

**CAUVERY COLLEGE FOR WOMEN
(AUTONOMOUS)
NATIONALLY ACCREDITED (III CYCLE) WITH "A" GRADE BY NAAC
ISO 9001:2015 Certified
TIRUCHIRAPPALLI – 18**

DEPARTMENT OF COMPUTER APPLICATIONS



**Bachelor of Computer
Applications
2019-2020 onwards
SYLLABUS**

I to VI SEMESTER

BACHELOR OF COMPUTER APPLICATIONS- PROGRAMME STRUCTURE
(For the Candidates admitted from the academic year 2019-2020 onwards)

| Semester | Part | Course | Title | Course Code | Inst. Hours/Week | Credit | Exam Hours | Marks | | Total |
|--------------|-----------------|--|---|-------------|------------------|-----------|------------|----------|----------|------------|
| | | | | | | | | Internal | External | |
| 1 | I | Language Course-I (LC)-Tamil / Other Languages (Hindi/Sanskrit/French) | Ikkaala ilakkiyam | 19ULT1 | 6 | 3 | 3 | 25 | 75 | 100 |
| | | | Story,Novel, Hindi Literature-I, & Grammar-I | 19ULH1 | | | | | | |
| | | | History of Popular Tales Literature and SanskritStory | 19ULS1 | | | | | | |
| | | | Communication in French-I | 19ULF1 | | | | | | |
| | II | English Language Course - I (ELC) | Functional Grammar for Effective Communication – I | 19UE1 | 6 | 3 | 3 | 25 | 75 | 100 |
| | III | Core Course - I (CC) | Programming with C | 19UCA1CC1 | 6 | 6 | 3 | 25 | 75 | 100 |
| | | Core Course - I (CP) | Practical I -Programming with C | 19UCA1CC1P | 3 | 2 | 3 | 40 | 60 | 100 |
| | | First Allied - I (AC) | Essential Mathematics | 19UCA1AC1 | 4 | 4 | 3 | 25 | 75 | 100 |
| | | First Allied - II (AC) | Numerical Analysis and Statistics | 19UCA1AC2 | 3 | - | - | - | - | - |
| | Value Education | | | | 19UGVE | 2 | 2 | 3 | 25 | 75 |
| Total | | | | | 30 | 20 | | | | 600 |
| 2 | I | Language Course-II (LC)-Tamil/Other Languages (Hindi/Sanskrit/French) | Idaikkaala Ilakkiyamum Puthinamum | 19ULT2 | 6 | 3 | 3 | 25 | 75 | 100 |
| | | | Prose, Drama, Hindi Literature-II, & Grammar-II | 19ULH2 | | | | | | |
| | | | Poetry Textual Grammar and Alakara | 19ULS2 | | | | | | |
| | | | Communication in French-II | 19ULF2 | | | | | | |
| | II | English Language Course - II (ELC) | Functional Grammar for Effective Communication - II | 19UE2 | 6 | 3 | 3 | 25 | 75 | 100 |
| | III | Core Course - II (CC) | Data Structures | 19UCA2CC2 | 6 | 6 | 3 | 25 | 75 | 100 |
| | | Core Course - II (CP) | Practical II -Data Structures Using C | 19UCA2CC2P | 3 | 2 | 3 | 40 | 60 | 100 |
| | | First Allied - II (AC) | Numerical Analysis and Statistics | 19UCA1AC2 | 3 | 3 | 3 | 25 | 75 | 100 |
| | | First Allied - III (AC) | Operations Research | 19UCA2AC3 | 4 | 2 | 3 | 25 | 75 | 100 |
| | IV | Environmental Studies | | 19UGES | 2 | 2 | 3 | 25 | 75 | 100 |
| Total | | | | | 30 | 21 | | | | 700 |

| | | | | | | | | | | | |
|--------------|---------------------|---|--|---|---------------------------|---|---|----|----|------------|-----|
| 3 | I | Language Course - III (LC)-Tamil / Other Languages (Hindi/Sanskrit/French) | Kaappiyamum Naadakamum | 19ULT3 | 6 | 3 | 3 | 25 | 75 | 100 | |
| | | | Medieval, Modern Poetry & History of Hindi Literature-3 | 19ULH3 | | | | | | | |
| | | | Prose, Textual Grammar and Vakyarachana | 19ULS3 | | | | | | | |
| | | | Communication in French-III | 19ULF3 | | | | | | | |
| | II | English Language Course - III(ELC) | Writing for General and Specific Purposes – I | 19UE3 | 6 | 3 | 3 | 25 | 75 | 100 | |
| | III | Core Course - III (CC) | Database Management Systems | 19UCA3CC3 | 6 | 6 | 3 | 25 | 75 | 100 | |
| | | | Core Course - III (CP) | Practical III – DBMS | 19UCA3CC3P | 3 | 2 | 3 | 40 | 60 | 100 |
| | | | Second Allied - I (AC) | Financial Accounting | 19UCA3AC4 | 4 | 4 | 3 | 25 | 75 | 100 |
| | | | Second Allied - II (AP) | Computer Applications in Business | 19UCA3AC1P | 3 | 2 | 3 | 40 | 60 | 100 |
| | IV | Non Major Elective - I | Principles of Internet | 19UCA3NME1 | 2 | 2 | 3 | 25 | 75 | 100 | |
| | | | Basic Tamil I | 19ULC3BT1 | | | | | | | |
| | | | Special Tamil I | 19ULC3ST1 | | | | | | | |
| | V | Extra Credit Course | Swayam Online Course | To be Fixed Later | As per UGC Recommendation | | | | | | |
| Total | | | | 30 | 22 | | | | | 700 | |
| 4 | I | Language Course-IV (LC)-Tamil /Other Languages (Hindi/Sanskrit/French) | Pandaiya Ilakkiyam | 19ULT4 | 6 | 3 | 3 | 25 | 75 | 100 | |
| | | | Letter writing, General Essays, Technical Terms,Proverbs, Idioms &Phrases, Hindi Literature-4 | 19ULH4 | | | | | | | |
| | | | Drama, History of Drama Literature | 19ULS4 | | | | | | | |
| | | | Communication in French-IV | 19ULF4 | | | | | | | |
| | II | English Language Course - IV(ELC) | Writing for General and Specific Purposes - II | 19UE4 | 6 | 3 | 3 | 25 | 75 | 100 | |
| | III | Core Course - IV (CC) | Programming with Java | 19UCA4CC4 | 6 | 5 | 3 | 25 | 75 | 100 | |
| | | | Core Course - IV (CP) | Practical IV - Programming with Java | 19UCA4CC4P | 3 | 2 | 3 | 40 | 60 | 100 |
| | | | Second Allied - III(AC) | Organizational Behaviour | 19UCA4AC5 | 5 | 3 | 3 | 25 | 75 | 100 |
| | IV | Non Major Elective - II | HTML Practicals | 19UCA4NME2P | 2 | 2 | 3 | 40 | 60 | 100 | |
| | | | Basic Tamil II | 19ULC4BT2 | | | | 25 | 75 | | |
| | | | Special Tamil II | 19ULC4ST2 | | | | | | | |
| | | | Skill Based Elective - I | Animation Practicals | 19UCA4SBE1AP | 2 | 2 | 3 | 40 | 60 | 100 |
| | HTML5 Practicals | 19UCA4SBE1BP | | | | | | | | | |
| V | Extra Credit Course | Swayam Online Course | To be Fixed Later | As per UGC Recommendation | | | | | | | |
| Total | | | | 30 | 22 | | | | | 700 | |

| | | | | | | | | | | | |
|---------------------------|--|--------------------------------|---|-------------------|---------------------------|------------|-----------|----|-----|-------------|------------|
| 5 | III | Core Course - V (CC) | Web Programming with PHP | 19UCA5CC5 | 5 | 5 | 3 | 25 | 75 | 100 | |
| | | Core Course - V (CP) | Practical V -PHP with MySQL | 19UCA5CC5P | 4 | 3 | 3 | 40 | 60 | 100 | |
| | | Core Course - 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 Data Mining 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 | Practical-Mobile Applications Development | 19UCA5SBE3AP | 2 | 2 | 3 | 40 | 60 | 100 | |
| | | | Practical-Multimedia Systems | 19UCA5SBE3BP | | | | | | | |
| | | 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 Recommendation | | | | | | |
| | Total | | | | | 30 | 29 | | | | 800 |
| | 6 | III | Core Course - VIII (CC) | Computer Networks | 19UCA6CC8 | 6 | 5 | 3 | 25 | 75 | 100 |
| Core Course - 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 | | | | | | | |
| 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 | 4 | - | - | - | 100 | | |
| 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 | 26 | | | | 600 | |
| Total | | | | | 180 | 140 | | | | 4100 | |

SEMESTER I

CORE COURSE – I (CC)
PROGRAMMING WITH C

SEMESTER - I

| CourseCode | Course Title | Category | Learning Hours | Theory Hours/ Week | Practical Hours/ Week | Credit |
|------------|--------------------|----------|----------------|--------------------|-----------------------|--------|
| 19UCA1CC1 | Programming with C | Core | 90 | 6 | - | 6 |

PREAMBLE

- To understand the concepts of C and to develop the programming skill in C programming

COURSE OUTCOMES(CO)

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

| CO NUMBER | CO STATEMENT | KNOWLEDGE LEVEL |
|-----------|--|-----------------|
| CO1 | Explain the program structure, programming rules, C tokens and syntax. | K2 |
| CO2 | Apply decision making and looping statements in C Program. | K3 |
| CO3 | Utilize the concept of arrays and functions. | K3 |
| CO4 | Identify the role of structure, union and pointers. | K3 |
| CO5 | Make use of the file operations and file functions. | K3 |

MAPPING WITH PROGRAMME OUTCOMES

| | PSO1 | PSO2 | PSO3 | PSO4 |
|-----|------|------|------|------|
| CO1 | S | S | M | L |
| CO2 | S | S | M | L |
| CO3 | S | S | S | S |
| CO4 | S | S | S | S |
| CO5 | S | S | S | S |

S – Strong; M – Medium; L – Low

SYLLABUS

UNIT I : BASIC CONCEPTS

(15 HOURS)

Overview of C: Constants, Variables, and Data Types: Introduction - Identifiers – Constants – Variables - Data types – Declaration of variables – Assigning values to Variables-Defining Symbolic Constant- Operators and Expressions: Arithmetic, Relational, Logical, Assignment, Conditional, Bit wise, Special, Increment and Decrement operators - Arithmetic expressions - Evaluation of expressions–Precedence of Arithmetic Operators-Operator Precedence & Associativity.

