ARULMIGU PALANIANDAVAR ARTS COLLEGE FOR WOMEN, PALANI
(AUTONOMOUS)
(Re-accredited with 'A' Grade by NAAC)

Bachelor of Science(Computer Science)

(2014-2017)

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. 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.

  o Physics / Chemistry / Commerce.

2. 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).

3. Medium of Instruction: English

4. Subject of Study: As given in Appendix

5. Scheme of Examination: As given in Appendix

6. Eligibility of 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.

➢ The passing minimum is 40% (both in internal and external separately) in each paper.

➢ To get Graduation , the students should gain minimum 140 credits.

7. Evaluation

➢ Evaluation of the candidates shall be through both internal and external assessment. The ratio of internal and external assessment should be 40:60.

➢ For each course there will be Continuous Internal Assessment(CIA) and Final Semester Examination

➢ CIA Carries 40 Marks.

➢ The break-up for internal assessment shall be as follows:

```
Written Test   :      25      Marks
Seminar        :      10      Marks
Assignment     :       5      Marks
_____
Total                 40      Marks
```

8. Passing Requirements

Scoring 40% Minimum in Internal and 40 % Minimum External Examination

Course	Internal (40 Marks)	External (60 Marks)	Average of Passing Minimum
UG	**16/40(40 %)**	**24/60(40%)**	**40/100**

9. Question Paper Pattern:

Type	No. of questions to be Answered	Marks
Objective	10 Questions to be answered(no choice and all questions are compulsory)	(10*1)=10
Paragraph about 1 ½ Pages	5 Out of 7 questions	(5*4)=20
Essay Type- about 3 Pages	3 out of 5 questions	(3*10)=30
Total		**60**

10. Question Paper Model:

EXTERNAL QUESTION PATTERN

(For Core, Allied, Elective, SBS and NME Paper)

Maximum : 60 Marks   **Time :3 Hours**

PART A

10*1=10

Answer All questions: (Two Questions from each Unit)

This may include Multiple choice ,true or false, fill up, very short answer and simple Examples

PART B

Answer any FIVE questions out of SEVEN questions   **(5*4=20)**

 Each Unit must have one or Two Question

PART C

Answer any THREE questions Out of FIVE Questions   **(3*10=30)**

(One Question from each Unit)

ARULMIGU PALANIANDAVAR ARTS COLLEGE FOR WOMEN
COMMON ACADEMIC STRUCTURE IN AUTONOMY
PG DEPARTMENT OF COMPUTER SCIENCE
BACHELOR OF SCIENCE
CORE STRUCTURE AS PER TANSCHE GUIDELINES FOR UG PROGRAM

Semester	Title of Paper	Hours	Marks			Credits
			Int.	Ext.	Total	
I	**Part – I** Tamil	6	40	60	100	3
	Part – II English	6	40	60	100	3
	Part – III : **Core – I** Programming in C	6	40	60	100	4
	Core – II Programming in 'C' Lab	6	40	60	100	4
	Allied - I Probability & Statistics	5	40	60	100	4
	Part – IV Value Education	1	40	60	100	3
	Total	**30**				**21**
II	**Part – I** Tamil	6	40	60	100	3
	Part – II English	6	40	60	100	3
	Part – III **Core – III** Object Oriented Programming with C++	6	40	60	100	4
	Core –IV Object Oriented Programming with C++ Lab.	5	40	60	100	4
	Allied II –Digital Electronics	5	40	60	100	4
	Part – IV Environmental Science	2	40	60	100	2

		Total	**30**				**20**

Semester	Title of paper	Hours	Marks			Credits
			Int.	Ext.	Total	
III	**Part I** Tamil	6	40	60	100	3
	Part II English	6	40	60	100	3
	Part III **Core V** – Visual Programming	5	40	60	100	4
	Allied III – Resource Management Techniques	5	40	60	100	4
	Elective I – Data Structures	4	40	60	100	3
	Part – IV **NME I** – Computer Fundamentals and Internet Basics(Offered to other Department Students)	2	40	60	100	2
	SBS I - Visual Programming Lab	2	40	60	100	2
	Total	**30**				21
IV	**Part I** Tamil	6	40	60	100	3
	Part II English	6	40	60	100	3
	Part III **Core VI** - Relational Database Management System.	4	40	60	100	4
	Core VII - System Programming	4	40	60	100	4
	Allied IV - RDBMS Lab	3	40	60	100	4
	Elective II Computer Organization	3	40	60	100	3
	Part – IV **NME II** Information Technology(Offered to other department Students)	2	40	60	100	2
	SBS II - Office Automation	2	40	60	100	2
	Total	**30**				25

