Cauvery College for Women (Autonomous)
Nationally Accredited (III Cycle) with "A"Grade by NAAC
Annamalai Nagar, Trichy -18.

DEPARTMENT OF INFORMATION TECHNOLOGY
B.Sc (IT) COURSE STRUCTURE
(For the candidates admitted from the Academic year 2020-2021 onwards)

Sem	Part	Course	Title	Subject Code	Inst. Hours/ week	Credit	Exam Hours	Marks Int	Marks Ext	Total
I	I	Language Course-I (LC)- Tamil/Other Languages	இக்கால இலக்கியம்	19ULT1	6	3	3	25	75	100
			Story, Novel, Hindi Literature – I & Grammar – I	19ULH1						
			History of Popular Tales Literature & 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 I	Programming in C	19UIT1CC1	6	5	3	25	75	100
		Core Practical I	Programming in C Lab	19UIT1CC1P	3	2	3	40	60	100
		First Allied I	Essential Mathematics	19UIT1AC1	4	4	3	25	75	100
		First Allied II	Numerical Analysis & Statistics	19UIT1AC2	3	-	-	-	-	-
	IV	UGC Jeevan Kaushal Life Skills	Universal Human Values	20UGVE	2	2	3			100
Total					**30**	**19**				**600**

Sem	Part	Course	Title	Subject Code	Inst. Hours/ week	Credit	Exam	Marks		Total
							Hours	Int	Ext	
II	I	Language Course-II (LC)-Tamil/Other Languages	இடைக்கால இலக்கியமும் புதினமும்	19ULT2	6	3	3	25	75	100
			Prose, Drama, Hindi Literature – 2 & 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 II	Data structures and C++	19UIT2CC2	6	6	3	25	75	100
		Core Practical II	Data structures using C++ Lab	19UIT2CC2P	3	2	3	40	60	100
		First Allied II	Numerical Analysis & Statistics	19UIT1AC2	3	3	3	25	75	100
		First Allied III	Operation Research	19UIT2AC3	4	2	3	25	75	100
	IV	Environmental Studies	Environmental Studies	19UGES	2	2	3			100
Total					**30**	**21**				**700**

Sem	Part	Course	Title	Subject Code	Inst. Hours / week	Credit	Exam	Marks		Total
							Hours	Int	Ext	
III	I	Language Course-III (LC)-Tamil/Other Languages	காப்பியமும் நாடகமும்	19ULT3	6	3	3	25	75	100
			Medieval, Modern Poetry & Hindi Literature – 3	19ULH3						
			Prose Textual Grammar and Vakyarachana	19ULS3						
			Communication in French – III	19ULF3						
	II	English Language Course – III (ELC)	Reading & Writing for Effective Communication - I	19UE3	6	3	3	25	75	100
	III	Core III	Database Management Systems	19UIT3CC3	6	5	3	25	75	100
		Core III-Practical	DBMS Lab	19UIT3CC3P	3	2	3	40	60	100
		Second Allied course-I	Financial Accounting	19UIT3AC4	4	4	3	25	75	100
		Second Allied course –II-P	Computer Applications in Business	19UIT3AC1P	3	2	3	40	60	100
	IV	Non Major Elective I – for those who studied Tamil under Part I a)Basic Tamil for other language students b) Special Tamil for those who studied Tamil upto 10th, +2 but opt for other languages in degree programme.	Internet and its Usage	19UIT3NME1	2	2	3	25	75	100
			Basic Tamil	19ULC3BT1						
			Special Tamil	19ULC3ST1						
	V	SWAYAM ONLINE COURSE	As per UGC Recommendations (Extra credit)		As per UGC Norms					
Total					**30**	**21**				**700**

Sem	Part	Course	Title	Subject Code	Inst. Hours / week	Credit	Exam	Marks		Total
							Hours	Int	Ext	
IV	I	Language Course-IV (LC)-Tamil/Other Languages	பண்டைய இலக்கியம்	19ULT4	6	3	3	25	75	100
			Letter Writing, General Essay, Technical Terms, Proverbs, Idioms & Phrases, Hindi Literature– 4	19ULH4						
			Drama, History of Drama Literature	19ULS4						
			Communication in French - IV	19ULF4						
	II	English Language Course – IV (ELC)	Reading & Writing for Effective Communication - II	19UE4	6	3	3	25	75	100
	III	Core IV	Programming in Java	19UIT4CC4	6	5	3	25	75	100
		Core IV Practical	Java Programming Lab	19UIT4CC4P	3	3	3	40	60	100
		Second Allied course III	Organizational Behavior	19UIT4AC5	5	3	3	25	75	100
	IV	Skill Based Elective I-P	Web Development Tool	19UIT4SBE1AP	2	2	3	40	60	100
			Animation Tool	19UIT4SBE1BP						
		Non Major Elective II for those who studied Tamil under Part I a)Basic Tamil for other language students b) Special Tamil for those who studied Tamil upto 10th, +2 but opt for other languages in degree programme.	Information security & Cyber Laws	19UIT4NME2	2	2	3	25	75	100
			Basic Tamil	19ULC4BT2						
			Special Tamil	19ULC4ST2						
	V	SWAYAM ONLINE COURSE	As per UGC Recommendations (Extra credit)	May be fixed later	As per UGC Norms					
Total					**30**	**21**				**700**

Sem	Part	Course	Title	Subject Code	Inst. Hours/ Week	Credit	Exam	Marks		Total
							Hours	Int	Ext	
V	III	Core V	Python Programming & Machine Learning	19UIT5CC5	5	5	3	25	75	100
		Core V Practical	Programming in Python Lab	19UIT5CC5P	4	3	3	40	60	100
		Core VI	Computer Networks	19UIT5CC6	5	5	3	25	75	100
		Core VII	Digital Logic and Computer Design	19UIT5CC7	5	5	3	25	75	100
		Major Based Elective I	Software Engineering	20UIT5MBE 1A	5	5	3	25	75	100
			Object Oriented Analysis and design	19UIT5MBE 1B						
			Software Project Management	19UIT5MBE 1C						
	IV	Skill Based Elective– IIP	Content Management System Tool	19UIT5SBE2 AP	2	2	3	40	60	100
			Interactive Multimedia Software	19UIT5SBE2 BP						
		Skill Based Elective–IIIP	Web Designing Lab	19UIT5SBE3 AP	2	2	3	40	60	100
			Graphics Lab	19UIT5SBE3 BP						
		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 Norms					
Total					**30**	**29**				**800**

Sem	Part	Course	Title	Subject Code	Inst. Hours/ Week	Credit	Exam	Marks		Total
							Hours	Int	Ext	
VI	III	Core VIII	Operating system	19UIT6CC8	6	6	3	25	75	100
		Core IX	Mobile Application Development	20UIT6CC9	6	6	3	25	75	100
		Major Based Elective II	PHP and MYSQL Web Development	19UIT6MBE2A	6	5	3	25	75	100
			C# Programming	19UIT6MBE2B						
			Artificial Intelligence	19UIT6MBE2C						
		Major Based Elective III	PHP and MYSQL Web Development Lab	19UIT6MBE3AP	5	5	3	40	60	100
			.Net with C#	19UIT6MBE3BP						
			Mobile Application using Android	19UIT6MBE3CP						
		Project	Project	19UIT6PW	6	5	3	-	-	100
	V	Extension Activity	Extension Activity	19UGEA	0	1	0	-	-	-
		Gender Studies	Gender Studies	19UGGS	1	1	3	25	75	100
Total					**30**	**29**				**600**

Semester - I	**PROGRAMMING IN C**	**Hours/Week-6**	
Core Course -I		**Credits – 5**	
Course Code - 19UIT1CC1		**Internal-25**	**External-75**

COURSE OBJECTIVE

To understand the basics of computers and get the deep knowledge of C programming and they can write program for some mathematical problem.

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Discuss the basic concepts of Information Technology	**K1**
CO2	Understanding the structure and basics of programming	**K2**
CO3	Apply the knowledge to develop simple programs	**K3**
CO4	Solve real time problems using C	**K3**

Mapping with Programme Outcomes

COs\POs	PO1	PO2	PO3	PO4
CO1	**S**	**M**	**S**	**M**
CO2	**S**	**M**	**M**	**S**
CO3	**S**	**M**	**M**	**S**
CO4	**S**	**S**	**M**	**S**

SYLLABUS

UNIT I **(18 Hrs)**

Introduction of Computer –Characteristics of computers- Basic components of computers-Software and hardware-Types of Software-CPU-Input devices-Output devices-Storage device-Basics of Programming: Algorithm – Flowchart– Pseudo code conventions and applications– Case scenarios

UNIT II **(18 Hrs)**

Overview of C – Structure of C program – Character set-Tokens – Data types – Variables – Declaration of variables - symbolic constant – Operators and Expressions- Data input and output.

Applications: Basic arithmetic operations-swapping two numbers-Temperature conversion

UNIT III **(18 Hrs)**

Decision making statement: If Statement-Switch-Conditional operator-GOTO statement –Looping statement: While – Do statement –For statement – break and continue.

Applications: Different types of triangles – Income Tax calculations – Electricity Bill calculations

UNIT IV **(18 Hrs)**

Array – One dimensional array – Two and multidimensional array – Character array – String functions –User defined function – Defining a function – Categories of function – Function with arrays – Scope and life time of a variable.

