ANNEXURE - 13
DEPARTMENT OF COMPUTER SCIENCE

VISION

- To play an active role in the information technology revolution

MISSION

- To help students discover their ability and interest in computing, developing it, and to encourage them to extend the application of computers to solve the problems of the Society.

Programme Educational Objectives (PEO)

PEO1	Natural navigators and nimble witted in diagnosing problems, in enlisting steps to rectify them and in providing the most effective solutions in the best possible way
PEO2	Moralistic while demonstrating their academic caliber, in recognizing and acknowledging value systems, in making decisions, accepting responsibilities and while concerned about society and public issues and needs
PEO3	Self-reliant in learning and in real life job situations through which they support their peers and become stable and reliable students, workers and citizens
PEO4	Steadfast in shielding and nurturing environment and stimulate its sustainable growth for a bright future
PEO5	Versatile and vibrant communicators in person and through other media. Vigilant/vital in prolonging the long winding richness and tradition of their mother tongue
PEO6	Neoteric global citizens of our nation, who would take the nation's pride around the world by adapting and adopting the scientific and technological developments
PEO7	Civilized and confident graduates, who believe in lifelong learning with the socio-cultural changes in the generations to come

Programme Outcome (PO)

PO1	**Development of solutions:** Design and develop the system components and find solutions for complex problems in ethical manner, processes to meet the specifications with consideration for the public safety and environmental development.
PO2	**Skill oriented:** Able to tackle modern technical challenges and recent issues in work environment with morality, can apply ethical principles and commit to professional practice in computer profession with reliability and stability.
PO3	**Qualitative Attitude:** Communicate effectively in oral, written and graphical form to extend ethical attitude and leadership skills. Manage effectively with the large society of computer professionals. Exhibit analytical decision making and problem solving skills for handling dynamic real time challenges.
PO4	**Life-long learning:** Ability to engage themselves independently and follow self study and continuous learning in the broadest context of technical and technological changes. Demonstrate the knowledge and need for sustainable development in society and multidisciplinary fields.
PO5	**Services to Environment**: Promote the goodwill and impact of the professional IT solutions in society and environment. The broad education to understand the impact of IT solutions in a global, economic, environmental, and societal context.

PROGRAM SPECIFIC OUTCOME (PSO)

PSO1	Ability to analyze a problem, identify and define the computing requirements, which may be appropriate to its solution.
PSO2	Apply the knowledge of ethical and management principles required to work in a team with stewardship of the society.
PSO3	Able to apply the knowledge gained during the course of the programme in the areas of problem solving, analysis, design & development of software and hardware to choose a career option in high degree of employability / entrepreneurship / Higher Education.
PSO4	Evolve as globally competent computer professionals possessing leadership skills and domain knowledge for developing innovative solutions in multidisciplinary domains.
PSO5	To acquire the knowledge on multiple programming skills to develop core software products that lays the foundation for further application development in the field of computer science and recent technology with focus on multimedia and animation.

MAPPING PEO AND PO

PEOs that are attained through concerned PO

	PO1	**PO2**	**PO3**	**PO4**	**PO5**
PEO1	**3**	**2**	**3**	**2**	**3**
PEO2	**3**	**3**	**3**	**2**	**2**
PEO3	**2**	**3**	**2**	**3**	**3**
PEO4	**2**	**3**	**2**	**3**	**3**
PEO5	**2**	**2**	**3**	**3**	**2**
PEO6	**3**	**3**	**2**	**3**	**3**
PEO7	**3**	**2**	**1**	**3**	**2**

B.Sc COMPUTER SCIENCE

SEM	Part – I	Part – II	Part – III					Part – IV				Part – V (6th Hr)	ACC (6th Hr)			SLC
I Sem.	I Lang (6)	II Lang (6)	Core (4)	Core (4)	Core Lab (3)	Core Lab (3)	Allied Maths (4)			–	**Total (30)**	NCC/NSS/PED./ R.R/Li.Sc (3)	Com. Eng (2)	Comp. Lit (1)	–	–
II Sem.	I Lang (6)	II Lang (6)	Core (5)	Core Lab (3)	Allied Physics Lab (3)		Allied Maths (4)	SBE (2)		Elec. EVS (1)	**Total (30)**	NCC/NSS/PED./ R.R/Li.Sc (3)	Com. Eng (2)	Comp. Lit (1)	–	SLC
III Sem.	I Lang (6)	II Lang (6)	Core (6)	Core Lab (6)	Allied Maths (4)		–	NME (2)		–	**Total (30)**	NCC/NSS/PED./ R.R/Li.Sc (3)	Com. Eng (2)	Comp. Lit (1)	–	SLC Human Rights
IV Sem.	I Lang (6)	II Lang (6)	Core (6)	Core Lab (6)	Allied Maths (4)		–	NME (2)		–	**Total (30)**	NCC/NSS/PED./ R.R/Li.Sc (3)	Com. Eng (2)	Comp. Lit (1)	–	SLC Web Design
V Sem.	Core (5)	Core (5)	Core Lab (5)	Core Lab (5)	Elec. (5)		–	SBE (2)	SBE (2)	Elec. W.S. (1)	**Total (30)**	–	Com. Eng (2)	Comp. Lit (1)	Skill Devt – Career Guidance (3)	SLC Major Client server computing
VI Sem.	Core (4)	Core (4)	Core lab (5)	Elec. (5)	Elec. Project (6)		-	SBE Major (2)	SBE Major (2)	Elec. VBE (2)	**Total (30)**	–	Com. Eng (2)	Comp. Lit (1)	Skill Devt – Career Guidance (3)	—
										Total	**180 Hrs**					

I Language – Tamil
II Language – English
SBE – Skill – Based Electives
SLC – Self – Learning Course
EVS – Environmental Studies
W.S. – Women Studies
VBE - Value Based Education

B.SC COMPUTER SCIENCE: CHOICE BASED CREDIT SYSTEM WITH OBE PATTERN FOR THOSE WHO HAVE JOINED FROM THE ACADEMIC YEAR 2021-22 ONWARDS

Part	Course	Subject	CODE	Hrs.	6th Hr.	Cr.	Adl. Cr.	Exam (Hrs)	Marks	
									Int.	Ext.
SEMESTER - I										
I	Lang. – I	Tamil – I	210103101	6		3		3	25	75
II	Lang. – II	English – I	211003101	6		3		3	25	75
III	Core	C Programming	212503101	4		4		3	25	75
	Core Lab	C Programming Lab	212503102	3		2		3	40	60
	Al.Phy	Digital Principles and Applications	212103122	4		3		3	25	75
	Al. Maths	Discrete Mathematics Paper – I	212003122	4		4		3	25	75
	Al. Phy Lab	Digital Electronics Practical's	-	3		-		-	-	-
V	Extension activities	NSS / NCC / PED/Rover and Rangers/Library Science and Information	–		3			–	–	–
	Additional Courses	Communicative English–I	–		2			–	–	–
		Computer Literacy	–		1			–	–	–
SEMESTER – II										
I	Lang. – I	Tamil – II	210103201	6		3		3	25	75
II	Lang. – II	English – II	211003201	6		3		3	25	75
III	Core	Object Oriented programming with C++	212503201	5		4		3	25	75
	Core Lab	C++ Programming Lab	212503202	3		2		3	40	60
	Al. Mat	Discrete Mathematics Paper – II	212003222	4		4		3	25	75
	Al. Phy Lab	Digital Electronics Practical's	212103223	3		3		3	40	60
IV	SBE	Computer organization	214403225	2		2		3	25	75
	EVS	Environmental Studies	214103201	1		1		2	-	100
V	Extension activities	NSS / NCC / PED/Rover and Rangers/Library Science and Information	–		3			–	-	-
	Additional Courses SLC	Communicative English – I	218003201	-	2	-		–	–	–
		Computer Literacy	–	-		–	–	–	-	-
		Office Automation	218003225	-	-	-	3	3	–	100
SEMESTER – III										
I	Lang. – I	Tamil – III	210103301	6		3		3	25	75
II	Lang. – II	English – III	211003301	6		3		3	25	75
III	Core	Java Programming	212503301	6		5		3	25	75
	CoreLab	Java Programming Lab	212503302	6		5		3	40	60
	Al. Maths	Linear Programming	212003322	4		4		3	25	75
IV	NME – I	Fundamentals of Information Technology	214603325	2		2		3	25	75
V	Extension activities	NSS / NCC / PED/Rover and Rangers/Library Science and Information	–		3			–	–	–
	Additional Courses	Communicative English– II	–		2			–	–	–
		Computer Literacy	–		1			–	–	–
	SLC	System Software	218003325	-	-	-	3	3	–	100

