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

2020-2021 onwards

SYLLABUS

BACHELOR OF COMPUTER APPLICATIONS- PROGRAMME STRUCTURE
(For the Candidates admitted from the academic year 2020-2021 onwards)

Semester	Part	Course	Title	Course Code	Inst. Hours/ Week	Credit	Exam Hours	Marks Internal	Marks External	Total
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 Sanskrit Story	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	-	-	-	-	-
	IV	UGC Jeevan Kaushal Life Skills	Universal Human Values	20UGVE	2	2	3	25	75	100
			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	Environmental Studies	19UGES	2	2	3	25	75	100
	V	Extra Credit Course	Swayam Online Course	To be Fixed Later	As per UGC Recommendation					
			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)	Readingand Writing for Effective Communication-I	19UE3	6	3	3	25	75	100
	III	CoreCourse - III (CC)	Database Management Systems	19UCA3CC3	6	6	3	25	75	100
		CoreCourse - 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	19ULC3BT1						
			SpecialTamil	19ULC3ST1						
	V	Extra Credit Course	Swayam Online Course	TobeFixed 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&Pharses,Hindi Literature-4	19ULH4						
			Drama, History of Drama Literature	19ULS4						
			Communication in French-IV	19ULF4						
	II	English Language Course- IV(ELC)	Reading and Writing for Effective Communication-II	19UE4	6	3	3	25	75	100
	III	CoreCourse - IV (CC)	Programming with Java	19UCA4CC4	6	6	3	25	75	100
		CoreCourse - IV (CP)	Practical IV - Programming withJava	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	19ULC4BT2				25	75	
			SpecialTamil	19ULC4ST2						
		Skill Based Elective– I	Animation Practicals	19UCA4SBE1AP	2	2	3	40	60	100
			HTML5Practicals	19UCA4SBE1BP						
	V	Extra Credit Course	Swayam Online Course	To be Fixed Later	As per UGC Recommendation					
				Total	**30**	**21**				**700**

5	III	CoreCourse -V(CC)	Web Programming with PHP	19UCA5CC5	5	5	3	25	75	100
		CoreCourse - V(CP)	Practical V -PHP with MySQL	19UCA5CC5P	4	3	3	40	60	100
		CoreCourse - VI (CC)	Operating Systems	19UCA5CC6	5	5	3	25	75	100
		CoreCourse - 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	Mobile Applications Development Lab	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	5	-	-	-	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**	**27**				**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 the successful completion of the course, students will be able to

CO NUMBER	COSTATEMENT	KNOWLEDGE LEVEL
CO1	Explain the program structure, programming rules, C tokens and syntax.	K2
CO2	Apply decision making and loopingstatements in C Program.	K3
CO3	Utilize the concept of arrays andfunctions.	K3
CO4	Identify the role of structure, union andpointers.	K3
CO5	Make use of the file operations and filefunctions.	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

UNITI : 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, Spec ial, 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 GoToInstruction – Decision Making and Looping:Introduction – While, Do, For Statements –Jumps in Loops.

UNITIII: 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.

UNITIV: STRUCTURESAND 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 variablethrough its pointers - Pointer Expressions - Pointers and Arrays - Pointers andCharacter strings – Array of Pointes-Pointers to Functions - Pointers and Structures.

UNITV: 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. YashavantKanetkar, "**Let Us C**", BPB Publications, New Delhi, 6th Edition,2005.
2. Byron S. Gottfried, "**Programming with C**", McGraw HillEducation, 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

PRACTICAL I -PROGRAMMING WITH C

SEMESTER - I

Course Code	Course Title	Category	Learning Hours	Theory Hours/ Week	Practical Hours/ Week	Credit
19UCA1CC1P	Practical I - Programming with 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

CONUMBER	COSTATEMENT	KNOWLEDGE LEVEL
CO1	Relate looping structure with arrays.	K1
CO2	Demonstrate the concept of basic Coperators 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 I -ESSENTIAL MATHEMATICS

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	COStatement	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) –Simpleproblems only.

UNIT III : (**12 hours**)
Integration: Evaluation of integrals of types

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

Evaluation using Integration byparts – Properties of definite integrals.

UNIT IV: (**12 hours**)
Differential Equations: Variables Separables – Linear equations – Second order of types $(a \, D^2 + b \, D + c) \, y = F (x)$ 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 , nbeing 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, Sub graphs, Walks – Paths and Circuits – Euler graphs.