Applications: Sorting: Student Marklist– String Manipulations: Aadhar and PAN applications – Functions: Factorial

UNIT V **(18 Hrs)**

Structures and Unions: Structure definition – Structure Initialization – Array of structure – Array within structure –Structure within structure-Union– Pointers – File Management in C: Defining and Opening File –Closing a File – I/O operations on Files – error handling during I/O operations – Random Access to Files- Command Line Arguments

Applications: Pass by reference – Find the maximum of n numbers using pointer – Create a file with student record

TEXT BOOKS

S.NO	AUTHORS	TITLE	PUBLICATION	YEAR
1	**E.**Balagurusamy	Programming in ANSI C (Unit II,III,IV & V)	Tata McGraw Hill – 7th Edition	2017
2	Alexis Leon & Mathew Leon	Fundamentals of Information Technology(Unit I)	Vikas Publishing House Pvt Ltd -2nd Edition	2009

REFERENCE BOOKS

S.NO	AUTHORS	TITLE	PUBLICATION	YEAR
1	Byron Gottfried	Programming With C	Tata McGraw Hill – 3rd Edition	2013
2	V.Rajaraman	Computer Programming in C	Prentice Hall of India Pvt Ltd – Ist Edition	2004
3.	Yashwvant Kanetkar	Let us C	BPB Publications, 13th Edition.	2014

Semester - I	PROGRAMMING IN C LAB	Hours/Week-3	
Core Practical - II		Credits - 2	
Course Code- 19UIT1CC1P		Internal-40	External-60

COURSE OBJECTIVES

- To develop and execute C programs
- To apply the knowledge of control structures, Arrays and functions
- To manipulate C functions

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge level
CO1	Recall program execution and Debugging	K1
CO2	Demonstrate the ideas of control structures	K2
CO3	Make use of functions and arrays	K3
CO4	Apply string handling functions and develop files	K3

Mapping with Programme Outcomes

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

SYLLABUS

1. Simple Programs
2. Control Structures – Branching statements
3. Control structures – Looping statements
4. Array Manipulations
5. Handling Strings
6. Programs using functions
7. Applications of Pointers
8. Structures and Files

Semester - I	ESSENTIAL MATHEMATICS	Hours/Week-4	
First Allied - I		Credits - 4	
Course Code-19UIT1AC1		Internal-25	External-75

COURSE OBJECTIVE

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

COURSE OUTCOMES

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

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

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	M
CO2	S	S	S	M	M
CO3	S	S	S	S	S
CO4	S	M	M	M	M
CO5	S	S	S	M	M
CO6	S	S	M	M	M
CO7	S	S	S	S	S

SYLLABUS

UNIT I **(12 Hours)**

Matrices

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

UNIT II **(12 Hours)**

Differentiation

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

UNIT III **(12 Hours)**

Integration

Evaluation of integrals of types

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

Evaluation using Integration by parts – Properties of definite integrals

UNIT IV **(12 Hours)**

Differential Equations

Variables Separables – Linear equations – Second order of types (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 , n being an integer (iv) e^{kx} f (x)

UNIT V **(12 Hours)**

Graph Theory

Basic concepts- Finite and infinite graphs-Incidence and degree ideas on vertices – Isomorphism, Sub graphs, Walks – Paths and Circuits – Euler graphs

TEXT BOOKS

S.No	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	T.K. Manichavasagam Pillai and others	Algebra, Volume II	S. Viswanathan Pvt Limited	1985
2	S. Narayanan, T.K. Manichavasagam Pillai	Calculus, Volume I.	S. Viswanathan Pvt Limited	2003
3	S. Narayanan, T.K. Manichavasagam Pillai	Calculus, Volume II.	S. Viswanathan Pvt Limited	2003
4	S. Narayanan, T.K. Manichavasagam Pillai	Calculus, VolumeIII.	S. Viswanathan Pvt Limited	2003
5	Narsingh Deo	Graph Theory	Hall of india Pvt Ltd	1997

UNIT	CHAPTER	TEXT BOOK	SECTION
I	2	1	1- 8, 10-16
II	5 8	2	1.1 - 1.5, 2 1.1 - 1.6
III	1 8 9,11,12	3	7.1 – 7.3, Case II
IV	1 2	4	2.1 , 2.4 1 - 4
V	1 2	5	1.1 – 1.5 2.1 – 2.6

REFERENCE BOOKS

S.No	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	A.Singaravelu	Allied Mathematics	A.R.Publications	2003
2	P.R.Vittal	Allied Mathematics	Margham Publications, Chennai	2014
3	S. Arumugam and S. Ramachandran	Invitation to Graph Theory	SciTech Publications(India)Pvt Ltd.,Chennai	2006

Pedagogy: Lecture, PPT, Quiz, Assignment, Group Discussion, Seminar, E-Content

Semester – I & II	NUMERICAL ANALYSIS AND STATISTICS	Hours/Week-3	
First Allied - II		Credits - 3	
Course Code-19UIT1AC2		Internal-25	External-75

COURSE OBJECTIVE

To train the students in numerical and statistical problems.

COURSE OUTCOMES

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

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	M	M
CO3	S	S	S	M	M
CO4	S	S	S	M	M
CO5	S	S	S	S	S

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

S. No	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
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

UNIT	CHAPTER	TEXT BOOK	SECTION
I	2 3	1	2.1 – 2.5 3.3 (Omit 3.3.4), 3.6, 3.9.1
II	6 7		6.4.1 – 6.4.3 7.5.1 & 7.5.3 , 7.6
III	8		8.1 – 8.6 (Omit 8.4.1)
IV	2	2	2.5 – 2.9, 2.13
V	10 11		10.1 – 10.4, 10.7 11.1 & 11.2

REFERENCE BOOKS

S.No	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1.	M. K. Jain, S. R. K. Iyengar and R. K. Jain	Numerical Analysis Numerical Methods for Scientific and Engineering Computations	New Age International Private Limited	1999
2.	C. E. Froberg	Introduction to Numerical Analysis, II Edn.	Addison Wesley	1979

Pedagogy: Lecture, PPT, Quiz, Assignment, Group Discussion, Seminar, E-Content

Semester - II	**DATA STRUCTURES AND C++**	**Hours/Week-6**	
Core Course -II		**Credits - 6**	
Course Code-19UIT2CC2		**Internal - 25**	**External - 75**

COURSE OBJECTIVES

- To provide the keen knowledge of C++ language and enable the students to write object oriented, platform independent and interactive program.
- To provide complete understanding of classes and objects, constructors and destructors, and control structures.
- To impart knowledge about data structures including linked lists, stacks & queues, and binary tree.

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge level
CO1	Outline the basic concepts of Oops, classes ,objects and functions	**K1**
CO2	Build the knowledge about Constructor, Inheritance and polymorphism	**K2**
CO3	Illustrate Linear Data structures	**K2**
CO4	Implement Linked list and Tree data structure	**K3**
CO5	Analyze various search and sorting techniques	**K4**

Mapping with Programme Outcomes

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

SYLLABUS

UNIT I **(18 Hours)**

Basic concepts of object oriented programming-Functions in C++: The main functions – Function prototyping – Inline functions– Function overloading – Friend & Virtual Functions. Classes and Objects: Specifying a class– Defining member function–Static data members – Static member functions – Array of objects – Objects as function arguments

UNIT II **(18 Hours)**

Constructors and Destructors: Constructors – Types of constructors –Operator overloading-Unary operator-Binary operator– Type conversions-Inheritance: Defining derived classes – Types of Inheritance – Virtual Base Classes – Abstract classes – Constructors in Derived Classes. Pointers, Virtual functions and Polymorphism: Pointers – Pointers to Objects, this Pointer, Pointers to Derived classes.

UNIT III **(18 Hours)**

Introduction and Overview: Definitions – Concepts of data structures – Overview of data structures-Implementation of data structure –Arrays: Definition – Terminology-Operations on Arrays – Stack: Introduction- Definition-Representation-Operations of Stack-Application of Stack: Evaluation of expression – Queues: Introduction-Definition-Representation-Various structures of Queues: Circular Queue, Deque, Priority Queue using an array – Applications of Queue: Round robin algorithm

UNIT IV **(18 Hours)**

Linked list: Introduction-Singly linked list: Representation, Operations: Traverse, Insertion and Deletion-Doubly linked list -Circular linked list-Polynomial Addition-Tree: Terminologies – Definition and basic concepts – Representations of Binary Tree – Operations on a Binary tree: Traversal

UNIT V **(18 Hours)**

Sorting – Terminologies – Sorting Techniques – Straight Insertion sort – Straight Selection sort – Bubble sort – Radix sort – Internal Merge sort –- Searching – Terminologies – Linear search with Array– Binary search-Binary Tree Searching

TEXT BOOKS

S.No	Authors	Title	Publishers	Year
1.	E.Balagurusamy	Object Oriented Programming with C++-Unit I & Unit II	Tata McGraw Hill – 6th Edition	2013
2.	SamantaDebasis	Classic Data strucutures-Unit III,IV & V	PHI Learning Pvt.Ltd-2nd Edition	2008

REFERENCE BOOKS

S.No	Authors	Title	Publishers	Year
1.	Robert Lafore	Object Oriented Programming in C++	Pearson Education	2012
2.	BjarneStroustrup	The C++ Programming Language	Pearson Education, 4th Edition	2014
3.	Rajesh K.Shukla	Object Oriented Programming in C++	Wilsey India Pvt.Ltd,1st,Edition.	2008
4.	Ellis Horowitz SartajSahni	Fundamentals of Data structures	Computer Science press	1983
5.	Seymour Lipshutz	Data structures with C	Tata McGraw Hill Education Pvt Ltd -3rd Edition	2011

Semester - II	**DATA STRUCTURES USING C++ LAB**	**Hours/Week-3**	
Core Practical II		**Credits - 2**	
Course Code-19UIT2CC2P		**Internal-40**	**External-60**

COURSE OBJECTIVES

- To develop and execute C++ programs
- To apply the knowledge of Object Oriented Programming
- To create files

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Exhibit the knowledge of program execution and Debugging of C++	K1
CO2	Demonstrate the use of function and operator overloading	K2
CO3	Understanding the use of inheritance	K2
CO4	Build the applications with files and Combine pointers	K3

Mapping with Programme Outcomes

COs\POs	PO1	PO2	PO3	PO4
CO1	**S**	**M**	**S**	**M**
CO2	**S**	**M**	**M**	**S**
CO3	**S**	**M**	**M**	**S**
CO4	**S**	**S**	**S**	**S**

SYLLABUS

1. Classes and Objects
2. Function overloading
3. Operator overloading
4. Implementation of Stack
5. Operations of Queue
6. Handling of Linked list
7. Traversal of a Binary Tree
8. Binary search
9. Merge sort

Semester - II	OPERATIONS RESEARCH	Hours/Week-4	
First Allied III		Credits - 2	
Course Code-19UIT2AC3		Internal-25	External-75

COURSE OBJECTIVES

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

COURSE OUTCOMES

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

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

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	**S**	**S**	**S**	**M**	**M**
CO2	**S**	**S**	**S**	**S**	**S**
CO3	**S**	**M**	**S**	**M**	**M**
CO4	**S**	**S**	**S**	**S**	**S**
CO5	**S**	**S**	**S**	**S**	**S**
CO6	**S**	**S**	**S**	**S**	**S**

SYLLABUS

UNIT I **(12 Hours)**

Operations Research

Introduction - Basics of OR – OR & decision making –Role of Computers in OR

Linear Programming Problem

Linear programming formulations & graphical solution of two variables – Canonical & standard forms of LPP

UNIT II **(12 Hours)**

Linear Programming Problem

Introduction - Simplex Method for < , = , > constraints – Two phase Simplex method – Big M Method.