Part	Course	Subject	CODE	Hrs.	6th Hr.	Cr.	Adl. Cr.	Exam (Hrs)	Marks	
									Int.	Ext.
SEMESTER - IV										
I	Lang. – I	Tamil – IV	210103401	6		3		3	25	75
II	Lang. – II	English – IV	211003401	6		3		3	25	75
III	Core	Operating Systems	212503401	6		5		3	25	75
	Core Lab	Web Design Lab	212503402	6		5		3	40	60
	Al. Maths	Numerical Analysis	212003422	4		4		3	25	75
IV	NME - II	Introduction to HTML	214603425	2		2		3	25	75
V	Extension activities	NSS / NCC / PED/Rover and Rangers/Library Science and Information	-		3	1		3	25 *40	75 *60
	Additional Courses	Communicative English–II	218003401		2		1	3	25	75
		Computer Literacy	-		1			–	–	–
	SLC	Web design	218003425	-	-	-	4	3	–	100
SEMESTER – V										
III	Core	Database Management System	212503501	5		5		3	25	75
	Core	Data structures	212503502	5		5		3	25	75
	Core Lab	RDBMS Lab	212503503	5		4		3	40	60
	Core Lab	Data Structures Lab	212503504	5		4		3	40	60
	Elec. - I	Elective - I	212503505/ 212503506	5		5		3	25	75
IV	SBE - II	Python Programming Lab	214403525	2		2		3	40	60
	SBE - III	Visual Programming lab	218203525	2		2		3	40	60
	WS	Women Studies	214503501	1		1		2	–	100
	Additional Courses	Communicative English– III	–		2			–	–	–
		Computer Literacy	–		1			–	–	–
		Skill Development – Career Guidance	–		3			–	–	–
	SLC	Client\Server Computing	218003525				4	3	–	100
SEMESTER – VI										
III	Core	Computer Networks	212503601	4		4		3	25	75
	Core	Software Engineering	212503602	4		4		3	25	75
	Core Lab	.Net Lab	212503603	5		2		3	40	60
	*Elec. – II	*Elective - II	212503604/ 212503605	5		5		3	25	75
	*Elec. - III	Project *Report;@Viva	212503606	6		5		-	40 [24:16]	60 [36:24]
IV	SBE - IV	MAT LAB Programming Lab	214403625	2		2		3	40	60
	SBE - V	Linux Programming Lab	218203625	2		2		3	40	60
	VBE	Value Based Education	214303601	2		2		2	–	100
	Additional Courses	Communicative English– III	218003601		2		1	3	25	75
		Computer Literacy	218003602		1		1	3	–	100
		Skill Development – Career Guidance	218003603		3		2	3	–	100
		TOTAL		**180**	**36**	**140**	**20**			

*Elective – I – I.1. Multimedia and its Applications - 212503505
I.2 Python Programming - 212503506
*Elective – II – II.1. Computer Graphics - 212503604
II.2 Cloud Computing - 212503605

Core Subject **DATA BASE MANAGEMENT SYSTEM** **Code: 212503501**

SEMESTER V **5 Hrs/Week**

Credits 5

PREAMBLE

- ***Facilitates the students to be familiar with Database Management Concepts and contribute an ability to design their own design in database.***

COURSE OUTCOMES (COs)

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

No.	Course Outcome	Knowledge Level (According to Bloom's Taxonomy)
CO1	Identify the basic concepts of DBMS and Classify the Data Models and Data Languages	Up to K3
CO2	Understand the basic structure of Relational Model and Relational Algebra Operations.	Up to K3
CO3	Demonstrate the SQL Queries, Set Operations, Nested Sub Queries and Modification of the Database	Up to K3
CO4	Understand and apply Tuple Relational Calculus, Domain Relational Calculus and E-R Model	Up to K3
CO5	Demonstrate Normalization and understand Storage and File Structure	Up to K3

K1-Knowledge K2 – Understand K3- Apply

UNIT – I: **[15 Hrs]**

Introduction: Database – System Applications – Purpose of Database Systems– View of Data – Database Languages – Relational Databases.

UNIT - II: **[15 Hrs]**

Introduction to the Relational Model: Structure of Relational Databases – Database Schema – Keys – Schema Diagrams – Relational Query Languages – Relational Operations – Formal Relational Query Languages: The Relational Algebra.

UNIT - III: **[15 Hrs]**

Introduction to SQL: Overview of SQL Query Language – SQL Data Definition – Basic Structure of SQL Queries – Additional Basic Operations – Set Operations – Null Values –Aggregate Functions – Nested Sub Queries – Modification of the Database – Intermediate SQL: Join Expressions – Views – Integrity Constraints – Advanced SQL: Triggers in SQL.

UNIT- IV: **[15 Hrs]**

Formal Relational Query Languages: The Tuple Relational Calculus – The Domain Relational Calculus – Database Design and the E-R Model: Overview of the Design Process – The Entity -Relationship Model –Constraints – Entity – Relationship Diagrams – Extended E-R Features.

UNIT - V: **[15 Hrs]**

Relational Database Design: Features of Good Relational Designs – First Normal Form – Second Normal – Third Normal Form – BCNF – Decomposition Using Functional Dependencies –Storage and File Structure: File Organization – Organization of Records in Files – Data Dictionary Storage.

TEXT BOOK:

01. Abraham Silberschatz, Henry F.Korth, S Sudarshan, Database System Concepts, 6th Edition, McGraw Hill Education (India) Private Limited, New Delhi, 2013.

Unit I	Chapter 1– 1.1-1.5
Unit II	Chapter 2, 6 – 2.1-2.6, 6.1
Unit III	Chapter 3, 4, 5 – 3.1 - 3.9, 4.1 – 4.2, 4.4, 5.3.2
Unit IV	Chapter 6, 7 – 6.2, 6.3, 7.1-7.3, 7.5, 7.8
Unit V	Chapter 8, 10 – 8.1-8.3, 10.5-10.7

REFERENCES:

1. Alexis Leon, Mathews Leon , Fundamentals of Database Management Systems ,_McGraw Hill Education , 2009
2. Thomas Connolly , Carolyn Begg , Database Systems - A Practical Approach to Design, Implementation, and Management Sixth Edition By Pearson Publication -2019
3. Raghu Ramakrishnan (Author), Johannes Gehrke , Database Management Systems 3rd Edition , Mcgraw Hill , July 2014

WEB RESOURCES:

1. https://www.javatpoint.com/dbms-tutorial
2. https://www.tutorialspoint.com/dbms/index.htm
3. https://www.geeksforgeeks.org/dbms

PEDAGOGY: Chalk, Talk, Power point presentation, Videos

COURSE CONTENTS & TEACHING / LEARNING SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
UNIT – I [15 Hrs]				
1.1	Introduction: Database	2	Lecturer	Black board
1.2	System Applications	2	PPT Presentation	Projector
1.3	Purpose of Database Systems– View of Data	3	PPT Presentation	Projector
1.4	Database Languages	4	Lecturer	Black board
1.5	Relational Databases	4	Lecturer	Black board
UNIT – II [15 Hrs]				
2.1	Introduction to the Relational Model: Structure of Relational Databases	3	PPT Presentation	Projector
2.2	Database Schema – Keys – Schema Diagrams	3	PPT Presentation	Projector
2.3	Relational Query Languages	3	Lecturer	Black board
2.4	Relational Operations	3	Lecturer	Black board
2.5	Formal Relational Query Languages: The Relational Algebra.	3	Lecturer	Black board

UNIT – III [15 Hrs]				
3.1	Introduction to SQL: Overview of SQL Query Language – SQL Data Definition	3	Lecturer	Black board
3.2	Basic Structure of SQL Queries – Additional Basic Operations – Set Operations – Null Values	3	PPT Presentation	Projector
3.3	Aggregate Functions – Nested Sub Queries – Modification of the Database	4	PPT Presentation	Projector
3.4	Intermediate SQL: Join Expressions – Views – Integrity Constraints	2	Lecturer	Black board
3.5	Advanced SQL: Triggers in SQL	3	Lecturer	Black board
UNIT – IV [15 Hrs]				
4.1	Formal Relational Query Languages: The Tuple Relational Calculus	3	Lecturer	Black board
4.2	The Domain Relational Calculus	3	PPT Presentation	Projector
4.3	Database Design and the E-R Model: Overview of the Design Process	3	PPT Presentation	Projector
4.4	The Entity -Relationship Model – Constraints	3	Lecturer	Black board
4.5	Entity -Relationship Diagrams – Extended E-R Features	3	Lecturer	Black board
UNIT – V [15 Hrs]				
5.1	Relational Database Design: Features of Good Relational Designs	3	Lecturer	Black board
5.2	First Normal Form - Second Normal	3	PPT Presentation	Projector
5.3	Third Normal Form –BCNF- Decomposition Using Functional Dependencies	3	PPT Presentation	Projector
5.4	Storage and File Structure: File Organization	3	Lecturer	Black board
5.5	Organization of Records in Files - Data Dictionary Storage	3	Lecturer	Black board

MAPPING OF COs WITH POs

	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	3	3	3	2	2
CO2	3	2	2	3	2
CO3	3	2	2	2	3
CO4	3	3	2	3	2
CO5	3	2	3	3	2

3 - Strong 2 - Medium 1- Low

COURSE DESIGNER: Mrs. M. SAROJA

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Core Subject **DATA STRUCTURES** **Code:212503502**

SEMESTER V **5 Hrs/Week**

Credit 5

PREAMBLE:

- ***This course is planned to understand the various data structures and their operations, analyze computations of different data structures, identify suitable data structure for specific applications.***

COURSE OUTCOMES (COs)

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

No.	Course Outcome	Knowledge Level (According to Bloom's Taxonomy)
CO1	Understand the basic concept of data structures and demonstrate basic operations of an array	Up to K3
CO2	Discuss various types of linked lists, it's operations & simple applications	Up to K3
CO3	Demonstrate basic operations of stacks, queues, circular queues and applications.	Up to K3
CO4	Classify the trees and know their properties & operations	Up to K3
CO5	Have a knowledge on various graph representation & various internal sorting Methods	Up to K3

K1- Knowledge K2 – Understand K3-Apply

UNIT - I: **[15 Hrs]**

Introduction to Data Structures: The Need for Data Structures – Definitions.