Semester	Title of paper	Hours	Marks			Credits
			Int.	Ext.	Total	
V	**Part – III**					
	Core VIII – Operating System	5	40	60	100	4
	Core IX – Java Programming	5	40	60	100	4
	Core X – Software Engineering	5	40	60	100	4
	Core XI – Java Lab	5	40	60	100	4
	Core XII – Computer Networks	5	40	60	100	4
	Elective III Numerical Methods	3	40	60	100	3
	Part – IV					
	SBS III – Quantitative Aptitude	2	40	60	100	2
	Total	**30**				**25**
VI	**Part – III**					
	Core XIII - Web Technology	5	40	60	100	4
	Core XIV - Computer Graphics	5	40	60	100	4
	Core XV – Data Mining	5	40	60	100	4
	Core XVI – Project Work	5	40	60	100	4
	Core XVII – Multimedia Lab	5	40	60	100	4
	Elective IV Principles of Information Technology	3	40	60	100	3
	Part – IV SBS IV: Soft Skills	2	40	60	100	2
	PART V: Extension Activities	-				3
	Total	**30**				**28**
	TOTAL NUMBER OF CREDITS					**140**

CORE PAPERS   **: 17**
ALLIED   **: 04**
ELECTIVE   **: 04**
SBS   **: 04**
NME   **: 02**

CORE I - PROGRAMMING IN 'C'

Hours:6   **Credits: 4**

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 Statement – The Switch Statement – The? : Operator - The GOTO Statement - **Loops in C** – 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 – General form of a Function – Functions with Arguments – Function declaration and Prototypes – Call by value and call by Reference – Calling functions with Arrays – Recursion.

Unit IV

Structures: Concepts – Initialization. Pointers.

Unit V

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

1. 'Programming in ANSI 'C', E.Balagurusamy, Third Edition, Tata McGraw-Hill Publishing Company, 2002.

<u>Core II</u>

PROGRAMMING IN 'C' LAB

Hours: 6   **Credits : 4**
                                                          Semester: I

Programming List:

- ➢ To find the Sum of Digits .
- ➢ To Reverse a given Digits.
- ➢ Prime Number Series.
- ➢ Armstrong Number Series.
- ➢ Matrix Manipulation and Transpose of a Matrix.
- ➢ Palindrome using String.
- ➢ String Concatenation.
- ➢ Count number of words, character and lines.
- ➢ Standard deviation
- ➢ Fibonacci using Recursion.
- ➢ Swapping using Pointers.
- ➢ To prepare student Mark List using Structure.
- ➢ To prepare EB Bill using Files.

<u>ALLIED-I</u>

PROBABILITY & STATISTICS

Hours: 5   **Credits : 4**

Semester: I

Objectives:

1. To acquire the basic knowledge of Probability

2. To have the learning 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..

UNITI V:

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

Text Books

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

CORE III

OBJECT ORIENTED PROGRAMMING WITH C++

Hours: 6   **Credits : 4**

Semester:II

Objectives:

1. To discuss Oops Concepts.

2. To deal with I/O facilities, control structures which are important for a structured programming language.

3. To discuss Structure and Union.

4. To develop programming skills in writing simple programs.

UNIT I

PRINCIPLES Of OOPS: OOPS Paradigm – Basic Concepts of OOP – Benefits of OOP – Object Oriented Languages – Application of OOP.

Introduction to C++ : Tokens, Keywords, Identifiers and Constants ,Data types , Variables, Operators, Manipulators, Expressions and Control Structures in C++.

UNIT II

FUNCTIONS IN C++ - Main Function – Function Prototyping – Call by Reference – Inline Function- Function Overloading – Friend and Virtual Functions.

UNIT III

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

UNIT IV

Inheritance – Single Inheritance – Multilevel Inheritance – Hierarchical Inheritance – Hybrid Inheritance – Pointers – Virtual Functions - 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:

1. Object Oriented Programming with C++ by E. Balagurusamy, Tata McGraw-Hill, New Delhi 2002. 4th Edition.

CORE IV

OBJECT ORIENTED PROGRAMMING WITH C++ LAB

Hours:5   **Credits: 4**

Semester:II

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.