TEXT BOOKS:

1. T.K. ManickavasagamPillai and others, "Algebra, Volume II", S. Viswanathan Pvt Limited, 1985.
2. S. Narayanan, T.K. ManickavasagamPillai, "Calculus, Volume I", S. ViswanathanPvt Limited, 2003.
3. S. Narayanan, T.K. ManickavasagamPillai, "Calculus, Volume II", S. ViswanathanPvtLimited, 2003.
4. S. Narayanan, T.K. ManickavasagamPillai, "Calculus, Volume III", S. ViswanathanPvt Limited, 2003.
5. NarsinghDeo, "GraphTheory", Hall of India Pvt Ltd, 1997.

REFERENCE BOOKS:

1. A.Singaravelu, "Allied Mathematics", A.R.Publications, 2003.
2. P.R.Vittal, "Allied Mathematics", MarghamPublications, 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 ofMathematics

ALLIED II- NUMERICAL ANALYSIS AND STATISTICS

SEMESTER - I

Course Code	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	Knowledge Level
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 Jordon 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 Learning private 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 and Engineering 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

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CORECOURSE– II (CC)

DATA STRUCTURES

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SEMESTER -II

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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	COSTATEMENT	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

UNITI : BASIC TERMINOLOGY   **(20 HOURS)**
Introduction and Overview: Introduction- Basic Terminology- Data Structures- Data StructureOperations. Arrays: Linear Arrays – Representation of Linear Arrays in Memory – Traversing Linear Arrays- Inserting & Deleting – Multi Dimensional Arrays.

UNITII: 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: STACKSand QUEUES   **(20 HOURS)**
Stacks and Queues: Introduction– Stacks – ArrayRepresentation of Stacks – Linked Representation of Stacks – Arithmetic Expression; Polish Notation-Application of Stacks-Recursion. Queues – Linked Representation of Queues-Queue as ADT- Deques.

UNITIV: 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.

UNITV: GRAPHS   **(20 HOURS)**
Graphs and their applications: Introduction – Graph Theory Terminology – Sequential Representation of Graphs – Linked representation ofa Graph- Operations onGraphs – 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. Anany Levitin,"**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

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
1. Matrix representation and manipulation
2. Sorting algorithms
3. Searching algorithms
4. Stack representation and manipulation
5. Queue representation and manipulation
6. Linked list representation and manipulation
7. Binary tree traversal
8. Graph traversal

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

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

CONumber	COStatement	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

UNITI   **(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.

UNITII   **(12 Hours)**

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

UNITIII   **(12 Hours)**

Transportation problem: Introduction - Transportation algorithm –Degeneracy algorithm –
Degeneracyin Transportation Problem, Unbalanced transportation problem.
Assignment Problem: Introduction - Assignment algorithm –Unbalanced Assignment problem-
TheTravelling Salesman Problem.

UNITIV   **(12 Hours)**

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

UNITV   **(12 Hours)**

Network Scheduling by PERT/CPM: Introduction - Network – Fulkerson"s rule - measure ofactivity–
PERT computation– CPM computation

TEXT BOOK:

1. KantiswarupP.K.Gupta&Man Mohan, "Operations Research", Sultan Chand Publishers, New Delhi,
   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

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 Sliberschatz, 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

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

CONUMBER	COSTATEMENT	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

   a) Set the primary key
   b) Alter the structure of the table
   c) 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) Emptyrelation (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 byproperly 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

FINANCIAL ACCOUNTING

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 the 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

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.	COStatement	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 categorysummary 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 Creationof 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 Categoryand Cost Centres in voucher entry.

Unit– V GST & Generating Reports

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

Listof 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	COSTATEMENT	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 dataacross 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 networkswork?

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

How Google works? - How map sites work? - How Wikis and Wikipedia work? - Using common internettools: 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 theweb 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 wirelessnetworking -How viruses work? - Parental controls onthe 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 ofComputer 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

CONUMBER	COSTATEMENT	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

S-Strong; M-Medium; L-Low

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 Davis Holmen."The JAVA Programming Language",3rd Edition. Addition 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.

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

CONUMBER	COSTATEMENT	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 PRCTICALS

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		Hours/Week- 5	
Allied Course - III	**Organizational Behaviour**	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 Gregors'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.

