

**ARULMIGU PALANIANDAVAR ARTS COLLEGE FOR WOMEN, PALANI
(AUTONOMOUS)
(Re-accredited with 'A' Grade by NAAC)
Chinnakalayamputhur,Palani – 624615.**

Bachelor of Science (Computer Science)

**SYLLABUS
2016-17 to 2018-19 Batches**



**PG DEPARTMENT OF COMPUTER SCIENCE
Under Choice Based Credit system**

ARULMIGU PALANIANDAVAR ARTS COLLEGE FOR WOMEN
PG DEPARTMENT OF COMPUTER SCIENCE
B.SC COMPUTER SCIENCE

REGULATIONS

1. OBJECTIVES:

- To impart value based education
- To develop communication skills to secure a meaningful career in IT market
- To provide practical experience to complement the theoretical knowledge
- To develop skilled manpower in the areas like Software Engineering, Multimedia and web based applications.
- To provide conceptual grounding in computer usage as well as its practical business application

2. QUALIFICATION FOR ADMISSION:

- Candidate should have passed the Higher Secondary Examination conducted by the board of syndicate as equivalent there to with Mathematics or Computer Science and at least one of the following subject.
 - Physics / Chemistry

3. DURATION OF THE COURSE:

- The students will undergo the prescribed course of study for a period of not less than three academic years (Six semesters).

4. MEDIUM OF INSTRUCTION:

- English

5. GENERAL FRAMEWORK:

- Course study: Part I,II,III, IV,V subjects

6. ELIGIBILITY FOR THE DEGREE:

- Candidates will be eligible if they complete the course with the required credits and pass in the prescribed examinations.

- The candidate requires 75% of attendance to attend the semester examination.
- Three internal tests will be conducted and best of two will be considered for the internal mark consolidation.
- The passing minimum is 40% in each paper.
- To get Graduation, the students should gain minimum of 140 credits.

7. EVALUATION:

- 75% of marks are allotted for external evaluation and 25% of the marks are allotted for internal evaluation in each of the theory subjects.
- 60% of marks are allotted for external evaluation and 40% of the marks are allotted for internal evaluation in each of the practical subjects.
- For each course there will be Continuous Internal Assessment(CIA) and Final Semester Examination

PATTERN OF EVALUATION

	Int.	Ext.	Total
Theory	25	75	100
Practical	40	60	100
Project	40	60	100

INTERNAL ASSESSMENT COMPONENTS

Theory(25 marks)

Test	-	15
Assignment	-	5
Seminar	-	5

25

Practical(40 marks)

Lab sessions	-	10
Record	-	10
Model test	-	20

40

8 i) INTERNAL QUESTION PATTERN (For Core, Allied and Elective Papers)**Time: 1 Hour****Total Marks: 15****Section A**Answer **ALL** questions (3*1=3 Marks)**Section B**Answer any **ONE** out of **TWO** questions (1*2=2 Marks)**Section C**Answer any **ONE** out of **TWO** questions (1*4=4 Marks)**Section D**Answer any **ONE** out of **TWO** questions (1*6=6 Marks)**8 ii) INTERNAL QUESTION PATTERN (For SBC & NME Papers)****Time: 1 Hour****Total Marks: 15 Marks****Section A**Answer any **TWO** out of **THREE** questions (2*2=4 Marks)**Section B**Answer any **ONE** out of **TWO** questions (1*4=4 Marks)**Section C**Answer any **ONE** out of **TWO** questions (1*7=7 Marks)

8. iii) EXTERNAL QUESTION PATTERN (For Core, Allied and Elective Papers)**Time: 3 Hours****Total Marks: 75****Section A**Answer **ALL** questions**(10*1=10 Marks)**

This may include multiple choices, True or False, Fill ups, Very Short answers and Simple Examples

Section BAnswer any **FIVE** out of **SEVEN** questions**(5*3=15 Marks)**

(Each Unit must have one or Two Questions)

Section CAnswer any **FOUR** out of **SIX** questions**(4*5=20 Marks)**

(Each Unit must have one or Two Questions)

Section DAnswer any **THREE** out of **FIVE** questions**(3*10=30 Marks)**

(One Question from each Unit)

8iv) EXTERNAL QUESTION PATTERN (For SBC & NME Papers)**Duration: 3 Hours****Total Marks: 75****Section A**Answer any **FIVE** out of **EIGHT** questions**(5*3=15 Marks)**

(Each Unit must have one or Two Questions)

Section BAnswer any **FIVE** out of **EIGHT** questions**(5*6=30 Marks)**

(Each Unit must have one or Two Questions)

Section CAnswer any **THREE** out of **FIVE** questions**(3*10=30 Marks)**

(One Question from each Unit)

ARULMIGU PALANIANDAVAR ARTS COLLEGE FOR WOMEN,PALANI**(AUTONOMOUS)****Accredited with 'A' Grade by NAAC****(Affiliated To Mother Teresa Women's University)****Syllabus for****B.Sc., Computer Science (2016-17 and onwards)****BOARD OF STUDIES / MEETING - 29.02.2016****UNIVERSITY NOMINEE****Dr.(Mrs)M.Pushparani ,M.C.A.,Ph.D.,****Professor and Head,****Department of Computer Science,****Mother Teresa Women's University, Madurai centre,****Madurai.****SUBJECT EXPERTS**

- 1. Dr.(Mr.) .K. Thangadurai,M.Sc.,M.C.A.,M.Phil.,Ph.D.,**
Assistant professor&Head,
PG & Research Department of Computer Science,
Government Arts College(Autonomous),
Karur -639005.
- 2. Mr .G. Marimuthu,M.C.A.,M.Phil,**
Assistant Professor & Head,
Department of Computer Science(UG &PG),
Yadava College(Mens) ,
Madurai -625014.

**ARULMIGU PALANIANDAVAR ARTS COLLEGE FOR WOMEN, PALANI
(AUTONOMOUS)**

**B.Sc Computer Science – CBCS
(Syllabus for 2016-2017 to 2018-19 batches)**

Semester	Part	Title of Paper	Hours	Marks			Credits
				INT	EXT	TOT	
I	PART I	Tamil	6	25	75	100	3
	PART II	English	6	25	75	100	3
	PART III	Core I – Programming in ‘C’	5	25	75	100	5
		Core II – Lab I- Programming in ‘C’	5	40	60	100	3
		Allied I – Digital Electronics	5	25	75	100	5
	PART IV	Skill Based Course-I : Basic Computational Skills	2	25	75	100	2
		Value Education – Yoga Practical	1	-	-	-	-
		TOTAL		30			600
II	PART I	Tamil	6	25	75	100	3
	PART II	English	6	25	75	100	3
	PART III	Core III :Object Oriented Programming with C++	5	25	75	100	5
		Core IV: Lab II – C++ Programming With Data Structures	5	40	60	100	3
		Allied II : Data Structures	5	25	75	100	5
	PART IV	Skill Based Course -II Office Automation Lab	2	40	60	100	2
		Value Education – Theory	1	25	75	100	2
				30			700

III	PART III	Core V – Java Programming	5	25	75	100	4	
		Core VI – Computer Organization	6	25	75	100	4	
		Core VII - Operating System	5	25	75	100	4	
		Core VIII – Lab III : Java Programming	5	40	60	100	3	
		Allied III- Statistics	5	25	75	100	5	
	PART IV	Skill Based Course – III Entrepreneurship Development	2	25	75	100	2	
		Non Major Elective – I- Computer Fundamentals and internet Basics (Offered to other department Students)	2	25	75	100	2	
		Total	30			700	24	
	IV	PART III	Core IX –Relational Database Management System	6	25	75	100	4
			Core X – Computer Graphics and Multimedia	6	25	75	100	4
Core XI– Lab IV : Web Programming			5	40	60	100	3	
Core XII – Lab V: Relational Database Management System			5	40	60	100	3	
Allied IV – Resource Management Techniques			6	25	75	100	5	
PART IV		Skill Based Course – IV : Multimedia Lab	2	40	60	100	2	
PART V		Extension Activities	-	-	-	100	1	
		Total	30			700	22	