UNIT II: INPUT AND OUTPUT OPERATIONS & ITERATIVE STRUCTURES

(20 HOURS)

Managing Input and Output Operations: Reading and Writing a character -Formatted Input and Output. Decision Making and Branching: If, Switch, The ?: operator - The GoTo Instruction – Decision Making and Looping: Introduction – While, Do, For Statements – Jumps in Loops.

UNIT III: ARRAYS AND FUNCTIONS

(20 HOURS)

Arrays: One-dimensional - Two dimensional - Multidimensional Arrays-Character Arrays and Strings: Declaring and Initializing String Variables - Reading Strings from Terminal - Writing Strings to Screen - String-Handling Functions - User-Defined Functions: Need for User -Defined Functions –A Multi-Function Program-Elements of User-Defined Functions-Definition of Functions –Return values and Their Types-Function Calls-Function Declaration-Category of Functions –Nesting of Functions - Recursion - Storage Class-The scope and lifetime of variables in functions.

UNIT IV: STRUCTURES AND POINTERS

(20 HOURS)

Structure and Unions: Defining a Structure –Declaring Structure Variables-Accessing Structure Members- Initialization - Comparison of structure variables - Arrays of structures - Arrays within structures - Structures within Structures –Structures and Functions-Union-Size of Operator. Pointers: Understanding pointers - Accessing the address of a variable - Declaring and Initializing pointers - Accessing a variable through its pointers - Pointer Expressions - Pointers and Arrays - Pointers and Character strings –Array of Pointers-Pointers to Functions - Pointers and Structures.

UNIT V: FILES

(15 HOURS)

File management in C: Defining and Opening a file –Closing a file - I/O operations on files –Text file-Data File-Error handling during I/O operations -Random access to files - Command line Arguments.

TEXTBOOK

E. Balagurusamy, “**Programming in ANSI C**”, TMH Publishing Pvt., Ltd., 6th Edition, 2012.

REFERENCES

1. Yashavant Kanetkar, “**Let Us C**”, BPB Publications, New Delhi, 6th Edition, 2005.
2. Byron S. Gottfried, “**Programming with C**”, McGraw Hill Education, 2nd Edition, 2008.
3. www.learn-c.org
4. www.cprogramming.com
5. www.zentut.com/c-tutorial

COURSE DESIGNER

Ms.R. Brendha, Assistant Professor, Department of Computer Applications

CORE COURSE – I (CP)

PRACTICAL I -PROGRAMMING WITH C

SEMESTER - I

| Course Code | Course Title | Category | Learning Hours | Theory Hours/ Week | Practical Hours/ Week | Credit |
|-------------|---------------------------------|----------|----------------|--------------------|-----------------------|--------|
| 19UCA1CC1P | Practical I - Programmingwith C | Core | 45 | - | 3 | 2 |

PREAMBLE

- To impart knowledge on basic concepts of C Programming

COURSE OUTCOMES(CO)

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

| CO NUMBER | CO STATEMENT | KNOWLEDGE LEVEL |
|-----------|---|-----------------|
| CO1 | Relate looping structure with arrays. | K1 |
| CO2 | Demonstrate the concept of basic C operators and functions. | K2 |
| CO3 | Utilize the file concept. | K3 |

MAPPING WITH PROGRAMME OUTCOMES

| | PO1 | PO2 | PO3 | PO4 |
|-----|-----|-----|-----|-----|
| CO1 | M | M | M | M |
| CO2 | M | M | M | M |
| CO3 | S | S | S | M |

S – Strong; M – Medium; L - Low

LIST OF PRACTICALS

1. Formulae Conversion
2. Selection Structure
 - (a) Simple if
 - (b) If-else
 - (c) Else-if ladder
 - (d) Switch
 - (e) Ternary Operator
3. Iterative Structure
 - (a) While
 - (b) Do-while
 - (c) For
4. Arrays
 - (a) One dimension
 - (b) Two Dimension
5. Pointers
6. Files

COURSE DESIGNER

Ms.R.Sridevi, Assistant Professor, Department of Computer Applications

ALLIED COURSE – I (AC)

ALLIED I -ESSENTIAL MATHEMATICS

SEMESTER - I

| Course Code | Course Title | Category | Learning Hours | Theory Hours/ Week | Practical Hours/ Week | Credit |
|--------------------|-----------------------|-----------------|-----------------------|---------------------------|------------------------------|---------------|
| 19UCA1AC1 | Essential Mathematics | Allied | 60 | 4 | - | 4 |

PREAMBLE

- To equip the students with mathematical methods formatted for their major concepts and train them in basic Differentiations and Integrations.

COURSE OUTCOME

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

| CO Number | CO Statement | Knowledge Level |
|------------------|--|------------------------|
| CO1 | State the basic concepts of graph theory | K1 |
| CO2 | Explain the concepts of Matrices and its types | K2 |
| CO3 | Compute characteristic equation of a matrix and its inverse by Cayley Hamilton theorem | K3 |
| CO4 | Apply Differentiation to find the solutions of Ordinary and Partial Differentiation | K3 |
| CO5 | Classify the various types of integrals | K3 |
| CO6 | Solve different types of ordinary differential equation | K3 |
| CO7 | Classify the characteristics of graph theory | K3 |

COURSE OUTCOME MAPPED WITH PROGRAMME OUTCOME

| | PO1 | PO2 | PO3 | PO4 |
|------------|------------|------------|------------|------------|
| CO1 | S | S | S | S |
| CO2 | S | S | S | M |
| CO3 | S | S | S | S |
| CO4 | S | M | M | M |
| CO5 | S | S | S | M |
| CO6 | S | S | M | M |
| CO7 | S | S | S | S |

S – Strong; M – Medium; L – Low

SYLLABUS

UNIT I : (12 hours)

Matrices : Singular matrices – Inverse of a non-singular matrix using adjoint method - Rank of a Matrix – Consistency - Characteristic equation, Eigen values, Eigen vectors – Cayley Hamilton's Theorem (proof not needed) – Simple applications only

UNIT II : (12 hours)

Differentiation: Maxima & Minima – Concavity, Convexity – Points of inflexion - Partial differentiation – Euler's Theorem - Total differential coefficients (proof not needed) – Simple problems only.

UNIT III: (12 hours)

Integration: Evaluation of integrals of types

$$(1) \int \frac{px+q}{ax^2+bx+c} dx \quad (2) \int \frac{px+q}{\sqrt{ax^2+bx+c}} dx \quad (3) \int \frac{dx}{a+b \sin x} \quad (4) \int \frac{dx}{a+b \cos x}$$

Evaluation using Integration by parts – Properties of definite integrals.

UNIT IV: (12 hours)

Differential Equations: Variables Separables – Linear equations – Second order of types $(aD^2 + bD + c)y = F(x)$ where a, b, c are constants and $F(x)$ is one of the following types (i) e^{kx} (ii) $\sin(kx)$ and $\cos(kx)$ (iii) x^n , n being an integer (iv) $e^{kx}f(x)$

UNIT V: (12 hours)

Graph Theory: Basic concepts- Finite and infinite graphs-Incidence and degree ideas on vertices – Isomorphism, Subgraphs, Walks – Paths and Circuits – Euler graphs.

TEXT BOOKS:

1. T.K. Manickavasagam Pillai and others, "Algebra, Volume II", S. Viswanathan Pvt Limited, 1985.
2. S. Narayanan, T.K. Manickavasagam Pillai, "Calculus, Volume I", S. Viswanathan Pvt Limited, 2003.
3. S. Narayanan, T.K. Manickavasagam Pillai, "Calculus, Volume II", S. Viswanathan Pvt Limited, 2003.
4. S. Narayanan, T.K. Manickavasagam Pillai, "Calculus, Volume III", S. Viswanathan Pvt Limited, 2003.
5. Narsingh Deo, "Graph Theory", Hall of India Pvt Ltd, 1997.

REFERENCE BOOKS:

1. A.Singaravelu, "Allied Mathematics", A.R.Publications, 2003.
2. P.R.Vittal, "Allied Mathematics", Margham Publications, Chennai, 2014.
3. S.Arumugam and S.Ramachandran, "Invitation to Graph Theory", SciTech Publications (India) Pvt Ltd., Chennai, 2006.

COURSE DESIGNER:

Dr.V.Geetha and Dr.S.Sasikala, Department of Mathematics

ALLIED COURSE – II (AC)

ALLIED II- NUMERICAL ANALYSIS AND STATISTICS

SEMESTER - I

| CourseCode | Course Title | Category | Learning Hours | Theory Hours/ Week | Practical Hours/ Week | Credit |
|-------------------|-----------------------------------|-----------------|-----------------------|---------------------------|------------------------------|---------------|
| 19UCA1AC2 | Numerical Analysis And Statistics | Allied | 90 | 3 | - | - |

PREAMBLE

- To train the students in numerical and statistical problems

COURSE OUTCOME

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

| CO Number | CO Statement | KnowledgeLevel |
|------------------|--|-----------------------|
| CO1 | Explain the concept of measures of central tendency and dispersion | K2 |
| CO2 | Apply numerical methods to solve Algebraic, Transcendental equations and Interpolation | K3 |
| CO3 | Compute the numerical solution of ordinary differential equation by various method | K3 |
| CO4 | Solve numerical integration and system of linear equation by appropriate methods. | K3 |
| CO5 | Explain correlation and regression and solve the numerical problems. | K3 |

COURSE OUTCOME MAPPED WITH PROGRAMME OUTCOME

| | PO1 | PO2 | PO3 | PO4 |
|------------|------------|------------|------------|------------|
| CO1 | S | S | S | S |
| CO2 | S | S | S | M |
| CO3 | S | S | S | M |
| CO4 | S | S | S | M |
| CO5 | S | S | S | S |

S – Strong; M – Medium; L – Low

SYLLABUS

UNIT I (18 Hours)

Solution of Algebraic & Transcendental equations: Introduction - Bisection Method, Method of False Position, Iteration method, Newton Raphson Method (Problems Only)

Interpolation: Finite differences –Forward, Backward and Central differences – Newton’s formulae for interpolation - Lagrange’s interpolation formula.

UNIT II (18 Hours)

Numerical differentiation & Integration: Numerical Integration using Trapezoidal rule and Simpson’s ($\frac{1}{3}$ and $\frac{3}{8}$) rules (proof not needed)

Numerical Linear Algebra: Solutions to Linear Systems –Gauss Elimination and Gauss Jordan method –Iterative methods (Problems Only)

UNIT III (18 Hours)

Numerical solution of Ordinary Differential Equations : Introduction - Solution by Taylor Series Method ,Picard’s method of successive approximations, Euler’s Method, Modified Euler’s Method - Runge - Kutta method- Predictor Corrector Method -Adams –Moulton method and Milne’s Method.