PRACTICAL – A - ANIMATION PRACTICALS

SEMESTER-IV

Course Code	Course Title	Category	Learning Hours	Theory Hours/Week	Practical Hours/Week	Credit
19UCA4SBE1AP	Animation Practicals	SBE	30	_	2	2

PREAMBLE:
● To impart training on Animation practicals

COURSE OUTCOMES (CO):

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

CONUMBER	COSTATEMENT	KNOWLEDGE LEVEL
CO1	Recall pen, brush tools in Photoshop	K1
CO2	Apply resolution, grayscale, black and white 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

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

CONUMBER	COSTATEMENT	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

    a. Design a webpage using SCRIPT & NOSCRIPT tags using HEADER & FOOTER

b.   Design a webpage using Citations, Quotations & Definitions

2. PHRASE TAGS

    a. Create a web page using Canvas element in HTML.

    b. 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.

COURSEDESIGNER:

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

SEMESTER V

CORE COURSE – V (CC)
WEB PROGRAMMING WITHPHP

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	COSTATEMENT	KNOWLEDGE LEVEL
CO1	Describe the basic concepts of PHP	K2
CO2	Implement functions and arrays in PHP	K3
CO3	Apply OOPS concepts in PHP	K3
CO4	Demonstrate the concepts of session, cookies and FTP	K2
CO5	Execute MySQL queries using PHP	K3

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES:

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

S-Strong; M-Medium; L-Low

SYLLABUS:

UNIT I: Essential PHP   **(15 HOURS)**

Essential PHP: Creating your Development Environment- Creating a First PHP Page-Mixing HTML and PHP - Printing Some Text- Printing Some HTML- More Echo Power- Using PHP "Here" Documents- Adding Comments to PHP - Variables - Constants - Data Types .Operators and Flow Control. **UNIT II: PHP Basics**   **(15 HOURS)**

Strings and Arrays - Creating Functions- Reading Data in Web Pages: Setting Up Web Pages to Communicate with PHP - Handling Text Fields and Text Areas - Handling Check Boxes and Radio Buttons - Handling List Boxes, Password Controls, Hidden Controls, Image Maps, File Uploads and Buttons.

UNIT III: OOPs Concepts   **(15 HOURS)**

Object-Oriented Programming: Creating Classes, Objects - Setting Access to Properties and Methods - Using Constructors and Destructors - Inheritance - Overriding, Overloading Methods, Autoloading Classes. Advanced Object-Oriented Programming: Creating Static Methods, Abstract Classes, Interfaces and Class Constants, Supporting Object Iteration - Using Final Keyword - Cloning Objects- Reflection.

UNIT IV: File Handling   **(15 HOURS)**

PHP Browser-Handling Power -File Handling-Cookies and FTP: Setting, Reading, Deleting Cookies - Working with FTP - Downloading, Uploading, Deleting a File with FTP - Creating and Removing Directories with FTP - Working with E-mail. Session Handlers:Session Handling - Configuration Directives - Working with Sessions - Practical Session-Handling Examples - Creating Custom Session Handlers.

UNIT V: MySQL using PHP   **(15 HOURS)**

Introducing MySQL: Key Features of MySQL - Prominent MySQL Users.Working with Databases: Creating a MySQL Database - Creating a New Table - Putting Data into the New Database - Accessing the Database in PHP -Update Data into the Database- Insert Data into the Database - Delete Data from Database. Drawing Images on the Server.

TEXT:

1. Steven Holzner, "The Complete Reference PHP", Tata McGraw Hill Pvt. Ltd., 2012.
2. Frank   M.   Kromann,   "Beginning   PHP   and   MySQL",   Novice   to   Professional,   Fifth Edition, 2018.(Chapters 3, 17, 22)

REFERENCES:

1. Rasmus Lerdorf, Kevin Tatroe, Peter MacIntyre, "Programming PHP", Third Edition, O'Reilly, 2013.

2. Luke Welling, Laura Thomson, "PHP and MySQL Web Development", Fifth Edition, Pearson India Education Services Pvt. Ltd., 2017.

<u>WEBREFERENCES:</u>

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.

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

1. Using HTML tags, create a college application form. (Note: Application form should contain the following fields Name, Father's Name, Date of Birth, Gender, Email-Address, Mobile Number, Address and Course to be Applied)
2. Apply PHP coding to print the data of the college application form.
3. Validate the application form using validator functions and display the error messages.

4. Design a HTML form to get a student's semester mark details and calculate the total, average, grade, result according to the marks.