V	PART III	Core XIII – Visual Programming	5	25	75	100	5
		Core XIV– System Programming	6	25	75	100	5
		Core XV– Lab VI : Visual Programming	5	40	60	100	3
		Elective - I	5	25	75	100	5
		Elective - II	6	25	75	100	5
	PART IV	Skill Based Course – V Quantitative Aptitude	2	25	75	100	2
	Total	30			600	25	
VI	PART III	Core XVI – Computer Networks	6	25	75	100	5
		Core XVII – Data Mining	5	25	75	100	4
		Core XVIII – Project Work	7	40	60	100	5
		Elective - III	6	25	75	100	5
	PART IV	Skill Based Course – VI VB.Net Lab	2	40	60	100	2
		Environmental Studies	2	25	75	100	2
		Non Major Elective – II Web designing (Offered to other department Students)	2	25	75	100	2
		Total	30			700	25

TOTAL NUMBER OF CORE PAPERS :18(12 Theory +6 Lab)

ELECTIVE : 03

PROJECT :01

TOTAL PAPAERS :22

TOTAL MARKS : 4000

TOTAL CREDITS :140

Credit Table:

Semester		I	II	III	IV	V	VI	TOTAL
Part –I		3	3	-	-	-	-	06
Part II		3	3	-	-	-	-	06
CORE	Theory (49 Credits)	5	5	12	8	10	9	72
	Project (5 Credits)	-	-	-	-	-	5	
	Lab (18 Credits)	3	3	3	6	3	-	
Allied		5	5	5	5	-	-	20
Elective		-	-	-	-	10	5	15
SBC		2	2	2	2	2	2	12
NME		-	-	2	-	-	2	04
EVS		-	-	-	-	-	2	02
Value Education		-	2	-	-	-	-	02
Extn.Activity		-	-	-	1	-	-	01
Total		21	23	24	22	25	25	140

NME Papers: (Offered to other department Students)

1. Computer Fundamentals and internet Basics
2. Web designing.

Elective Papers:**Elective I**

1. Software Engineering
2. Pc Maintenance and Trouble Shooting
3. Object Oriented Analysis and Design

Elective II

1. Numerical Methods
2. Client Server Computing
3. Principles of Information Technology

Elective III

1. Software Testing
2. Digital Image Processing
3. Mobile Computing

CORE I
PROGRAMMING IN 'C'

Hours: 5

Credits : 5

Semester: I

Objectives:

1. To learn about C Programming Language
 2. To discuss the various concept of the C Language
 3. To Develop Programming Skills in writing Simple Programs.
-

UNIT I

History of C – Basic Structure of C Programs – Character Set –C Tokens – Keywords and Identifiers – Constants and Variables – Data Types – Storage Class - Operators and Expressions.

UNIT II

Managing Input and Output Operations - Decision Making and Branching: IF statement – Simple IF Statement-The IF....ELSE Statements - Nesting of IF.....ELSE Statements – The Switch Statement – The? : Operator - The GOTO Statement – **Decision Making and Looping** – The WHILE Statement – The DO Statement – The FOR Statement-Jumps in LOOPS.

UNIT III

Arrays: One-dimensional Arrays – Two-dimensional Arrays – Multi-dimensional Arrays – Character Arrays and Strings.

User - defined Function – Elements of user defined functions – definition of functions – function calls – Functions declaration – category of functions - Nesting of functions – Passing arrays to functions – Scope, visibility and life time of variables.

UNIT IV

Structures: Defining a Structure – Declaring Structure variables – Accessing structure members – structure initialization – copying and comparing Structure Variables- Arrays of structure – Arrays within structure – Structure within structure.

Union: introduction- size of structure – Bit fields.

Pointers: Accessing the address of a variable – declaration – initialization – accessing a variable through its pointer – pointer expression – pointers & characters string – Array of pointers – Pointers as functions arguments – pointers and Structures.

UNIT V

File Management : Introduction – Defining and Opening a File – Closing a File – Input / Output Operations on Files - Error Handling During I/O Operation – Random Access to Files – Command Line Arguments.

Text Book:

- ❖ Programming in ANSI ‘C’, E.Balagurusamy, Fouth Edition, Tata McGraw – Hill Publishing Company, 2009.

Reference Book:

- ❖ “Let us C” Yashwanth Kanetkar – BPB Publication

Core II**LAB I - PROGRAMMING IN 'C'****Hours: 5****Credits : 3****Semester : I**

Program List:

- To find the Sum of individual Digits.
- To reverse a given Digit.
- Prime Number Series.
- Armstrong Number Series.
- Matrix Manipulation and Transpose of a Matrix.
- Palindrome using String.
- String Concatenation, Comparison and Length.
- Count number of words, character and lines in a sentence.
- Standard deviation ,Mean
- Fibonacci using Recursion.
- Swapping of numbers using Pointers.
- To prepare student Mark List using Structures.
- To prepare Electricity Bill using Files.

ALLIED I
DIGITAL ELECTRONICS

Hours: 5

Credits : 5

Semester: I

Objectives:

1. To Give basic Knowledge on Digital Principles
2. To Give Knowledge on Digital Circuits.

UNIT I

Number Systems: Introduction – conversion – Floating point representation of Numbers – Binary Arithmetic Operations - 1's & 2's Complement – 9's & 10's complement – Binary Coded Decimal.

Codes: Weighted Binary Codes – Non weighted Codes – Error detecting codes – Error Correcting codes – Alpha numeric codes.

UNIT II

Boolean algebra and Minimization Techniques: Introduction – Boolean Logic Operations – Basic Laws of Boolean Algebra – Demorgan's Theorems– Sum of Products and Product of Sums – Karnaugh Map.

UNIT III

Logic Gates: Introduction – Positive and Negative Logic Designation – Logic Gates.

Arithmetic: Half Adder – Full Adder –Half Subtractor- Full Subtractor.

UNIT IV

Combinational Circuits: Multiplexer: Basic Four – Input Multiplexer – 8 to 1 Multiplexer – 16 to 1 Multiplexer.

De-Multiplexer: 1 to 4 De-Multiplexer – 1 to 8 De-Multiplexer – 1 to 16 De- Multiplexer.

UNIT V

Flip – Flops: Introduction - S-R Flip – Flops - D Flip – Flops - J-K Flip – Flops - T Flip – Flops.

Text Book:

- ❖ Digital Circuits and Design by S.Salivahanan and S.Arivazhagan, Third Edition, Vikas Publishing House Pvt. Ltd. New Delhi, 2007

Reference Book:

- ❖ Digital Electronics Principles, Devices, Applications by Anil K.Maini, Wiley Publications, 2007

SKILL BASED COURSE- I**BASIC COMPUTATIONAL SKILLS****Hours: 2****Credits : 2****Semester : I**

UNIT I

Introduction to Computers: Introduction - Importance of Computer – Characteristics of Computer – Classification of Computers – Uses of Computers - Generation of Computers.

UNIT II

Classification of Digital Computer System: Introduction – Microcomputer –Mini Computer – Main Frame Computers - Super Computers – Network Computers.

UNIT III

Anatomy of Digital Computers: Parts of Computers: Processor/CPU-Memory – Input Devices – Output Devices – Storage Devices.

UNIT IV

Introduction to Computer Software: Introduction - Computer Software- Hardware software interaction – Classification of Software-Operating System – Utilities-Compilers and interpreters.

UNIT V

Computer Applications in Bank, Textiles & Insurance.

TextBook:

- ❖ Fundamentals of Information Technology , Alexis Leon & Mathews Leon

CORE III**OBJECT ORIENTED PROGRAMMING WITH C++****Hours: 5****Credits : 5****Semester: II****Objectives:**

1. To discuss OOPS Concepts.
 2. To deal with I/O facilities, control structures which are important for a OOPS programming language.
 3. To develop programming skills in writing simple programs.
-

UNIT I

Principles of OOP: OOP Paradigm – Basic Concepts of OOP – Benefits of OOP – Object Oriented Languages – Applications of OOP.