UNIT III **(12 Hours)**

Transportation problem

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

Assignment Problem

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

UNIT IV **(12 Hours)**

Sequencing problem

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

UNIT V **(12 Hours)**

Network Scheduling by PERT/CPM

Introduction - Network – Fulkerson's rule - measure of activity – PERT computation– CPM computation

TEXT BOOK

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Kanti swarup P.K.Gupta & Man Mohan	Operations Research	Sultan Chand Publishers, New Delhi	2008

UNIT	CHAPTER	SECTION
I	1 2 3	1.1 - 1.10 2.1 – 2.4 3.1 – 3.5
II	4	4.1 – 4.4
III	10 11	10.1 -10.3,10.5,10.6 10.8-10.13 11.1 – 11.4,11.7
IV	12	12.1 – 12.6
V	25	25.1 – 25.8

REFERENCE BOOKS

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
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

Pedagogy: Lecture, PPT, Quiz, Assignment, Group Discussion, Seminar, E-Content

Semester - III	**CORE-III** **DATABASE MANAGEMENT SYSTEMS**	**Hours/Week-6**	
Core Course-III		**Credits -5**	
Course Code-19UIT3CC3		**Internal-25**	**External-75**

COURSE OBJECTIVES

- To provide a sound introduction to DBMS
- To present SQL and Procedural interfaces to SQL comprehensively
- To present the concepts and techniques relating to query processing by SQL engines
- To introduce the concepts of transactions and transaction processing

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge level
CO1	Outline the terminology, features, classifications, characteristics and benefits embodied in database systems	K1
CO2	Formulate using relational algebra solutions to a broad range of query problems	K2
CO3	Demonstrate a broad range of SQL query and its application	K3
CO4	Design an information model expressed in the form of an Entity relation diagram	K3
CO5	Apply normalization in relational database design and demonstrate understanding of PL/SQL program interfaces	K3

Mapping with Programme Outcomes

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

SYLLABUS

Unit I **(18 Hours)**

Introductory concepts of DBMS :Introduction and applications of DBMS, Purpose of data base, Data, Independence, Database System architecture- levels, Mappings, Database, users and DBA Relational Model :Structure of relational databases, Domains, Relations, Relational algebra – fundamental operators and syntax, relational algebra queries

UNIT II **(18 Hours)**

SQL Concepts :Basics of SQL, DDL,DML,DCL, structure – creation, alteration, defining constraints – Primary key, foreign key, unique, not null, check, IN operator, Functions - aggregate functions, Built-in functions –numeric, date, string functions, set operations, sub-queries, correlated sub-queries, Use of group by, having, order by, join and its types, Exist, Any, All , view and its types. Transaction control commands – Commit, Rollback, Savepoint

Unit III **(18 Hours)**

Entity-Relationship model :Basic concepts, Design process, constraints, Keys, Design issues, E-R diagrams, weak entity sets, extended E-R features – generalization, specialization, aggregation, reduction to E-R database schema

Unit IV **(18 Hours)**

Relational Database design :Functional Dependency – definition, trivial and non-trivial FD, closure of FD set, closure of attributes, irreducible set of FD, Normalization – 1Nf, 2NF, 3NF, Decomposition using FD- dependency preservation, BCNF, Multi- valued dependency, 4NF, Join dependency and 5NF Transaction concepts, properties of transactions, serializability of transactions, testing for serializability

Unit V **(18 Hours)**

PL/SQL Concepts: Cursors, Stored Procedures, Stored Function, Database Triggers

TEXT BOOKS

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1.	C.J.Date	An Introduction To Database Systems	Pearson	2003
2.	Abraham Silberschatz, Henry F. Korth& S. Sudarshan	Database system concepts	Mc-Graw Hill Education	2011
3.	Ivan Bayross	SQL,PL/SQL	BPB	
4.	Martin Gruber	Understanding SQL	Tech	2003

REFERENCE BOOKS

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1.	J.D.ULLAMAN	Principles of Database Systems,	Mc-Graw Hill Education Galgotia Publishers	2010
2.	Elamsri and navathe	Fundamentals of database systems	Pearson Education	1999

Pedagogy: Lecture, PPT, Quiz, Assignment, Group Discussion, Seminar, E-Content

Course Designer: Ms. S. Sugunadevi

Semester - III	**CORE-III**	**Hours/Week-3**	
Core Practical - III	**DBMS LAB**	**Credits - 2**	
Course Code-19UIT3CC3P		**Internal-40**	**External-60**

COURSE OBJECTIVES

- Creating and Altering Tables with necessary constraints, keys and data types
- Inserting data and manipulating data as per needs
- Writing SQL Queries to retrieve required information from single/multiple tables.
- Creating views and manipulating them as needed

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge level
CO1	Design and implement a database schema for a given problem	K1
CO2	Create and maintain tables using PL/SQL	K2
CO3	Populate and query a database	K3
CO4	Prepare reports	K3
CO5	Application development using PL/SQL & front end tools	K3

Mapping with Programme Outcomes

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

SYLLABUS

1. Creation

Create a table **EMP** with the following Fields and constraints

Field	Type	Constraint
EMPNO	NUMBER(4)	Set it as primary key aftercreating table
ENAME	VARCHAR2(10)	
JOB	VARCHAR2(9)	CLRK/MGR/A.MGR/GM/CEO,default CLRK
MGR_ID	NUMBER(4)	
DATE_BIRTH	DATE	Must be less than joining Date
SAL	NUMBER(7,2)	More than 20000,default 20001
COMM	NUMBER(7,2)	DEFAULT 1000
DEPTNO	VARCHAR2(3)	References DEPT
DATE_OF_JOIN	DATE	

Create table DEPT with following columns and constraints

Field	Type	Constraint
DNO	VARCHAR2(3)	Primary Key and Starts from 'D'
DNAME	VARCHAR2(10)	Unique
LOCATION	VARCHAR2(9)	BNG/MNG/MUB/HYD/CHN,default BNG

Create table PROJECT with following constraints combination of **DNO and PRJ_NO** is primary key

Field	Type	Constraint
DNO	VARCHAR2(3)	References DEPT ,NOT NULL
PRJ_NO	VARCHAR2(5)	Starts with 'P' , NOT NULL
PRJ_NAME	VARCHAR2(10)	
PRJ_CREDITS	NUMBER(2)	Range from 1 to 10
STRT_DATE	DATE	
END_DATE	DATE	END_DATE > START_DATE

Add a column to EMP table named PRJ_ID. Add a foreign key constraint to EMP table on (DeptNo, Proj_Id) referencing PROJECTS. Indicates -an employee from which department is working on which project.

2. Insert records into EMP, Dept, Project table.

3. Implement Basic Commands (Insert, Update, Delete, Display) using MySQL.

4. Write Queries to implement types of Joins.

5. Write MySQL Query to create, display and update a View.

6. PL/SQL

6.1.Write PL/SQL block to give salary hike of 10% to first five highest paid employees, create a save point for salary hike given to each of five employees Calculate total amount paid by the company as salary to all employees and it should not exceed 500000/-(this amount can be assumed suitably). If it exceeds, rollback up to the recent previous save point and check again to know whether total salary lies below 500000/- and so on. Commit the changes if total salary lies below500000/-.

6.2.Write a PL/SQL block to process Pay roll of all Employees by calculating Bonus(considering Project Credits of projects in which they are working),HRA,PF,TAX,GROSS and NET_SAL. Insert these salary details into a new table PAYROLL(EmpNo, Pay_Date, Salary, Bonus, HRA, GROSS,PF, TAX, NET_SAL). Note Salary is same as Sal from EMP table, Bonus=Salary*Proj_Credits/100, HRA=10% of Salary, PF=10% of Salary GROSS=Salary +Bonus + HRA, TAX=10% of GROSS, NET_SAL=GROSS-PF-TAX.(Hint: use two cursor one for EMP and another for different projects and their credits)

7. Triggers

Write a PL/SQL trigger to fire when there is an updation of salary of any Empno and record the Empno, Dept. Name and old salary, date on which salary is modified and user name who modified information in the table SAL_MOD(Empno, Dname, Old_Sal, Mod_date, Modifier)

Pedagogy: System, White Board

Course Designer: Ms. S. Sugunadevi

Semester - III	**INTERNET AND ITS USAGE**	**Hours/Week-2**	
NME– I		**Credits - 2**	
Course Code-19UIT3NME1		**Internal-25**	**External-75**

COURSE OBJECTIVES

- To get familiar of basics of Internet programming
- To acquire knowledge and skills for creation of web site
- To gain ability to develop responsive web applications.

COURSE OUTCOMES

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

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Discuss the terms related to Internet and its Technologies	K1
CO2	Demonstrate the usage of E-Mail and Social works	K3
CO3	Analyze the commands used to create and design web pages	K3
CO4	Apply HTML to create basic web pages	K3
CO5	Design the web content using CSS	K3

SYLLABUS

Unit - I **(5 Hours)**

Introduction to Internet – Internet Technologies – Internet Browser –E-Mail

Unit - II **(5 Hours)**

Getting started with HTML 5 – Introduction to HTML 5 – New Structure – Define HTML mark up – Basic Structure of an HTML Document – Creating and Saving a HTML document – opening the HTML document in a web browser – Modifying the background of HTML web page.

Unit - III **(6 Hours)**

Introduction to New Elements in HTML : The markup element – The Media Element – The Canvas Elements – The Form Elements - The Input type attributes values– The new attributes – The window event Attributes – The Form attributes – The window event attributes – The Form Event – The mouse Event – The Media Event.

Unit IV **(5 Hours)**

Working with Text – Working with Lists, Tables and Frames.

Unit V **(5 Hours)**

Working with Hyper links – Images and Multimedia – Working with Cascading Style Sheet.

TEXTBOOKS

S.No	Author	Title	Publisher	Year of Publication
1.	C Xavier	World Wide Web Design	Tata Mc-Graw Hill Publishing limited, New Delhi	2014
2.	Kogent Learning Solutions.	HTML 5 in Simple Steps –	Dream Tech Press	2010

REFERENCE BOOK

S.No	Author	Title	Publisher	Year of Publication
1.	O. H. U. Heathcote	Basics Of Internet 3rd Edition	Payne Gallway Publisher Limited	2003

Semester - III	Financial Accounting	Hours/Week - 4	
Second Allied Course - I		Credits - 4	
Course Code - 19UCA3AC4 / 19UIT3AC4		Internal 25	External 75

COURSE OBJECTIVE

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

COURSE OUTCOMES

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

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 BOOK

S.No.	Authors	Title	Publishers	Year of Publication
1.	Fundamentals of Accounting	S.P.Jain and K.L.Narang	Kalyani Publishers	2017

REFERENCE BOOK

S.No.	Authors	Title	Publishers	Year of Publication
1.	Financial Accounting	T.S. Reddy & Murthy	Margham Publications	2017

PEDAGOGY

Lecture, Power Point Presentation, Assignment, Quiz & Group Discussions.