Arrays: Introduction-Range of an Array – Primitive Operations – Element Access in an Array – Addressing Function – One Dimensional Array – Two Dimensional Array – Multi-Dimensional Arrays – Special Types of Matrices.

UNIT - II: **[15 Hrs]**

Linked List: Introduction – Memory Allocation - Benefits of Linked Lists – Limitations of Linked Lists – Types - Basic Operations in Linked List - Singly Linked Lists – Simple Algorithms on Linked lists - Circular Linked Lists –Doubly Linked Lists – Applications of Linked Lists.

UNIT - III: **[15 Hrs]**

Stacks: Introduction – ADT Stack – Implementation of Stack – Linked List Implementation of Stack – Applications of Stack - Tower of Hanoi.

Queues: Introduction – Implementation of Queues – Implementation of Basic Operations on Array-Based Implementation of Queues – Implementation of Basic Operations on Linked List – Based Implementation of Queues - Circular Queues.

UNIT - IV: **[15 Hrs]**

Trees: Introduction – Binary Trees – Number of Nodes in Binary Trees: Operations on Binary Trees – Inorder Traversal – Pre Order Traversal – Post Order Traversal – Breadth First Traversal – Representation of Binary Trees – Linear Representation – Linked Representation – Binary Tree Traversal in C – Inorder Traversal – Non-Recursive Algorithm for Preorder Traversal – Applications of Binary Trees – Huffman Coding – Decoding – Threaded Binary Trees – Expression Trees.

Binary Search Tree: Introduction – Creating a BST – Inserting an Element into BST – Searching an Element in BST – Deleting an Element in BST.

UNIT - V: **[15 Hrs]**

Graphs: Introduction– Representation of Graphs – Traversal – BFS – DFS – Minimum Spanning Tree –Topological Sort.

Sorting: General Background of Sorting – Classification of Sorting Algorithms – Bubble Sort – Quick Sort – Selection Sort – Insertion Sort – Merge Sort.

TEXT BOOK:

1. A. Chitra and P.T.Rajan, Data Structures, Second Edition, Vijay Nicole Imprints Private Limited, Chennai, 2016.

Unit1:	Chapter1	(Pages 1 - 6)
	Chapter3	(Pages 29 - 39)
Unit2:	Chapter4	(Pages 47 - 71 & 84 – 88)
Unit3:	Chapter5	(Pages 91 – 121)
	Chapter6	(Pages 123 -128 &131 – 133)
Unit4:	Chapter 7	(Pages 139 – 143, 148-154, 157 – 170, 179 – 180 & 184 – 185)
	Chapter 8	(Pages 205 – 214 & 219 - 225)
Unit5:	Chapter11	(Pages 291 – 311, 324 – 326 & 334 – 338)
	Chapter 12	(Pages 363 – 382 & 394 – 403)

REFERENCES:

1. Data Structure and Algorithm Analysis in C, Mark Allen Weiss, Second Edition, Addison Wesley Publishing Company, 1997.
2. C and C++ Programming Concepts and Data Structures, P.S.Subramanyam, BS Publications, 2013.
3. Data Structures and Algorithms, Alfred V.Aho, John E.Hopcraft and Jeffrey D.Ullman, Pearson Education, Fourteenth Impression, 2013.

WEB RESOURCES:

01.https://www.javatpoint.com/data-structure-tutorial
02.https://www.programiz.com/dsa/types-of-queue
03.https://www.geeksforgeeks.org/linked-list-set-2-inserting-a-node/

PEDAGOGY: Chalk, Talk, Power point presentation, Videos

COURSE CONTENTS & TEACHING / LEARNING SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
UNIT – I [15 Hrs]				
1.1	Introduction to Data Structures: The Need for Data Structures – Definitions	3	Lecturer	Black board
1.2	Arrays: Introduction-Range of an Array – Primitive Operations	3	PPT Presentation	Projector
1.3	Element Access in an Array – Addressing Function	3	Lecturer	Black board
1.4	One Dimensional Array – Two Dimensional Array	3	PPT Presentation	Projector
1.5	Multi-Dimensional Arrays –Special Types of Matrices	3	PPT Presentation	Projector
UNIT – II [15 Hrs]				
2.1	Linked List: Introduction – Memory Allocation	2	PPT Presentation	Projector
2.2	Benefits of Linked Lists — Limitations of Linked Lists – Types	3	PPT Presentation	Projector
2.3	Basic Operations in Linked List – Singly Linked Lists	3	Lecturer	Black board
2.4	Simple Algorithms on Linked lists - Circular Linked Lists	4	PPT Presentation	Projector
2.5	Doubly Linked Lists – Applications of Linked Lists	3	Lecturer	Black board
UNIT – III [15 Hrs]				
3.1	Stacks: Introduction – ADT Stack – Implementation of Stack	2	Lecturer	Black board
3.2	Linked List Implementation of Stack – Applications of Stack - Tower of Hanoi	4	PPT Presentation	Projector
3.3	Queues: Introduction – Implementation of Queues	4	PPT Presentation	Projector
3.4	Implementation of Basic Operations on Array-Based Implementation of Queues	2	Lecturer	Black board
3.5	Implementation of Basic Operations on Linked List– Based Implementation of Queues — Circular Queues	3	PPT Presentation	Projector
UNIT – IV [15 Hrs]				
4.1	Trees: Introduction – Binary Trees – Number of Nodes in Binary Trees: Operations on Binary Trees – Inorder Traversal – Pre Order Traversal – Post Order Traversal – Breadth First Traversal	4	Lecturer	Black board
4.2	Representation of Binary Trees – Linear Representation – Linked Representation – Binary Tree Traversal in C – Inorder Traversal – Non-Recursive Algorithm for Preorder Traversal – Applications of binary Trees	4	PPT Presentation	Projector

4.3	Huffman Coding – Decoding – Threaded Binary Trees – Expression Trees	2	PPT Presentation	Projector
4.4	Binary Search Tree: Introduction – Creating a BST – Inserting an Element into BST	3	PPT Presentation	Projector
4.5	Searching an Element in BST – Deleting an Element in BST	2	Lecturer	Black board
UNIT – V [15 Hrs]				
5.1	Graphs: Introduction – Representation of Graphs	2	Lecturer	Black board
5.2	Traversal – BFS – DFS	3	PPT Presentation	Projector
5.3	Minimum Spanning Tree – Topological Sort	3	PPT Presentation	Projector
5.4	Sorting: Introduction –Types of Sorting – BubbleSort –Insertion Sort	3	Lecturer	Black board
5.5	Selection Sort – Merge Sort — Quick Sort	4	PPT Presentation	Projector

MAPPING OF COs WITH POs

	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	2	2	2	2	3
CO2	3	3	3	2	3
CO3	2	3	3	2	2
CO4	3	2	3	3	3
CO5	3	3	3	3	3

3 - Strong 2 - Medium 1- Low

COURSE DESIGNER: R.MALARVIZHI

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Core Lab **RDBMS LAB** **Code:212503503**

SEMESTERV **5 Hrs/Week**

Credits4

Preamble:

- ***To understand the creation and design of database.***

Oracle Lab:

1. Implementation of DDL Use - Create, Alter and Drop.
2. Implementation of DML Use-Insert, Update, delete.
3. Implementation of TCL Use-Roll Back
4. Simple Queries using Distinct,
   a) Order By Clause,
   b) Between Clause
   c) In and Not In
   d) Like
   e) Count Clause
   f) Group By
5. To make a Equi Join
6. To Create a View

7. To drop the relation

8. Sub Queries:

Employee Relation (Eno, Ename, Age, DOB, Salary,Designation,

Dept no)

Department Relation(Dept no, Location, Dept Name)

Hotel Problem.(Hotel (Hno, Hname, Address))

(Room (Rno, Hno, Type, Price))

(Booking (Hno, Gno, Datefrom, DateTo, Rno))

(Guest (Gno, Hname, Address))

9. Aggregate Function

a. Using Sum

b. Using Average

c. Using Maximum

d. Using Minimum

e. Using count

10.PL/SQLProgram

a) Write a PL/SQL Program for Conditional Control

b) Write a PL/SQL Program for iteractive Control using for

c) Write a PL/SQL Program for iteractive Control using While

d) Write a PL/SQL Program for Sequential Control

e) Write a PL/SQL Program for Sum of Natural Number

f) Write a PL/SQL Program for Find the Factorial Value

g) Write a PL/SQL Program for Implicit Cursor

h) Write a PL/SQL Program for Factorial using Procedure.

i) Write a PL/SQL Program for Fibonacci Series using Procedure

j) Write a PL/SQL Program for Explicit Cursor

k) Write a PL/SQL Program for IN Parameters

REFERENCES:

01. Nileshshah ,Database System using Oracle, Pearson Publications.
02. George Koch and Kevin loney, Oracle The Complete Reference, Osborne McGraw Hill, Electronic edition, New Delhi1996.

COURSE DESIGNER: Mrs. M. SAROJA.