Token, Expressions and Control Structures: Introduction – Tokens - Keywords, - Identifiers and Constants – Data Types – Variables – Operators – Manipulators - Expressions - Control Structures in C++.

UNIT II

Functions in C++: Introduction - Main Function – Function Prototyping – Call by Reference –Return by Reference - Inline Functions - Function Overloading – Friend and Virtual Functions.

UNIT III

Classes and Objects - Constructors and Destructors - Operator Overloading and Type Conversions.

UNIT IV

Inheritance: Introduction - Single Inheritance – Multilevel Inheritance –Multiple Inheritance- Hierarchical Inheritance – Hybrid Inheritance – Virtual Base Classes – Abstract Classes.

Pointers , Virtual Functions and Polymorphism - Managing Console I/O Operations

UNIT V

Working with Files – Classes for File Stream Operations – Opening and Closing a File – Detecting end-of-file – File Pointers – Updating a File – Error handling During File Operations – Command Line Arguments.

Text Book:

- ❖ Object Oriented Programming with C++ by E.Balagurusamy, Fourth Edition, Tata McGraw – Hill, New Delhi 2009.

Reference Book:

- ❖ “C++: The Complete Reference”, Herbert schildt, Fourth Edition, McGraw – Hill Publications 2003.

CORE IV - LAB II**C++ PROGRAMMING WITH DATA STRUCTURES****Hours: 5****Credits : 3****Semester: II**

Program List

1. Print the Student Name, Register Number, Marks, Total and Average using Array Of Objects.
2. Sum of the given numbers using Function Overloading
 - a. Two Integer Values
 - b. Three Integer Values
 - c. Two double Values
3. Banking Operations using Constructors.
4. Sum of the two values using '+' operator overloading using
 - a. Two integer values
 - b. Two floating values
5. Find the Arithmetic operations using Inline function.
6. Write a C++ program to apply single inheritance and assume the fields by your own.
7. Write a C++ program to apply multiple inheritances and assume the fields by your own.
8. Write a C++ program to apply the 'this' pointer to greatest age among them.
9. Write a C++ program to apply run time polymorphism to display the book details.
10. Create a sequential file with fields with student name, register number C++ Mark, Maths mark, Science mark and write another program to access the file and calculate total mark, average and result.
11. Stack Operations
12. Queue Operations
13. Binary Search
14. Sorting

ALLIED II**DATA STRUCTURES****Hours: 5****Credits : 5****Semester: II****Objectives:**

1. To give knowledge on data, files, Arrays, Records and pointers.
2. To learn about Stack, Queue, Linked list and Trees.
3. To learn about Data Structures representations in Memory, Operators and Applications.

UNIT I

Introduction and Overview: Introduction – Basic Terminology; Elementary Data organization – Data Structures-Data Structure Operations. Algorithms: Complexity - Time-space Tradeoff.

UNIT II

Arrays, Records and Pointers: Introduction – Linear Arrays – Representation of Linear Arrays in Memory – Representation of Linear Arrays in Memory – Traversing Linear Arrays – Inserting and deleting .Sorting :Bubble Sort – Searching : Linear Search – Binary Search.

UNIT III

Linked Lists: Introduction - Linked Lists –Representation of Linked List in Memory – Traversing a Linked Lists – searching a Linked List. Memory allocation: Garbage Collection – Insertion into a Linked List –Deletion from a Linked List – Header Linked List –Two way Lists.

UNIT IV

Stacks, Queues: Stacks – Array Representation of Stacks – Linked Representation of Stacks - Arithmetic expressions: Polish Notation – Queues – Linked Representation of Queues.

UNIT V

TREES: Introduction – Binary Trees – Representing Binary Trees in Memory – Traversing Binary Trees – Traversal Algorithms using Stacks – Header Nodes: Threads – Binary Search Trees – Searching and Inserting in Binary Search Trees – Deleting in a Binary Search Tree.

Text Book:

- ❖ Data Structures Revised First Edition by Seymour Lipschutz – McGraw Hill Education Private Limited,2006.

Reference Book:

- ❖ Fundamentals of Data Structures by Ellis Horowitz, Sartaj Sahni – Galgotia Publicaitons, 1998.

SKILL BASED COURSE- II**OFFICE AUTOMATION LAB****Hours: 2****Credits : 2****Semester: II**

Program List**MS – Word**

1. Formatting the Text
2. Macro Creation
3. Table Creation
4. Mail Merge

MS – Powerpoint

5. Scenery Creation
6. Creating Presentation using Wizard
7. Slide show on College Courses
8. Creation Charts using Power Point

MS - Excel

9. Employee Payroll
10. Inventory Control
11. Chart Creation using Excel

MS - Access

12. Students Mark List
13. Employee Payroll
14. Form Creation

CORE V**JAVA PROGRAMMING****Hours: 5****Credits : 4****Semester: III****Objectives:**

1. To inculcate knowledge on Java Programming Concepts.
 2. To create wide range of Applications and Applets using Java.
-

UNIT I

Fundamentals of Object Oriented Programming: Introduction – Object Oriented Paradigm – Basic concepts of OOP – Benefits of OOP – Applications of OOP. Java Evolution.

Over View of Java Language:

Introduction-Simple Java Program – Java Program Structure - Java Tokens - Java Statements - Implementing a Java Program - Java Virtual Machine - Command Line Arguments - Constants, Variables and Data Types.

UNIT II

Classes, Objects and Methods: Introduction-Defining a Class- Static Members-Overriding Methods-Final Variables and Methods-Final Classes- Finalizer Methods-Abstract Methods and Classes –Visibility Control.

Interfaces: Introduction-Defining Interfaces-Extending Interfaces - Implementing Interfaces- Accessing Interface Variables.

UNIT III

Packages: Java API Packages-Using System Packages-Creating Packages-Accessing a Package-Using a Package-Adding a Class to Package-Hiding Classes.

Multithreading Programming: Creating Threads - Extending the Thread Class-Stopping and Blocking a Thread - Life Cycle of a Thread-Thread Exceptions-Thread Priority-Synchronization-Implementing the ‘Runnable’ Interface - Managing Error and Exceptions.

UNIT IV

Applet Programming: Introduction-Preparing to Write Applets-Applet Life Cycle-Designing a web page-Passing Parameters to Applets. Event Handling.

Graphics Programming: The Graphics Class-Lines and Rectangles-Circle and Ellipses-Drawing Arcs-Drawing Polygons-Line Graphs-Using Control Loops in Applets.

UNIT V

Managing Input/Output Files in Java: Introduction - Concept of Streams - Stream Classes - Byte Stream Classes - Character Stream Classes - Input/Output Exceptions - Creation of Files - Reading/Writing Characters - Reading/Writing Bytes - Random Access Files.

Text Book:

- ❖ Programming with JAVA – E.Balagurusamy,Fourth Edition. Tata McGraw – Hill, New Delhi 2010.

Reference Book:

- ❖ “Java 2: The Complete Reference” by Herbert Schildt, Fifth Edition, Tata McGraw – Hill 2002.

CORE VI
COMPUTER ORGANIZATION

Hours: 6

Credits : 4

Semester: III

Objectives:

1. To know about the basic structure of hardware and software.
2. To know input output organization and memory subsystem.

UNIT I

Basic Structure of Computers: Computer Types - Functional Units - Basic Operational Concepts - Bus Structures – Software – Performance – Processor Clock – Basic Performance Equation.

Memory Location and Address: Byte Addressability – Big Endian and Little Endian Assignments – Word Alignment.

UNIT II

Instructions and Instruction Sequencing: Assembly Language Notation – Basic Instructions Type – Addressing Modes.

Input-Output Organization: Accessing I/O devices - Interrupts – Interrupts Hardware - Enabling and Disabling Interrupts - Handling Multiple Devices – Exceptions - Direct Memory Access.

UNIT III

Memory System: Basic Concepts – Semi Conductor RAM Memories - Static Memories- Asynchronous DRAMs – Read - Only Memories. **Cache Memories:** Introduction - Mapping Functions-Replacement Algorithm. **Virtual Memories:** Address Translation.