5. Create a PHP page for the college union bearers' election using sessions.

6. Database in PHP
    a. Get the student details, using application form insert into the database.
    b. Design a HTML page for selecting subjects for examination and insert into database.
    c. Based on student's selection of subjects generate hall ticket with examination date.

7. Create your own PHP applications (like Employee Management System, Library Management System, Student Management System)

COURSE DESIGNERS:

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

Ms. A. Jabeen, Assistant Professor, Department of Computer Applications.

CORE COURSE – VI (CC)

OPERATING SYSTEMS

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.

UNITII: 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.

UNITIII: 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.

UNITIV: Memory Management, I/O Systems &Mass Storage   **(15 HOURS)**

Memory Management Strategies: Background – Contiguous Memory Allocation – Non- Contiguous Memory Allocation – Swapping – Overlays.**Virtual Memory:** Demand Paging – Page Replacement– Thrashing**. I/O Systems:** Introduction – I/O techniques – Application I/O Interface – Kernel I/O Sub systems. **Mass Storage:** Introduction – Disk Structure- Disk Scheduling.

UNIT V: File Systems   **(15 HOURS)**

File Systems: Introduction – Basic concept – Directories – File System Mounting – Record Blocking- File Sharing – Protection.**- Implementation of File System:** File System Structure – File System Implementation – Allocation Methods – Implementing Directories – Shared Files – Free Space Management – Recovery– Log Structured File System.

TEXT:

1. Rohit Khurana, "Operating Systems", Vikas Publishing House Pvt.Ltd, New Delhi, 2nd Edition, 2018.

REFERENCES:

1. "Abraham Sliberschatz, Peter Baer Galvin, Greg Gagne", "Operating System concepts", John Wiley & Sons, Inc, New Delhi, 6th Edition, 2002.

2. "Ann MclverMcHoes, Ida M.Flynn", "Understanding Operating Systems",Cengage Learning, New Delhi, 6th Edition, 2018.

WEB REFERENCES:

1. https://www.tutorialspoint.com/operating_system/
2. https://www.geeksforgeeks.org/operating-systems/
3. http://www.sncwgs.ac.in/wp-content/uploads/2015/11/operating_system_tutorial.pdf

COURSE DESIGNER

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

CORE COURSE – VII (CC)

SOFTWARE ENGINEERING

CourseCode	CourseTitle	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

CONUMBER	COSTATEMENT	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 EngineeringPrinciples**: Introduction - Requirements Engineering - Importance of Requirements -Types of Requirements.

Unit II: Analysis & Design   **(15 HOURS)**

       Requirement Analysis Modeling: Analysis Modeling Approaches -Structured Analysis - Object Oriented Analysis - **Design and Architectural Engineering**: Design Process and Concepts - Basic 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 OrientedConcepts   **(15 HOURS)**

       Object Oriented Concepts: Introduction - Fundamental Parts of Object-Oriented Approach -Data Hiding and Class Hierarchy Creation -Relationships -Role of UML in OO Design -Design Patterns - Frameworks – **Object Oriented Analysis and Design**: Object Oriented Analysis -Object Oriented Design.

Unit IV: Software Design & Coding   **(15 HOURS)**

       User Interface Design: Concepts of User Interface - Elements of User Interface -Designing the User Interface -User Interface Evaluation -Golden Rules of User Interface Design -User Interface Models –Usability- **Software Coding**: Introduction – Programming Principles –Programming Guidelines – Coding Conventions – KeyConcepts in Software Coding.

Unit V: Software Testing & Maintenance   **(15 HOURS)**

       Introduction to Software Testing: Introduction – Psychology of Testing – Software Testing Scope - Software Testing Objectives - Strategic Approach to Software Testing- Types of Software Testing - **Software Maintenance**: Introduction - Maintenance Activities - Maintenance Process - Maintenance Cost - Software Evolution - Reverse Engineering - Re-engineering - Re-structuring - Maintenance Strategies - Issues in Software Maintenance.

TEXT:

1. Chandramouli Subramanian, Saikat Dutt, Chandramouli Seetharaman, B.G.Geetha "Software Engineering", Pearson Publications, 2015.

REFERENCES:

1. JibiteshMishra,"Software Engineering", Pearson Education, 2011
2. Richard E. Fairley, "Software Engineering Concepts", Tata McGraw-Hill Publishing 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)

CLOUDCOMPUTING

SEMESTER: V

CourseCode	CourseTitle	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

CONUMBER	COSTATEMENT	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:

UNITI: 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.