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Core Labe **DATA STRUCTURES LAB** **Code: 212503504**

SEMESTER V **5 Hrs/Week**

Credits 4

Preamble:

- ***To implement basic concepts about searching, sorting stacks, queues, lists, trees and graphs***

01.Implementation of Singly Linked List

02.Implementation of Circular Linked List

03.Implementation of Stack using Array

04.Implementation of Stack using Linked List

05.Implementation of Queue using Array

06.Implementation of Queue using Linked List

07.BubbleSort

08.InsertionSort

09.SelectionSort

10.QuickSort

11.MergeSort

12.Towers of Hanoi using Recursion

13.Tree traversal - Preorder, Inorder, Postorder

14.Infix to Postfix Expression usingStack

15.Evaluation of Postfix Expression

16. Implementation ofBFS

17.Implementation of DFS

REFERENCES:

1. Chitra and P.T.Rajan, Data Structures, Tata Mc Graw Hill Publications, New Delhi,2008.
2. Data Structure and Algorithm Analysis in C, Mark Allen Weiss, Second Edition, Addison Wesley publishing company, 1997.
3. C and C++ Programming concepts and Data Structures, P.S.Subramanyam, BS Publications, 2013.

COURSE DESIGNER: Mrs. R.MALARVIZHI

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Elective I Major **1.1 MULTIMEDIA AND ITS APPLLICATIONS** **Code: 212503505**
SEMESTER V **5 Hrs/Week**
Credits 5

PREAMBLE:

- ***Multimedia is defined as interacting with information that to present visualizations of concepts, to present animations, to require interactive participation of learner or all of the media: text, graphics, images, audio, and video. Students need to learn to create and use high-quality multimedia documents, including references, lecture materials, reports, and term papers.***

COURSE OUTCOMES (COs)

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

No.	Course Outcome	Knowledge Level (According to Bloom's Taxonomy)
CO1	Explain the multimedia and hardware, software components.	Up to K3
CO2	Illustrate text, image elements in multimedia	Up to K3
CO3	Discuss Audio and video elements in multimedia	Up to K3
CO4	Explain the Product design and Multimedia Tool features	Up to K3
CO5	Outline the fundamentals of web and Multimedia Development Team	Up to K3

K1- Knowledge K2 – Understand K3-Apply

UNIT – I: **[15 Hrs]**

Introduction: Objectives-Brief History of Multimedia- What Is Multimedia?-The Multimedia Market-Content and Copyright-Resources for Multimedia Developers Product and Evaluation: Objectives-Types of Products-Evaluation. Hardware, Operating Systems, and Software: Objectives-Computer Architecture-Computer Architecture Standards-Operating Systems and Software-Multimedia Computer Architecture-Software Executables and Libraries-Software Drivers.

UNIT – II: **[15 Hrs]**

Text: Objectives - Elements of Text-Text Data Files-Using Text in Multimedia Applications-Hypertext Graphics: Objectives -Element of Graphics-Images and Color-Graphics File and Application Formats-Obtaining Images for Multimedia Use-Using Graphics in Multimedia Application.

UNIT – III: **[15 Hrs]**

Digital Audio: Objectives-Characteristics of Sound and Digital Audio-Digital Audio Systems-MIDI-Audio File Formats-Using Audio in Multimedia Applications: Digital video and Animation: Objectives-Background on Video-Characteristics of Digital Video-Digital Video Data Sizing-Video Capture and Playback Systems-Computer Animation-Using Digital Video in Multimedia Applications

Unit – IV: **[15 Hrs]**

Product Design Objectives-Buildings Blocks-Classes of Products-Content Organizational Strategies-Storyboarding Authoring Tools: Objectives-Categories of Authoring Tools-Selecting the Right Authoring Paradigm-One Strategy for Selecting a Tool.

UNIT – V: **[15 Hrs]**

Multimedia and the Internet Objectives-The Internet-HTML and Web Authoring-Multimedia Considerations for the Internet-Design Considerations for Web Page The Multimedia Development Team: Objectives-Team Approach-Assembling a Multimedia Production Team.

TEXT BOOK:

01. David Hillman, Multimedia Technology & Applications, Galgotia Publications Pvt.Ltd ,2010
    UNIT I: Chapter 1,2,3
    UNIT II: Chapter4,5
    UNIT III: Chapter 6,7
    UNIT IV: Chapter 8,9
    UNIT V: Chapter 10,11

REFERENCES:

01. TayVaughan,Multimedia Making It Work,Seventh Edition-,Tata Mcgraw Hill Publishing Company Limited 2010.
02. Judith Jaffcoats,Multimedia in Practice-Technology and Operations,1st Impression, Prentice Hall India 2002.

WEB RESOURCES:

01. www.tutorialpoint.com
02. http://etutorials.org/
03. www.slideshare.net
04. http://www.netnic.org/concept-of-multimedia/
05. https://www.scribd.com/
06. https://www.freetimelearning.com/basics-of-computer-science/basics-of-multimedia.php
07. https://www.geeksforgeeks.org/

PEDAGOGY: Chalk, Talk, Power point presentation, Videos

COURSE CONTENTS & TEACHING / LEARNING SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
UNIT – I [15 Hrs]				
1.1	Introduction: Objectives	3	Lecture	Blackboard
1.2	Resources for Multimedia Developers	3	Lecture	Blackboard
1.3	Types of Products	3	Lecture	Blackboard
1.4	Operating Systems and Software	3	PPT Presentation	LCD Projector
1.5	Multimedia Computer Architecture	3	PPT Presentation	LCD Projector
UNIT – II [15 Hrs]				
2.1	Elements of Text	3	PPT Presentation	LCD Projector

2.2	Text in Multimedia Applications	3	PPT Presentation	LCD Projector
2.3	Element of Graphics	3	Lecture	Blackboard
2.4	Graphics File and Application Formats	4	PPT Presentation	LCD Projector
2.5	Using Graphics in Multimedia Application	2	Lecture	Blackboard
	UNIT – III [15 Hrs]			
3.1	Characteristics of Sound and Digital Audio	3	Lecture	Blackboard
3.2	Digital Audio Systems	2	Lecture	Blackboard
3.3	Digital video and Animation:	3	Lecture	Blackboard
3.4	Characteristics of Digital Video	3	Lecture	Blackboard
3.5	Video Capture and Playback Systems	4	PPT Presentation	LCD Projector
	UNIT – IV [15 Hrs]			
4.1	Buildings Blocks	3	Lecture	Blackboard
4.2	Classes of Products	2	PPT Presentation	LCD Projector
4.3	Content Organizational Strategies	2	PPT Presentation	LCD Projector
4.4	Storyboarding	2	PPT Presentation	LCD Projector
4.5	-Categories of Authoring Tools	3	PPT Presentation	LCD Projector
4.6	Selecting the Right Authoring Paradigm	3	Lecture	Blackboard
	UNIT – V [15 Hrs]			
5.1	Multimedia and the Internet	3	Lecture	Blackboard
5.2	HTML and Web Authoring	3	PPT Presentation	LCD Projector
5.3	Multimedia Considerations for the Internet	3	Lecture	Blackboard
5.4	Design Considerations for Web Page	2	PPT Presentation	LCD Projector
5.5	The Multimedia Development Team:	4	Lecture	Blackboard

MAPPING OF COs WITH POs

	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	2	2	2	2	3
CO2	2	3	1	1	2
CO3	3	3	3	2	2
CO4	3	3	3	3	3
CO5	3	3	3	3	3

3 - Strong 2 - Medium 1- Low

COURSE DESIGNER: Mr.R.Ganesh

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Elective I - Major I.2 PYTHON PROGRAMMING **Code: 212503506**

SEMESTER V **5 Hrs/Week**

Credits 5

PREAMBLE:

- ***To introduce open source programming language and to acquire programming skills in python.***

COURSE OUTCOMES (COs)

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

No.	Course Outcome	Knowledge Level (According to Bloom's Taxonomy)
CO1	Get introduced to Python programming Language	Up to K3
CO2	Understand the Functions and Modules	Up to K3
CO3	Demonstrate the Strings and String Operations.	Up to K3
CO4	Get acquainted with Files and User I/O	Up to K3
CO5	Understand various data types like lists, tuples, Sets and Dictionaries	Up to K3

K1- Knowledge K2 – Understand K3-Apply

UNIT-I: **[15 Hrs]**

Basics of Python Programming: Introduction-Features of Python-History of Python–The Future of Python-Writing and Executing First Python Program-Literal Constants-Variables and Identifiers-Data Types-Input Operation – Comments-Reversed Words – Indentation-Operators and Expressions-Expression in Python-Operations on Strings-Other Data Types-Type Conversion.

Decision Control Statements: Selection/Conditional Branching Statements-Basic Loop Structure/Iterative Statements-Nested Loops – The Break Statement-The Continue Statement – The Pass Statement – The Else Statement Used With Loops

UNIT-II: **[15 Hrs]**

Function and Modules: Introduction-Function Definition-Function Call-Variable Scope and Lifetime–The Return Statement-Recursive Functions – Modules-Packages in Python-Standard Library Modules-Globals(),Locals(),and Reload().

UNIT-III: **[15 Hrs]**

Strings: Introduction-Concatenating, Appending, and Multiplying Strings-Strings are Immutable-String Formatting Operator-Built-in String Methods and Functions-Slice Operation-ord() and chr() Functions- in and not in Operators-Comparing Strings.

UNIT-IV: **[15 Hrs]**

File Handling: Introduction- File Path-Types of Files-Opening and Closing Files-Reading and Writing Files-File Positions-Renaming and Deleting Files-Directory Methods.

UNIT-V: **[15 Hrs]**

Data Structures: Introduction - Sequence - Lists - Tuple -Sets-Dictionaries.