UNIT IV

The Processing Unit: Fundamentals Concepts: Register Transfers – Performing. Arithmetic or Logic Operations - Fetching a word from Memory-Storing a word into the Memory.

UNIT V

Pipelining: Basic Concepts - Role of Cache Memories – Pipeline Performance – Data Hazards – Operand Forwarding - Instruction Hazards.

Text Book

- ❖ Computer Organization by V.Carl Hamacher, Zvonko G. Vranesic,Safwat G. Zaky- 5th Edition, McGraw Hill Publication, 2002.

Reference Book:

- ❖ Computer System Architecture by Morris Mano,Prentice Hall of India,2001

CORE VII**OPERATING SYSTEM****Hours: 5****Credits : 4****Semester: III****Objectives:**

1. To teach the Fundamental Aspect of Operating System
2. To give sufficient knowledge on various system Resources
3. To know about Security and Production Policies.

UNIT I**Introduction:** What is an Operating System – Mainframe Systems – Distributed Systems**Processes:** Process Concept – Process Scheduling – Interprocess Communication.**UNIT II****Threads:** Overview – Multithreading Models. **CPU Scheduling:** Basic Concepts – Scheduling Criteria – Scheduling Algorithms.**UNIT III****Process Synchronization:** Background – The Critical Section Problem – Synchronization Hardware – Semaphores.**Deadlock:** System Model – Deadlock Characterization – Methods For Handling Deadlocks – Deadlock Prevention – Deadlock avoidance – Deadlock detection – Recovery from deadlock**UNIT IV****Memory Management:** Swapping – Contiguous Memory allocation – Paging – Segmentation – Segmentation with Paging – Virtual Memory: Demand Paging**UNIT V****Security:** User Authentication – Cryptography**File System Interface:** File Concept – File Access Methods – Directory Structure.**Text Book:**

- ❖ Operating Systems Concepts – Silberschatz , Galvin, Gagne, Sixth Edition, John Wiley & Sons, Inc.

Reference Book:

- ❖ Operating Systems (Concepts and Design), Milan Milenkovic, Second Edition, Tata McGraw -Hill

CORE VIII - LAB III**JAVA PROGRAMMING****Hours: 5****Credits : 3****Semester: III**

Program List:

1. To perform addition of complex numbers using classes and objects.
2. To perform multiplication of matrices using classes and objects.
3. To perform volume calculation using method overloading.
4. Using command line arguments, test if the given string is palindrome or not.
5. Using multilevel inheritance process student marks.
6. Implement multiple inheritance for payroll processing.
7. Package illustration.
8. To Illustrate built-in exceptions (any four).
9. To Create multiple threads
 - a. Using Thread class
 - b. Using Runnable interface
10. String manipulation using string methods.
11. Applet – Graphical methods
12. Write a Java Program which open an existing File and append text to that file.

ALLIED-III**STATISTICS****Hours: 5****Credits : 5****Semester : III****Objectives:**

1. To acquire the basic knowledge of Probability
2. To learn the applications of Statistical Methods.

UNIT I

Measures of Central Tendency - Mean – Median – Mode – Measures of dispersion – Standard deviation – Variance – Simple Problems Only.

UNIT II

Correlation and Regression: Introduction – Correlation – Solved Problems. Rank Correlation: Spearman's formula for Rank Correlation – Solved Problems Only.

UNIT III

Probability-Random Experiment-Trial-Relative Frequency – Uniform Probability Function – Mutually disjoint – Conditional Probability – Properties of Independent events – Baye's Theorem-Boole's in Equality.

UNIT IV

Binomial Distribution: Distribution – Mode of Binomial Distribution – fitting of binomial distribution – Solved Problems Only.

UNIT V

Poisson Distribution : Definition – Mean – Standard Deviation – Mode – fitting of Poisson Distribution to the Observed data- Solved Problems Only.

Text Book:

- ❖ STATISTICS by Dr.S.Arumugam, A.Thangapadisaac, New Gamma Publishing House, Palayamkottai.

Reference Book:

- ❖ "STATISTICAL METHODS" by S.P.Gupta S.Chand & sons.

Non Major Elective - I**COMPUTER FUNDAMENTALS AND INTERNET BASICS****(Offered to Other Department Students)****Hours: 2****Credits : 2****Semester: III****Objectives:**

1. To give basic Computer Knowledge.
2. To Know the Internet Basis.

UNIT I

Introduction to Computers – Definition and Characteristics – Functioning of a Computer – Generations of a Computer – Hardware - Software.

UNIT II

Input Devices: Keyboard- Mouse – Trackball- Joystick – Digitizing Tablet – Scanners – Digital Camera- MICR –OCR-OMR-Touch Screen.

UNIT III

Output Devices: Monitor - Printers: Impact and Non-Impact printers.

UNIT IV

Memory: Primary Memory: RAM and ROM.

Secondary Memory: Floppy disk, Hard Disk & CD-ROM.

UNIT V

Internet Basics: World Wide Web – Search Engines – Web Browsers.

Text Book:

- ❖ Donald H.Sanders, Computer Today – McGraw Hill, Second Edition.
- ❖ Yaung Kaiseng using the internet the easy way – Minerva Publications, reprint 2003.

Reference Book:

- ❖ Fundamentals of Information Technology , Alexis Leon & Mathews Leon

CORE IX**RELATIONAL DATABASE MANAGEMENT SYSTEM****Hours: 6****Credits : 4****Semester : IV****Objectives:**

1. To know the Core concepts of RDBMS
2. To create and connect the multiple tables.
3. To have knowledge on Normalization Techniques.

UNIT – I

Introduction: Database System Applications – Purpose of Database Systems – View of Data – Database Languages – Transaction Management – Database users and Administrators – Overall System Structure.

UNIT – II

Relational Model: Entity – Relationship Model: Basic Concepts – Design Issues – Mapping cardinalities – Keys – E – R Diagrams – Weak entity sets – Extended E – R feature

UNIT – III

Data Normalization: Pitfalls in Relational Database Design- Entity – Decomposition – Functional Dependencies – Normalization – First Normal Form – Second Normal Form – Third Normal Form – Boyce – Codd Normal Form – Fourth Normal Form – Fifth Normal Form – Denormalization

UNIT – IV

PL/SQL: A Programming Language: History – Fundamentals – Block Structure – Comments – Data Types – Other Data Types – Declaration – Assignment operation – Bind variables – Substitution Variables – Printing – Arithmetic Operators.

Control Structures and Embedded SQL: Control Structures – Nested Blocks – SQL in PL/SQL – Data Manipulation – Transaction Control statements.

UNIT – V

PL/SQL Cursors and Exceptions: Cursors – Implicit & Explicit Cursors and Attributes – Cursor FOR loops – SELECT...FOR UPDATE – WHERE CURRENT OF clause – Cursor with Parameters – Cursor Variables – Exceptions – Types of Exceptions (Predefined Oracle Server Exceptions, User Defined Exceptions).

PL/SQL Composite Data Types: Records – Tables – Varrays . **Named Blocks:** Triggers

Text Books:

- ❖ Database System Concepts, Abraham Silberschatz, Henry F.Korth, S.Sudarshan , TMH 5th Edition (*UNIT s – I, II,III- Chapter – 7(7.1,7.2,7.3)*)
- ❖ Database Management Systems, Alexis Leon, Mathews Leon , Lieon Vikas (*UNIT – III – Chapter -11*)
- ❖ Database Systems Using Oracle, Nilesh Shah, 2nd edition, PHI.
(*UNIT – IV: Chapters 10 & 11 UNIT – V: Chapters 12, 13 & 14*)

Reference Book:

- ❖ Database Management Systems, Gerald V. Post, 3rd Edition, TMH.

CORE X**COMPUTER GRAPHICS AND MULTIMEDIA****Hours:6****Credits :4****Semester: IV****Objectives:**

1. To offer Concepts on basic Graphical Techniques.
2. To study about Two Dimensional Transformations.

UNIT I

Output Primitives: Points and Lines – Line - Drawing Algorithms – Loading the frame Buffer – Line function – Circle-Generating Algorithms. **Attributes of Output Primitives:** Line Attributes – Curve Attributes – Color and Grayscale Levels – Area-Fill Attributes – Character Attributes.