UNITII: 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.

UNITIV: Cloud Services & Applications   **(18 HOURS)**

      Cloud Services: Cloud Types and Services-Software as a Service- Platform as a Service- Infrastructure as a Service-Other Cloud Services. **Cloud Applications**: Microsoft Cloud Services. **Google Cloud Applications:** Google Applications Utilizing Cloud-Google App Engine-**Amazon Cloud Services**: Understanding Amazon Web Components and Services-Elastic Compute Cloud (EC2)-Amazon Storage System-Amazon Database Services.

UNITV: 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

CONUMBER	COSTATEMENT	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.

UNITIII: 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 .

UNITIV: WebData 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 , 03ta Cube Operations.

TEXT:

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

REFERENCES:

1. Jiawei Han, MichelineKamber, Jia n Pei "Data Mining: Concepts and Techniques" MorganKaufman 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.Juliemary , Assistant Professor, Department of Computer Applications.

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 faster the development and understanding of Artificial Intelligence and its applications worldwide.

COURSE OUTCOMES:

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

CO NUMBER	COSTATEMENT	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 SPECIFICOUTCOMES:

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 - ControlStrategies – Algorithm : Breadth-First Search – Algorithm : Depth-First Search – Advantages of Depth- First Search and Breadth-First Search.

UNITII: 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.

UNITIII: 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 **(18Hours)**

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.

UNITV: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.

PRACTICAL - PC Packages

Semester: V

Course Code	Course Title	Category	Learning Hours	Theory Hours/ Week	Practical Hours/ Week	Credit
19UCA5SBE2AP	PC Packages	SBE	30	-	2	2

PREAMBLE:

- To understand concepts of PC Package Programming.

COURSE OUTCOME:

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

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Creating documents using template in MS – word	K1
CO2	Design a worksheet in MS- Excel	K2
CO3	Demonstrate usage of slides in MS - PowerPoint	K3

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES:

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

S-Strong; M-Medium; L-Low

LIST OF PRACTICALS

MS – WORD

1. Text Manipulation– Change the font type and style, alignment of text and underline the text
2. Prepare a document with Bullets, Footers and Headers
3. Prepare a document in newspaper format
4. Table – Creation, insertion, deletion (Columns and rows)
   a. Create a Mark Sheet using table and find out total of all marks for each student
5. Picture insertion and alignment:- Prepare a Greeting Card

6. Creation of documents using templates
    a. Prepare a letter using any template
    b. Prepare a Biodata using any kind of templates
7. Mail Merge:- Prepare Convocation invitation to be sent to specific addresses in the data source.

MS EXCEL

8. MS-Excel-Introduction:- Worksheet & Work book preparation
    a. Entering, Editing and Deleting Text, Numbers, Dates
    b. Moving and Copying data
    c. Inserting, Deleting and Hiding Rows & Columns
    d. Inserting, Deleting, Moving and Copying Sheets
    e. Merging of cells
9. Implement built-in functions such as date, date & time, Text functions
10. Data sorting – Ascending and Descending (both numbers and alphabets)
11. Prepare worksheet
    a. For Mark list of a class with a chart (any type)
    b. For electricity bill
12. Implement Data filtering in the mark list
13. Implement the concept of conditional formatting and freeze panes.

MS POWER POINT

14. MS-PowerPoint:- Inserting clip and pictures

    Create a slide show presentation for a seminar chooses your own topics.

    a. Enter the text in outline view

    b. Create non-bulleted and bulleted body text

    c. Apply the appropriate text attributes

15. Presentation using wizards -Usage of design templates: - Creation of a slide show presentation using different presentation template and different transition effect for each slide. Use different text attributes in each slide.

COURSE DESIGNER

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

SKILL BASED ELECTIVE - II

PRACTICAL –COREL DRAW

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 CorelDraw X7	K1
CO2	Describe formatting tools in CorelDraw	K2
CO3	Creating effective document	K3
CO4	Demonstrating all options in shapes tool	K3
CO5	Developing a sample webpage	K3

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES:

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

S-Strong; M-Medium; L-Low

LIST OF PRACTICALS

Download & Install Corel Draw X7

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

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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

CONUMBER	COSTATEMENT	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.