<u>**ALLIED II**</u>

DIGITAL ELECTRONICS

Hours:5   **Credits:4**

Semester: II

Objectives:

1. To Give basic Knowledge on Computer Fundamentals and Digital Principles

2. To Give Knowledge on Digital Circuits.

UNIT I

   Computer System: Introduction – Types of Computers – Characteristics of Computers. **Classifications of Digital Computer**: Microcomputer – Minicomputer – Mainframe Computer- Super Computers. **Auxiliary Storage Devices**: Hard Disk – Floppy Disk – CD – ROM. **Input Devices:** Keyboard- Mouse – Trackball- Joystick – Digitizing Tablet – Scanners – Digital Camera- MICR – OCR-OMR-Touch Screen. **Output Device:** Monitor: Classification of monitors – Based on Color, Signal. Printer.

UNIT II

   Number Systems : Binary Numbers – Octal Numbers – Decimal Numbers – Hexadecimal Numbers System . **Conversion :** Decimal to Binary – Octal to Binary - Hexadecimal to Binary – Hexadecimal to Octal & Vice Versa.

UNIT III

   Arithmetic Operation : Binary Arithmetic Operation - 1's & 2's Complement **-** Logic Gates. **Boolean Algebra :** Introduction – Boolean Logic Operations – Basic Laws Of Boolean Algebra – Demorgan's Theorems– Sum of Products and Products of Sum – Karnaugh Map.

UNIT IV

   Arithmetic And Combinational Circuits : Half Adder – Full Adder - Multiplexer and De-Multiplexer.

UNIT V

   Sequential Circuits: Flip – Flops: S-R , J-K, D, T Flip –Flop-Synchronous and Asynchronous Counters –UP/Down Counters. Shift Registers   : Serial In – Serial Out – Parallel In – Parallel Out.

Text Books

1. Fundamentals of Information Technology by Alexis Leon and Mathews Leon(UNIT I)

2. Digital Circuits and Design by S.Salivahanan and S.Arivazhagan, Vikas Publishing House Pvt. Ltd. New Delhi, 2000 (UNIT II - UNIT V)

CORE V

VISUAL PROGRAMMING

Hours:5   **Credits: 4**

Semester: III

Objectives
1.To know the core concepts of Visual Programming.
2. To design Forms
3. To create database tables and create reports.

UNIT – I

Introducing Visual Basic: What is VB? – Event and Event Procedures – Object-relate 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, 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 out – Library Functions – Program Comments. Branching and Looping: Relational operators and Logical Expressions – Branching with If-Then, If-Then-Else blocks – Selection Select Case – Looping with For-Next, Do-Loop, While-Wend – Stop statement.

UNIT - II

Visual Basic control Fundamentals: Control tools – Control tool Categories – Working with Controls – Naming Forms and Controls – Assigning Property values to Forms and Controls– Executing commands – Displaying Output – Entering Input Data – Selecting Multiple Features, Exclusive Alternatives, Form 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 Menu from Keyboard – Menu Enhancements – Submenus – Pop-Up Menus – Dialog Boxes – more about Msgbox Function – The Input Box function. Executing and Debugging a New Project: Syntax errors – Logical errors – Setting Breakpoints – Defining Watch Values – Stepping Through a Program – User-induced Errors – Error-handlers – Generating a Stand alone Executable Program.

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 - RecordSets, ADODC, DAO, RDO, Data Control (Accessing records, Adding, Navigation, Editing and Deleting),Flex Grid. Database Reporting - Data Environment Designer, Creating Data Report,Crystal Report.

Text Book

1.Visual Basic 6 from the Ground Up, Cornell, TMH (Unit V)
2.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)

ALLIED III

RESOURCE MANAGEMENT TECHNIQUES

Hours : 5   **Credits : 4**

Semester: III

Objective:

1. To give basic ideas about Operation Research.

2. To Solve problems using Simplex Method , Big-M Method and etc.

3. To Solve Transportation Problems and Assignment Problems.

UNIT I

Development of OR-Definition of OR-Modeling - Characteristics and Phases-Tools, Techniques and methods-Scope of OR.

UNIT II

Linear Programming problem-Formulation-Stack Surplus Variables-Graphical Solution of LPP.

UNIT III

Simplex method-Computational Procedure-Artificial Variable Techniques-Two Phase Method –Duality.

UNIT IV

Mathematical Formulation of Assignment Problem-Method of solving the Assignment Problem. Mathematical Formulation of Transportation problem-Initial Feasible solution-Optimal Solution-Degeneracy in TP-Unbalanced TP.

UNIT V

PERT Network and Timing Estimates-Critical Path Method(CPM)

Text Book

"Operations Research"-Theory and Applications By J.K.Sharma,McMillan Publishers.