UNIT IV (18 Hours)

Measures of Central Tendency: Arithmetic Mean – Median - Mode - Geometric Mean – Harmonic Mean. Measures of Dispersion: Range- Quartile Deviation - Mean Deviation, Standard Deviation.

UNIT V (18 Hours)

Correlation: Introduction - Meaning of Correlation – Scattered Diagram – Karl Pearson’s co-efficient Correlation – Rank Correlation

Linear Regression: Introduction – Linear Regression –Regression Coefficients and its equations (Problems Only)

TEXT BOOKS:

1. S.S.Sastry, “Introductory methods of Numerical Analysis” , fifth Edition, PHI Learningprivate limited, 2013.
2. Gupta.S.C&Kapoor, V.K, “Fundamentals of Mathematical Statistics”, Sultan Chand& sons, New Delhi, 1994.

REFERENCE BOOKS:

1. M.K. Jain, S.R.K. Iyengar and R.K. Jain, “Numerical Methods for Scientific andEngineering Computations”, New Age International Private Limited, 1999.
2. C.E. Froberg, “Introduction to Numerical Analysis”, II Edition, Addison Wesley, 1979.

COURSE DESIGNER:

Dr.V.Geetha and Dr.S.Sasikala, Department of Mathematics

SEMESTER II

CORE COURSE – II (CC)

DATA STRUCTURES

SEMESTER –II

| CourseCode | Course Title | Category | Learning Hours | Theory Hours/ Week | Practical Hours/ Week | Credit |
|------------|-----------------|----------|----------------|--------------------|-----------------------|--------|
| 19UCA2CC2 | Data Structures | Core | 90 | 6 | - | 6 |

PREAMBLE

- To understand the concepts of data structures

COURSE OUTCOMES (CO)

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

| CO NUMBER | CO STATEMENT | KNOWLEDGE LEVEL |
|-----------|--|-----------------|
| CO1 | Explain basics of data structures. | K1 |
| CO2 | State the operations of various data structures. | K1 |
| CO3 | Make use of the stack, queue and linked lists. | K2 |
| CO4 | Apply traversal concept on trees and graphs. | K3 |
| CO5 | Utilize arrays in sorting and searching. | K3 |

MAPPING WITH PROGRAMME OUTCOMES

| | PSO1 | PSO2 | PSO3 | PSO4 |
|-----|------|------|------|------|
| CO1 | S | S | M | M |
| CO2 | S | S | S | M |
| CO3 | S | S | S | L |
| CO4 | S | S | S | L |
| CO5 | S | S | S | M |

S – Strong; M – Medium; L – Low

SYLLABUS

UNIT I : BASIC TERMINOLOGY (20 HOURS)

Introduction and Overview: Introduction- Basic Terminology- Data Structures- Data Structure Operations. Arrays: Linear Arrays – Representation of Linear Arrays in Memory – Traversing Linear Arrays- Inserting & Deleting – Multi Dimensional Arrays.

UNIT II: LINKED LISTS (15 HOURS)

Linked Lists: Linked Lists – Representation of Linked List in Memory – Traversing a Linked list- Searching a Linked List- Memory allocation; Garbage collection-Insertion into a Linked List – Deletion from a Linked List.

UNIT III: STACKS and QUEUES (20 HOURS)

Stacks and Queues: Introduction – Stacks – Array Representation of Stacks – Linked Representation of Stacks – Arithmetic Expression; Polish Notation-Application of Stacks-Recursion. Queues – Linked Representation of Queues-Queue as ADT- Deques.

UNIT IV: TREES (15 HOURS)

Trees: Introduction – Binary Trees – Representing Binary Trees in Memory – Traversing Binary Trees – Traversal Algorithms using Stacks-Binary Search Trees-Balanced Binary Trees-Applications of Trees.

UNIT V: GRAPHS (20 HOURS)

Graphs and their applications: Introduction – Graph Theory Terminology – Sequential Representation of Graphs – Linked representation of a Graph- Operations on Graphs – Traversing a Graph.Sorting and Searching – Bubble Sort-Insertion Sort. Searching- Linear Search – Binary Search.

TEXTBOOK

Seymour Lipschutz, “**Data Structures with C**”, McGraw Hill Education, 2011

REFERENCES

1. Ellis Horowitz, SartajSahni, “**Fundamentals of Data Structures**”, Galgotia Publications, 2008.
2. AnanyLevitin,“**Introduction to the Design and Analysis of Algorithms**”, Pearson Education, 2nd edition,2011.
3. Ashok N.Kamthane, “**Introduction to Data Structure in C**“ Pearson Education,2011(Singapore)
4. www.studytonight.com/data-structures

COURSE DESIGNER

Ms.H.Krishnaveni , Associate Professor, Department of Computer Applications

CORE COURSE – II (CP)
PRACTICAL II -DATA STRUCTURES USING C

SEMESTER-II

| Course Code | Course Title | Category | Learning Hours | Theory Hours/ Week | Practical Hours/ Week | Credit |
|-------------|--|----------|----------------|--------------------|-----------------------|--------|
| 19UCA2CC2P | Practical II - Data Structures Using C | Core | 45 | - | 3 | 2 |

PREAMBLE

- To impart practical training on data structures using C

COURSE OUTCOMES (CO)

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

| CO NUMBER | CO STATEMENT | KNOWLEDGE LEVEL |
|-----------|---|-----------------|
| CO1 | Recall operations of various data structures using C programming. | K1 |
| CO2 | Describe sorting and searching techniques using array. | K2 |
| CO3 | Apply the concepts of traversal on trees and graphs. | K3 |

MAPPING WITH PROGRAMME OUTCOMES

| | PSO1 | PSO2 | PSO3 | PSO4 |
|-----|------|------|------|------|
| CO1 | M | M | M | M |
| CO2 | S | S | S | L |
| CO3 | S | S | S | M |

S – Strong; M – Medium; L – Low

LIST OF PRACTICALS

- Matrix representation and manipulation
- Sorting algorithms
- Searching algorithms
- Stack representation and manipulation
- Queue representation and manipulation
- Linked list representation and manipulation
- Binary tree traversal
- Graph traversal

COURSE DESIGNER

Ms.H.Krishnaveni , Associate Professor, Department of Computer Applications

ALLIED COURSE – III (AC)
OPERATIONS RESEARCH

SEMESTER-II

| CourseCode | Course Title | Category | Learning Hours | Theory Hours/ Week | Practical Hours/ Week | Credit |
|------------|---------------------|----------|----------------|--------------------|-----------------------|--------|
| 19UCA2AC3 | Operations Research | Allied | 60 | 4 | - | 3 |

PREAMBLE

- To inculcate the basic concepts of Operations Research
- To practice the students for solving Operation Research Problems

COURSE OUTCOME

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

| CO Number | CO Statement | Knowledge Level |
|------------|--|-----------------|
| CO1 | Explain the applications of Operations research. | K2 |
| CO2 | Solve Linear Programming Problem by graphical method | K3 |
| CO3 | Classify the different types of Simplex methods | K3 |
| CO4 | Describe the concepts of Transportation Problem and Assignment Problem and compute the solution by various methods | K3 |
| CO5 | Compute PERT and CPM in Network Analysis | K3 |
| CO6 | Determine the solution of Sequencing Problem | K4 |

COURSE OUTCOME MAPPED WITH PROGRAMME OUTCOME

| | PSO1 | PSO2 | PSO3 | PSO4 |
|------------|------|------|------|------|
| CO1 | S | S | S | M |
| CO2 | S | S | S | S |
| CO3 | S | M | S | M |
| CO4 | S | S | S | S |
| CO5 | S | S | S | S |
| CO6 | S | S | S | S |

S – Strong; M – Medium; L - Low

SYLLABUS

UNIT I

(12 Hours)

Operations Research: Introduction - Basics of OR – OR & decision making –Role of Computers in OR.
Linear Programming Problem: Linear programming formulations & graphical solution of two variables – Canonical & standard forms of LPP.

UNIT II

(12 Hours)

Linear Programming Problem: Introduction - Simplex Method for $<$, $=$, $>$ constraints – Two phase Simplex method – Big M Method.

UNIT III

(12 Hours)

Transportation problem: Introduction - Transportation algorithm –Degeneracy algorithm –Degeneracy in Transportation Problem, Unbalanced transportation problem.

Assignment Problem: Introduction - Assignment algorithm –Unbalanced Assignment problem- The Travelling Salesman Problem.

UNIT IV

(12 Hours)

Sequencing problem: Introduction - Processing of n jobs through two machines – Processing of n jobs through k machines – processing of two jobs through k machines.

UNIT V

(12 Hours)

Network Scheduling by PERT/CPM: Introduction - Network – Fulkerson's rule - measure of activity – PERT computation– CPM computation

TEXT BOOK:

1. Kantiswarup P.K.Gupta &Man Mohan, "Operations Research", Sultan Chand Publishers, NewDelhi, 2008.

REFERENCE BOOKS:

1. Prem Kumar Gupta and D.S. Hira, Operations Research: An Introduction, S. Chand and Co., Ltd.New Delhi, 1983.
2. Hamdy A. Taha, "Operations Research", McMillan Publishing Company, New Delhi, 1982.

COURSE DESIGNER :

Dr.V.Geetha and Dr.S.Sasikala,Department of Mathematics

SEMESTER III

CORE COURSE-III (CC)
DATABASE MANAGEMENT SYSTEMS

SEMESTER - III

| Course Code | Course Title | Category | Learning Hours | Theory Hours/Week | Practical Hours/Week | Credit |
|-------------|-----------------------------|----------|----------------|-------------------|----------------------|--------|
| 19UCA3CC3 | Database Management Systems | Core | 90 | 6 | - | 6 |

PREAMBLE:

- To understand the basic concepts of the database systems
- To learn the features of relational model and ER model
- To develop SQL queries for a database
- To apply the basic normalization techniques

COURSE OUTCOMES:

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

| CO NUMBER | CO STATEMENT | KNOWLEDGE LEVEL |
|-----------|---|-----------------|
| CO1 | Explain the basic concepts of database design, architecture and its model | K2 |
| CO2 | Illustrate structure of relational database | K2 |
| CO3 | Apply the various SQL queries in the Database | K3 |
| CO4 | Implement the concepts of ER model and its diagram | K3 |
| CO5 | Relate the concept of transaction management in a database environment | K3 |

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES (PSO):

| | PSO1 | PSO2 | PSO3 | PSO4 |
|-----|------|------|------|------|
| CO1 | M | M | M | M |
| CO2 | M | M | S | M |
| CO3 | S | M | M | S |
| CO4 | S | M | M | M |
| CO5 | S | S | S | L |

S – Strong; M – Medium; L - Low

SYLLABUS

UNIT I: INTRODUCTION

(18 HOURS)

Introduction to DBMS: Applications of DBMS - Purpose of DBMS - View of Data- Database Languages - Relational Databases - Database Design - Data Storage & Querying- Transaction Management - Database Architecture - Database Users and Administrators.