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

CourseCode	Course Title	Category	Learning Hours	Theory Hours/ Week	Practical Hours/ Week	Credit
19UCA6CC9	Internet ofThings	Core	90	6	-	5

PREAMBLE

- To understand the conceptsofInternet ofThings and technologies involved inthe connected devices

COURSE OUTCOME:

- On successful completion ofthe course, students will be able to

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Explain IoT enabling Technologies.	K2
CO2	Analyze applications ofIoT in realtime scenario	K4
CO3	Design a portable IoT using Raspberrypi	K5
CO4	Expalin Data Analytics for IoT.	K2
CO5	Illustrate Tools in IoT	K3

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES:

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

S – Strong; M – Medium; L – Low

SYLLABUS

UNIT I: Internet of Things & Design Principles (18 HOURS)

Internet of Things an Overview: Internet of Things-IoT conceptual framework-IoT architectural view-Technology behind IoT-Sources of IoT –M2M communication-Examples of IoT. **Design Principles for connected devices**: Introduction –IoT/M2M Systems layers & designs standardisation-communication technologies-data enrichment, data consolidation & device management at gateway-ease of designing and affordability.

UNITII : 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.

UNITIII: Data Acquiring and Data Collection   **(18   HOURS)**

     Data Acquiring, Organizing, Processing and Analytics: Introduction-Data Acquiring and Storage-Organizing the Data-Transactions ,Business Process, Integrations & Enterprise Distance-Analytics-Knowledge Acquiring, Managing and Storing Processors .**Data Collection ,Storage & Computing Using Cloud Platform**: Introduction-Cloud Computing Paradigm for Data Collection ,Storage and Computing-Everything as a Service and Cloud Service Models-IoT Cloud based Services Using the Xively, Nimbits and Other Platforms.

UNIT IV: Sensors and Embedded Devices   **(18   HOURS)**

     Sensors, Participatory Sensing, RFIDs and Wireless Sensor Networks: Introduction-Sensor Technology- Participating Sensing, Industrial IoT and Automotive IoT-Actuators-Sensor Data Communication Protocols-Radio Frequency Identification Technology-Wireless Sensor Network Technology. **Prototyping the Embedded Devices for IoT and M2M**: Introduction-Embedded Computing Basics –Embedded Platforms for Prototyping-Things always connected to the Internet/Cloud.

UNIT V: IoT Security   **(18 HOURS)**

IoT Privacy, Security and Vulnerabilities Solutions:Introduction-Vulnerabilities,Security Requirements and Thread Analysis-Use Cases And Misuse Cases-IoT Security Tomography and Layered Attacker Models –Identity Management and Establishment ,Access Control and Secured Message Communication –Security Models, Profiles and Protocols for IoT.

TEXT:

1. Raj Kamal, "Internet of Things Architecture and Design Principles", McGraw Hill Education (India) Private Limited, 2017.

REFERENCES:

1. David Hanes, Gonzalo Salgueiro, Patrick Grossette,Robert Barton, Jerome Henry, "IoT Fundamentals,Networking Technologies, Protocols and Use cases forInternet of Things", Cisco Press, 2017.
2. Olivier Hersent, David Boswarthick, Omar Elloumi, "The Internet of Things – Keyapplications and Protocols",Wiley, 2012.

WEB REFERENCES:

1. https://www.tutorialspoint.com/
2. https://www.guru99.com/
3. https://www.pythonforbeginners.com/

COURSE DESIGNER

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

MAJOR BASED ELECTIVE- II

PYTHON PROGRAMMING

Semester: VI

Course Code	Course Title	Category	Learning Hours	Theory Hours/Week	Practical Hours/ Week	Credit
19UCA6MBE2A	Python Programming	MBE II	90	6	-	5

PREAMBLE

- To understand concepts of Python Programming language.

COURSE OUTCOME :

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

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Understand Python's core data types while writing new programs	K1
CO2	Demonstrate different decision-making statements	K2
CO3	Use the knowledge of file concepts	K3

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES:

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

S- Strong; M-Medium; L-Low

SYLLABUS

UNIT I: Basics of Python Programming (18 HOURS)

Introduction: Python Character Set-Token-Python Core Data Type- The print() Function- Assigning value to a variable-Multiple Assignments- Writing Simple Programs in Python- The input() Function- The eval() Function- Formatting Number and Strings- Python Inbuilt Functions

UNIT II: Operators , Expressions, Decision and Loop Control Statements   (18 HOURS)

Introduction: Operators and Expressions- Arithmetic Operators- Operator Precedence and Associatively- 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 toa 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 Turtleto Any Location-The color , bgcolor ,circle and Speed Method of Turtle-Drawing with Colors- Drawing Basic Shapes using Iterations-Changing Color Dynamically Using List-Turtles to Create Bar Charts- Introduction- Need of File Handling-Text Input and Output-The seek() Function- Binary Files

TEXT:

1. Ashok Namdev Kamthane, Amit Ashok Kamthane, "Programming and Problem Solving with Python" ,McGraw Hill Education, 2018.