UNIT II

Geometric Transformations: Basic Transformations – Matrix Representations and Homogeneous Coordinates – Composite Transformations – Other Transformations.

UNIT III

Two Dimensional Viewing: The Viewing Pipeline – Viewing Co-ordinate Reference Frame – Window-to-Viewport Co-ordinate Transformation – 2D Viewing Functions – **Clipping Operations:** Point Clipping – Line Clipping: Cohen- Sutherland Line Clipping, Liang – Barsky Line Clipping – Curve Clipping – Text Clipping.

UNIT IV

Text: Types of Text – Unicode Standard – Font – Insertion of Text – Text Compression – File Formats.

Image: Image Types – Seeing Color – Color Models.

UNIT V

Audio : Introduction – Acoustics – Nature of Sound Waves – Fundamental characteristics of Sound – Microphone – Amplifier – Loudspeaker – Audio Mixer – Digital Audio.

Video: Analog Video Camera – Transmission of Video Signals – Video Signal Formats – Television Broadcasting Standards – PC Video - Video Editing – Video Editing Software.

Text Books:

- ❖ Computer Graphics – Donald Hearn, M.Pauline Baker, 2nd Edition
- ❖ Principles of Multimedia – Rajan Parekh, 2007, TMH

Reference book:

- ❖ Computer graphics: principles and practice- Foley, VanDam, Feiner, and hughes, 3rd edition

CORE XI - LAB IV
WEB PROGRAMMING

Hours:5

Credits : 3

Semester: IV

Program List:

1. Simple HTML Page using formatting tags.
2. Simple HTML Page using Frames
3. Simple Web page using Tables
4. Website Design for a Department (or) College (or) Company etc.
5. Java Script for a Mathematical Calculator
6. Java Script – Number Puzzle
7. Java Script -Magic Square
8. Java script-Games using Random number generation
9. Online Quiz using Java Script
10. Validation of name, mobile number, date of birth, email id using Java Script
11. Online Quiz using JSP
12. Arithmetic operations using JSP

CORE XII - LAB V**RELATIONAL DATABASE MANAGEMENT SYSTEM****Hours: 5****Credits : 3****Semester: IV**

Program List

- DDL, DML, DCL Commands
- Logical, Comparison, Conjunctive & Arithmetic Operators.
- **Retrieving rows with Characters functions:**
 - CONCAT (Concatenation)
 - REPLACE
 - SUBSTR (Substring)
 - LENGTH
- **Retrieving rows with Aggregate functions:**
 - GROUP BY
 - HAVING
- **Retrieving rows with date functions & number function:**
 - SYSDATE
 - ABS, FLOOR, CEIL, ROUND, POWER
- **JOINS:**
 - Union, Intersection & Union all
 - Simple Join
 - Self-Join
 - Outer Join
- **CONSTRAINTS:**
 - Domain Integrity (Not Null, Check)
 - Entity Integrity (Unique & Primary Key)
 - Referential Integrity (Foreign Key)
- **VIEW: PL/SQL**
- PL/SQL Programs with Control Structures
- PL/SQL Programs with Exception Handling
- PL/SQL Programs with Cursors
- Creating & Calling Procedures

ALLIED IV**RESOURCE MANAGEMENT TECHNIQUES****Hours: 6****Credits : 5****Semester: IV****Objectives:**

1. To give basic ideas about Operational Research.
 2. To solve problems using Simplex Method, Big-M Method etc.,
 3. To solve Transportation Problems and Assignment Problems.
-

UNIT I

Operation research: Introduction – Origin and development – Nature and features – Modeling – Advantages and Limitations of Models – Applications of Operation Research.

Linear Programming Problem: Mathematical Formulation - Graphical Solution Method: Exceptional Cases – Canonical and Standard forms of LPP.

UNIT II

Linear Programming Problem - Simplex method: Introduction – Computational procedures – Use of Artificial Variables – Degeneracy in Linear Programming.

UNIT III

Transportation problem : Introduction – LP Formulation of the Transportation Problem- Solution of a TP – Finding an I.B.F.S – Test for Optimality - Degeneracy in TP – MODI Method .

Assignment Problem: Mathematical Formulation of the problem – Solution methods of AP – Special cases in AP – Travelling Salesman Problem.

UNIT IV

Games and Strategies : Two –Person Zero –Sum Games – The Maximin – Minimax Principle –Games without Saddle Points – Mixed Strategies –Graphic Solution of $2 \times n$ and $m \times 2$ Games – Dominance Property.

UNIT V

Network Scheduling by PERT / CPM : Introduction – Network – Logical Sequencing – Rules of Network Construction - Critical Path Analysis – Probability considerations in PERT – Distinction between PERT and CPM.

Text Book:

- ❖ “Operations Research” kanti swarup P.K Gupta, Manmohan sultan chand & sons, Newdelhi

Reference Book:

- ❖ Introduction to operations research , P.K. Gupta & D.S. Hira, chand & sons, Newdelhi
- ❖ Resource management techniques, Ganapathy
- ❖ Linear Programming, Arumugam, New Gamma Publishing House, Palayamkottai

Distribution of Marks:(For Question Paper Setting)

1. 25% of Question from Theory
2. 75% of Question from Problems

SKILL BASED COURSE-IV**MULTIMEDIA LAB****Hours: 2****Credits : 2****Semester : IV**

Program List :

1. Scenery Creation.
2. Greeting Card Design.
3. Visiting Card Design.
4. Motion Tweeing.
5. Shape Tweeing.
6. Animation Using Mask Layer.
7. Animation Using Guide Layer.
8. Transforming Object Using Buttons.
9. Screen Creation.
10. Greeting Design & Star Blinking.

CORE XIII**VISUAL PROGRAMMING****Hours:5****Credits: 5****Semester: V****Objectives**

1. To know the core concepts of Visual Programming.
2. To give practice in form designing.
3. To create database tables and create reports.

UNIT I

Introducing Visual Basic: What is VB? – Event and Event Procedures – Object-Related Concepts –VB program Development Process – Required Computer Skills – Logical Program Organization – VB Program Components – VB Environment – Opening, Saving, Running a VB Project – Getting Help – Sample VB project.

Visual Basic Fundamentals: Numeric Constants – String Constants – Variables – Data Types and Declarations – Operators and Expressions – Hierarchy of Operations – Inserting Parentheses – Special Rules concerning Numeric Expressions – String Expressions – Assigning Values to Variables – Displaying output – Library Functions – Program Comments.

Branching and Looping: Relational operators and Logical Expressions – Logical Operators – Branching with If-Then blocks –Branching with If-Then-Else blocks – Selection: Select Case – Looping with For – Next - Looping with Do – Loop - Looping with While - Wend – Stop statement.

UNIT II

Visual Basic control Fundamentals: VB Control tools – Control tool Categories – Working with Controls – Naming Forms and Controls – Assigning Property values to Forms and Controls – Executing commands – Displaying Output data – Entering Input Data – Selecting Multiple Features,

Exclusive Alternatives, from a List – Assigning Properties collectively –Generating Error Messages – Creating timed Events – Scroll Bars.

UNIT III

Menus and Dialog Boxes: Building Drop-Down Menus – Accessing a Menu from the Keyboard – Menu Enhancements – Submenus – Pop-Up Menus – Dialog Boxes – More about MsgBox Function – The InputBox function.

UNIT IV

Procedures: Modules and Procedures – Sub Procedures – Event Procedures – Function Procedures – Scope – Optional Arguments

Arrays: Characteristics – Declarations – Processing –Passing Arrays to Procedures – Dynamic Arrays – Array – related Functions – Control Arrays –Looping with for Each-Next.

UNIT V

Data Controls and Reporting: Record Sets, ADODC, DAO, and Data Control (Accessing records, Adding, Navigation, Editing and Deleting). Database Reporting – Data Environment Designer, Creating Data Report.