COURSE DESIGNER

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

Semester - III	**Computer Applications in Business**	**Hours/Week - 3**	
Second Allied Course - II		**Credits - 2**	
Course Code - 19UCA3AC1P / 19UIT3AC1P		**Internal 40**	**External 60**

COURSE OBJECTIVE

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

COURSE OUTCOMES

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

CO No.	CO Statement	Knowledge Level
CO 1	Recall the basic concepts of components of computer	K1
CO2	Understand the basic features of Tally ERP9	K2
CO3	Prepare different types of financial reports	K3
CO4	Analyse stock group, stock category, stock item and compare stock category summary with godown summary	K4
CO5	Explain the procedure for GST Registration	K5

SYLLABUS

Unit – I Introduction to Computerized Accounting

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

Unit – II Introduction to Tally

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

Unit – III Creation of Ledgers, Groups & Voucher Entries

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

Unit – IV Cost Categories & Cost Centre

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

Unit – V GST & Generating Reports

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

List of Practicals:

1. Creation, alteration and deletion of companies and user defined accounting groups.
2. Creation, alteration and deletion of ledger Accounts.
3. Preparation of Final Accounts with adjustments.
4. Voucher entries in double entry mode.
5. Creation, alteration and deletion of inventory masters.
6. Generating Accounting and Inventory Reports.
7. GST Registration and E-filing of returns.

TEXT BOOKS

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 BOOKS

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

PEDAGOGY

Lecture, Power Point Presentation, Assignment, Quiz & Group Discussions.

COURSE DESIGNER

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

SEMESTER - IV	PROGRAMMING IN JAVA	Hours/Week-6	
Core Course - Core IV		Credits - 5	
Course Code 19UIT4CC4		Internal-25	External-75

COURSE OBJECTIVES

- To provide the keen knowledge of JAVA language
- Enable the students to write object oriented, platform independent and interactive program
- Learn to connect and access database through JDBC

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Introducing the basics of platform independent language and its structure	K1
CO2	Illustrate the Object Oriented Programming Concepts with interactivity	K2
CO3	Outline the error handling mechanism	K2
CO4	Experiment with simple programming exercises	K3
CO5	Apply Object Oriented concepts to develop real time applications	K3

Mapping with Programme Outcomes

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

SYLLABUS

UNIT I: Overview of Java language (12 Hours)

Java History – Java Features – How Java differs from C and C++ - Java and Internet - Java Support Systems – Java Environment. Introduction – Simple Java Program – Comments – Java Program Structure – Tokens – Java Statements – Implementing a Java Program – JVM – Command Line Arguments - Constants – Variables – Data Types – Type Casting. [Operators and Expressions - If – if...else – Nesting of if… Else– else if – switch - ternary operator-Decision Making and Branching- Decision Making and Looping**] [Self-Study]**

Applications: Finding the area and perimeter for different shapes,

UNIT II: Classes, Objects and Methods (17 Hours)

Classes, Objects and Methods - **Inheritance** – Overriding methods – final Variables and methods – Final classes – finalizer methods – Abstract methods and classes – visibility control-Arrays, Strings and Vectors: Arrays – One Dimensional Arrays – Creating an array – Two Dimensional Arrays – Strings. **Interfaces:** Multiple Inheritance -Defining interfaces – Extending interfaces – implementing interfaces – Accessing interface variables.

Applications: Bank Transaction, Electricity Bill Calculation

UNIT III: Packages, Multithreading and Exception Handling (17 Hours)

Packages - Multithreaded Programming - Managing Errors and Exceptions:Types of errors – Exceptions – Syntax of Exception handling code – Multiple Catch Statements – Using finally statement – Throwing our own Exceptions – Using Exceptions for Debugging

Applications: Student Marklist preparation, Playing audio

UNIT IV: Applet Programming (16 Hours)

How applets differ from Applications – preparing to write applets – Building Applet Code – Applet life cycle – creating an Executable Applet – Designing a Web Page – Applet Tag – Adding Applet to HTML file – Running the Applet – Passing parameters to Applets

Graphics Programming: The Graphics Class – Lines and Rectangles – Circles and Ellipses – Drawing Arcs – Drawing Polygons – Line Graphs – Using Control Loops in Applets – Drawing Bar Charts-Introduction to AWT Package - Window Fundamentals – Closing an AWT Window or Frame – Working with Fonts - Layout Managers – Handling Events on AWT Components

Managing Input/output Files in Java: Concepts of Streams - Stream Classes – Byte Stream classes – Character stream classes – Using streams – I/O Classes – File Class – I/O exceptions –Creation of files – Reading / Writing characters, Byte-Handling Primitive data types – Random Access Files

Applications: Draw different shapes, Change the background color according to the selection

UNIT V: JDBC **(16 Hours)**

Introduction - JDBC Architecture –Discussion with Example – **Java Servlets and JSP:** Introduction – Evolution of N-Tier Architecture – Difference between Two Servers – Overview of Servlets – Overview of JSP.

Applications: Create Employee Database and access the data through JDBC Connection.

TEXT BOOK

S.No	Authors	Title	Publishers	Year
1.	E. Balagurusamy	Programming with JAVA-A Primer	Tata McGraw-Hill, 6th Edition	2019

REFERENCE BOOKS

S.No	Authors	Title	Publishers	Year
1.	Herbert Schildt	Java 2 – The Complete Reference	Tata McGraw-Hill, 9th Edition	2014
2.	H.M. Deitel, P.J.Deitel	Java – How to Program	Pearson Education, 6th Edition	2005

SEMESTER - IV	JAVA PROGRAMMING LAB	Hours/Week-3	
Core Course - Core IV Practical		Credits - 3	
Course Code 19UIT4CC4P		Internal-40	External-60

COURSE OBJECTIVE

This course enables the students to develop the real time application software to implement in a platform independent environment.

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Recall basic programming logic with simple example	K1
CO2	Develop Java Application program using Object Oriented Concepts	K2
CO3	Make use of the applet concept to design interactive program	K3
CO4	Create and analyze the real time applications	K4

Mapping with Programme Outcomes

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

SYLLABUS

- Classes and Objects
- Constructor Overloading
- Method Overloading
- String Operations (Reverse, Copy, Concatenate, Compare)
- Inheritance
- Interface
- Multithreading
- Package
- User-Defined Exception (minimum 3 types of exception should be used)
- Applet
- Create Database and access using JDBC connectivity

Semester - IV	WEB DEVELOPMENT TOOL	Hours/Week-2	
SBE-1A		Credits - 2	
Course Code- 19UIT4SBE1AP		Internal-40	External-60

COURSE OBJECTIVES

- To develop a webpage
- To handle embedding audio and video in HTML
- To design a web page using HTML, CSS and Scripting language

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Develop a simple web page using basic HTML tags	K1
CO2	Create many frames and link them in HTML	K2
CO3	Design a web page using Forms and Tables	K3
CO4	Embed audio and video in HTML	K3

Mapping with Programme Outcomes

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

SYLLABUS

1. Handling different tags available in HTML
2. Create an application form for a job (use Text box, Check box, Buttons…)
3. Create an advertisement in HTML with images and link multiple documents
4. Prepare a Time Table for your class using TABLE tag
5. Create a number of framesets and jump to a specified section within a frame
6. Develop a web page using different types of lists in HTML
7. Embedding audio and video in HTML documents
8. Design a HTML web page using CSS
9. HTML program with scripting language

Semester - IV	Animation Tool	Hours/Week-2	
SBE-1B		Credits - 2	
Course Code- 19UIT4SBE1BP		Internal-40	External-60

COURSE OBJECTIVES

- To develop multimedia and animated rich web content using Photoshop
- To develop poster making and certificate preparation using Photoshop

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Create graphics using design elements	K1
CO2	Illustrate masking effects	K2
CO3	Demonstrate attributes of images	K3
CO4	Model key drawing for animations	K3

Mapping with Programme Outcomes

COs\POs	PO1	PO2	PO3	PO4
CO1	**S**	**M**	**M**	**S**
CO2	**S**	**S**	**M**	**S**
CO3	**S**	**M**	**S**	**M**
CO4	**S**	**S**	**M**	**M**

SYLLABUS

1. Drawing Arts -using basic tools
2. Images with Masking effect- Clipping Mask
3. Poster Making – Text tool and shape tool
4. Designing a certificate – Pen tool
5. Text animation
6. Color replacement
7. Text portrait poster preparation – Layer mask and merging layers
8. Rainbow effect in image – Gradient tool
9. 3D text and shapes
10. Making PNG image – Magnetic Lasso tool

SEMESTER - IV	Information Security & Cyber Laws	Hours/Week-2	
NON-MAJOR ELECTIVE-II		Credits - 2	
Course Code-19UIT4NME2		Internal-25	External-75

COURSE OBJECTIVES

- To provide a basic introduction to Information and Security
- To present an ideas about the types of Threats and Virus
- To present the counter measures and Cyber Laws for Information security

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge level
CO1	Outline the basics of Information Security, its quality, value and aspects	K1
CO2	Recall the basic concepts of Threats and its counter measures	K1
CO3	Define the types of viruses, its detection and recovery	K1
CO4	Summarize the counter measures for Information security and Cryptography	K2
CO5	Identify Cyber laws for Prevention and Detection	K3

Mapping with Programme Outcomes

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

SYLLABUS

Unit I **(6 Hours)**

Basics of Information and Security: Information – Quality and Value of Information – Information Security – Information Security Breach – Aspects of Information Security

Unit II **(5 Hours)**

Information Security Threats – Threats, Vulnerabilities and Countermeasures – Types of Threats

Unit III **(6 Hours)**

Viruses –Introduction – Types of Viruses – Prevention from Virus attacks – Antivirus software – Virus detection and Recovery

Unit IV **(7 Hours)**

Countermeasures for Information Security Breach – Backups: Need, Media and Qualities – Cryptography – Biometrics

Unit V **(6 Hours)**

Cyber Laws and Ethics – Cybercrime – Prevention and Detection – Cyber Laws – Indian IT Act and Ethical Issues