UNIT II: RELATION MODEL

(18 HOURS)

Introduction to Relation Model: Structure of Relational Databases - Database Schema – Keys - Schema diagrams - Relational Query Languages: Relational Operators - Relational Algebra.

UNIT III: STRUCTURED QUERY LANGUAGE

(18 HOURS)

Introduction to SQL: SQL Data Definition - Basic Structure of SQL Queries - Additional basic Operations - Set Operations - NULL Values - Aggregate Functions - Nested Sub Queries - Modification of Database. **Intermediate SQL:** Join Expressions – Views – Transactions - Integrity Constraints - SQL data types and Schemas - Authorization.

UNIT IV: ER MODEL & FUNCTIONAL DEPENDENCY

(18 HOURS)

Database design and ER-Model: Overview of design process - ER Model – Constraints - ER Diagram - Reduction to Relational Schemas - ER design issues - **Relational Database Design:** Features of Good Relational Design - Atomic Domains and First Normal Form - Decomposition using Functional Dependencies - Functional Dependency Theory - Algorithms for Decomposition.

UNIT V: TRANSACTION MANAGEMENT

(18 HOURS)

Transaction Management: Transaction Concepts - Storage Structure - Transaction Atomicity and Durability - Transaction Isolation - Serializability.

TEXT:

1. Abraham Silberschatz, Henry F. Korth& S. Sudarshan, "Database System Concepts", 6th edition, McGraw Hill Education (India) Private Limited, 2013

REFERENCES:

1. "An Introduction to Database" – C.J. Date, A. Kannan& S. Swamynathan, Pearson Education, India, 2009
2. "Essentials of Database Management Systems" - Alexis Leon, Mathews Leon, McGraw Hill Education India Pvt Ltd., Revised Edition 2009.
3. "Database System Concepts", Peter Rob, Carlos Coronel, Lengage Learning, 2008

WEB REFERENCES:

1. <https://beginnersbook.com/2015/04/dbms-tutorial/>
2. <https://www.studytonight.com/dbms/>
3. <https://www.tutorialspoint.com/dbms/>
4. <https://www.w3schools.in/dbms/>

Course Designer

Ms.Lakshna Arun - Assistant Professor, Department of Computer Applications

**CORE COURSE–III (CP)
PRACTICAL III- DBMS**

SEMESTER - III

| Course Code | Course Title | Category | Learning Hours | Theory Hours/ Week | Practical Hours/ Week | Credit |
|-------------|----------------------|----------|----------------|--------------------|-----------------------|--------|
| 19UCA3CC3P | Practical III – DBMS | Core | 45 | - | 3 | 2 |

OBJECTIVE

- To provide in depth programming knowledge in MYSQL

COURSE OUTCOMES

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

| CO NUMBER | CO STATEMENT | KNOWLEDGE LEVEL |
|-----------|---|-----------------|
| CO1 | Recall DDL and DML Commands | K1 |
| CO2 | Apply Arithmetic, Logical and Set operators | K3 |
| CO3 | Implement string operations | K3 |
| CO4 | Use Aggregate Functions in SQL Queries | K3 |
| CO5 | Create Nested Subqueries | K5 |

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES (PSO):

| | PSO1 | PSO2 | PSO3 | PSO4 |
|-----|------|------|------|------|
| CO1 | M | S | M | M |
| CO2 | S | M | S | M |
| CO3 | S | M | S | S |
| CO4 | S | L | M | M |
| CO5 | S | S | S | S |

S – Strong; M – Medium; L - Low

LIST OF PRACTICALS

1. Create a table and perform the following DDL operations
Set the primarykey
 - a) Alter the structure of the table
 - b) Drop the table

2. Create a table and perform the following DML operations
 - a) Insert values
 - b) Update values 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. Implement Nested Sub queries
 - a) Set membership (in, not in)
 - b) Set comparison (some, all)
 - c) Empty relation (exists, not exists)
 - d) Check for existence of Duplicate tuples (unique, not unique)
5. Develop MySQL Queries to implement Aggregate Functions.
6. Implement Grouping and Ordering Commands in a Table.
7. Develop MySQL Queries for View Operations.
8. Develop MYSQL queries to implement String operations using % and “_”
 [Note: create necessary tables for the above questions (1 to 8) with required attributes]
9. 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

COURSE DESIGNER

Ms.Lakshna Arun- Assistant Professor, Department of Computer Applications

ALLIED COURSE – II
FINANCIAL ACCOUNTING

SEMESTER - III

| Course Code | Course Title | Category | Learning Hours | Theory Hours/Week | Practical Hours/Week | Credit |
|-------------|----------------------|----------|----------------|-------------------|----------------------|--------|
| 19UCA3AC4 | Financial Accounting | Allied | 45 | 4 | - | 4 |

Course Objective

- To equip the students with fundamental knowledge and acquire analytical skills on the accounting concepts.

Course Outcome

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

| CO No. | CO Statement | Knowledge Level |
|--------|---|-----------------|
| CO 1 | Define the basic concepts of Accounting | K1 |
| CO2 | Explain the accounting rules required for business enterprise | K2 |
| CO3 | Develop the skills in preparation of financial reports | K3 |
| CO4 | Analyze various methods of depreciation | K4 |

Mapping with Programme Outcomes

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

S – Strong; M – Medium; L - Low

SYLLABUS

Unit – I: Introduction

(12 Hours)

Accounting Meaning – Need for Accounting – Users of Accounting Information – Meaning of Book Keeping – Accounting Principles – Accounting Cycle – Phases of Accounting – Accounting Equation. Double Entry: Meaning – Nature and Principle of Double Entry. Journal: Meaning and Need – Steps in Journalizing – Exercises of Journal Entry. Subsidiary Books: Meaning – Classification and Advantages.

Unit – II: Ledger & Trial Balance

(12 Hours)

Ledger: Meaning and Difference between Journal and Ledger – Steps in Posting – Problems on Journal, Ledger and Trial Balance. Trial Balance: Meaning and Objective of Preparing Trial Balance – Comprehensive Problems on Journal, Ledger and Trial Balance.

Unit – III: Cash Book & Bank Reconciliation Statement (BRS)

(12 Hours)

Cash Book: Meaning – Objectives and Classification – Difference between Cash and Trade Discount – Problems on Triple Column Cash Book. Bank Reconciliation Statement (BRS): Meaning – Causes for Difference between Cash and Pass Book Problems.

Unit – IV: Final Accounts

(12 Hours)

Meaning – Need for Preparation – Components of Final Accounts – Problems with Adjustments.

Unit – V: Depreciation

(12 Hours)

Meaning – Need for Providing Depreciation – Problems on Straight Line Method, Diminishing Balance Method and Annuity Method.

Text:

1. Fundamentals of Accounting, S.P.Jain and K.L.Narang, Kalyani Publishers, 2017

References:

1. Financial Accounting, T.S. Reddy & Murthy, Margham Publications, 2017

Course Designer

Ms. Shilpa A. Talreja – Assistant Professor, Department of Commerce.

ALLIED COURSE – II
COMPUTER APPLICATIONS IN BUSINESS

SEMESTER - III

| Course Code | Course Title | Category | Learning Hours | Theory Hours/Week | Practical Hours/Week | Credit |
|-------------------------|-----------------------------------|----------|----------------|-------------------|----------------------|--------|
| 19UCA3AC1P / 19UIT3AC1P | Computer Applications in Business | Allied | 45 | - | 3 | 2 |

Course Objective

- The primary objective of this course is to expose the students with the Accounting Software Tally ERP9 with GST.

Course Outcome

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

| CO No. | CO Statement | Knowledge Level |
|--------|---|-----------------|
| CO 1 | 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. | K5 |

Syllabus

Unit – I Introduction to Computerized Accounting

Introduction to computerized Accounting – Features – Advantages – Manual Accounting Vs. Computerized Accounting – Accounting transaction – Journal Entry – Ledgers – Trial Balance – Balance Sheet.

Unit – II Introduction to Tally

Opening Tally screen – Gate way of Tally – Features of Tally – Creation of Company – Selecting a Company – Altering / Modifying existing company – Configuration of Tally – Tally screen and Menu.

Unit – III Creation of Ledgers, Groups & Voucher Entries

Creation of Ledger – Group – Voucher – Displaying – Altering – Deleting – Introduction to Voucher entries – Contra Voucher – Payment Voucher – Receipt Voucher – Journal Voucher – Sales Voucher – Recording transaction of sample data.

Unit – IV Cost Categories & Cost Centre

Introduction to Cost – Creation of cost Categories – Creation of Cost Centre – Editing – Deleting – Usage of Cost Category and Cost Centres in voucher entry.

Unit – V GST & Generating Reports

Introduction to GST – Registration - Creating Company with GST – Creating Tax Ledgers- Recording GST Sales – Financial Reports: Trial Balance – Profit & Loss – Balance Sheet - Bank Reconciliation Statement - Stock Summary.

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. Generating Accounting and Inventory Reports.
7. GST Registration and E-filing of returns.

Text Book

| S.No. | Authors | Title | Publishers | Year of Publication |
|--------------|--|------------------------|----------------------------|----------------------------|
| 1. | Computer Applications in Business | V. Srinivasa Vallabhan | Sultan Chand & Sons | 2014 |
| 2. | Computer Application by Implementing Tally ERP | A.K. Nadhani | BPB Publications, Chennai. | 2015 |
| 3. | Windows and MS Office with Database Concepts | N. Krishnana | Scitech Publications | 2001 |

Reference Book

| S.No. | Authors | Title | Publishers | Year of Publication |
|-------|-----------------------------------|-----------------------------|-------------------------------|---------------------|
| 1. | Computer Applications in Business | K. Mohankumar & S. Rajkumar | Vijay Nicole Imprints (P) Ltd | 2018 |
| 2. | Tally ERP 9 | Dr. Pl Rizwan Ahmed | Margham Publications | 2016 |
| 3. | Computer Application in Business | Dr. Joseph Anbarasu | Learn Tech Press | 2007 |

Course Designer

Ms. J. Lalithambigai – Assistant Professor, Department of Commerce.