TEXT BOOK:

01. Reema Thareja, Python Programming Using Problem Solving Approach, Oxford University Press, 2020.

Unit	**Chapter**
I	3,4
II	5 (Mentioned Topics Only)
III	6(Mentioned Topics Only)
IV	7
V	8(Mentioned Topics Only)

REFERENCE:

01. Ch.satyanarayana M.Radhika Mani, B.N.Jagadesh,Python Programming, Universities Press, 2018.
02. Allen B.Downey,Think Python: How to Think like a Computer Scientist, 2nd Edition,O'Reilly/Shroff Publishers, 2019

WEB RESOURCES:

01. https://docs.python.org/3/tutorial/
02. https://www.w3schools.com/python/
03. https://www.tutorialspoint.com/python/

PEDAGOGY: Chalk, Talk, Power point presentation, Videos

COURSE CONTENTS & TEACHING / LEARNING SCHEDULE

Module No.	**Topic**	**No. of Lectures**	**Content Delivery Method**	**Teaching Aids**
UNIT – I [15 Hrs]				
1.1	Basics of Python Programming: Introduction-Features of Python-History of Python–The Future of Python	2	Lecturer	Black board
1.2	Writing and Executing First Python Program-Literal Constants-Variables and Identifiers-Data Types	2	PPT Presentation	Projector
1.3	Input Operation – Comments-Reversed Words – Indentation-Operators and Expressions-Expression in Python-Operations on Strings-Other Data Types-Type Conversion	3	PPT Presentation	Projector
1.4	Decision Control Statements:Selection/ Conditional Branching Statements-Basic Loop Structure/ Iterative Statements	4	Lecturer	Black board
1.5	Nested Loops-The Break Statement-The Continue Statement-The Pass Statement-The Else Statement Used With Loops	4	Lecturer	Black board

UNIT – II [15 Hrs]				
2.1	Function and Modules: Introduction-Function Definition	3	PPT Presentation	Projector
2.2	Function Call-Variable Scope and Lifetime	2	PPT Presentation	Projector
2.3	The Return Statement-Recursive Functions – Modules	3	Lecturer	Black board
2.4	Packages in Python-Standard Library Modules	4	Lecturer	Black board
2.5	Globals(),Locals(),and Reload()	3	Lecturer	Black board
UNIT – III [15 Hrs]				
3.1	Strings: Introduction-Concatenating, Appending, and Multiplying Strings	3	Lecturer	Black board
3.2	Strings are Immutable-String Formatting Operator	3	PPT Presentation	Projector
3.3	Built-in String Methods and Function	3	PPT Presentation	Projector
3.4	Slice Operation- ord() and chr() Functions	3	Lecturer	Black board
3.5	in and not in Operators-Comparing Strings	3	Lecturer	Black board
UNIT – IV [15 Hrs]				
4.1	File Handling: Introduction- File Path	3	Lecturer	Black board
4.2	Types of Files-Opening and Closing Files	3	PPT Presentation	Projector
4.3	Reading and Writing Files-File Positions	3	PPT Presentation	Projector
4.4	Renaming and Deleting Files	3	Lecturer	Black board
4.5	Directory Methods	3	Lecturer	Black board
UNIT – V [15 Hrs]				
5.1	Data Structures: Introduction	2	Lecturer	Black board
5.2	Sequence - Lists	3	PPT Presentation	Projector
5.3	Tuple	3	PPT Presentation	Projector
5.4	Sets	3	Lecturer	Black board
5.5	Dictionaries	4	Lecturer	Black board

MAPPING OF COs WITH POs

	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	3	3	2	3	2
CO2	3	2	3	2	3
CO3	3	3	2	3	3
CO4	3	2	2	3	2
CO5	3	2	3	2	3

3 - Strong 2 - Medium 1- Low

COURSE DESIGNER: Mr. Jeganathan

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Part - IV **PYTHON PROGRAMMING LAB** **Code: 214403525**
Skill Based Elective-II **SEMESTER V** **2 Hrs/week**
Credits 2

Preamble:

- ***To develop programming skills in Python***

Content:

1. Python program to find factorial for a given number.
2. Python program to generate Fibonacci series.
3. Python program to implement classes and objects.
4. Python program to implement the concept of constructors.
5. Python program to implement the various types of Inheritance.
6. Python program to demonstrate method overriding.
7. Python program to demonstrate Exception.
8. Python program to demonstrate Multithreading.
9. Program to manipulate String
10. Python Program to implement looping statements
11. Python Program to implement Conditional statements
12. Python Program to implement function
13. Python Program using interface
14. Python Program using packages
15. Python Program using Files
16. Python Program to implement build in functions

REFERENCE:

01. ExploringPython–TimothyA.Budd,TataMcGrawHill,2017

WEB RESOURCES:

01.https://www.programiz.com/python-programming/example
02.https://pythonprogramming.net

COURSE DESIGNER: Mr. Jeganathan

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Part IV **VISUAL PROGRAMMING LAB** **Code: 218203525**
Skill Based Elective – III **SEMESTER V** **2 Hrs/Week**
Credits 2

PREAMBLE:-

- ***To inculcate the basic knowledge in visual programming and to design discrete applications with the knowledge acquired.***

LIST OF PROGRAMS

1.VB program using Text, Label boxes and Command button.
2. VB program to implement Numeric functions.
3. VB program to implement Date and Time functions.
4. VB program to animate Text and Picture.
5. VB program to implement Date format.
6. VB program to implement Scale properties.
7. VB program to implement Color properties.

8. VB program to display Scroll values.
9. VB program to design Digital Clock.
10. VB program to create animation using Image boxes.
11. VB program to implement Line and Shape controls.
12. VB program to display concentric circles.
13. VB program to change the radius of Circle.
14. VB program to change the Window state and create color mixer using slider.

REFERENCES:

01. Steven Holzner, Visual Basic 6 Programming, Dreamtect Press, Reprint edition, 2014.
02. Gary Cornell, Visual Basic 6.0 from the ground up, TataMcGrawHill, Edition, 31st reprint, New Delhi, 2010.

WEB RESOURCES:

1. https://www.vbtutor.net
2. https://www.tutlane.com/tutorial/visual-basic

COURSE DESIGNER: Mrs. J. KALPANA DEV

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Self Learning Course–Major **CLIENT/SERVER COMPUTING**

SEMESTER V **Code: 218003525**

Addl. Credits 4

Preamble:

- ***Gain exposure on most common used servers.***
- ***Understand the concept of Client-Servers development and learn problem solving skills through design scenarios for network environment.***
- ***Develop a client-server based application.***

UNIT – I:

Overview of Client Server Computing – Evolution of Client Server application – overview of Client/Server – Understanding Client Server Computing.

UNIT – II:

Client Hardware and software-Client Software Products- Client Requirements.

UNIT – III:

Server Hardware –Server Environment-Server operating system- Server Requirements- Server data Management and access tools.

UNIT – IV:

Overview of Networking LAN Hardware and Software –Development – Production requirement –Future trends.

UNIT – V:

Application Development tools-Managing the Production environment-Production requirement- Future trends.

TEXT BOOK:

01.Dawna Travis Dewire, Client Server Computing, McGraw Hill International, 14th reprint Editions, New Delhi -2010.

Unit-I	Chapter	1, 2, 3, 4
Unit-II	Chapter	5, 6, 7
Unit-III	Chapter	8, 9, 10, 11, 12
Unit-IV	Chapter	13, 14, 15, 18
Unit-V	Chapter	17, 18, 19

REFERENCE:

01.Patrick Smith & Steve Guangerich, Client Server Computing, PHI –II Edition, 14th reprint, NewDelhi.2010.

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Core Subject **COMPUTER NETWORKS** **Code: 212503601**

SEMESTER VI **4 Hrs/ Week**

Credits 4

PREAMBLE

- ***To develop an understanding of computer networking basics, different components of computer networks, various protocols, modern technologies and their application.***

COURSE OUTCOMES (COs)

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

No.	Course Outcome	Knowledge Level (According to Bloom's Taxonomy)
CO1	Build an understanding of the fundamental principles of computer networking and the functions of each layer in OSI and TCP/IP model.	Up to K3
CO2	Understands the Presentation layer paradigms.	Up to K3
CO3	Describe the functions of data link layer and explain the protocols.	Up to K3
CO4	Classify the routing protocols and analyze the soundness or potential flaws in proposed protocols	Up to K3
CO5	Explain the functions of Application layer paradigms.	Up to K3

K1- Knowledge K2 – Understand K3-Apply

UNIT- I: **[12 Hrs]**

Introduction : Uses of Computer Networks – Network Hardware – Network Software – Reference Models – Example Networks.

UNIT – II: **[12 Hrs]**

Physical Layer : Transmission Media – Wireless transmission – The telephone system – Communication satellites.

UNIT – III: **[12 Hrs]**

Data link Layer – Elementary Data link protocols – Sliding Window Protocols – The Channel Allocation problem -.Multiple Access Protocols – ALOHA, CSMA, Collision Free Protocols.

UNIT – IV: **[12 Hrs]**

Network Layer – Routing Algorithms – Shortest path, Flooding Hierarchical and Broadcast.

UNIT – V: **[12 Hrs]**

Application Layer : DNS – The domain Name System – Electronic Mail – The World Wide Web – Multimedia.