TEXT BOOKS

S.No	Author	Title of The Book	Publishers/Edition	Year of Publication
1.	NIIT	Information Security : An Overview	Prentice-Hall of India Private Limited	**2004**
2.	Pankaj Agarwal	Information Security and Cyber Laws	Acme Learning Private Learning	**2010**

REFERENCE BOOK

S. No	Author	Title of The Book	Publishers/Edition	Year of Publication
1.	Michael E. Whitman Herbert J. Mattord	Principles of Information Security	Cengage Learning India Private Limited	**2012**

Semester - IV	ORGANIZATIONAL BEHAVIOUR	Hours/Week - 5	
Allied Course - III		Credits - 3	
Course Code - 19UCA4AC5 / 19UIT4AC5		Internal 25	External 75

COURSE OBJECTIVES

- 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 OUTCOMES

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

CO No.	CO Statement	Knowledge Level
CO1	Define the conceptual framework of organization behavior	K1
CO2	Explain what leadership is and what makes an effective leader	K2
CO3	Identify the individual characteristics that influence work behavior and organizational effectiveness.	K3
CO4	Analyse specific strategic human resources demands for future reaction	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 BOOKS

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

REFERENCE BOOKS

S. No.	Authors	Title	Publishers	Year 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.

SEMESTER – V	PYTHON PROGRAMMING & MACHINE LEARNING	Hours/Week-5	
CORE -V		Credits - 5	
Course Code- 19UIT5CC5		Internal-25	External-75

COURSE OBJECTIVES

- To understand the fundamentals of Python programming
- To demonstrate the usage of Arrays, Functions, Strings and Lists
- To develop programs with regular expressions and GUI
- To create the ability to handle Data Frames

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Introduce the basic concepts of Python	K1
CO2	Write and Execute programs using Arrays and Functions	K2
CO3	Illustrate the concepts of Strings and Dictionaries	K2
CO4	Design coding using Regular Expressions and GUI	K3
CO5	Applying knowledge in handling Data Frames	K3

MAPPING WITH PROGRAMME OUTCOMES

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

SYLLABUS

UNIT I **(13 Hours)**

Introduction – Python Overview – Comments – Python Identifiers – Reserved Keywords – Variables – Standard Data Types – Operators – Statement and Expression – String Operations – Boolean Expressions – Control Statements – Iteration – while statement – Input from Keyboard – Output statements

UNIT II **(15 Hours)**

Arrays – Creating an Array – Importing the Array Module – Indexing and slicing on Arrays – Types of Arrays – Working with Arrays using numpy – Creating Arrays using array( ) – Mathematical Operations on Arrays – Comparing, Aliasing, Viewing and Copying Arrays – Slicing and Indexing in numpy Arrays – Attributes of an Array – The reshape() and flatten() Method – Functions

UNIT III **(17 Hours)**

Strings – Lists – Tuples – Dictionaries: Creating, Accessing and Operations

UNIT IV **(14 Hours)**

Regular Expressions – Sequence Characters – Quantifiers – Special Characters – GUI : The Root Window – Fonts and colors – Working with containers - Canvas – Frame and Widgets – Arranging Widgets in the frame – Button, Label, Message, Text, Scrollbar, Check button, Radio button, Entry, Spin box, List box and Menu Widget

UNIT V **(16 Hours)**

Introduction – Why Machine Learning – Framework for developing ML models – Why Python for ML? – Python Stack for Data Science – Getting started with Anaconda Platform – Working with Data Frames in Python – Handling Missing Values – Exploration of Data using Visualization

TEXT BOOKS

S.NO	AUTHOR	TITLE	PUBLISHERS/EDITION	YEAR OF PUBLICATION
1.	E. Balagurusamy	Problem Solving and Python Programming (Units: 1, 3)	McGraw Hill Education (India) Private Limited	2018
2.	Dr. R. Nageswara Rao	Core Python Programming (Units: 2, 4)	Dream Tech Press	2017
3.	Manaranjan Pradhan & U. Dinesh Kumar	Machine Learning using Python (Unit: 5)	Wiley India Pvt Limited	2019

REFERENCE BOOKS

S.NO	AUTHOR	TITLE	PUBLISHERS/EDITION	YEAR OF PUBLICATION
1.	Jason Cannon	Python Programming for Beginners	O'Reilly	2010
2.	David Beazley , Brain K Jones	Python CookBook	Third edition	2013

SEMESTER - V	PROGRAMMING IN PYTHON LAB	Hours/Week-4	
CORE – V PRACTICAL		Credits - 2	
Course Code- 19UIT5CC5P		Internal-40	External-60

COURSE OBJECTIVE

To understand the basics of Python and enhancing in depth knowledge to enable them to develop simple project giving hands-on experience on Python Programming and improves the practical skill set.

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Develop programs using fundamental concepts	K1
CO2	Demonstrate the concepts of Arrays and Functions	K2
CO3	Make use of Regular Expressions and GUI	K3
CO4	Apply DataFrame operations in a dataset	K3

MAPPING PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4
CO1	**S**	**S**	**S**	**M**
CO2	**S**	**M**	**S**	**M**
CO3	**S**	**M**	**M**	**M**
CO4	**S**	**S**	**M**	**S**

PROGRAMS

1. Simple programs in Python
2. Array Manipulations
3. Programs using Functions
4. Handling Strings
5. Programs using Lists, Tuples and Dictionaries
6. Executing Regular Expressions in Python
7. GUI programs
8. Load a dataset and perform the following:
    a. Display first few records of the DataFrame
    b. Finding Summary of the DataFrame
    c. Slicing and Indexing of DataFrame
    d. Creating New Columns, Grouping and Aggregating
    e. Re-naming columns, Applying operations to Multiple Columns
    f. Filtering Records based on Condition
    g. Exploration of Data using Visualization

SEMESTER – V	COMPUTER NETWORKS	Hours/Week-5	
CORE -VI		Credits - 5	
Course Code-19UIT5CC6		Internal-25	External-75

COURSE OBJECTIVE

To inculcate the knowledge about the computer network layers, transmission media, error correction techniques, routing algorithms and supporting protocols for various applications.

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Describe the structure and organization of computer network layers, responsibilities of each layer, and relationships between the layers.	K1
CO2	Discuss over the types of transmission media and various switching techniques	K2
CO3	Explain the data link layer properties including error-detection and correction techniques and flow control mechanisms and wireless communication.	K3
CO4	Illustrate the network layer concepts and protocols including datagram forwarding, routing algorithms and transport layer concepts that include connection oriented and connection-less models, techniques to provide reliable data delivery and algorithms for congestion control.	K3
CO5	Explain the concepts of application layer protocol for various applications like HTTP, FTP and Email and cryptography.	K3

Mapping with Programme Outcomes

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

SYLLABUS

UNIT I **(14 Hours)**

Data Communication – Networks – Protocols and standard – Line configuration-Topology – Transmission mode – Categories of networks – Internet works. The OSI model – Functions of the layers – TCP/IP protocol suite.

UNIT II **(14 Hours)**

Transmission media: Guided media – Unguided media- Multiplexing: FDM-TDM-WDM-Switching: Circuit Switching Networks-Datagram Networks– Virtual-Circuit Networks.

UNIT III **(14 Hours)**

Data Link Control -Flow and Error Control-Noiseless Channels-Noisy Channels- Wireless LANs:IEEE 802.11 – Bluetooth-Cellular Telephony - Satellite Networks

UNIT IV **(17 Hours)**

Networking and Internetworking devices: Repeaters – Bridges – Routers-Gateways. IPv4 Addresses-Address space, Classful addressing, Classless addressing – IPv6 - Routing algorithms – Distance Vector Routing –Link State Routing. Transport Layer: User Datagram Protocol-TCP-TCP services-TCP features-Segments-Congestion Control

UNIT V **(16 Hours)**

TCP/IP protocol suite: Client server model – Domain Name System – File Transfer Protocol (FTP) – Simple Mail Transfer Protocols (SMTP) – World Wide Web (www) – Hyper Text Transfer Protocol (HTTP). Cryptography: Introduction-Symmetric-Key Cryptography: Traditional Ciphers-Asymmetric-Key Cryptography-RSA

TEXT BOOK

S.NO	AUTHORS	TITLE	PUBLISHERS/ EDITION	YEAR
1.	Behrouz A. Forouzan	Data Communications and Networks	Tata McGraw-Hill, 5th Edition	2017

REFERENCE BOOKS

S.NO	AUTHORS	TITLE	PUBLISHERS/EDITION	YEAR
1.	Andrew S. Tanenbaum	Computer Networks	Pearson Publication, 5th Edition	2012
2.	Achyut S.Godbole, Atul Kahate	Data Communications and Networks	Tata McGraw, 2nd Edition	2011

SEMESTER - V	Digital Logic and Computer Design	Hours/Week-5	
CORE -VII		Credits - 5	
Course Code- 19UIT5CC7		Internal-25	External-75

COURSE OBJECTIVE

Conceptualize the basics of organizational and architectural issues of a digital computer.

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge level
CO1	Recall the basic principles of digital electronics	**K1**
CO2	Understand different types of digital electronic circuits for particular operation	**K2**
CO3	Demonstrate the functions of combinational and sequential circuits	**K2**
CO4	Build micro operations and can experiment with basic design	**K3**
CO5	Sketch the microcomputer organization	**K3**

Mapping with Programme Outcomes

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

SYLLABUS

UNIT I **(15 Hours)**

Digital Computers and Information: Digital Computers –Number Systems, Arithmetic Operations. Boolean algebra and Logic Gates – Simplification of Boolean Function: Map Method-

Two, Three and Four variable Map - Product-of-Sums Simplification-Don't Care Conditions. NAND and NOR Implementation.

UNIT II **(15 Hours)**

Combinational Logic Circuits: Binary Adders - Half and Full Adders – Binary Subtractors – Half and Full Subtractors – Multiplexers - Demultiplexers – Decoders -Encoders.

UNIT III **(15 Hours)**

Sequential Logic Circuits: Flip Flops – State Reduction and Assignment – Excitation Tables – Design Procedure. Counters and Shift Registers: Counters – Asynchronous and Synchronous Counter –Shift Registers – The Memory Unit

UNIT IV **(15 Hours)**

Microoperations and Processor Logic Design: Arithmetic, Logic and Shift Microoperations- Instruction Codes- Design of a Simple Computer. Processor Logic Design: Processor Organization – ALU - Design of Arithmetic and Logic Circuits - Design of ALU – Status Register – Design of Shifter and Accumulator – Processor Unit.