**NON MAJOR ELECTIVE –I
PRINCIPLES OF INTERNET**

Semester: III

| Course Code | Course Title | Category | Learning Hours | Theory Hours/ Week | Practical Hours/ Week | Credit |
|--------------------|------------------------|-----------------|-----------------------|---------------------------|------------------------------|---------------|
| 19UCA3NME1 | Principles of Internet | NME-I | 30 | 2 | - | 2 |

OBJECTIVES

- To understand the architecture of Internet
- To brief the concepts of network and WWW
- To expose students about entertainment on Internet with security

COURSE OUTCOMES

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

| CO NUMBER | CO STATEMENT | KNOWLEDGE LEVEL |
|------------------|---|------------------------|
| CO1 | State the dangers in Internet | K1 |
| CO2 | Understand the architecture of Internet | K2 |
| CO3 | Utilize the Internet | K3 |
| CO4 | Discuss on Internet tools | K2 |
| CO5 | Apply Internet for entertainment & multimedia | K3 |

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES (PSO):

| | PSO1 | PSO2 | PSO3 | PSO4 |
|------------|-------------|-------------|-------------|-------------|
| CO1 | M | S | M | M |
| CO2 | M | M | M | M |
| CO3 | M | S | S | M |
| CO4 | S | M | S | M |
| CO5 | S | S | S | S |

S – Strong; M – Medium; L - Low

UNIT I: ARCHITECTURE OF INTERNET**(6 HOURS)**

Understanding the Internet's Underlying Architecture: What is Internet? - How computer networks send data across the internet? - How TCP/IP works?

UNIT II: CONNECTING TO THE INTERNET**(6 HOURS)**

How computers connect to the Internet? - How wireless connections and WIFI works? - How Home networks work?

UNIT III: USING THE WORLD WIDE WEB**(6 HOURS)**

How Google works? - How map sites work? - How Wikis and Wikipedia work? - Using common internet tools: How telnet works? - How FTP works? - How agents work? - How CGI scripting works?

UNIT IV: ENTERTAINMENT AND MULTIMEDIA ON THE INTERNET**(6 HOURS)**

How music and audio works on the Internet? - How music sharing and file sharing? - How animation on the web works? - Shopping and doing business on the Internet.

UNIT V: PROTECTING YOURSELF ON THE INTERNET**(6 HOURS)**

How firewalls work? - How hackers can cripple the Internet and attack your PC? - The dangers of wireless networking -How viruses work? - Parental controls on the Internet.

TEXT:

1. How the Internet Works? - Preston Gralla, Pearson Education, 8th Edition

REFERENCES:

1. "Internet for Everyone"- Alexis Leon, S.Chand (G/L)& Company; 2nd Edition, 2012

WEB REFERENCES:

1. <http://web.stanford.edu/>
2. <https://in.zapmetasearch.com/>
3. <https://ads.google.com/>
4. <https://in.zapmetasearch.com/>
5. <https://www.izito.co.in/>

COURSE DESIGNER

Ms. T. Julie Mary- Assistant Professor, Department of Computer Applications

SEMESTER IV

**CORE COURSE – III (CC)
PROGRAMMING WITH JAVA**

| Course Code | Course Title | Category | Learning Hours | Theory Hours/ Week | Practical Hours/ Week | Credit |
|-------------|-----------------------|----------|----------------|--------------------|-----------------------|--------|
| 19UCA4CC4 | Programming with JAVA | Core | 90 | 6 | - | 5 |

PREAMBLE

- Understand fundamentals of programming concepts, OOPs concepts and ability to write a Java program to solve specified problems.

COURSE OUTCOME:

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

| CO NUMBER | CO STATEMENT | KNOWLEDGE LEVEL |
|-----------|---|-----------------|
| CO1 | Explain the fundamental concepts in Object Oriented Programming | K2 |
| CO2 | List basic programming skills in Java | K1 |
| CO3 | Illustrate package and exceptions with example | K2 |
| CO4 | Demonstrate the usage of threading and files | K2 |
| CO5 | Applet package and Database connectivity | K3 |

MAPPING WITH PROGRAM SPECIFIC OUTCOMES:

| | PSO1 | PSO2 | PSO3 | PSO4 |
|-----|------|------|------|------|
| CO1 | M | M | M | M |
| CO2 | M | M | M | M |
| CO3 | S | M | M | M |
| CO4 | S | M | M | M |
| CO5 | S | S | S | M |

SYLLABUS

UNIT I: OOPs Fundamentals

(18 HOURS)

Fundamentals of Object Oriented Programming: Basic Concepts of Object Oriented Programming- Benefits and Applications of OOP. **Java Evolution:** Java Features – How Differs From C And C++ - Java And Internet – Java And World Wide Web – Web Browsers - Java Environment- **Overview of Java Language:** Simple Java Program- More of Java- An Application With Two Classes- Java Program Structures, Tokens, Statements–

Installing And Configuring Java- Implementing A Java Program – Java Virtual Machine – Comment Line Arguments – Programming Style.

UNIT II: Constants, Variables, Data Types, Operators and Control Statements

(18 HOURS)

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. **Operators and Expressions- Decision Making and Branching -Decision Making and Looping** – While, Do, For Statements, Jump In Loops, Return Statements.

UNIT III: Classes, Objects, Methods, Arrays, Strings, Vectors,Interfaces and Packages

(18 HOURS)

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 – Finalizer Methods – Abstract Methods And Classes – Visibility Control. **Arrays, Strings and Vectors:** Creating Arrays – One And Two Dimensional Arrays- Strings – Vectors – Wrapper Classes – Enumerated Types. **Interfaces: Multiple Inheritance – Packages.**

UNIT IV: Multithreaded Programming, Files and I/O Streams

(18 HOURS)

Multithreaded Programming: Creating Threads – Extending The Thread Class – Stopping and Blocking Thread- Life Cycle of Thread-Using Thread Method-Thread Exception- Thread Priority-Synchronization – Implementing The Runnable Interface-**Managing Errors and Exceptions. Managing Input / Output Files In Java.**

UNIT V: Applet and Database Connectivity

(18 HOURS)

Applet Programming: How Applets Differ From Applications - Preparing To Write Applets- Building Applet Code- Applet Life Cycle- Creating And Executable Applet – Designing A Web Page- Applet Tag-Adding Applet To HTML File-Running The Applet. **Java Database Connectivity:** Introduction – JDBC Architecture – Discussion With Example – Overview of JDBC Components.

TEXT:

1. E. Balagurusamy, "Programming with JAVA", Tata McGraw-Hill Publishing Company Limited, New Delhi, 6th Edition, 2019.

REFERENCES:

1. Ken Arnold Gosling and David Holmes. "The Java Programming Language", 3rd Edition. Addison Wesley Publication.
2. S.Sagayaraj, R.Denis, P.Karthik and D.Gajalakshmi, "Java programming", Universities Press, 2017.
3. C.Muthu, "Programming with JAVA", Second Edition, McGraw Hill Education (2008).
4. Schildt Herbert, "Java :The Complete Reference", Tata McGraw-Hill, 8th Edition, 2011.

WEB REFERENCES:

1. <https://beginnersbook.com/>
2. https://www.tutorialspoint.com/java/java_tutorial.pdf
3. http://www.ntu.edu.sg/home/ehchua/programming/java/jdbc_basic.html - For JDBC connection.

COURSE DESIGNER

Ms.V.Yasodha, Assistant Professor, Department of Computer Applications.

CORE COURSE – IV (CP)
PRACTICAL-IV –PROGRAMMING WITH JAVA

Semester: IV

| Course Code | Course Title | Category | Learning Hours | Theory Hours/Week | Practical Hours/Week | Credit |
|-------------|------------------------------------|----------|----------------|-------------------|----------------------|--------|
| 19UCA4CC4P | Practical IV-Programming with Java | Core | 45 | – | 3 | 2 |

PREAMBLE:

- To impart practical training on Programming with Java.

COURSE OUTCOMES (CO):

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

| CO NUMBER | CO STATEMENT | KNOWLEDGE LEVEL |
|-----------|--|-----------------|
| CO1 | Recall basic arithmetic operations, command line arguments and arrays. | K1 |
| CO2 | Apply polymorphism, inheritance, interface and packages concepts. | K3 |
| CO3 | Implement all string operations. | K3 |
| CO4 | Use thread and exception handling concepts. | K3 |
| CO5 | Create applet programs | K5 |

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES:

| | PSO1 | PSO2 | PSO3 | PSO4 |
|------------|------|------|------|------|
| CO1 | S | M | M | M |
| CO2 | M | S | M | S |
| CO3 | M | M | S | L |
| CO4 | M | S | M | S |
| CO5 | L | S | S | S |

S-Strong; M-Medium; L-Low

LIST OF PRACTICALS

1. COMMAND LINE ARGUMENTS

Write a program to find the factorial of a given number using command line arguments.

2. ARRAYS

Write a program to sort list of elements in ascending and descending order.

3. STRING OPERATIONS

Write a program to implement all string operations.

4. POLYMORPHISM

Write program to implement constructor overloading.

5. INHERITANCE

Write a program to calculate employee pay slip using single inheritance.

6. INTERFACE

Write a program to implement the concept of interface.

7. PACKAGES

Write a program to find the student's percentage and grade using packages.

8. THREAD

Write a program to implement multithread concept and also assign priorities to them.

9. EXCEPTION HANDLING

Write a program to handle the exception using try and multiple catch statements
(NumberFormatException, ArithmeticException, ArrayIndexOutOfBoundsException).

10. APPLETS

Write a program to create a window with three check boxes called red, green, blue. The applet should change the colors according to the selection of the check box.

COURSE DESIGNER:

Ms. P. Ranjani, Assistant Professor, Department of Computer Applications.

ALLIED COURSE – III
ORGANIZATIONAL BEHAVIOUR
2019 – 2020 Onwards

| | | | |
|--|---------------------------------|------------------------|------------------------|
| Semester – IV | Organizational Behaviour | Hours/Week - 5 | |
| Allied Course – III | | Credits - 3 | |
| Course Code - 19UCA4AC5 / 19UIT4AC5 | | Internal 25 | External 75 |

Course Objective

- To help the students to develop cognizance of the importance of human behaviour.
- To enable students to describe how people behave under different conditions and understand why people behave as they do.
- To provide the students to analyse specific strategic human resources demands for future action.

Course Outcome

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

| CO No. | CO Statement | Knowledge Level |
|---------------|---|------------------------|
| CO 1 | Define the conceptual framework of organization behaviour | K1 |
| CO2 | Explain what leadership is and what makes an effective leader | K2 |
| CO3 | Identify the individual characteristics that influence work behaviour and organizational effectiveness. | K3 |
| CO4 | Analyse specific strategic human resources demands for future action | K4 |

Syllabus

Unit – I Fundamentals of Organisational Behaviour (15 Hours)

Definition – Nature – Scope and Goals of Organisation Behaviour – Fundamentals Concepts – Models – Foundation of Individual Behaviour – Human Behaviour - TQM – Managing Cultural Diversity – Total Employee Involvement.