ELECTIVE I

DATA STRUCTURES

Hours:4   **Credits:3**
                                                                                   Semester : III

Objectives:

1. To Basic terminology, Notations and Operators.

2. Stack, Queue, Linked list, Tree and Graph.

3. Data Structures representations in Memory, Operators and Applications.

UNIT I

Introduction: Overview – SPARKS – How to Create Programs – How to Analyze Programs.
ARRAYS: Ordered Lists – Sparse Matrices – Representation of Arrays.

UNIT II

STACKS AND QUEUES: Fundamentals – A Mazing Problem – Evaluation of Expression – Multiple Stacks and Queues.

UNIT III

LINKED LISTS : Singly Linked Lists – Linked Stacks and Queues – Doubly Linked Lists – Dynamic Storage Management – Garbage Collection and Compaction.

UNIT IV

TREES: Basic Terminology – Binary Trees – Binary Tree Representations – Binary Tree Traversal – More on Binary Trees – Threaded Binary Trees – Binary Tree Representation of Trees.

UNIT V

GRAPHS: Terminology and Representations – Traversals, Connected Components and Spanning Trees - Shortest Paths and Transitive Closure – Activity Networks and Critical paths.

Text Book:

1. Fundamentals of Data Structures by Ellis Horrowitz, Sartaj Sahini – Galgotia Publicaitons, 1998.

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

1. Donald H.Sanders ,Computer Today – McGraw Hill, 2nd Edition.

2. Yaung Kaiseng using the internet the easy way – Minerva Publications, reprint 2003.

SKILL BASED SUBJECT - I

VISUAL PROGRAMMING LAB

Hours:2   **Credits:2**

Semester: III

1.Arithmetic Operations using Functions.

2.Objective type Questionnaires

3. Scientific Calculator

4.Design a 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

CORE VI

RELATIONAL DATABASE MANAGEMENT SYSTEM

Hours : 4   **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: Purpose of Database System – View of Data – Data Models – Database Languages – Transaction Management – Storage Management – Database Administrator – Database Users – Overall System Structure.

UNIT II

Entity – Relationship Model: Basic Concepts – Design Issues – Mapping cardinalities – Keys – E-R Diagrams – Weak entity sets – Extended E-R feature – Design of an E-R Database scheme – Reduction of an E-R scheme to Table.

UNIT III

Relational Model: Structure of Relational Database – Relational Algebra – The Tuple Relational Calculus – The Domain Relational Calculus – Extended Relational – Algebra Operations – Modifications of the Database – Views. Integrity Constraints.

UNIT IV

Relational Database Design : Relational Database Design – Decomposition – Normalization using Functional Dependencies – Multi valued Functional Dependencies – Join Dependencies – Domain-Key Normal Form – Alternative Approaches to Database Design.

UNIT V

Database System Architecture: Centralized System – Client Server System – Parallel System – Distributed Systems – Network types.

Text Book

Database System Concepts (III Edition) by Abraham Silberschtz, Henry F.Horth S.Sundershan McG Hill International Editions, 1997.

CORE VII

SYSTEM PROGRAMMING

Hours: 4   **Credits   :4**

Semester: IV

Objectives:

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 processers: Basic Macro processor functions – Machine Independent Macro processor features – Macro processor Design options.

UNIT V

Complier: Basic Complier 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

<u>Allied IV</u>

RELATIONAL DATABASE MANAGEMENT SYSTEM LAB

Hours : 3   **Credits : 4**

                                                           Semester:IV

1. DDL, DML, DCL Commands

2. Logical, Comparison, Conjunctive & Arithmetic Operators.

3. **Retrieving rows with Characters functions:**
   i)   CONCAT (Concatenation)
   ii)   REPLACE
   iii)   SUBSTR (Substring)
   iv)   LENGTH

4. **Retrieving rows with Aggregate functions:**
   i)   GROUP BY
   ii)   HAVING

5. **Retrieving rows with date functions & number function:**
   i)   SYSDATE
   ii)   ABS, FLOOR, CEIL, ROUND, POWER

6. **JOINS:**
   i)   Union, Intersection & Union all
   ii)   Simple Join
   iii)   Self Join
   iv)   Outer Join

7. **CONSTRAINTS:**
   i)   Domain Integrity (Not Null, Check)
   ii)   Entity Integrity (Unique & Primary Key)
   iii)   Referential Integrity (Foreign Key)

8. VIEW: **PL/SQL**

9. PL/SQL Programs with Control Structures

10. PL/SQL Programs with Exception Handling

11. PL/SQL Programs with Cursors

12. Creating & Calling Procedures

13. Creating & Calling Functions

14. Creating & Calling Packages.

15. Triggers

ELECTIVE II

COMPUTER ORGANIZATION

Hours: 3   **Credits   : 3**

Semester: IV

Objectives

1.To Know about the Basic Structure of Computer Hardware and Software.