UNIT V: **(15 Hours)**

Microcomputer System Design: Introduction- Microcomputer Organization – Microprocessor Organization – Instructions and Addressing Modes – Stacks, Subroutines and Interrupt – Memory Organization – Input, Output Interface – Direct Memory Access.

TEXT BOOK

S.NO	AUTHORS	TITLE	PUBLICATION	YEAR
1	Morris M. Mano	Digital Logic and Computer Design	Pearson India Education	2017

REFERENCE BOOKS

S.NO	AUTHORS	TITLE	PUBLICATION	YEAR
1	William Stallings	Computer Organization & Architecture Designing for Performance	Pearson Education	2014
2	Thomas.L.Floyd	Digital Fundamentals, Global Edition	Pearson Education -11th Edition	2017

SEMESTER - V	SOFTWARE ENGINEERING	Hours/Week-5	
Major Based Elective I		Credits - 5	
Course Code- 20UIT5MBE1A		Internal-25	External-75

COURSE OBJECTIVES

- The course is intended to influence the knowledge on constructing reliable software products.
- It also highlights several software testing to improve the quality of the software.

COURSE OUTCOMES

The successful completion of the course will equip the students to

CO Number	CO Statement	Knowledge Level
CO1	Outline the progression in software and software engineering practice.	K1
CO2	Categorize the development phases and life cycle models of a project.	K2
CO3	Illustrate the model in software project design and quality.	K2
CO4	Discuss the fundamentals of software testing with its various types.	K3
CO5	Explain the method of performance and internationalization testing.	K3

Mapping with Programme Outcomes

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

SYLLABUS

UNIT I **(15 Hours)**

Overview of Software: The nature of Software–Web based systems and applications- **Introduction to Software Engineering:** Software engineering- Software engineering practice -

Communication practices - Planning practices - Modeling practices - Construction practice- Deployment-Software myth

UNIT II **(15 Hours)**

Software Development Process Model: Generic process model- Prescriptive process models- **Requirements Modeling** - Requirements Analysis- Analysis Modeling Approaches – Data Modeling concepts-Class based modeling -Flow Oriented Modeling

UNIT III **(15 Hours)**

Design concepts - Design within the context of software engineering - **The Design Process** - Software Quality Guidelines and Attributes -Evolution of Software Design - **Design Concepts**: Abstraction-Refinement-Modularity-Functional Independence - **The Design model** – **Component Level Design:** Designing Class - Based Components- **Quality concepts**- What is Quality? - Software Quality: McCall's Quality Factors - Achieving Software Quality

UNIT IV **(15 Hours)**

Testing Approaches: Software Testing Fundamentals -**Types of Testing**: White Box Testing - Static Testing-Structural Testing-Black Box Testing- Challenges in White Box and Black Box Testing. **Integration Testing:** Integration Testing- Integration Testing as Type of Testing. **System and Acceptance Testing:** System Testing Overview- Functional testing versus Non- functional Testing-Functional testing - Non-functional Testing – Acceptance Testing and its criteria

UNIT V **(15 Hours)**

Performance Testing: Factors governing Performance testing-What is Regression testing- Best Practices in Regression Testing. **Internationalization Testing:** Primer on Internationalization - Test Phase for Internationalization – Internationalization Validation – Fake Language Testing – Language Testing – Localization Testing

TEXT BOOKS

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1.	Roger S. Pressman	Software Engineering: A Practitioner's Approach **(Unit 1,2,3)**	McGraw-Hill Education	7th Edition, 2010
2.	Srinivasan Desikan, Gopalaswamy Ramesh	Software Testing Principles and Practices **(Unit 4,5)**	Pearson Education	2012

REFERENCE BOOKS

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1.	Ian Somerville	Software Engineering	Pearson Education	7th Edition 2010
2.	Paul C. Jorgensen	Software Testing: A Craftsman's Approach, Fourth Edition	Auerbach Publications	4th Edition 2013
3.	Naresh Chauhan	Software Testing-Principles and Practices	Oxford University Press	2012

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SEMESTER - V	OBJECT ORIENTED ANALYSIS AND DESIGN	Hours/Week-5	
Major Based Elective -I		Credits - 5	
Course Code- 19UIT5MBE1B		Internal-25	External-75

COURSE OBJECTIVES

- This course inculcate the student to explore various Object Oriented Design methodologies.
- It mostly emphasis on various applications of UML models in real time domain

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge level
CO1	Analyse, Design, Document the requirements through the use case driven approach.	K1
CO2	Identify, analyse and model structural and behavioral concepts of the system.	K2
CO3	Explore the conceptual model into various scenarios and Applications.	K3
CO4	Apply the concepts of architectural design for deploying the code for software.	K3
CO5	Demonstrate a rudimentary understanding of UML interfaces	K3

Mapping with Programme Outcomes

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

SYLLABUS

UNIT I **(15 Hours)**

Introduction to UML – Basic Structural Modelling – Advanced Structural Modelling advanced classes – Advanced Relationships

UNIT II **(17 Hours)**

Interfaces, Types and Roles – Packages – Instances – Object Diagrams

UNIT III **(13 Hours)**

Basic Behavioural modelling interactions – Interaction Diagram – Activity Diagrams – Events and Signals

UNIT IV **(17 Hours)**

State machine – Process and Threads – Time and Space – State Chart Diagrams

UNIT V **(13 Hours)**

Architectural modelling components – Architectural modelling component diagrams – Case Studies: Unified Library Applications

TEXT BOOKS

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1.	K.Venugopal reddy and Sampath Kora	Object Oriented Analysis and Design Using UML	BSP publications.	2018

REFERENCE BOOKS

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1.	Simon Bennett, Steve Mc Robb and Ray Farmer	Object Oriented Systems Analysis and Design Using UML".	Mc-Graw Hill Education	2010
2.	Martin Fowler	UML Distilled: A Brief Guide to the Standard Object Modeling Language".	Addison Wesley,	2003

SEMESTER - V	SOFTWARE PROJECT MANAGEMENT	Hours/Week-5	
MAJOR BASED ELECTIVE I		Credits - 5	
COURSE CODE-19UIT5MBE1C		Internal-25	External-75

COURSE OBJECTIVES

- To provide the graduates to understand the software project planning and evaluation techniques.
- To develop and implement software projects that will support to attain organization‘s strategic goals.

COURSE OUTCOMES

The successful completion of the course will equip the students to

CO NUMBER	CO STATAMENT	Knowledge Level
CO1	Define the scope of software project management	K1
CO2	Describe the projects at each stage of the software development life cycle	K2
CO3	Outline the software cost estimation techniques	K2
CO4	Discuss about the activity planning and risk management principles	K3
CO5	To develop skills to manage the various phases involved in project management and people management	K3

Mapping with Programme Outcomes

CO NUMBER	PO1	PO2	PO3	PO4
CO1	S	S	M	S
CO2	S	S	M	S
CO3	S	S	S	S
CO4	S	S	S	S
CO5	S	S	S	S

S- Strong M-Medium L-Low

SYLLABUS

UNIT - I **(15 Hours)**

Introduction to Software Project Management: Introduction- Key characteristics of Software Project Management- Software Project versus the other types of object- -Activities covered by Software Project Management- Difference between main types of Software-Viewing project as a system- Management Activities-Addressing problems with software project-Project control cycle-Stakeholder-Hierarchical Management structure.

UNIT - II (**15 Hours**)

An overview of Software Process Models: Selecting of an Appropriate Project Approach: Project characteristics-Project Analysis-Software Process Models-RAD-The Waterfall Model-The Spiral Model-V-process model-Software Prototyping- Other ways of categorizing prototypes- Incremental prototyping.

UNIT - III **(15 Hours)**

Software Project Estimation Methods: Introduction- Stages of software project for Estimation - The Basis for Software Estimating-Software Effort Estimation Techniques- Expert Judgement-Albrecht Function Point Analysis-Mark II Method-Object Points Estimation Method-COCOMO Model- Activity Planning: Introduction-Objectives of activity planning-Project Scheduling and Activities-Planning and Formulating Network Model-Critical Path Method-Forward Pass-Backward Pass-Precedence Networks.

UNIT - IV **(15 Hours)**

Risk Management: Introduction-Types of Risk-Managing Risk-Risk Analysis and identification-Risk Reduction- Evaluation of Risk in project schedule-Resource Allocation.

UNIT - V **(15 Hours)**

Monitoring and Controlling the Project Progress-Managing People and organizing team in Software environments.

TEXT BOOK

S.No	Authors	Title	Publishers	Year of Publication
1.	Bob Hughes, Mike Cotterell, Rajib Mall	Software Project Management	Tata Mc Graw Hill Publications	5th Edition 2011

REFERENCE BOOKS

S.No	Authors	Title	Publishers	Year of Publication
1.	Roger S. Pressman	Software Engineering	Tata Mc Graw Hill Publications	7th Edition 2014
2	Richard H. Thayer	Software Engineering and Project Management	Wiley publication	2nd edition 2010.

SEMESTER - V	CONTENT MANAGEMENT SYSTEM TOOL	HOURS/WEEK - 2	
SBE – II A PRACTICAL		CREDITS - 2	
COURSE CODE - 19UIT5SBE2AP		Internal - 40	External - 60

COURSE OBJECTIVES

- To introduce the creation of dynamic, interactive and fully functional website using word press
- To install and modify themes
- To develop blogs and post to manage the content

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge level
CO1	Apply the fundamental features to create a website	K1
CO2	Develop blogs and post	K2
CO3	Access images and media files	K2
CO4	Demonstrate website customization	K3
CO5	Implement the plugin capabilities	K3

Mapping with Programme Outcomes

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

List of Exercises

1. Create a Permanent link for user website and make it as public site
2. Set your website title and tagline
3. Pick a theme and design a website
4. Create categories for website post
5. Write a blog and post
6. Customize word press theme

7. Access word press media libraries
8. Create and publish pages in website
9. Adjust site navigation using menus and widgets
10. Create and Manage links in word press pages
11. Add and mange comments in blog posts
12. Add plugins to websites abilities

SEMESTER - V	INTERACTIVE MULTIMEDIA SOFTWARE	Hours/Week-2	
SBE-II B PRACTICALS		Credits - 2	
Course Code-19UIT5SBE2BP		Internal-40	External-60

COURSE OBJECTIVES

- To implement various effects in animation
- To design an animated video

COURSE OUTCOMES

CO Number	CO Statement	Knowledge level
CO1	Handling Layout with color and fonts	K1
CO2	Illustrate the operation for working on layers	K2
CO3	Create graphics using templates	K2
CO4	Demonstrate Masking technique	K3
CO5	Design an Animated video	K3

Mapping with Programme Outcomes

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

LIST OF EXERCISES

1. Layout with different colors and fonts
2. Working with Key frames to create animations
3. Automate with Templates
4. Applying Masking
5. Handling composition with multiple layers
6. Animate text letter by letter
7. Animation with 2D and 3D layers
8. Create an animated video on a specific topic

SEMESTER - V	WEB DESIGNING LAB	Hours/Week-2	
SBE-III A PRACTICALS		Credits - 2	
Course Code-19UIT5SBE3AP		Internal-40	External-60

COURSE OBJECTIVE

The course provides the hands on experience for designing, publishing and managing websites.