Unit – II Personality, Perception & Motivation (15 Hours)

Definition – Determinants – Theories of Personality – Trait Theory: Big Five Model Type of Theory – Types of Personality. Perception: Meaning – Factors Affecting Perception – Motivation – Needs and Importance of Motivation – Process and Models of Motivation – Theories of Motivation: Maslow’s Need Hierarchy Theory, Mc Gregor’s Theory “X” and Theory “Y” and Herzberg’s Two factor theory of Motivation – Techniques of Motivation.

Unit – III Job Satisfaction & Job Stress (15 Hours)

Meaning – Factors – Importance of Satisfaction – Morale – Importance – Employee Attitude and Behaviour and Their Significance to Employee Productivity – Job Enrichment – Job Enlargement - Job Stress – Nature - Kinds of Stressors – Managing Stress – Job Frustration.

Unit – IV Groups and Conflict in Organisation (15 Hours)

Group: Meaning - Nature - Types – Group Dynamics – Cohesiveness – Group Norms. Conflict: Concept – Process – Types – Resolution of Conflict – Sociometry – Power and Politics – Meaning – Distinction between Power and Politics – Organisational Politics – Types of Power.

Unit – V Learning & Leadership (15 Hours)

Learning - Components of Learning, Theories of Learning - Leadership – Types – Theories – Trait – Managerial Grid - Fielders Contingency Theory – Organisational Climate – Organisational Effectiveness – Counselling and Guidance – Importance – Types of Counselling.

Text Book

| . No. | Authors | Title | Publishers | of Publication |
|--------------|----------------|--|-----------------------|-----------------------|
| 1. | L.M. Prasad | Organisational Behaviour | Sultan Chand & Sons | 2008 |
| 2. | K. Aswathappa | Organisational Behaviour Text, Cases & Games | Himalaya Publications | 2013 |

Reference

| . No. | Authors | Title | Publishers | of Publication |
|--------------|----------------|---------------------------------------|------------------------|-----------------------|
| 1. | P. Subba Rao | Management & Organisational Behaviour | Himalaya Publications | 2009 |
| 2. | S.S. Khanka | Organisational Behaviour Text & Cases | Sultan Chand & Co. Ltd | 2008 |
| 3. | Fred Luthans | Organisational Behaviour Text & Cases | Mc Graw Hill | 2014 |

Pedagogy

Lecture, Power Point Presentation, Assignment, Quiz, Google Classroom, Moodle, Seminar & Group Discussions.

Course Designer

Ms. D. Indumathi – Assistant Professor, Department of Commerce.

SKILL BASED ELECTIVE-I

PRACTICAL – A - ANIMATION PRACTICAL

SEMESTER-IV

| Course Code | Course Title | Category | Learning Hours | Theory Hours/Week | Practical Hours/Week | Credit |
|--------------|---------------------|----------|----------------|-------------------|----------------------|--------|
| 19UCA4SBE1AP | Animation Practical | SBE | 30 | – | 2 | 2 |

PREAMBLE:

- To impart training on Animation practical

COURSE OUTCOMES (CO):

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

| CO NUMBER | CO STATEMENT | KNOWLEDGE LEVEL |
|-----------|---|-----------------|
| CO1 | Recall pen, brush tools in Photoshop | K1 |
| CO2 | Apply resolution, grayscale, black andwhite to an image | K3 |
| CO3 | Using layers, masking, rotation , overlapping of an image | K3 |
| CO4 | Creating custom colors, gradients, grouping , tweening | K5 |

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES:

| | PSO1 | PSO2 | PSO3 | PSO4 |
|-----|------|------|------|------|
| CO1 | S | S | M | M |
| CO2 | M | S | S | S |
| CO3 | M | S | S | S |
| CO4 | S | S | S | S |

S-Strong; M-Medium; L-Low

LIST OF PRACTICALS

PHOTOSHOP

1. BRUSH TOOL

Create a multicolor real life image using brush tool.

2. IMAGE SIZE, RESOLUTION AND COLOR CHANGE

- a. Changing size, resolution and gray scale of an image.
- b. Convert black and white image into color image.

3. IMAGE MODIFICATION

Cropping, rotating, overlapping, super imposing an image.

4. COMMERCIAL BROCHURE

Develop a commercial brochure with background tints.

5. LAYERS

Working with layers (creation, deletion, merge).

6. FILTERS AND MASKS

Applying masks and filtering on images.

FLASH

1. STROKES AND FILLS

Working with strokes and fills.

2. WORKING WITH COLOURS

Creating custom colors, gradients, grouping of objects.

3. CONVERSION

Converting text to shapes.

4. TWEENING

Applying tweening (motion, shape)

COURSE DESIGNER:

Ms. P. Ranjani, Assistant Professor, Department of Computer Applications.

PRACTICAL – B - HTML 5 PRACTICALS

SEMESTER-IV

| Course Code | Course Title | Category | Learning Hours | Theory Hours / Week | Practical Hours / Week | Credit |
|--------------|-------------------|----------|----------------|---------------------|------------------------|--------|
| 19UCA4SBE1BP | HTML 5 Practicals | SBE | 30 | - | 2 | 2 |

PREAMBLE:

To know the basic concepts of HTML 5.

COURSE OUTCOMES (CO):

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

| CO NUMBER | CO STATEMENT | KNOWLEDGE LEVEL |
|-----------|--|-----------------|
| CO1 | Understand basic HTML tags | K1 |
| CO2 | Create a HTML page using keygen, meter and menu elements | K5 |
| CO3 | Apply audio components and datalist in HTML 5 | K3 |

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES (PSO):

| | PSO1 | PSO2 | PSO3 | PSO4 |
|-----|------|------|------|------|
| CO1 | S | S | M | M |
| CO2 | M | M | M | M |
| CO3 | M | S | S | M |

S- Strong; M-Medium; L-Low

LIST OF PRACTICALS

1. BASIC ELEMENTS OF HTML

- Design a webpage using SCRIPT & NOSCRIPT tags using HEADER & FOOTER
- Design a webpage using Citations, Quotations & Definitions

2. PHRASE TAGS

- Create a web page using Canvas element in HTML.
- Design a webpage by applying Keygen element of HTML.

3. PRESENTATION TAGS

Create a web page using Background image & color properties

4. LIST PROPERTY

Design a webpage using list-style-type property.

5. LINKS AND IMAGES

- a. Create a web page using HYPERLINK
- b. Create a web page using IMAGES.

6. TABLES

Design a webpage using Table elements

7. FORMS

Design a webpage by applying Form elements of HTML.

8. FRAMES

Create a web page using frames

9. JAVASCRIPT

Write JAVASCRIPT to display the result of any calculation, using HTML output element.

COURSE DESIGNER:

Ms.Lakshna Arun, Assistant Professor, Department of Computer Applications

SEMESTER V

**CORE COURSE – V (CC)
WEB PROGRAMMING WITH PHP**

SEMESTER: V

| Course Code | Course Title | Category | Learning Hours | Theory Hours/ 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.

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, KevinTatroe, PeterMacIntyre, “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, AssociateProfessor, 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 | KNOWLEDGE LEVEL |
|-----------|--|-----------------|
| 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:

| | 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

- 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)
- Apply PHP coding to print the data of the college application form.
- 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 Management System, Student Management System)

COURSE DESIGNERS:

Ms. V. Infine Sinduja, 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 | KNOWLEDGE LEVEL |
|-----------|---|-----------------|
| 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 – Interprocess 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 Silberschatz, 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.snewgs.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 | KNOWLEDGE LEVEL |
|-----------|---|-----------------|
| CO1 | Describe the basics of Software Engineering | K1 |
| CO2 | State the concepts of design and Architecture Engineering | K1 |
| CO3 | Explain object oriented analysis and design concepts | 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

(15 HOURS)

Software Engineering-Introduction: Introduction to Software Engineering -Software Process - Software Process Models -Software product -**Requirements Engineering Principles:** 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 Issues in 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 – Key Concepts 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, Chandramouli Seetharaman, B.G.Geetha “Software Engineering”, Pearson Publications, 2015.

REFERENCES:

1. Jibitesh Mishra,”Software Engineering”, Pearson Education, 2011
2. Richard E. Fairley, “Software Engineering Concepts”, Tata McGraw-Hill Publishing Company Ltd. 2001
3. Roger S.Pressman, Bruce R.Maxim, “Software Engineering: A Practitioner's Approach, Tata McGraw-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)-AmazonStorage 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-Homo Sapiens 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 Parallel Processing 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

MsLakshnaArun, Assistant Professor, Department of Computer Applications.

Major Based Elective - I (MBE)
INTRODUCTION TO DATA MINING AND WAREHOUSING
SEMESTER: V

| Course Code | Course Title | Category | Learning Hours | Theory Hours/ Week | Practical Hours/ Week | Credit |
|-------------|---|----------|----------------|--------------------|-----------------------|--------|
| 19UCA5MBE1B | Introduction to Data Mining And Warehousing | MBE I | 75 | 5 | - | 5 |

PREAMBLE

- To understand concepts of data mining and ware housing.

COURSE OUTCOME:

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

| CO NUMBER | CO STATEMENT | KNOWLEDGE LEVEL |
|-----------|---|-----------------|
| CO1 | Understand the concept of data mining and data warehousing | K1 |
| CO2 | Know the various data mining techniques such as association rule mining | K2 |
| CO3 | Describe the Characteristics of web and web Mining | K3 |
| CO4 | Discuss the Knowledge on multi dimensional data and OLAP operations | 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

UNIT I: Introduction

(18 HOURS)

Data Mining Definition - Application - Data Mining Techniques - Data Mining Case Studies: Aviation, Astrology, Mall Order - Future of Data Mining - Data Mining Software. Association Rule Mining: Introduction - Basics – Apriori Algorithm.

UNIT II: Classification

(18 HOURS)

Introduction- Decision tree -Building a Decision Tree - The Tree Induction Algorithm - Split Algorithm based on Information Theory - Over fitting and Pruning - Decision Tree Rules - Naive Bayes Method - Estimation of Predictive Accuracy of Classification Methods.

UNIT III: Cluster Analysis**(18 HOURS)**

Cluster Analysis - Desired Features of Cluster Analysis - Types of Data - Computing Distance - Types of Cluster Analysis Methods – Partition Methods: K-Means Method - Hierarchical Methods : Distance between clusters - Agglomerative Method - Divisive Hierarchical Method - Density based Methods - Dealing With Large Databases .

