	98.21
14	INFORMATION TECHNOLOGY	IV	22	22	22	100
15	NUTRITION & DIETETICS	IV	28	28	28	100
16	COGNITIVE SYSTEMS	IV	35	35	34	97.14

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY - 18**END SEMESTER EXAMINATION – APRIL 2023****RESULT ANALYSIS BEFORE REVALUATION****III UG**

S.NO.	DEPARTMENT	SEM	NUMBER REGISTERED	NUMBER APPEARED	NUMBER OF PASS	PASS PERCENTAGE
1	TAMIL	VI	33	33	33	100
2	ENGLISH	VI	108	108	104	96.30
3	BSW	VI	35	35	35	100
4	BBA	VI	82	82	82	100
5	B.COM	VI	240	240	236	98.33
6	B.COM (CA)	VI	65	65	65	100
7	MATHEMATICS	VI	79	79	77	97.47
8	PHYSICS	VI	42	42	42	100
9	CHEMISTRY	VI	50	50	50	100
10	MICROBIOLOGY	VI	72	72	72	100
11	BIOTECHNOLOGY	VI	70	70	69	98.57
12	COMPUTER SCIENCE	VI	143	143	143	100
13	COMPUTER APPLICATIONS	VI	116	116	114	98.28
14	INFORMATION TECHNOLOGY	VI	39	39	39	100
15	NUTRITION & DIETETICS	VI	37	37	37	100

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY -18

END SEMESTER EXAMINATION RESULTS – APRIL 2023

RESULT ANALYSIS BEFORE REVALUATION

I PG

S.NO.	DEPARTMENT	SEM	NUMBER REGISTERED	NUMBER APPEARED	NUMBER OF PASS	PASS PERCENTAGE
1	TAMIL	II	8	8	8	100
2	ENGLISH	II	29	29	28	96.55
3	MSW	II	18	18	17	94.44
4	COMMERCE	II	34	34	33	97.06
5	MATHEMATICS	II	36	36	36	100
6	PHYSICS	II	20	20	16	80
7	CHEMISTRY	II	27	27	22	81.48
8	MICROBIOLOGY	II	17	17	17	100
9	COMPUTER SCIENCE	II	29	29	29	100
10	FSM & D	II	26	26	26	100

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY -18

END SEMESTER EXAMINATION RESULTS – APRIL 2023

RESULT ANALYSIS BEFORE REVALUATION

II PG

S.NO.	DEPARTMENT	SEM	NUMBER REGISTERED	NUMBER APPEARED	NUMBER OF PASS	PASS PERCENTAGE
1	TAMIL	IV	9	9	9	100
2	ENGLISH	IV	34	34	34	100
3	MSW	IV	16	16	15	93.75
4	COMMERCE	IV	15	15	15	100
5	MATHEMATICS	IV	42	42	37	88.10
6	PHYSICS	IV	29	29	28	96.55
7	CHEMISTRY	IV	23	23	23	100
8	MICROBIOLOGY	IV	19	19	19	100
9	COMPUTER SCIENCE	IV	34	34	34	100
10	FSM & D	IV	24	24	24	100

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY - 18**END SEMESTER EXAMINATION – APRIL 2023****RESULT ANALYSIS AFTER REVALUATION****I UG**

S.NO.	DEPARTMENT	SEM	NUMBER REGISTERED	NUMBER APPEARED	NUMBER OF PASS	PASS PERCENTAGE
1	TAMIL	II	25	25	18	72
2	ENGLISH	II	31	31	28	90.32
3	BSW	II	24	24	23	95.83
4	BBA	II	68	68	67	98.53
5	B.COM	II	255	255	228	89.41
6	B.COM (CA)	II	69	69	67	97.10
7	MATHEMATICS	II	28	28	28	100
8	PHYSICS	II	32	32	31	96.88
9	CHEMISTRY	II	39	39	34	87.18
10	MICROBIOLOGY	II	70	70	69	98.57
11	BIOTECHNOLOGY	II	68	68	65	95.59
12	COMPUTER SCIENCE	II	150	150	142	94.67
13	COMPUTER APPLICATIONS	II	96	96	95	98.96
14	INFORMATION TECHNOLOGY	II	53	53	48	90.57
15	NUTRITION & DIETETICS	II	35	35	33	94.29
16	COGNITIVE SYSTEMS	II	37	37	34	91.89

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY - 18**END SEMESTER EXAMINATION – APRIL 2023****RESULT ANALYSIS AFTER REVALUATION****II UG**

S.NO.	DEPARTMENT	SEM	NUMBER REGISTERED	NUMBER APPEARED	NUMBER OF PASS	PASS PERCENTAGE
1	TAMIL	IV	15	15	15	100
2	ENGLISH	IV	36	36	31	86.11
3	BSW	IV	9	9	9	100
4	BBA	IV	44	44	44	100
5	B.COM	IV	248	248	242	97.58
6	B.COM (CA)	IV	64	64	63	98.44
7	MATHEMATICS	IV	52	52	52	100
8	PHYSICS	IV	19	19	18	94.74
9	CHEMISTRY	IV	20	20	20	100
10	MICROBIOLOGY	IV	48	48	48	100
11	BIOTECHNOLOGY	IV	34	34	34	100
12	COMPUTER SCIENCE	IV	76	76	69	90.79
13	COMPUTER APPLICATIONS	IV	56	56	55	98.21
14	INFORMATION TECHNOLOGY	IV	22	22	22	100
15	NUTRITION & DIETETICS	IV	28	28	28	100
16	COGNITIVE SYSTEMS	IV	35	35	34	97.14