REFERENCES:

1. Jeeva Jose and P. Sojan Lal, "Introduction to Computing and Problem Solving with Python", Khanna Book Publising 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 ofComputer Applications.

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 Datatypes 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 datatypes – 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 – Illustracting 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 easysteps", In EasySteps, 2018.

REFERENCES:

1. Dr. Mark Gardener, "Beginning R the Statistical Programming Language", John Wiley & Sons, Inc, 2012.

2. Jafed P.Lander, "R for EveryOne", 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.

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:
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.

PRACTICAL - PYTHON PROGRAMMING

Semester: VI

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

PREAMBLE:

- To impart the practical training on Python programming

COURSE OUTCOME:

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

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Understand and apply the basic concepts of Python	K1
CO2	Demonstrate the basic concepts of OOPS	K2
CO3	Use the knowledge of file concepts	K3

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES:

	PSO1	PSO2	PSO3	PSO4
CO1	M	S	M	M
CO2	M	M	M	M
CO3	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.

MAJORBASED ELECTIVE - III

PRACTICAL - R PROGRAMMING

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 practicaltraining onR Programming

COURSE OUTCOME:

- Onsuccessful completion ofthe course, the students will be able to

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Define usage ofR & 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 PROGRAMMESPECIFIC 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 boxplot function.

COURSE DESIGNER

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

MAJOR BASED ELECTIVE – III (MBE)

PRACTICAL - DOT NET PROGRAMMING

<div align="right">Semester: VI</div>

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:
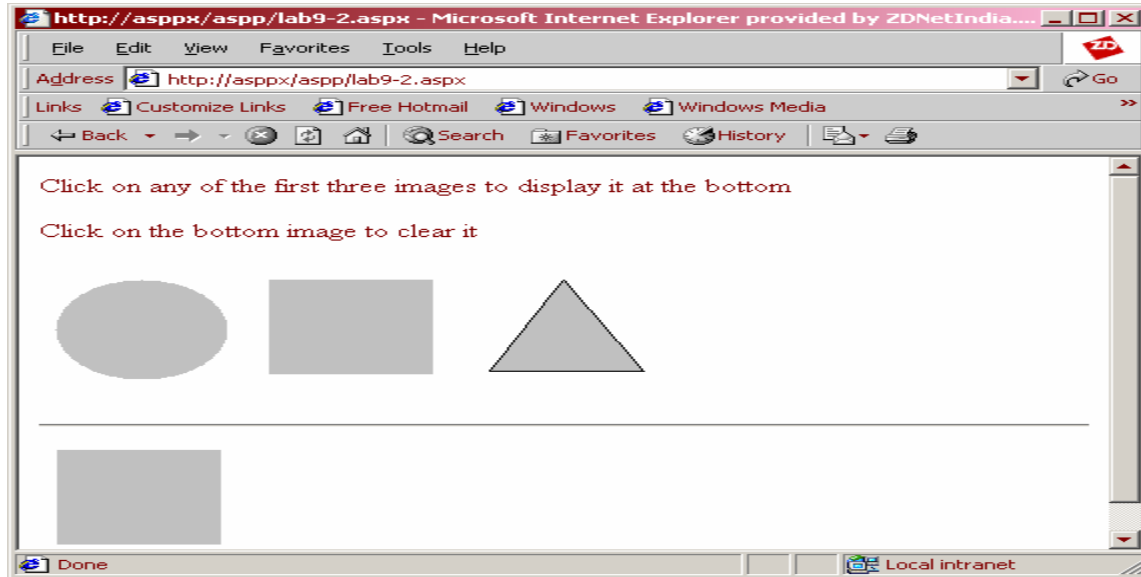
2. Use Dot Net framework with VB.Net to do the following exercises:

   a) Design ASP.Net webform 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.