UNIT IV: Web Data Mining**(18 HOURS)**

Introduction - Web Terminology and Characteristics - Web Content Mining - Web Usage Mining - Web Structure Mining - Search Engines: Search Engines Functionality Search Engines Architecture - Ranking Of Web Pages.

UNIT V: Data Warehousing**(18 HOURS)**

Introduction - Data Warehouses - Data Warehousing Design - Guidelines for Data Warehousing Implementation - Data Warehouse Metadata. Online Analytical Processing (OLAP): Introduction - Characteristics of OLAP System: Multidimensional View and Data Cube , OLAP Cube Operations.

TEXT:

1. G.K. Gupta “Introduction To Data Mining With Case Studies” , PHI, 2014

REFERENCES:

1. Jiawei Han, Micheline Kamber, Jian Pei “Data Mining: Concepts and Techniques” Morgan Kaufman Publishers, Third Edition, 2012
2. C.S.R. Prabhu “Data Warehousing: Concepts, Techniques, Products and Application” PHI Learning Private Ltd. Second Edition, 2008

WEB REFERENCES:

1. <https://www.tutorialride.com/data-mining/data-mining-tutorial.htm>
2. https://hanj.cs.illinois.edu/bk3/bk3_slidesindex.htm

COURSE DESIGNER

Ms.T.Juliamary , Assistant Professor, Department of Computer Applications.

**MAJOR BASED ELECTIVE – I (MBE)
ARTIFICIAL INTELLIGENCE**

SEMESTER: V

| Course Code | Course Title | Category | Learning Hours | Theory Hours/Week | Practical Hours/Week | Credit |
|-------------|-------------------------|----------|----------------|-------------------|----------------------|--------|
| 19UCA5MBE1C | Artificial Intelligence | MBE I | 75 | 5 | - | 5 |

PREAMBLE

To foster the development and understanding of Artificial Intelligence and its applications worldwide.

COURSE OUTCOMES:

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

| CO NUMBER | CO STATEMENT | KNOWLEDGE LEVEL |
|-----------|--|-----------------|
| CO1 | Explain the AI problem Solving Techniques | K-2 |
| CO2 | Describe Several General Purpose Search Techniques | K-3 |
| CO3 | Explain Various Heuristic Search Algorithms | K-2 |
| CO4 | Discuss the Predicate Logic and Relationships for Knowledge Representation | K-3 |
| CO5 | Apply the Use of Rules to Encode Knowledge | K-2 |

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES:

| COs | PSO1 | PSO2 | PSO3 | PSO4 |
|-----|------|------|------|------|
| CO1 | M | M | M | S |
| CO2 | S | S | M | S |
| CO3 | M | S | S | S |
| CO4 | S | S | M | S |

S – Strong; M – Medium; L – Low

UNIT I: Problems and Search

(18 Hours)

What is Artificial Intelligence?:- The AI Problems-What is an AI Technique?-**Problems, Problem Spaces and Search:**Defining the Problem as State Space Search- Production Systems - Control Strategies – Algorithm : Breadth-First Search – Algorithm : Depth-First Search – Advantages of Depth-First Search and Breadth-First Search.

UNIT II: Heuristic Search Techniques**(18 Hours)**

Generate-and-Test –Algorithm: Generate-and-Test - Hill Climbing –Simple Hill Climbing – Algorithm: Simple Hill climbing - Steepest-Ascent Hill Climbing – Algorithm: Steepest-Ascent Hill Climbing - Best-first Search – OR-Graphs – Algorithm: Best-First Search -The A* Algorithm.

UNIT III: Heuristic Search Techniques**(18 Hours)**

Problem Reduction – AND-OR Graphs – Algorithm- Problem Reduction - The AO*Algorithm – Algorithm: AO* - Constraint Satisfaction – Algorithm: Constraint Satisfaction -Means-Ends- Analysis.

UNIT IV: Knowledge Representation**(18 Hours)**

Knowledge Representation Issues: Representations and mappings -Approaches to Knowledge Representation. **Using Predicate Logic:** Representing Simple Facts in Logic- Representing Instance and ISA Relationships - Computable Functions and Predicates.

UNIT V: Representing knowledge using Rules**(18 Hours)**

Procedural Versus Declarative Knowledge – Logic Programming – Forward Versus Backward Reasoning. **Symbolic Reasoning Under Uncertainty:** Introduction to Non-monotonic Reasoning - Logics for Non-monotonic Reasoning.

TEXT:

1. Elaine Rich, Kevin Knight and Shivashankar B Nair, “Artificial Intelligence”, Tata McGraw-Hill companies, Third Edition, Reprint 2017.

REFERENCES:

1. Stuart Russel and Peter Norvig ,“Artificial Intelligence- A Modern Approach”, Pearson Education ,2nd Edition,2020.
2. SarojKaushik, “Artificial Intelligence” ,Cengage Learning India, 2011.

WEB REFERENCES:

1. www.eeCIS.udel.edu
2. <https://courses.cs.washington.edu>
3. www.cs.ukzn.ac.za
4. www.tutorialspoint.com/pdf/artificial_intelligence_expert_systems.pdf

COURSE DESIGNER

A. Anandhavalli, 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
 1. 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 differentpresentation 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 |
|------------------|--------------|----------|----------------|-------------------|----------------------|--------|
| 19UCA5SBE2B P | 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 | KNOWLEDGE LEVEL |
|-----------|--|-----------------|
| 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

- Creating new document, adding new pages and resizing the documents using simple tools in Corel Draw X7.

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 - MOBILE APPLICATIONS DEVELOPMENT**

SEMESTER: V

| Course Code | Course Title | Category | Learning Hours | Theory Hours/ Week | Practical Hours/ Week | Credit |
|--------------|--|----------|----------------|--------------------|-----------------------|--------|
| 19UCA5SBE3AP | Practical -Mobile Applications Development | SBE | 30 | - | 2 | 2 |

PREAMBLE

- To understand the android studio tools and SDK for developing android applications.

COURSE OUTCOMES:

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

| CO NUMBER | CO STATEMENT | KNOWLEDGE LEVEL |
|-----------|---|-----------------|
| CO1 | Illustrate the android application development tools with installation. | K2 |
| CO2 | Develop user interfaces for the android platform. | K3 |
| CO3 | Apply Java programming concepts to android application development. | K3 |

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES:

| | PSO1 | PSO2 | PSO3 | PSO4 |
|------------|------|------|------|------|
| CO1 | S | S | M | M |
| CO2 | S | M | M | M |
| CO3 | M | M | L | L |

S – Strong; M – Medium; L - Low

LIST OF PRACTICALS

1. Develop a “Hello World” application.
2. Develop an application that uses GUI components (Font and Colors).
3. Develop a login module (Check username and password) using activity and Intent.
4. Develop a native calculator application using activities and Fragments.
5. Develop an application that draws basic graphical primitives on the screen.
6. Develop an application that makes use of databases.
7. Develop an application that creates an alarm clock.

COURSE DESIGNER

Ms.V.Yasodha, 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 mockup for any business with tag line
5. Develop a College website using the tools of renderforest
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 data link 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:

| | 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 | KNOWLEDGE LEVEL |
|-----------|---|-----------------|
| CO1 | Explain IoT enabling Technologies. | K2 |
| CO2 | Analyze applications of IoT in real time scenario | K4 |
| CO3 | Design a portable IoT using Raspberry pi | 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 & Websockets. **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 asa 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 forInternet 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 | Apply 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” ,Mc Graw Hill Education, 2018.

REFERENCES:

1. Jeeva Jose and P. Sojan Lal, “Introduction to Computing and Problem Solving with Python”, Khanna Book Publishing 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 – II

R PROGRAMMING FOR DATA ANALYSIS

Semester: VI

| Course Code | Course Title | Category | Learning Hours | Theory Hours/Week | Practical Hours/Week | Credit |
|-------------|---------------------------------|----------|----------------|-------------------|----------------------|--------|
| 19UCA6MBE2B | R Programming for Data Analysis | MBE - II | 90 | 6 | - | 5 |

PREAMBLE:

- To impart knowledge in fundamentals of R using Data Analysis.

COURSE OUTCOME:

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

| CO NUMBER | CO STATEMENT | KNOWLEDGE LEVEL |
|-----------|--|-----------------|
| CO1 | Recognize Data Analytics Lifecycle | K1 |
| CO2 | State Data types and its Values | K1 |
| CO3 | Classify Operations and Testing Conditions | K2 |
| CO4 | Discuss Functions and Matrices | K2 |
| CO5 | Operate Data Frames and Plots | K3 |

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES:

| | PSO1 | PSO2 | PSO3 | PSO4 |
|-----|------|------|------|------|
| CO1 | S | S | M | M |
| CO2 | S | S | M | M |
| CO3 | M | M | S | S |
| CO4 | M | M | M | L |
| CO5 | M | M | L | L |

S-Strong; M-Medium; L-Low

SYLLABUS

UNIT I: Introduction to Data Analytics and R

(18 HOURS)

Data Analytics Lifecycle Overview – Discovery – Data Preparation – Model Planning – Model Building – Communication Results – Operationalize. Understanding R – Installing R – Installing Rstudio – Exploring Rstudio – Setting preferences – Creating an R script - Storing a single value – Adding comments – Recognizing data types – Storing multiple values – Storing mixed data types – Plotting stored values – Controlling objects.

UNIT II: Performing Operation and Testing Conditions

(18 HOURS)

Doing arithmetic – Making comparisons – Assessing logic – Operating on elements – Comparing elements – Recognizing precedence – Manipulating elements – Seeking truth – Branching alternatives – Chaining branches – Switching branches – Looping while true – Performing for loops – Breaking from loops.

UNIT III: Employing Functions and Building Matrices

(18 HOURS)

Doing mathematics – Manipulating strings – Producing sequences – Generating random numbers – Distributing patterns – Extracting statistics – Creating functions – Providing defaults – Building matrix – Transposing data – Binding vectors – Naming rows and columns – Plotting matrices – Adding labels – Extracting matrix subsets – Maintaining dimensions.

UNIT IV: Constructing data frames and Producing quick plots

(18 HOURS)

Constructing a data frame – Importing data sets – Examining data frames – Addressing frame data – Extracting frame subsets Changing frame columns – Filtering data frames – Merging data frames – Adjusting factors – Installing packages – Scattering points – Smoothing lines – Portraying stature – Depicting groups – Adding labels – Drawing columns – Understanding histograms – Producing histograms – Understanding box plots – Producing box plots.