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY - 18**END SEMESTER EXAMINATION – APRIL 2023****RESULT ANALYSIS AFTER REVALUATION****III UG**

S.NO.	DEPARTMENT	SEM	NUMBER REGISTERED	NUMBER APPEARED	NUMBER OF PASS	PASS PERCENTAGE
1	TAMIL	VI	33	33	33	100
2	ENGLISH	VI	108	108	104	96.30
3	BSW	VI	35	35	35	100
4	BBA	VI	82	82	82	100
5	B.COM	VI	240	240	236	98.33
6	B.COM (CA)	VI	65	65	65	100
7	MATHEMATICS	VI	79	79	77	97.47
8	PHYSICS	VI	42	42	42	100
9	CHEMISTRY	VI	50	50	50	100
10	MICROBIOLOGY	VI	72	72	72	100
11	BIOTECHNOLOGY	VI	70	70	69	98.57
12	COMPUTER SCIENCE	VI	143	143	143	100
13	COMPUTER APPLICATIONS	VI	116	116	114	98.28
14	INFORMATION TECHNOLOGY	VI	39	39	39	100
15	NUTRITION & DIETETICS	VI	37	37	37	100

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY -18

END SEMESTER EXAMINATION RESULTS – APRIL 2023

RESULT ANALYSIS AFTER REVALUATION

I PG

S.NO.	DEPARTMENT	SEM	NUMBER REGISTERED	NUMBER APPEARED	NUMBER OF PASS	PASS PERCENTAGE
1	TAMIL	II	8	8	8	100
2	ENGLISH	II	29	29	28	96.55
3	MSW	II	18	18	17	94.44
4	COMMERCE	II	34	34	33	97.06
5	MATHEMATICS	II	36	36	36	100
6	PHYSICS	II	20	20	18	90
7	CHEMISTRY	II	27	27	22	81.48
8	MICROBIOLOGY	II	17	17	17	100
9	COMPUTER SCIENCE	II	29	29	29	100
10	FSM & D	II	26	26	26	100

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY -18

END SEMESTER EXAMINATION RESULTS – APRIL 2023

RESULT ANALYSIS AFTER REVALUATION

II PG

S.NO.	DEPARTMENT	SEM	NUMBER REGISTERED	NUMBER APPEARED	NUMBER OF PASS	PASS PERCENTAGE
1	TAMIL	IV	9	9	9	100
2	ENGLISH	IV	34	34	34	100
3	MSW	IV	16	16	16	100
4	COMMERCE	IV	15	15	15	100
5	MATHEMATICS	IV	42	42	40	95.24
6	PHYSICS	IV	29	29	28	96.55
7	CHEMISTRY	IV	23	23	23	100
8	MICROBIOLOGY	IV	19	19	19	100
9	COMPUTER SCIENCE	IV	34	34	34	100
10	FSM & D	IV	24	24	24	100

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY - 18**END SEMESTER EXAMINATION – JUNE 2023****RESULT ANALYSIS AFTER INSTANT EXAMINATIONS****III UG**

S.NO.	DEPARTMENT	SEM	NUMBER REGISTERED	NUMBER APPEARED	NUMBER OF PASS	PASS PERCENTAGE
1	TAMIL	VI	33	33	33	100
2	ENGLISH	VI	108	108	108	100
3	BSW	VI	35	35	35	100
4	BBA	VI	82	82	82	100
5	B.COM	VI	240	240	240	100
6	B.COM (CA)	VI	65	65	65	100
7	MATHEMATICS	VI	79	79	79	100
8	PHYSICS	VI	42	42	42	100
9	CHEMISTRY	VI	50	50	50	100
10	MICROBIOLOGY	VI	72	72	72	100
11	BIOTECHNOLOGY	VI	70	70	70	100
12	COMPUTER SCIENCE	VI	143	143	143	100
13	COMPUTER APPLICATIONS	VI	116	116	115	99.14
14	INFORMATION TECHNOLOGY	VI	39	39	39	100
15	NUTRITION & DIETETICS	VI	37	37	37	100

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY - 18

END SEMESTER EXAMINATION – JUNE 2023

RESULT ANALYSIS AFTER INSTANT EXAMINATIONS

II PG

S.NO.	DEPARTMENT	SEM	NUMBER REGISTERED	NUMBER APPEARED	NUMBER OF PASS	PASS PERCENTAGE
1	TAMIL	IV	9	9	9	100
2	ENGLISH	IV	34	34	34	100
3	MSW	IV	16	16	16	100
4	COMMERCE	IV	15	15	15	100
5	MATHEMATICS	IV	42	42	42	100
6	PHYSICS	IV	29	29	29	100
7	CHEMISTRY	IV	23	23	23	100
8	MICROBIOLOGY	IV	19	19	19	100
9	COMPUTER SCIENCE	IV	34	34	34	100
10	FSM & D	IV	24	24	24	100