Text Books:

- ❖ Visual Basic – Byran S.Goftfried, Schaum’s outline series, TMH
(UNIT:I Chapters : 1,2 & 3, UNIT:II Chapter 4 UNIT:III Chapter 5 & 6 UNIT:IV Chapter 7 &8)
- ❖ Visual Basic 6 Programming Bible Eric A Smith ,Valor Whisher ,Hank Marquis – UNIT V

Reference Book:

- ❖ Visual Basic 6 from Ground up, CORNELL, Tata Mc-Graw Hill Publications

CORE XIV**SYSTEM PROGRAMMING****Hours:6****Credits: 5****Semester: V****Objectives:**

1. Enable the Student to get sufficient knowledge on various system resources.
-

UNIT I

Introduction: System Software and Machine Architecture – SIC, CISC – RISC machines.

UNIT II

Assemblers: Basic Assembler Functions – Machine Dependent, Independent Assembler features – Assembler design options.

UNIT III

Loaders and Linkers: Basic Loader Functions – Machine Dependent, Independent Loader features – Loader design options.

UNIT IV

Macro Processors: Basic Macro processor Functions – Machine Independent Macro processor features – Macro processor Design options.

UNIT V

Compiler: Basic Compiler functions – Machine Dependent and Independent compiler features – Compiler Design options.

Text Book:

- ❖ System Software (An Introduction to System Programming) – III Edition – 1997 – Addison Wesley. Chapters: 1 – 5

Reference Book:

- ❖ System software: an introduction to system programming, Leland L.Beck, 3rd edition

CORE XV - LAB VI**VISUAL PROGRAMMING****Hours: 5****Credits : 3****Semester: V**

Program List

1. Arithmetic Operations using Functions.
2. Objective type Questionnaires
3. Scientific Calculator
4. Design a Digital clock
5. Menu creation with simple file and Edit Options
6. Designing a color mixer using basic colors.
7. Picture Animation
8. Authentication form using List Box.
9. Student Mark List using DAO.
10. Employee details using ADO.
11. Flex grid controls
12. Changing the font color, size and save the file using common control dialog box and Rich text box.
13. To change the shape using Combo box

ELECTIVE 1.1
SOFTWARE ENGINEERING

Hours:5

Credits : 5

Semester : V

Objectives:

1. To know the concept of computer based system and products
2. To present the role of software, system analysis, design concepts, testing methods and strategies.

UNIT I

The Evolving Role of Software – Definition of Software Engineering – The Changing Nature of Software – Software Myths – Terminologies – Software Life Cycle Models: Build and Fix Model – Evolutionary Process Models – Selection of a Life Cycle Model.

UNIT II

Requirements: Analysis and Specifications: Type of Requirements – Feasibility Studies – Requirement Elicitation: interviews, brain storming sessions, FAST – Requirement analysis: Data flow diagram, Data Dictionaries - Requirements Validation

UNIT III

Project Planning: Size Estimation – The Constructive Cost Model (COCOMO) – The Putnam Resource Allocation Model.

UNIT IV

Software Design: Design: Conceptual and Technical designs, Objectives of design – Modularity - Function Oriented Design – Software reliability: Basic concepts, software reliability, maturity levels - Software Testing: A Strategic Approach to Software Testing – Testing – Functional Testing – Structural Testing – Levels of Testing – Validation Testing.

UNIT V

Software Maintenance: Categories of Maintenance – Problems during Maintenance – Maintenance is Manageable – Potential Solutions to maintenance problems – Maintenance process – Estimation of maintenance cost

Text Book:

- ❖ “Software Engineering” by K.K.Agarwal, Third Edition 2008

Reference Book:

- ❖ “Software Engineering Concepts”, Richard e.Fairley, McGrawHill,

ELECTIVE 1.2**PC MAINTENANCE AND TROUBLE SHOOTING****Hours:5****Credits:5****Semester: V****Objectives:**

1. To know the peripheral of computer.
 2. To do simple trouble shooting techniques.
-

UNIT I

The Basic Microcomputer System – Processor subsystem – 8086 processor – clock generator 8284 - Bus subsystem Bus controller 8288 – Latch 74LS373 – Transceiver 74LS245 – Memory subsystems – Decoder 74LS138 – DMA Controller 8237 – I/O subsystem – PPI 8255 – PIC 8259 – PIT 8253 – Tips and Trouble Shootings.

UNIT II

Inside the IBM PC system unit - * power supply - cabling and connectors - *system board functions – system configuration.

UNIT III

Peripherals – Memory peripherals - * Floppy disk drive – working principle – Removal and Installation – Cleaning and preventive maintenance – Floppy disk format – Winchester disk - *CRT working principle – IBM PC display adapter – printers – interface standards – Modems and Acoustic couplers – Trouble shooting keyboards.

UNIT IV

Servicing – Switch Settings – Cables and connectors – Operation – post – preventive maintenance.

UNIT V

Diagnostics and Trouble shooting – Test equipment – Login problem – oscilloscope.

Text Book:

- ❖ Stuart M. Asser, Vincent J. Stigliano, Richard F. Bahrenburg, “Microcomputer servicing practical system and Trouble Shooting”, A Bell & Howell Information Company Columbus, 1990.

Reference Book:

- ❖ IBM PC & CLONES, B. Govindrajalu, Tata McGrawhill Publishers, IBM PC & CLONES

ELECTIVE 1.3**OBJECT ORIENTED ANALYSIS AND DESIGN****Hours: 5****Credits: 5****Semester: V****Objectives:**

1. Understood the trends and principles of object oriented methodologies.
 2. Gained problem solving skills using developing object based models.
-

UNIT I

Object Orientation – System Development – Review of Objects – Inheritance – Object Relationships – Dynamic binding – OOSD life cycle – Process – Analysis- Design - Prototyping– Implementation – Testing – Overview of Methodologies

UNIT II

OMT – Booch methodology, Jacobson – Methodology – patterns – Unified approach– UML –Class Diagrams – Dynamic Modeling

UNIT III

Using Case model – Creation of classes – Noun Phrase approach – responsibilities – Collaborators and relationships – Super – Sub class - Aggregation

UNIT IV

OO Design axioms – Class visibility – refining attributes- Methods – Access layer – OODBMS – Class mapping view layer

UNIT V

Quality Assurance testing – Inheritance and testing - Test Plan – Usability testing – User satisfaction testing

Text Book:

- ❖ Ali Brahmi , “ Object Oriented System Development” , *McGraw-Hill International Edition*

Reference Books:

- ❖ Object-Oriented Analysis and Design *by* Grady Booch, *Addison – Wesley*
- ❖ Object Oriented Modelling and Design *by* James Rumbaugh , *Micheal Blaha, Prentice*

Hall

ELECTIVE 2.1**NUMERICAL METHODS****Hours:6****Credits :5****Semester: V****Objectives:**

1. To give basic ideas about Numerical Methods.
2. To solve problems using iteration method, interpolation etc.

UNIT I

Solution of Algebraic and transcendental equations - iteration method – Newton Raphson Method – method of false positions – Solutions of simultaneous equations – Direct method – Gauss elimination method – Gauss Jordan method – Iterative method - Gauss Seidal method.

UNIT II

Newton's forward and backward interpolation formula –central difference interpolation formulae (For equal intervals) – Gauss's forward and backward interpolation formula – Stirling's formula.

UNIT III

Interpolation with unequal intervals – Divided differences – Lagrange's formula .

UNIT IV

Numerical Integration – Quadrature formula – Trapezoidal rule –Simpson's one –third rule – simpson'three - eighths rule . (Problems Only)

UNIT V

Numerical Solution of Differential Equations: Taylor Series – Euler's Mthod- Modified Euler's Method - Runge-Kutta Methods for second and fourth order DE.

Text Book:

- ❖ Numerical Methods by P.Kandasamy , K.Thilagavathy , K.Gunavathi , S.chand &Company Ltd. ,New Delhi.

Reference Book:

- ❖ Numerical methods by A.Singaravelu.