UNIT V: Storytelling with data and Plotting perfection

(18 HOURS)

Presenting data – Considering aesthetics – Using geometries – Showing statistics – Illustrating facets – Controlling coordinates – Designing themes – Loading the data – Retaining objects – Overriding labels – Adding a theme – Restoring the workspace – Comparing boxes – Identifying extremes – Limiting focus – Displaying facets – Exporting graphics – Presenting analyses.

TEXT:

1. EMC Education Services, “Data Science and Big Data Analytics”, John Wiley & Sons, Inc, 2015.
2. Mike McGrath, “R for Data Analysis in easy steps”, In Easy Steps, 2018.

REFERENCES:

1. Dr. Mark Gardener, “Beginning R the Statistical Programming Language”, John Wiley & Sons, Inc, 2012.
2. Jafed P.Lander, “R for Every One”, Pearson Education, 2015.

WEB REFERENCES:

1. <https://www.r-project.org/about.html>
2. <https://www.datacamp.com/community/tutorials/r-or-python-for-data-analysis>
3. https://lgatto.github.io/2017_11_09_Rcourse_Jena/index.html

COURSE DESIGNER

Ms. V. Infine Sinduja, Assistant Professor, Department of Computer Applications.

MAJOR BASED ELECTIVE – II (MBE)

DIGITAL MARKETING

Semester: VI

| Course Code | Course Title | Category | Learning Hours | Theory Hours/Week | Practical Hours/Week | Credit |
|-------------|-------------------|----------|----------------|-------------------|----------------------|--------|
| 19UCA6MBE2C | Digital Marketing | MBE-II | 90 | 6 | - | 5 |

PREAMBLE:

- To facilitate the students to develop an overall understanding of digital marketing and online platforms and increase their job opportunities

COURSE OUTCOME:

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

| CO NUMBER | CO STATEMENT | KNOWLEDGE LEVEL |
|-----------|--|-----------------|
| CO1 | Explain the basic concept of Digital Marketing | K1 |
| CO2 | Discuss the concepts of Display Advertising | K2 |
| CO3 | Discuss the Search Engine Advertising | K2 |
| CO4 | Utilize the Social Media Platforms | K3 |
| CO5 | Illustrate the Search Engine Optimization | k3 |

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES:

| | PSO1 | PSO2 | PSO3 | PSO4 |
|------------|------|------|------|------|
| CO1 | S | S | M | M |
| CO2 | S | S | M | M |
| CO3 | M | M | M | M |
| CO4 | M | M | M | M |
| CO5 | M | M | M | M |

S- Strong; M- Medium; L- Low

SYLLABUS

UNIT I: Introduction to Digital Marketing

(18 HOURS)

Introduction- Digital Marketing- Internet Users - Digital Marketing Strategy - Digital Advertising Market in India - Skills Required in Digital Marketing - Digital Marketing Plan.

UNIT II: Display Advertising**(18 HOURS)**

Introduction - Concept of Display Advertising - Types of Display Ads - Buying Models - Display Plan - Targeting - Programmatic Digital Advertising - Analytics Tools - YouTube Advertising.

UNIT III: Search Engine Advertising**(18 HOURS)**

Introduction - Search Advertising - Ad placement - AdRanks - Creating the First Ad Campaign - Enhance Your Ad Campaign - Performance Reports.

UNIT IV: Social Media Marketing**(18 HOURS)**

Introduction - Social Media Marketing Strategies - Facebook Marketing: Facebook for Business - Anatomy of an Ad Campaign - Adverts - Facebook Insights.

UNIT V: Search Engine Optimization**(18 HOURS)**

Search Engine- Concept of Search Engine Optimization (SEO) - SEO Phases - On Page Optimization - Off Page Optimisation - Social Media Reach.

TEXT:

1. Seema Gupta," Digital Marketing", McGraw Hill Education (India) Private Limited, 2018.

REFERENCES:

1. Puneet Bhatia," Fundamentals of Digital Marketing", Pearson Publication, 2018.
2. Nitin C Kamat & Chinmay Nitin Kamat," Digital Social Media", Himalaya Publishing House, 2018.

WEB REFERENCES:

1. www.digitalmarketer.com
2. www.learndigital.withgoogle.com

COURSE DESIGNER

Ms. R. Sridevi, 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 | derstand and apply the basic concepts of Python | K1 |
| CO2 | monstrate 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.

MAJOR BASED ELECTIVE - III

PRACTICAL - R PROGRAMMING

Semester: VI

| Course Code | Course Title | Category | Learning Hours | Theory Hours/Week | Practical Hours/Week | Credit |
|------------------|----------------------------|----------|----------------|-------------------|----------------------|--------|
| 19UCA6MBE 3BP | Practical-R Programming | MBE-III | 75 | - | 5 | 5 |

PREAMBLE

- To impart practical training on R Programming

COURSE OUTCOME:

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

| CO NUMBER | CO STATEMENT | KNOWLEDGE LEVEL |
|-----------|---|-----------------|
| CO1 | Define usage of R & R studio | K1 |
| CO2 | Describe objects & vectors | K2 |
| CO3 | Create data frames and matrix | K3 |
| CO4 | Manipulate data frames and matrices using functions | K3 |
| CO5 | Demonstrate data visualization | 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 |
| CO5 | M | M | L | L |

S-Strong; M-Medium; L-Low

LIST OF PRACTICALS

1. Create R program to take input from the user (name and age) and display the values. Also print the version of R installation.
2. Get the details of the objects in memory using R.
3. Create three vectors such as numeric data, character data and logical data. Display the content of the vectors and their type.
4. Create a simple bar plot of five subjects marks of a student.
5. Create data frames which contain details of 5 employees and display summary of the data.
6. Create an array of two 3x3 matrices for two given vectors.
7. Extract 3rd and 5th rows with 1st and 3rd columns from a given data frame.
8. Generate inner, outer, left, right join (merge) from given two data frames.
9. Demonstrate use of histogram.
10. Demonstrate box plot function.

COURSE DESIGNER

Ms. V. Infine Sinduja, Assistant Professor, Department of Computer Applications.

MAJOR BASED ELECTIVE – III (MBE)

PRACTICAL - DOT NET PROGRAMMING

Semester: VI

| Course Code | Course Title | Category | Learning Hours | Theory Hours/ Week | Practical Hours/ Week | Credit |
|--------------|--------------------------------|----------|----------------|--------------------|-----------------------|--------|
| 19UCA6MBE3CP | Practical- Dot Net Programming | MBE-III | 75 | - | 5 | 5 |

PREAMBLE:

- To impart practical training on Dot Net Programming.

COURSE OUTCOME:

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

| CO NUMBER | CO STATEMENT | KNOWLEDGE LEVEL |
|-----------|--|-----------------|
| CO1 | Design a web form using server and standard controls | K3 |
| CO2 | Implement form validation in Dot Net | K3 |
| CO3 | Connect and manipulate the database with the Dot Net | K3 |
| CO4 | Develop a web application by their own | K5 |

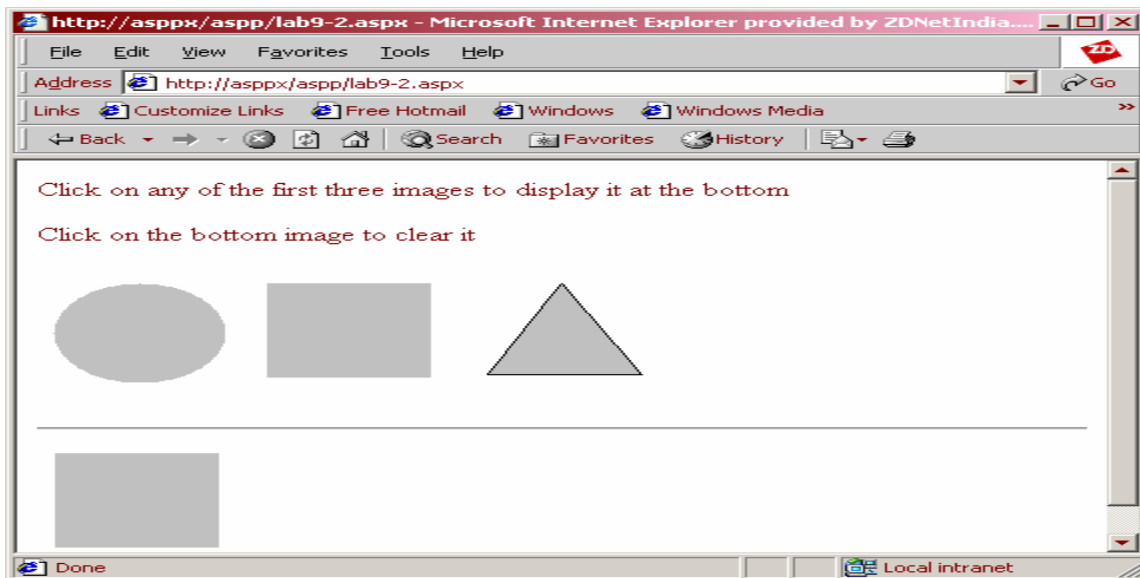
MAPPING WITH PROGRAMME SPECIFIC OUTCOMES:

| | PSO1 | PSO2 | PSO3 | PSO4 |
|-----|------|------|------|------|
| CO1 | S | S | S | M |
| CO2 | S | S | M | M |
| CO3 | S | S | M | L |
| CO4 | S | S | M | L |

S-Strong; M-Medium; L-Low

LIST OF PRACTICALS

1. Write a program using Dot Net framework with C# to display three images in a line. When any one of the images is clicked, it must be displayed below. On clicking the displayed image it must be cleared. The screen must look as in the figure given below:



2. Use Dot Net framework with VB.Net to do the following exercises:
 - a) Design ASP.Net web form using HTML Server Controls to enter job seeker's details
 - b) Create an ASP.Net web form using Web controls to fill E-Mail registration form
 - c) Validate the E-Mail registration form using the validation controls such as Required Field validator, Regular expression validator, Compare validator and Range validator
 - d) Write an ASP.Net application to retrieve form data and display it the client browser in a table format.
 - e) Create a web application using ADO.Net that uses details view which performs basic data manipulations (Insertion, Updation and Deletion) in MS- Access database.
 - f) Create an application using Details view control to perform the basic data manipulations in SQL server database.
 - g) Create an application using Grid view control to access information from a table in SQL server.
 - h) Create an application using Data list control to access information from table in SQL server and display the result in neat format.
 - i) Create a College portal which must include basic database operations such as Insertion, Deletion, Modification, Selection and Searching.

COURSE DESIGNER:

Dr. H. Krishnaveni, Associate Professor, Department of Computer Applications.