COURSE OUTCOMES

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

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Perform different operations on text and images	K1
CO2	Create forms with different types of controls	K2
CO3	Apply various Graphics effects	K3
CO4	Create links between multiple frames	K3
CO5	Design and finalize the web page using software	K3

Mapping with Programme Outcomes

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

LIST OF EXERCISES

1. Working with Graphics to insert an image, create rollover image and image map
2. Working with text.
3. Creation various links in the document
4. Insert and manipulate table
5. Working with Templates
6. Create multiple frames and link them
7. Applying various styles using CSS
8. Creating forms with all kinds of controls
9. Creation of Dynamic slide show
10. Creation of a Web Page

SEMESTER - V	GRAPHICS LAB	Hours/Week-2	
SBE-III B PRACTICALS		Credits - 2	
Course Code- 19UIT5SBE3BP		Internal-40	External-60

COURSE OBJECTIVE

Systematic understanding and practical experience of the drawing tools and applications

COURSE OUTCOMES

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

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Handle basics tools and include drawing in design of a web page	K1
CO2	Perform different operations on text	K2
CO3	Perform comprehensive processing of word and publishing integration	K3
CO4	Enable to create and modify objects for graphics design purposes.	K3
CO5	Create full-fledged document with various page backgrounds and layouts	K3

Mapping with Programme Outcomes

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

LIST OF EXERCISES

1. Handling Tools to draw Curve lines and Calligraphic lines
2. Performing operations like Rotate, Combine and Group on objects
3. Filling object
4. Wrapping paragraph text around objects
5. Cropping , Resampling and Resizing of bitmap
6. Applying special effects to bitmaps
7. Creation of Page and setting Page background and layout

SEMESTER – VI	CORE -VIII OPERATING SYSTEM	Hours/Week-6	
CORE – VIII		Credits - 6	
Course Code- 19UIT6CC8		Internal-25	External-75

COURSE OBJECTIVE

To inculcate the knowledge about fundamentals of operating system, scheduling mechanism of processor, memory management, resource allocation methods and Unix commands.

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Discuss the role of operating system	K1
CO2	Compare various algorithms and comment about the performance of various algorithms used for process management and CPU scheduling.	K3
CO3	Apply various concepts related to deadlock to solve problems related with resource allocation.	K3
CO4	Analyze the role of process synchronization towards increasing throughput of the system.	K3
CO5	Utilize the Unix commands pertaining with process, File and I/O Management.	K3

Mapping with Programme Outcomes

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

SYLLABUS

Unit I **(18 Hours)**

Introduction to operating system: Introduction – Objectives and Functions – Different Views of an OS – Types of OS – Comparison between different Operating system – Operating system

Structures. **Process Management:** Introduction – Process Concept – Operations on Process – Co-Operation Processes – Inter process Communication

Unit II **(18 Hours)**

Threads: Introduction – Thread Concept –Multithreading Models – Thread Issues. **CPU Scheduling:** Introduction – Scheduling Concepts – Scheduling Algorithm – Multiprocessor scheduling – Real time Scheduling – Algorithm Evaluation – Thread Scheduling

Unit III **(18 Hours)**

Process Synchronization: Introduction – Principles of Concurrency – Precedence graph – Critical regions –Semaphores. **Dead Lock:** Introduction – System Model – Deadlock Characterization – Method for Handling dead lock – Deadlock Prevention – Deadlock avoidance – Deadlock detection – Deadlock Recovery

Unit IV **(18 Hours)**

Memory Management: Introduction – Contiguous memory allocation – Noncontiguous memory allocation – swapping – overlays. **Virtual Memory:** Introduction – Demand paging - Process creation – Page Replacement – Allocation of frames – Thrashing – Demand Segmentation – Cache memory organization. **Mass Storage:** Introduction – Disk structure- Disk scheduling

Unit V **(18 Hours)**

File System: Introduction – Files Basic concept – Directories – File system Mounting – Record blocking- File sharing – Protection. **Case study:** Linux

TEXT BOOK

S.NO	AUTHORS	TITLE	PUBLISHERS/EDITION	YEAR
1.	Rohit Khurana	Operating Systems, 2nd Edn	Vikas Publishing House Ltd.	2014

REFERENCE BOOKS

S.NO	AUTHORS	TITLE	PUBLISHERS/EDITION	YEAR
1.	Andrew S.Tanenebaum S.Woodhull	Operating Systems and Design Implementation	Pearson Education 3rd Edition	2011
2.	Abraham Silberschatz, Perter Baer Galvin, Greg Gagne	Operating System Concepts	John Wiley & Sons, 8th Edition	2010

Book Link

https://books.google.co.in/books?id=MZJDDAAAQBAJ&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false

SEMESTER – VI	MOBILE APPLICATION DEVELOPMENT	Hours/Week-6	
CORE – IX		Credits - 6	
20UIT6CC9		Internal-25	External-75

OBJECTIVE

This course explores the knowledge over Mobile Application Development with its framework, layouts, intents and database connectivity.

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1.	Choose the development framework and the need for mobile applications	K1
CO2.	Demonstrate the activity and intent usage	K2
CO3.	Design applications with intents and broadcast receivers.	K3
CO4.	Compile an application with database connectivity	K4
CO5.	Develop real time applications to improvise user experience	K5

Mapping with Programme Outcomes

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

SYLLABUS

UNIT I: **Getting Started with Android Programming** **(18 Hrs)**

Introduction to Android – Obtaining the Required Tools – Launching your First Android Application - Using Android Studio for Android Development – Activities, Fragments and Intents.

UNIT II: Getting to Know the Android User Interface (18 Hrs)

Understanding the Components of a Screen – Designing User Interface with Views: Basic Views – Displaying Pictures and Menus with Views.

UNIT III: Data Persistence and Content Providers (18 Hrs)

Saving and Loading User Preferences – Persisting Data to Files – Creating and Using Databases. Content Providers: Sharing Data in Android – Using a Content Provider.

UNIT IV: Messaging and Location Based Services (18 Hrs)

Messaging: SMS Messaging – Sending Email. Location Based Services: Displaying Maps – Getting Location Data - Monitoring Location

UNIT V: Networking and Developing Android Services (18 Hrs)

Networking: Consuming Web Services Using HTTP – Consuming JSON Services. Developing Android Services: Creating your own services - Establishing Communication between a Service and an Activity - Binding Activities to Services – Understanding Threading.

TEXT BOOK:

S.NO	AUTHORS	TITLE	PUBLISHERS/EDITION	YEAR
1.	J. E. DiMarzio	Beginning Android Programming with Android Studio	4th Edition, John Wiley & Sons	2017

Reference Books:

http://developer.android.com/develop/index.html

S.NO	AUTHORS	TITLE	PUBLISHERS/EDITION	YEAR
1.	Reto Meier	Professional Android Application Development	Wiley	2012
2.	Charlie Collins, Michael Galpin and Matthias Kappler	Android in Practice	DreamTech	2012

Semester - VI	PHP AND MYSQL WEB DEVELOPMENT	Hours/Week-6	
MBE – II		Credits - 5	
Course Code - 19UIT6MBE2A		Internal - 25	External - 75

COURSE OBJECTIVES

- To understand the fundamentals of HTML and CSS
- To develop web pages using JavaScript
- To develop web pages with PHP and MYSQL connectivity
- To learn about the fundamentals of Laravel

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Introduce the basic concepts of HTML5	K1
CO2	Introducing JavaScript and developing programs in HTML with CSS	K1
CO3	Write and execute programs with JavaScript Event Handlers	K2
CO4	Illustrating the concepts of PHP for designing a webpage	K3
CO5	Applying knowledge in handling databases with PHP and introduction to Laravel Framework	K4

MAPPING WITH PROGRAMME OUTCOMES

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

SYLLABUS

UNIT I **(17 Hours)**

Building Web pages with HTML: Using HTML5 – Basic tags & Global Attributes – Setting Paragraph Styles – Applying Character Styles – Displaying Special Characters – Working with Images and Image Maps – Adding Hyperlinks and Bookmarks – Defining Forms – Creating Tables – New HTML5 Tags – Understanding Deprecated HTML Tags

UNIT II **(17 Hours)**

Styling with CSS and Introducing JavaScript: Creating CSS – CSS Properties and Values – Characteristics of JavaScript – Introduction – Parts of JavaScript – Control Structures

UNIT III **(19 Hours)**

Adding Dynamic Elements with JavaScript: Introducing Event Handlers – Working with the Window Event Handlers – Using the Mouse and Keyboard Event Handlers – Reviewing Forms in HTML – Using JavaScript in Forms – Validating a Form

UNIT IV **(19 Hours)**

Fundamentals of PHP: Introduction – Types of Information, Variables and Constants, Operators, Statements and Expressions, Functions – Control Structures – PHP File and Directory Management – Cookies, Session variables and Server variables – PHP Arrays

UNIT V **(18 Hours)**

PHP and MYSQL: Building and Handling Forms in PHP – User Authentication – Implementing MYSQL Command statements – Using a MYSQL Database with PHP – Introduction to Laravel – Features and History of Laravel – Application structure – Basic Routing and its Parameters – Named Routes

TEXT BOOKS

S.NO	AUTHOR	TITLE	PUBLISHER/EDITION	YEAR OF PUBLICATION
1.	Marty Matthews	PHP and MYSQL Web Development: A Beginner's Guide	McGraw Hill Education	2015
2.	Tam Sel	Laravel for Beginners	Kindle Edition	2020

REFERENCE BOOKS

S.NO	AUTHOR	TITLE	PUBLISHER/EDITION	YEAR OF PUBLICATION
1.	Joel Murach, Ray Harris	PHP and MYSQL	2nd Edition, Mike Murach & Associates, Inc.	2014
2.	Martin Bean	Laravel 5 Essentials	PACKT Publishing Ltd	2015

WEB LINKS

1. https://www.w3schools.in/laravel-tutorial
2. https://www.tutorialspoint.com/laravel/index.htm