ELECTIVE 2.2**CLIENT SERVER COMPUTING****Hours:6****Credits:5****Semester :V****Objectives:**

1. To inculcate knowledge on Client / Server concepts.
-

UNIT I

Introduction to client/server computing – main frame – centric client/server computing – downsizing and client/server computing – client/server development tools – advantages of client/server computing – connectivity – user productivity reduction in network traffic – faster delivery of systems.

UNIT II

Components of client/server applications – the client – the role of the client client services – request for service – dynamic data exchange (DDE) – object linking and embedding (OLE) - Common Object Request Broker Architecture (CORBA)- component of client/server applications.

UNIT III

Role of the server – Server functions – network operating systems – Novell Netware – LAN manager – IBM LAN server – Banyan VINES – PC Network file service – server operating systems: Netware, OS/2, Windows NT, Unix –System application Architecture (SAA).

UNIT IV

Components of client / server architecture – connectivity – open system interconnect (OSI) – Inter- process communication – communication interface technology – wide area network technology – Client/Server systems development software – platform migration and reengineering of existing of systems – client server development methodology – client server systems development

hardware PC level processing units – Unix Workstation – server hardware – mirrored disk RAID-disk array – CD-ROM-WORM- network interface cards(NIC)

UNIT V

Client/server systems development – service and support – system administration availability – reliability – serviceability – performance – Network management – remote systems management – security – LAN and network management – Client server systems development – training – training advantage of GUI applications – system administrator training – LAN administration – WAN issue – operation system issues – application issues – database administration training – end user training .

Text Book

- ❖ Robert Orfali, Dan Harkey and Jerry Edwards, “Essential Client/server Survival Guide” John Willey and Sons Inc., 1996.

Reference book

- ❖ Patrick /smith and Steve Guengerich,” Client/Server Computing”, prention Hall of India, Second Edition, 1997.

ELECTIVE 2.3**PRINCIPLES OF INFORMATION TECHNOLOGY****Hours:6****Credits:5****Semester :V****Objectives:**

1. To know the various aspects of information Technology.
 2. Understand the concepts and technology involved in the field of information Technology.
-

UNIT I

Information Technology Today – introduction to IT – information systems –software and data – IT in business and industries – applications area of IT – computers in hiding – Global Positioning System. Information Technology in Business – Corporate computing – transaction processing – information tools for management – marketing, advertising and sales – design, production and manufacturing – business on Internet.

UNIT II

The Computer System and CPU – Types of Computers – Anatomy of computer- foundations of modern technology – microprocessor – path of progress – microprocessor fabrication – types of memory – buses – communication with peripherals. Input and Output-Input and Output devices – pointing devices – foundations of modern output – display screen – printers.

UNIT III

Secondary Storage – foundations of modern storage – Storage media-media – floppy disk, hard disk drive and optical disk – increasing data storage capacity – backing up your data – Software – user interface – applications programs – operating system – introduction, types, file management and utilities – document – centric computing – major software issues – network computing.

UNIT IV

Internet and World Wide Web – Introduction to World Wide Web and Web – getting connected to web – browsing web – locating information on Web – Web multimedia Communications – electronic Web – network applications – foundations of modern networks – Local Area Network – Introduction, architecture and system – introduction to Wide Area Network – link between networks – devices, media and protocols – dial – up access – high bandwidth personal connections.

UNIT V

Multimedia – an introduction – tools of multimedia – paint and draw applications, graphic effects and techniques, sounds and music, video and multimedia authoring tools – delivering multimedia –multimedia on the web. Personal, Social and Ethical Issues: Computers and youth health – viruses – Computer crime – cryptography – burning issue.

Text book

- ❖ “Information Technology” – The Breaking Wave, Dennis P.Curtin, Kim Foley, Kunal Sen & Cathleen Morin, Tata McGraw Hill Ed., 1999.

Reference Books

- ❖ Fundamentals of Computers, Rajaraman V., 2/e Prentice Hall of India, New Mumbai, 1999.
- ❖ Fundamentals of Information Technology. Alex Leon, Leon Techno publications, Chennai, 1999.
- ❖ Understanding and Using Internet, Subhash Mehta, Global Business Press, New Mumbai, 1996.

SKILL BASED COURSE - V**QUANTITATIVE APTITUDE****Hours:2****Credits:2****Semester: V**

UNIT I:

Operations on Numbers – Tests of Divisibility – Solved Examples – Problems on Numbers

UNIT II:

Problems on Ages – Percentage – Profit & Loss – Ratio & Proposition – Partnership

UNIT III:

Time & Work – Pipes & Cistern – Time & Distance – Problems on Trains

UNIT IV:

Simple calendar Problems – Permutations & Combinations.

UNIT V:

General Mental Ability: Coding – Decoding – Blood Relations – Puzzle Test – Data Sufficiency

Logical Deduction: Statement & Conclusion – Cause & Effect Reasoning.

Text Book:

- ❖ Quantitative Aptitude for Competitive Examination, by R.S.AGGARWAL, Revised Edition
- ❖ A Modern approach to Verbal & Non Verbal Reasoning by Dr.R.S. AGGARWAL

CORE XVI**COMPUTER NETWORKS****Hours: 6****Credits:5****Semester: VI****Objectives:**

1. To impart knowledge on network concepts like layers wireless concepts, transmission and security.
 2. To give knowledge on networking technologies like broadband and Bluetooth.
-

UNIT I

Introduction: Uses of Computer Networks – Network Hardware: LAN- MAN – WAN- Wireless Networks –Network Software – Reference Models: OSI – TCP/IP- Comparison of OSI and TCP/IP.

UNIT II

Physical Layer : Guided Transmission Media: Magnetic Media – Twisted Pair – Coaxial Cable – Fiber Optics – Wireless Transmission : Electromagnetic Spectrum – Radio Transmission – Microwave – Infrared and Millimeter – Lightwave Transmission – Telephone Network: Structure of the Telephone System - Switching - Communication Satellites.

UNIT III

Data Link Layer: Services Provided to the Network Layer- Framing- Error Control – Flow Control- Error Detection and Correction - Elementary Data Link Protocols: An Unrestricted Simplex Protocol- A Simplex Stop-and-Wait Protocol- A Simplex Protocol for a Noisy Channel- Sliding Window Protocols: A One-Bit Sliding Window Protocol- A Protocol Using Go Back N- A Protocol Using Selective Repeat.

UNIT IV

Network Layer: Network Layer Design Issues- Routing Algorithms: The Optimality Principle- Shortest Path Routing- Flooding- Distance Vector Routing- Link State Routing- Hierarchical Routing- Routing for mobile Hosts - Broadcast Routing- Multicast Routing.

UNIT V

Transport Layer: The Transport Service: Services Provided to the Upper Layers-Transport Service Primitives- Elements of Transport Protocols: Addressing- Connection Establishment- Connection Release- Flow Control and Buffering -Multiplexing.

Application Layer: DNS- The Domain Name System: The DNS Name Space- Resource Records- Name Servers- Electronic Mail: Architecture and Services- The User Agent- Message Formats- Message Transfer.

Text Book:

- ❖ Computer Network by Andrew S.Tanenbawm PHI, III Edition, 1996.

Reference Book:

- ❖ Data Communications and Networking-BehrouzA.Forouzan,Four EditionTMH,2006.

CORE XVII
DATA MINING

Hours: 5

Credits : 4

Semester: VI

Objectives:

1. To present fundamentals of data warehousing.
2. To inculcate knowledge on Data mining Concepts.
3. To have sound knowledge on Data Mining Techniques.

UNIT I

Data Warehousing: Introduction – Definition – Multidimensional Data Model - OLAP Operations – Warehouse Schema – Data warehousing Architecture – Metadata – OLAP Engine - Data Warehouse Backend Process.

UNIT II

Data Mining: Definition – Comparison with other fields – DM Techniques – Issues Application Areas.

UNIT III

Association Rules: Methods – A Priori algorithm – Partition Algorithm – Pincer-Search Algorithm – Border Algorithm – Generalized Association Rules with Item constraints.