TEXT BOOK:

01. Andrew Tanenbaum S, Computer Networks, Prentice Hall of India, 6th Edition, New Delhi, 2015.

Unit I	Chapter 1	1.1 – 1.5
Unit II	Chapter 2	2.2 – 2.4, 2.7
Unit III	Chapter 3, 4	3.3 & 3.4, 4.1, 4.2 [4.2.1. – 4.2.3]
Unit IV	Chapter 5	5.2 [5.2.1 – 5.2.7]
Unit V	Chapter 7	7 [7.1 – 7.3]

REFERENCES:

01. Forouzen, Data Communications and Networking, Tata McGraw Hil, New Delhi, 5TH Edition, 2003.
02. William Stallings, Data and Computer Communications, Pearson Education, 10th Edition, New Delhi, 2003.

WEB RESOURCES:

01. https://www.javatpoint.com/computer-network-tutorial
02. https://www.geeksforgeeks.org/computer-network-tutorials/
03. https://www.tutorialspoint.com/data_communication_computer_network/index.htm

PEDAGOGY: Chalk and talk, LCD Projector, Desktop Computer.

COURSE CONTENTS & TEACHING / LEARNING SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
	UNIT – I [12 Hrs]			
1.1	Uses of Computer Networks	2	Lecture	Blackboard & Chalk
1.2	Network Hardware	2	Lecture	Blackboard & Chalk
1.3	Network Software	2	Lecture	Blackboard & Chalk
1.4	Reference Models	4	PPT Presentation	LCD Projector
1.5	Example Networks	2	PPT Presentation	LCD Projector
	UNIT – II [12 Hrs]			
2.1	Transmission Media – Wired Transmission	3	PPT Presentation	LCD Projector
2.2	Wireless Transmission	3	PPT Presentation	LCD Projector
2.3	The Telephone System	3	Lecture	Blackboard & Chalk
2.4	Communication Satellites	3	PPT Presentation	LCD Projector
	UNIT – III [12 Hrs]			
3.1	Elementary Datalink protocols	3	Lecture	Blackboard & Chalk
3.2	The Channel Allocation Problem	2	Lecture	Blackboard & Chalk
3.3	Multiple Access Protocols	4	Lecture	Blackboard & Chalk
3.4	Collision Free Protocols	3	Lecture	Blackboard & Chalk

UNIT – IV [12 Hrs]				
4.1	Routing Algorithms	1	Lecture	Blackboard & Chalk
4.2	Shortest path Routing	2	PPT Presentation	LCD Projector
4.3	Flooding	3	PPT Presentation	LCD Projector
4.4	Hierarchical Routing	3	PPT Presentation	LCD Projector
4.5	Broadcast routing	3	PPT Presentation	LCD Projector
UNIT – V [12 Hrs]				
5.1	DNS	2	Lecture	Blackboard & Chalk
5.2	Electronic Mail	2	PPT Presentation	LCD Projector
5.3	The World Wide Web	4	Lecture	Blackboard & Chalk
5.4	Multimedia	4	PPT Presentation	LCD Projector

MAPPING OF COs WITH POs

	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	1	2	2	2	3
CO2	2	3	1	1	2
CO3	3	3	3	2	2
CO4	3	3	3	3	3
CO5	3	3	3	3	3

3 - Strong 2 - Medium 1- Low

COURSE DESIGNER: Mrs.J. Kalpana Devi

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Core Subject **SOFTWARE ENGINEERING** **Code: 212503602**

SEMESTER VI **4 Hrs/ Week**

Credits 4

PREAMBLE

- ***This course helps students to become efficient programmers by learning best programming practices and testing techniques.***

COURSE OUTCOMES (COs)

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

No.	**Course Outcome**	**Knowledge Level (According to Bloom's Taxonomy)**
CO1	Build an understanding of the software engineering definitions and quality productivity factors.	Up to K3
CO2	Understands the Software cost estimation.	Up to K3
CO3	Describe the functions of software requirements.	Up to K3
CO4	Understand the software design concepts.	Up to K3
CO5	Explain the functions of Verification and validation techniques and software maintenance.	Up to K3

K1- Knowledge K2 – Understand K3-Apply

UNIT – I: **[12 Hrs]**

Introduction to Software Engineering: Some Definitions – Some Size factors – Quality and Productivity Factors – Managerial Issues.

Planning a Software Project: Defining the Problem – Developing a Solution Strategy – Planning the Development Process – Planning an Organizational Structure – Other Planning Activities.

UNIT – II: **[12 Hrs]**

Software Cost Estimation: Software Cost Factors – Software Cost Estimation Techniques – Staffing-Level Estimation – Estimating Software Maintenance Costs.

UNIT – III: **[12 Hrs]**

Software Requirements Definitions: The Software Requirements Specification – Formal Specification Techniques – Languages and Processors for Requirements Specification.

UNIT – IV: **[12 Hrs]**

Software Design: Fundamental Design Concepts – Modules and Modularization Criteria – Design Notations – Design Techniques – Detailed Design Considerations – Real- Time and Distributed System Design – Test Plans – Milestones, Walkthroughs, and Inspections - Design Guidelines.

UNIT – V: **[12 Hrs]**

Verification and Validation Techniques: Quality Assurance – Static Analysis – Symbolic Execution – Unit Testing and Debugging – System Testing – Formal Verification.

Software Maintenance: Enhancing Maintainability During Development – Managerial Aspects of Software Maintenance – Configuration Management – Source-Code Metrics – Other Maintenance Tools and Techniques.

TEXT BOOK:

01. Software Engineering Concepts, Richard Fairley, Tata McGrawHill Publishing Company Limited, NewDelhi,2017
    - UNIT – I : Chapters: 1.1 – 1.4, 2.1-2.5
    - UNIT – II : Chapters: 3.1 - 3.4
    - UNIT – III : Chapters: 4.1 – 4.3
    - UNIT – IV : Chapters: 5.1 – 5.9
    - UNIT – V : Chapters: 8.1, 8.3 – 8.7, 9.1 – 9.5

REFERENCES:

01. Fundamentals of Software Engineering – Rajib Mall, Prentice Hall of India Pvt. Ltd., New Delhi,2003.
02. Roger S. Pressman, 2007, Software Engineering Concepts, 7thedn, McGraw Hill
03. Software Engineering – K.L.James, Prentice Hall of India Pvt. Ltd., New Delhi, 2009.
04. IAN SOMMERVILLE, 2010, Software Engineering, 10thedn, Pearson Education Asia.

WEB RESOURCES:

01.https://www.tutorialspoint.com/software_engineering/
02.https://lecturenotes.in/subject/104/software-engineering-se
03.https://www.techopedia.com/definition/13296/software-engineering

PEDAGOGY: Chalk and talk, LCD Projector

COURSE CONTENTS & TEACHING / LEARNING SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
UNIT – I [12 Hrs]				
1.1	Definitions	3	Lecture	Black board
1.2	Some Size factors	3	Lecture	Black board
1.3	Quality and Productivity Factors	3	Lecture	Blackboard
1.4	Managerial Issues	3	PPT	LCD Projector
UNIT – II [12 Hrs]				
2.1	Software Cost Factors	3	PPT Presentation	LCD Projector
2.2	Software Cost Estimation Techniques	3	PPT Presentation	LCD Projector
2.3	Staffing-Level Estimation	3	Lecture	Blackboard a
2.4	Estimating Software Maintenance Costs	3	PPT Presentation	LCD Projector
UNIT – III [12 Hrs]				
3.1	Software Requirements Definitions	3	Lecture	Blackboard
3.2	The Software Requirements Specification	3	Lecture	Blackboard
3.3	Formal Specification Techniques	3	Lecture	Blackboard
3.4	Languages and Processors for Requirements Specification	3	Lecture	Blackboard
UNIT – IV [12 Hrs]				
4.1	Software Design	2	Lecture	Blackboard and Chalk
4.2	Fundamental Design Concepts	3	PPT Presentation	LCD Projector
4.3	Modules and Modularization Criteria	3	PPT Presentation	LCD Projector
4.4	Design Techniques	2	PPT Presentation	LCD Projector
4.5	Design Guidelines	2	PPT Presentation	LCD Projector
UNIT – V [12 Hrs]				
5.1	Enhancing Maintainability During Development	3	Lecture	Blackboard and Chalk
5.2	Managerial Aspects of Software Maintenance	3	PPT Presentation	LCD Projector
5.3	Configuration Management	2	Lecture	Blackboard and Chalk
5.4	Source-Code Metrics	2	PPT Presentation	LCD Projector
5.5	Other Maintenance Tools and Techniques.	2	PPT Presentation	LCD Projector

MAPPING OF COs WITH POs

	PO1	PO2	PO3	PO4	PO5
CO1	2	2	2	2	3
CO2	2	3	2	2	2
CO3	3	3	3	2	2
CO4	3	3	3	3	3
CO5	3	3	3	3	3

3 - Strong 2 - Medium 1- Low

COURSE DESIGNER: Mr. GOBINATH.P

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Core Lab **.NET LAB** **Code: 212503603**

SEMESTER VI **5 Hrs/ Week**

Credits 2

PREAMBLE:-

- ***The aim of this course is to bridge the gap in interoperability between services of various programming languages. It provide environment for developing various types of applications, such as Windows-based applications and Web-based applications***

LIST OF PROGRAMS

01. Write a program to generate n random numbers. (using rnd() function)
02. Write a program to accept array elements and find the minimum and maximum among them.
03. Write a program to find frequency of a given character in a string. (using for each loop)
04. Write a program to accept roll number, name, and marks in 2 subjects of a student and calculate total, average and display the grade. (using nested if)
05. Design an application to create a login form and validate it using msgbox.
06. Design an application to simulate the working of a font dialog using combo box.
07. Design a Pizza Order application using check box and radio buttons and also generate a bill for the same.
08. Design an application which calculates EMI of a loan using functions.
09. Design an application to implement various string operations such as reversing, case conversion, length, concatenation.
10. Design an application to open a text file, modify it and save the changes using built in dialog boxes.
11. Design a package for employee data processing
12. Write a program to accept sides of a triangle and then find its area, perimeter and type triangle using classes.
13. Write a program to perform various arithmetic operations and implement exception handling.
14. Design a Student Registration Application to store the student data in the database using ADO.Net
15. Design an inventory control system using ADO.Net.