SEMESTER - VI	C# PROGRAMMING	Hours/Week-6	
Major Based Elective II		Credits-5	
Course Code 19UIT6MBE2B		Internal-25	External-75

COURSE OBJECTIVES

- To understand C# language constructs, syntax and semantics.
- To provide the keen knowledge of C# language and enable the students to write interactive program.
- To provide complete understanding of Object-Oriented concepts and database connectivity of C#

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1.	Knowledge of the structure and model of the programming language C #	K1
CO2.	Understand use of C# basics, Objects and Types, Inheritance	K2
CO3.	Develop, implement and creating Applications with C#	K3
CO4.	Compile an application with database connectivity	K3
CO5.	Design and execute Web-based real time applications to improvise user experience	K3

Mapping with Programme Outcomes

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

SYLLABUS

UNIT I **(15 Hours)**

Overview: The relationship of C# to .NET - Compiling and running code that targets .NET -Data typing - Error handling with exceptions - .NET Framework Classes - Creating .NET Applications using C# - Fundamental C# - Variables – Constants - Predefined Data types - Flow control - The main () method - ConsoleI/O

UNIT II **(15 Hours)**

Object and Types: Creating and using classes-Classes and structs- Partial classes-**Inheritance:** Types of Inheritance-Implementing Inheritance-Access modifiers-Interface-**Arrays and Tuples:** Simple arrays-Multidimensional arrays- Jagged arrays-Array class-Arrays as parameters-Enumerations-
Tuples**.**

UNIT III **(15 Hours)**

Operators and Casts: Operators in C# **-** Data Conversion between primitive data types-Conversion of value type to reference and reference type to value-Operator overloading-Adding casting operators to custom types-**Delegates and Events:** Declaring and using Delegates-Events

UNIT IV **(15 Hours)**

Strings and Regular expressions: Building Strings-Formatting Expressions-Using Regular Expressions-**Windows service:** Windows Service Architecture- Installation program-Troubleshooting Windows Service

UNIT V **(15 Hours)**

ADO.NET Entity Framework: Mapping-Entity Classes-Object contexts- Relationships-Querying Data-Updates- **ASP.NET Web Forms-**Server side controls- Master pages- Site Navigation-Validating user input- Data access-Security-**ASP.NET Web API-**Creating services-.Net Clients-Using Odata

TEXT BOOK

S.NO	AUTHORS	TITLE	PUBLICATION	YEAR
1	Christian Nagel, Jay Glynn, Morgan Skinner	Professional C# 5.0 and .NET 4.5.1	Wiley	2014

REFERENCE BOOKS

	S.NO	AUTHORS	TITLE	PUBLICAT
	1	Ian Griffiths	Programming C# 5.0	O'Reilly
	2	John Paul Mueller, Bill Sempf	C# 7.0 All-in-One For Dummies	Wiley

SEMESTER - VI	ARTIFICIAL INTELLIGENCE	Hours/Week-6	
Major Based Elective II		Credits - 6	
Course Code 19UIT6MBE2C		Internal-25	External-75

COURSE OBJECTIVES

- Discuss the issues and techniques involved in the creation of intelligent systems.
- To analyze the various knowledge representation schemes, Reasoning and Learning techniques of AI.

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Create an appropriate state space searching techniques to maximize the performance	K1
CO2	Compute first-order propositional and predicate logic to represent knowledge	K2
CO3	Analyze the problem solving methods involved in uncertain information using probabilistic techniques.	K3
CO4	Apply planning algorithms to find optimal solutions	K3
CO5	Explain the steps involved in Natural language processing	K3

Mapping with Programme Outcomes

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

SYLLABUS:

UNIT I **(18 Hours)**

Intelligent Agents: Intelligent agents**,** structure of agents

Introduction & Problem Solving: AI problems, AI Technique, Defining problem as a State-Space Search, Production Systems, Problem Characteristics.

Heuristic Search Techniques: Generate–and–test, Hill Climbing, Best–First Search, Problem Reduction, Constraint Satisfaction.

UNIT II **(18 Hours)**

Game Playing: Overview, Min-Max search Procedure, Adding Alpha-beta Cutoffs, Additional Refinements, Iterative Deepening.

Using Predicate Logic: Representing simple facts in logic, Representing Instance and ISA Relationships, Computable Functions , propositional calculus and predicates, Resolution.

UNIT III **(18 Hours)**

Uncertainty and Reasoning Techniques: Non monotonic reasoning, Logics for Non monotonic reasoning, Implementation issues.

Statistical reasoning: Probability and Bayes theorem, Certainty factors and Rule-based systems, Bayesian Networks, Dempster - Shafer Theory.

UNIT IV **(18 Hours)**

Learning: What is Learning, Rote learning, Learning by taking advice, learning in problem solving, learning from examples: Induction.

Expert System: Representing and Using Domain Knowledge, Expert systems shells, Explanation, Knowledge Acquisition.

UNIT V **(18 Hours)**

Natural Language Processing: Introduction, Syntactic Processing, Semantic Analysis, Statistical NLP, Spell Checking.

PROLOG-The Natural Language of AI: Prolog facts and rules, variables, control structures, arithmetic operators, matching in Prolog, backtracking.

TEXT BOOKS:

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS	YEAR OF PUBLICATION
1.	**Elaine rich, Kevin Knight, Shivashankar B Nair**	**Artificial Intelligence**	**Tata McGraw Hill publication 3 rd Edition**	**2017**
2.	**Russell Norvig**	**Artificial Intelligence-Modern Approach**	**Pearson,3rd edition**	**2009**

REFERENCE BOOKS:

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS/EDITION	YEAR OF PUBLICATION
1.	Saroj Kaushik	Artificial Intelligence	Cengage Learning India	2012
2.	Mishra R.B	An Approach to Knowledge Base Management	Prentice Hall of India	2010

Semester - VI	PHP AND MYSQL WEB DEVELOPMENT LAB	Hours/Week-6	
MBE – III		Credits - 6	
Course Code - 19UIT6MBE3AP		Internal-40	External-60

COURSE OBJECTIVES

To understand the basics of web development and enable the students to learn and write programs in PHP environment implementing the basics of MYSQL along with the knowledge of Laravel Framework, HTML5, CSS and JavaScript

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Develop webpages using HTML5 and CSS	K1
CO2	Create simple programs and apply Event Handlers in JavaScript using HTML	K2
CO3	Implement programs using MYSQL with PHP	K3

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4
CO1	S	M	M	M
CO2	S	M	M	S
CO3	S	S	S	S

PROGRAMS

1. HTML & CSS
   - Create a webpage to show block level and text level elements
   - Develop a webpage to show all the Color, Text, Background and Font elements
   - Create a webpage with frames that appends the concept of images, tables, hyperlinks and lists
   - Create a presentation style for your webpage using inline, internal and external CSS

2. JavaScript
   - Simple programs to read input and display output using prompt, alert and control structures
   - Programs that demonstrates the use of Event Handlers (WindowEvent, MouseEvent, OnclickEvent)
3. PHP and MYSQL
   - Simple programs in PHP
   - PHP program to add data selected from a webpage using HTML
   - Program to upload a file and its contents
   - Program to create a directory and read its contents
   - Program to create a database and to insert a table with data
   - Program to perform manipulations in the data stored in MYSQL table
4. Create a User Registration form and using these credentials create a Login form using Laravel Framework?

SEMESTER - VI	.NET WITH C# LAB	Hours/Week-6	
Major Based Elective III		Credits-6	
Course Code 19UIT6MBE3BP		Internal-40	External-60

COURSE OBJECTIVES

- Write and execute C# programs in .NET platform.
- Create, compile and run object-oriented C# programs using Visual Studio
- Design and Implement database connectivity using ADO.NET in window based application and Web-based applications

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Exhibit the knowledge of program execution and Debugging Of C#	K1
CO2	Develop programs using Object-Oriented concepts of C#	K2
CO3	Design Window-based applications with database connectivity	K3
CO4	Compile an application to demonstrate web services	K3
CO5	Apply the complete knowledge of C# to develop Web-based real time applications using webserver controls	K3

Mapping with Programme Outcomes

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

SYLLABUS

1. Programs using Control statements
2. Handling arrays
3. String Manipulations
4. Demonstrate Inheritance and polymorphism
5. Apply Interface
6. Operator overloading
7. Exception handling
8. Creation of windows application with database connection
9. Creation of Web services
10. Design a Web-based application
11. Create Student record using ASP.NET MVC Entity framework

SEMESTER – VI	MOBILE APPLICATION USING ANDROID	Hours/Week-5	
CORE – IX Practical		Credits - 4	
Course Code-19UIT6MBE3P		Internal-25	External-75

COURSE OBJECTIVE

This course enables the students to develop the mobile application software as per the need of android market.

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Design the layout with various controls	K1
CO2	Exploring the User Interface	K2
CO3	Implementing interactivity through application	K3
CO4	Compile an application to access database	K3
CO5	Experiencing with background services	K3

Mapping with Programme Outcome

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

SYLLABUS

1. Hello world Application.

2. Create a screen that has input boxes for User Name, Password, Address, Gender (radio buttons for male and female), Age (numeric), Date of Birth (Date Picket), State (Spinner) and a Submit button. (use any layout)

3. Prepare basic arithmetic calculator with input boxes and buttons to do addition, subtraction, multiplication and division.

4. Write an android program to switch from one activity to another using Intent.

5. Implement an application that writes data into an SD card

6. Implement an application that creates an alert upon receiving a message

7. Audio, Video Application

8. Create an application with One-Time, Repeating Alarms and Long Running Background Task as Service

9. Prepare a menu card using Menu

10. Create an application to store contact information such as name, mobile number, organization etc., using SQLite database

SEMESTER – VI	PROJECT WORK	Hours/Week-6
Project		Credits - 5
Course Code- 19UIT6PW		External-100

OBJECTIVE

Course Objectives

1. To understand and select the task based on their core skills.
2. To get the knowledge about analytical and logical skill for solving the selected task.
3. To get confidence for implementing the task and solving the real time problems.

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

- Identify and formulate the problem
- Analyze the problem and collect necessary data.
- Design and develop the project using appropriate software by applying the programming skills.
- Implement, evaluate and generate reports

The project work should be done at least 2 or more students

External Assessment

Dissertation/Project submitted at the end of third year shall be valued by two examiners appointed by the Controller for the conduct of practical exam. The board of examiners can award marks based on the following components.

- Achievement of project deliverables
- Effective technical presentation of project work
- Project Viva-voce