UNIT IV

Clustering Techniques: Clustering Paradigms – Partitioning Algorithms – CLARA – CLARANS- Hierarchical Clustering – DBSCAN – Categorical Clustering Algorithms – STIRR.
Decision Trees: Tree Construction Principle – Best Split – Splitting Indices – Splitting Criteria
CART – ID3.

UNIT V

Web Mining: Introduction – Web Content Mining – Web Structure Mining – Web Usage Mining – Text Mining – Hierarchy of Categories – Text Clustering.

Text Book:

- ❖ Data Mining Techniques – Arun K Pujari – Universities Press – 2001.

Reference book:

- ❖ Jewie Han, Michelins Kamber, “Data Mining :Concepts and Techniques”
- ❖ Pang-Ning Tan, Michael Steinbach, Vipin Kumar, “Introduction to Data Mining” 2007.

CORE XVIII**PROJECT WORK****Hours:7****Credits :5****Semester: VI****Objective:**

1. Motivate the Students to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories.

The project is of 7 hours/week for one (semester VI) semester duration and a student is expected to do planning, analyzing, designing, coding, and implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The project proposal should include the following:

Title

Objectives

Details of modules and process logic

Limitations of the project

Tools/Platforms, Languages to be used

Sample Coding and Screenshots

Conclusion

For the project work, the guide (internal) evaluate the work for 40 marks based on the performance of the candidates during the development of the project and the external examiner will evaluate the project work for 60 marks.

The Project work should be either an individual one or group of not more than two members

ELECTIVE 3.1**SOFTWARE TESTING****Hours:6****Credits: 5****Semester: VI****Objectives:**

1. To Know about software development Life Cycle Models.
 2. To inculcate various testing Concepts.
-

UNIT I:

Software Development Life Cycle Models: Phases of Software Project – Quality, Quality Assurance and Quality Control – Testing, Verification and Validation-Process Model to Represent Different Phases – Life cycle Models

White Box Testing: What is White Box Testing – Static Testing – Structural Testing – Challenges in White Box Testing.

UNIT II:

Black Box Testing: What is Black Box Testing? – Why Black Box Testing? – When to do Black Box Testing? – How to do Black Box Testing?

Integration Testing: What is Integration Testing? – Integration Testing as a Type of Testing– Integration Testing as a Phase of Testing – Scenario Testing – Defect Bash.

UNIT III

System and Acceptance Testing: System Testing Overview – Why is System Testing Done? – Functional versus Non-Functional Testing – Functional Testing – Non-Functional Testing – Acceptance Testing – Summary of Test Phases.

UNIT IV:

Performance Testing: Introduction – Factors Governing Performance Testing – Methodology for Performance Testing – Tools for Performance Testing – Process for Performance Testing – Challenges.

Regression Testing: What is Regression Testing? Types of Regression Testing – When to do Regression Testing? – How to do Regression Testing? – Best Practices in Regression Testing.

UNIT V:

Test Planning, Management, Execution and Reporting: Introduction – Test Planning – Test Management – Test Process – Test Reporting – Best Practices.

Test Metrics and Measurements: Project Metrics – Progress Metrics – Productivity Metrics-Release Metrics.

Text Book:

- ❖ Software Testing Principles and Practices, by Srinivasan Desikan,Gopalaswamy Ramesh.

Reference Book:

- ❖ Lessons Learned in Software Testing by C.Kaner,J.Bach and Pettichord,2001.

ELECTIVE 3.2
DIGITAL IMAGE PROCESSING

Hours:6

Credits: 5

Semester: VI

Objectives:

1. To understand the fundamentals steps in Digital image processing.
 2. To inculcate knowledge on image compression and image segmentation.
-

UNIT I

Digital Image Processing: Definition – The Origin of Digital Image Processing – Elements of digital image processing – Steps involved in DIP – Fundamental Steps in DIP – Structure of the Human Eye – Brightness Adaptation and Discrimination – Image Acquisition using a single sensor – Image Acquisition using sensor arrays.

UNIT II

Basic concepts in image sampling and Quantization – Representing Digital Images – Spatial and Gray level resolution – Zooming and shrinking digital images – Neighbors of a pixel – Adjacency, Connectivity – Regions and Boundaries – Distance Measures, Image Operations on a pixel basis.

UNIT III

Image Enhancement in Spatial Domain – Gray level transformation – Image Negatives – Log Transformations – Enhancements using arithmetic/logical operations – Image Subtraction – Image Averaging.

UNIT IV

Image Compression: Coding Redundancy – Inter pixel redundancy – Psycho visual redundancy – Image compression models – The source encoder and decoder – The channel Encoder and Decoder.

UNIT V

Image Segmentation: Detection of discontinuous – Point detection – Line Detection – Edge Detection – Representation of Images: Chain Codes – Polygonal approximation – Signatures – Boundary segments – Skeletons.

Text Book:

- ❖ Digital Image Processing Rafael C. Gonzalez & Richard. E. Woods Addison – Wesley publishing Company Inc.(Third Indian Reprint, 2000).

Reference Books:

- ❖ Anil K.Jain, "Fundamentals Digital Image Processing", Pearson Education.
- ❖ B.Chandra and D.Dutta Majundar,"Digital Image Processing and Analysis", Prentice Hall of India private Ltd., New Delhi.

ELECTIVE 3.3**MOBILE COMPUTING****Hours:6****Credits: 5****Semester: VI****Objectives:**

1. To know about the information access device.
2. To impart knowledge on Internet protocols and formats.
3. To offer concepts of wireless Technology.

UNIT I

Information Access Devices – Handheld Computers – Palm OS – Based Devices Windows CE – Based Handheld Computers – EPOC Based Handheld Computers – S Notebooks – Phones – Cellular Phones – Data transmission capabilities – Smart Phones Screen Phones.

UNIT II

Smart Identification – Smart Cards – Smart Labels – Smart Tokens – Embedded Controls – Smart Sensors and Actuators – Smart Appliances and home networking – Automotive computing.

UNIT III

Internet Protocols and Formats: HTTP – HTML – XML – Xforms – Mobile Internet – WAP 1.1 Architecture – Wireless Application Environment 1.1 – WAP 2.0 Architecture – i-node.

UNIT IV

Voice: Voice Technology Trends – Voice on the web – Standardization.

UNIT V

Connectivity – Wireless Wide Area Networks – Short Range Wireless Communication.

Text Book:

- ❖ Principles of Mobile Computing – Uwe Hansmann, Lothar Merk, Martin S.Nicklous, Thomas Stober, Springer – Second Edition – 2003.

Reference Book:

- ❖ Principles of Mobile communication, Gordan L.Stober,2nd edition, Springer science

SKILL BASED COURSE - VI**VB.NET LAB****Hours: 2****Credits: 2****Semester: VI**

Program List:

1. Write a program to find a grade of students.
2. Write a program to find factorial of given number using functions.
3. Write a program to arrange names in alphabetical order.
4. Write a program to display the user information.(personal details)
5. Calculator.
6. Notepad
7. Employee Details.
8. Hospital Management system.
9. Sales Transaction System.
10. News Paper Vendor Details.

NON MAJOR ELECTIVE -II**WEB DESIGNING****(Offered to other department Students)****Hours: 2****Credits : 2****Semester: VI**

UNIT I:

Basics of Internet and World Wide Web : Network – History of internet – E-mail – WWW – Browser – Search Engines.

UNIT II:

Introduction to HTML: Introduction to HTML – Homepage – HTML documents – Anchor tag – Hyperlinks.

UNIT III:

Web Page Design: **Header Section:** Prologue – Links – Colorful webpage – Comment lines – Sample HTML.

UNIT IV:

Body Section: Heading printing – Aligning Heading – Horizontal rule – Paragraph – Formatting Tags – Logical style – Physical style – Images and Pictures

UNIT V:

Ordered And Unordered List: List – Unordered list – Heading Inner List – Type attribute – Nested List – **Table Handling:** Table – Table Creation – Width – Cells spanning – Cell alignment – Coloring Cells – Column specifications – Sample Tables

Text Book:

- ❖ World wide web design with HTML, C.Xavier, Tata McGraw- Hill Publishing , New Delhi.