REFERENCES:

01. Steven holzner,Dreamtech,VB.NET Black Book,2002.
02. Pro .Net 2.0 Windows Forms and Custom Controls in C#: From Professional to Expert by Matthew MacDonald-Apress Publisher,2006
03. C# 6.0 and the .NET 4.6 Frame work by Andrew Troelsen and Philip Japikse, Seventh edition, Kindle Edition, Apress Publisher,2015.

WEB RESOURCES:

01.https://www.programiz.com/csharp-programming
02.https://docs.google.com/document/preview?hgd=1&id=1_b7tPf6In55l-DorHNm3FgnVKVK9w4FNyHgNqAFHMCg

COURSE DESIGNER: Mr. GOBINATH.P

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Elective – II Major **II.1 COMPUTER GRAPHICS** **Code: 212503604**

SEMESTER VI **5 Hrs/Week**

Credits 5

Preamble:-

- ***To educate students about computer graphics algorithms and transformations.***
- ***To understand the core concepts and mathematical foundations of computer graphics***
- ***To acquire knowledge about different data structures involved in Computer Graphics***

COURSE OUTCOMES (COs)

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

No.	Course Outcome	Knowledge Level (According to Bloom's Taxonomy)
CO1	understand the basics of computer graphics, it's applications and different types of I/O devices.	Up to K3
CO2	Implement various Line –Drawing, Circle-Generating algorithms and Area filling algorithm	Up to K3
CO3	Understand and describe the attributes of output primitives, anti aliasing techniques, GUI and input Methods	Up to K3
CO4	Apply 2D transformations to geometric figure and illustrate 2D viewing and clipping concepts.	Up to K3
CO5	Explore the 3D Concepts and 3D viewing	Up to K3

K1- Knowledge K2 – Understand K3-Apply

UNIT – I: **[15 Hrs]**

Introduction to Computer graphics and applications-Display devices-Raster scan and random scan systems-Input Devices-Graphics Software and Functions.

UNIT – II: **[15 Hrs]**

Output Primitives: Line –Drawing, Algorithms, Circle-Generating algorithms-Filled-Area primitives –Character generation.

UNIT – III: **[15 Hrs]**

Attributes of output Primitives: Line, curve, area Fill, Character, Text, marker and bundled attributes –Inquiry function- Anti aliasing techniques.

GUI and input Methods: The User Dialogue- Graphical input devices-Input Functions-Interactive Picture-Construction Techniques-Virtual –Reality Environments.

UNIT – IV: **[15 Hrs]**

Geometric Transformations and viewing: Basic transformations-Homogeneous Co-ordinates-Composite transformations-Reflection and Shear-Window-to View Port Transformation-Viewing Functions-Point ,Line, Polygon Curve, text, exterior Clipping Operations.

UNIT – V: **[15 Hrs]**

Three Dimensional Concepts: Display Methods-Graphics Packages,

Three Dimensional Geometric and Modeling Transformations: Translation-Rotation-Scaling-Other Transformation-three Dimensional Transfer Function

Three Dimensional Viewing: Viewing Pipeline-Viewing Co-ordinates-Projections.

TEXT BOOK:

01. Donald D. Hearn and Pauline Baker M.,ComputerGraphics, CVersion", PearsonEducation, SecondEdition, New Delhi,2011.

Unit-I	:	Chap 1,2(1.1-1.8,2.1-2.3,2.5)
Unit-II	:	Chap 3(3.2,3.5,3.11,3.14)
Unit-III	:	Chap 4(4.1-4.8)
		Chap 8(8.1-8.4,8.5,8.6)
Unit-IV	:	Chap 5,6 (5.1-5.4,6.3-6.11)
Unit-V	:	Chap 9(9.1,9.2)
		Chap 11(11.1-11.4,11.6)
		Chap 12(12.1-12.3)

REFERENCES:

01. Roy A Plostock, Zhigang Xiang., Schaum's outline of Computer Graphics, Tata McGraw Hill, New delhi,2020.

WEB RESOURCES:

01. https://www.javatpoint.com/computer-graphics-tutorial
02. https://www.whitman.edu/Documents/Academics/Mathematics/2017/Shi.pdf
03. http://www.eazynotes.com/pages/computer-graphics/computer-graphics-algorithms.html

PEDAGOGY: Chalk and talk, LCD Projector, Desktop Computer.

COURSE CONTENTS & TEACHING / LEARNING SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
UNIT – I [15 Hrs]				
1.1	Introduction to Computer graphics applications	2	Lecture	Blackboard
1.2	Display Devices	5	PPT Presentation	LCD Projector
1.3	Raster scan and random scan systems	3	Lecture	Blackboard

1.4	Input Devices	3	PPT Presentation	LCD Projector
1.5	Graphics Software and Functions.	2	Lecture	Blackboard
	UNIT – II [15 Hrs]			
2.1	Line Drawing Algorithms	5	Lecture	Blackboard
2.2	Circle Generating algorithms-	4	Lecture	Blackboard
2.3	Fill Area Primitives	5	Lecture	Blackboard
2.4	Character generation	1	Lecture	Blackboard
	UNIT – III [15 Hrs]			
3.1	Attributes of output primitives	5	Lecture	Blackboard
3.2	Anti aliasing techniques.	2	Lecture	Blackboard
3.3	GUI and input Methods	3	Lecture	Blackboard
3.4	Input Functions	3	PPT Presentation	LCD Projector
3.5	Interactive Picture-Construction Techniques	2	Lecture	Blackboard
	UNIT – IV [15 Hrs]			
4.1	Basic transformations	2	Lecture	Blackboard
4.2	Homogeneous Co-ordinates and Composite transformations	4	Lecture	Blackboard
4.3	Reflection and Shear-	2	Lecture	Blackboard
4.4	Window-to View Port Transformation-Viewing Functions	2	PPT Presentation	LCD Projector
4.5	Clipping Operations.	5	Lecture	Blackboard
	UNIT – V [15 Hrs]			
5.1	Three Dimensional Concepts	2	Lecture	Blackboard
5.2	Three Dimensional Geometric and Modeling Transformations	5	PPT Presentation	LCD Projector
5.3	Three Dimensional Viewing coordinates	3	Lecture	Blackboard
5.4	Projections.	5	Lecture	Blackboard

MAPPING OF COs WITH POs

	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	2	2	1	2	3
CO2	2	3	2	2	2
CO3	3	3	3	2	2
CO4	2	3	3	3	3
CO5	3	3	3	3	3

3 - Strong 2 - Medium 1- Low

COURSE DESIGNER: Mrs. K.SUGANTHI

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Elective II-Major **II.2 CLOUD COMPUTING** **Code: 212503605**

SEMESTER VI **5 Hrs/Week**

Credits 5

PREAMBLE:

- ***The main purpose of CLOUD COMPUTING is to present a basic architecture and Learn the fundamentals and essentials of Cloud Computing.***

COURSE OUTCOMES (COs)

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

No.	Course Outcome	Knowledge Level (According to Bloom's Taxonomy)
CO1	Explain the Benefits of cloud Computing	Up to K3
CO2	Show a sound foundation of the Cloud Computing and learn how to use Cloud Services	Up to K3
CO3	Infer some important Cloud Computing driven commercial systems	Up to K3
CO4	Outline how to store and share files in cloud	Up to K3
CO5	Analyze using and adopting Cloud Computing Tools and Services in real life Scenario	Up to K3

K1- Knowledge K2 – Understand K3-Apply

UNIT – I: **[15 Hrs]**

Understanding cloud computing: An introduction to cloud computing- what it is & what it is not- History - The network is the computer: How cloud computing works. Companies in the cloud: cloud computing today. The pros and cons of cloud computing- benefits- how to develop cloud services.

UNIT – II: **[15 Hrs]**

Cloud computing for the community- Cloud computing for the corporation- Using cloud services: collaborating on calendars, schedules, and Task management. Exploring online calendar applications- Exploring online schedule applications- Exploring online planning and task management.

UNIT – III: **[15 Hrs]**

Collaborating on Event Management: Event Management applications - Exploring Event Management Applications – Collaborating on project Management: Exploring project Management Applications – Collaborating on databases: how it works Exploring Web-Based Databases.

UNIT – IV: **[15 Hrs]**

Storing and sharing Files and other Online Content: Understanding Cloud Storage- Evaluating Online File- Storage and Sharing Services- Exploring Online Book marking Services. Sharing Digital Photographs: Exploring online photo-editing Applications – Exploring Photo- Sharing Communities. Controlling it all with Web Based Desktops.

UNIT – V: **[15 Hrs]**

Collaborating via Web - Based Communication Tools: Evaluating Mail Services Instant Messaging Services - Web Conferencing services. Collaborating via Social networks and Groupware: creating groups on social networks – Evaluating online Groupware.

TEXT BOOK:

01. Michael Miller "CLOUD COMPUTING Web-Based Applications ThatChange The Way You Work and Collaborate Online", Pearson Education, First Edition 2008.

UNIT I: Chapter 1,2,3
UNIT II: Chapter 5,6,7
UNIT III: Chapter 8,10,13
UNIT IV: Chapter 15,16,17
UNIT V: Chapter 18,19

REFERENCES:

01. Velte T. Antony, Velte J. Toby., Elsenpeter Robert, "Cloud Computing: A Practical Approach",Tata McGraw-Hill ,Year 2017.
02. Beard Haley, "Cloud Computing Best Practices for Managing and Measuring Processes for On-demand Computing, Applications and Data Centers in the Cloud with SLAs", EmereoPvt. Limited, Second Edition ,year 2009

WEB RESOURCES:

01. https://en.wikipedia.org/wiki/Cloud_computing
02. https://www.salesforce.com/what-is-cloud-computing/
03. https://www.webopedia.com/TERM/C/cloud_computing.html
04. https://www.javatpoint.com/cloud-computing-tutorial
05. https://dotnettutorials.net/course/cloud-computing/

PEDAGOGY: Chalk and talk, LCD Projector.

COURSE CONTENTS & TEACHING / LEARNING SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
UNIT – I [15 Hrs]				
1.1	Understanding cloud computing	3	Lecture	Black Board
1.2	The network is the computer	4	Lecture	Black Board
1.3	Companies in the cloud	4	PPT	LCD
1.4	How to develop cloud services	4	PPT	LCD
UNIT – II [15 Hrs]				
2.1	Cloud computing for the community- corporation	4	Lecture	
2.2	Using cloud services	6	PPT	LCD
2.3	Exploring online calendar, schedule applications and planning and task management	5	PPT	LCD
UNIT – III [15 Hrs]				
3.1	Collaborating on Event Management	5	Lecture	Black Board
3.2	Collaborating on Project Management	5	Lecture	Black Board
3.3	Collaborating on databased	5	PPT	LCD
UNIT – IV [15 Hrs]				
4.1	Storing and sharing files and other online content	10	PPT	LCD
4.2	Sharing Digital Photographs	5	PPT	LCD

UNIT – V [15 Hrs]				
5.1	Collaborating via Web - Based Communication Tools	5	PPT	LCD
5.2	Collaborating via social networks and Groupware	10	Lecture	Black Board

MAPPING OF COs WITH POs

	PO1	PO2	PO3	PO4	PO5
CO1	1	2	2	2	3
CO2	2	3	1	1	2
CO3	3	3	3	2	2
CO4	3	3	3	3	3
CO5	3	3	3	3	3

3 - Strong 2 - Medium 1- Low

COURSE DESIGNER: Mr.R. Ganesh

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Elective-III **PROJECT** **Code: 212503606**

SEMESTERVI **6 Hrs/Week**

Credits 5

- ✍ Every student must complete a project work in the sixth semester
- ✍ Every student will be assigned to a staff member who will provide necessary guidance for preparation
- ✍ Every student shall be asked maintain work diary relating to the project work
- ✍ Every student must submit the project report at the end of the sixth semester before the last working day
- ✍ The report will be signed by the staff guide and counter signed by the head of the department of Computer Science.

Internal = 40 Marks	External = 60 Marks
Report = 30	Report = 50
Viva = 10	Viva = 10
Total = 40	Total = 60

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Part – IV **MAT LAB PROGRAMMING LAB** **Code: 214403625**

Skill Based Elective - IV **SEMESTER VI** **2 Hrs/Week**

Credits 2

PREAMBLE:

- ✍ ***To inculcate the basic knowledge in MATLAB and to manipulate of images (Enhancement, Filtering, noise removal, edge detection)***

LIST OF PROGRAMS

1. Image Enhancement
    a. Negative Transformation
    b. Log Transformation
    c. Power Law transformation
    d. Global histogram equalization
    e. Local Histogram Equalization
    f. Contrast Stretching

g. Thresholding
    i. Global Thresholding
    ii. Local Thresholding
h. Image Subtraction

2. Image Smoothening
    a. Low pass filter (with Mask size 3,5,7,15,35)
    b. Gaussian filter
3. Median Filter
4. Image Sharpening
    a. High pass filter
    b. Laplacian Filter
    c. High Boost Filter
5. Noise Removal by
    a. Averaging Mask (size 3×3)
    b. Median Filter (size 3×3)
6. Edge Detection
    a. Roberts cross-gradient operators
    b. Sobel operator

REFERENCES:

01. Digital Image Processing using Matlab, Gonzale,Richard E-Woods,Stavens L-Eddins, TMH, 2010, ISBN-13:978-0-07-070262-2, ISBN-10:0-07-070262-4
02. Matlab Programming, Y.Kirani Singh, BB.Chaudhuri, Ed-illustrated, PHI, 2007, ISBN:8120330811, 9788120330818
03. Matlab& its applications in Engineering, RajkamalBansal, Ashok Kumar Goel, Manoj Kumar Sharma, Pearson Education India., 2009, ISBN-8131716813, 9788131716816

WEB RESOURCES:

01.https://www.tutorialspoint.com/matlab/index.htm
02.https://in.mathworks.com/discovery/digital-image-processing.html

PEDAGOGY : Chalk and talk, LCD Projector, Desktop Computer.

COURSE DESIGNER: Mrs. I. PRIYANKA

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PART - IV **LINUX PROGRAMMING LAB** **Code : 218203625**

Skill Based Elective – V **SEMESTER VI** **2 Hrs/Week**

Credits 2

PREAMBLE:

- ***To introduce students the basic concepts of Linux kernel programming techniques.***
- ***To make students learn efficient Linux commands including file operations to interact with OS.***
- ***To understand and make effective use of linux utilities and shell scripting language to solve problems***

01. Find the sum of the digits of a given number
02. Find the reverse of a number
03. Perform basic arithmetic operations using case
04. Display multiplication table
05. Check whether a number is prime or not using while
06. Convert lowercase to uppercase using tr statement
07. Check for an Adam number
08. Check pattern matching using grep command
09. Find the number of users who have logged in
10. Check for palindrome
11. Find age of a person using set date
12. Write a menu driven program to display today's date, Processes of the system, User's of the system, list files of the system

Read 10 names from a file and sort in Ascending order Descending order

13. Write a menu driven program to check for file existence, file Read able or not, file write able or not,

Get mark details of a student and display total and grade

Prepare electricity bill

To set the attributes of a given file

To check the given file is a directory or not

To create and append a file

To compare two files To perform string manipulation1

13.a) Write a shell script to find the LCD (least common divisor) of two numbers.

14. Write a shell script to perform the tasks of basic calculator.
15. Write a shell script to find the power of a given number.'
16. Write a shell script to find the greatest number among the three numbers.
17. Write a shell script to find the factorial of a given number.
18. Write a shell script to check whether the number is Armstrong or not.

REFERENCES:

01. Linux Pocket Guide Essential Commands Daniel J. Barrett - Jun 28, 2016.
02. Gary Cornell, Visual Basic 6.0 from the ground up, TataMcGrawHill, Edition, 31st reprint, New Delhi, 2010.

WEB RESOURCES

01. https://www.geeksforgeeks.org/linux-commands/
02. https://www.javatpoint.com/linux-tutorial/

PEDAGOGY: Chalk and talk, LCD Projector, Desktop Computer.

COURSE DESIGNER: Ms. K.SUGANTHI

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Addl.Cre.Course **COMPUTER LITERACY** **Code: 218003602**

SEMESTER I – VI **1 Hr/Week**

[III YEAR] **Addl. Credit 1**

Common for all UG courses. External Examination will be conducted at the end of third year. (VI Semester)

Preamble:

- ***To have a basic knowledge about the Word, Excel, PowerPoint, Access and Internet.***

UNIT – I: **[18 Hrs]**

MS–Word:

Introduction to Word – Editing a Document – Move and Copy Text – Formatting Text and Paragraph – Finding and Replacing Text and Spelling Checking – Using Table – Tables and other Features – Using Mail Merge.

UNIT – II: **[18 Hrs]**

MS–Excel:

Getting started with Excel – Editing Cell and using Commands and Functions – Moving and Copying, Inserting, Deleting Rows and Columns – Getting help and Formatting a Worksheet – Creating Charts.

UNIT – III: **[18 Hrs]**

MS–Power Point:

Introduction – Creating a New Presentation – Opening a Presentation – Creating a New Slide – Deleting a Slide – Copying a Slide – Slide Numbering – Inserting Picture.

UNIT – IV: **[18 Hrs]**

MS–Access:

Introduction – Starting Access 2000 – Creating a Table – Entering Table Data – Data Filters – Queries – Saving a Database – Existing Ms–Access.

UNIT – V: **[18 Hrs]**

Internet:

Basics of Internet – Addresses and Names for the Internet, Web Objects, and Sites – Email – World Wide Web – File Transfer – The Telnet – Application of Internet.

TEXT BOOKS:

01. Rajkamal, Internet and Web Technologies, Tata McGraw–Hill Publication, New Delhi.
02. Taxali R.K., PC Software for Windows Made Simple, Tata McGraw–Hill Publication, New Delhi.

REFERENCES:

01. Nagapal D.P. Mastering, Ms–Office, Courter, SPB Publications.
02. Sanjay Saxena, Ms–Office 2007 for Everyone, Vikas Publications, New Delhi.