2.To Know the Memory Units and Pipelining Concepts

UNIT I

Basic Structure Of Computer Hardware And Software : Functional   Units   -   Basic Operational Concepts - Bus Structures - Addressing Modes.

UNIT II

The Processing Unit : Some Fundamentals Concepts: Fetching a word from Memory-Storing a word in a Memory-Register Transfers-Performing an Arithmetic or Logic Operation.

UNIT II

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

UNIT IV

The Memory : Internal Organization of Memory Chips-Static Memories-Dynamic Memories-Read only Memories-**Cache Memories**: Mapping functions-Virtual Memories.

UNIT V

Pipelining :Basic concepts: Role of cache memories- instruction queue-Branching: Delayed Branch Prediction- Multiple execution Units.

Text Book

Computer Organization by Vcarl Hamacher,Zronko G Vrancis,

Software G.Zaky-McGraw Hill publication,Fourth Edition,1996.

<u>Non Major Elective- II</u>
INFORMATION TECHNOLOGY
(Offered to Other Department Students)

Hours : 2   **Credits : 2**

                                                           Semester :IV

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

Introduction: Information systems – Computer in Business and Industries - Computers in home .

UNIT II

The Computer in Education & Training – Computer in Entertainment, Science, Medicine & Engineering.

UNIT III

Internet and World Wide Web – Introduction - The Web - Getting Connected to web – Browsing web – Locating information on Web – Web Multimedia.

UNIT IV

Multimedia – an introduction – Tools of multimedia .

UNIT V

New Technologies in information Technology – E Commerce – Hypermedia –Geographic information System

Text book

1. Fundamentals of Information Technology. Alex Leon, Mathews Leon ,Leon Vikas Publications.

<u>**SKILL BASED SUBJECT - II**</u>

OFFICE AUTOMATION

Hours:2   **Credits:2**

Semester: IV

List of Programs
MS – Word
1. Formatting the Text
2. Macro Creation
3. Table Creation
4. Mail Merge

MS – Powerpoint
5. Scenary 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

<u>**CORE VIII**</u>
OPERATING SYSTEM

Hours:5   **Credits:4**

                                                                                                            Semester: V

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 : Evolution - Types - Different Views of Operating System. **Processes**: Concepts. **Scheduling** : Types of Schedulers - Scheduling Algorithms.

UNIT II

Inter-Process Communication & Synchronization: Need for Inter Process Synchronization - Semaphores-Message and Implementation issues. **Deadlocks**: Prevention – Avoidance- Detection and Recovery.

UNIT III

Memory Management: Static - Dynamic Memory Allocation and Segmentation - Paging, Virtual Memory.

File Management: Disk Organization - Disk Controller and Driver - Operating System's View of the File Management: Directories.

UNIT IV

Security and Protection: Security Policies and Mechanisms –Authentication – Cryptography- Worms and Viruses.

UNIT V

Input & Output Programming: I/O Problem, I/O Interfaces, Program Controlled I/O .

Text Book

Operating Systems (Concept and Design)-Milen Milankovic, II Edition, 1987, Tata McGraw-Hill INC (Chapters 1-9, 12, 13)

Reference Book

Operating System Concepts-Silberchaz, Peterson and Galvin –Addision Wesley.

CORE IX

JAVA PROGRAMMING

Hours:5   **Credits:4**

Semester: V

Objectives:

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

UNIT I

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, 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.

UNIT III

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

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

UNIT IV

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

UNIT V

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

Graphics Programming: The Graphics Class-Lines and Rectangles-Circle and Ellipses-Line Graphics-Using Control Loop in Applets.

Text book

Programming with JAVA-E.Balagurusamy,4th Edition.

<div align="center">

<u>CORE X</u>

SOFTWARE ENGINEERING

</div>

Hours:5   **Credits:4**

                                                                                        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 - What is Software Engineering - The Changing Nature of Software - Software Myths - Some 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 - Requirements Validation.

UNIT III

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

UNIT IV

Soft Design: What is Design - Function Oriented Design - Software Testing: A Strategic Approach to Software Testing - What is Testing - Functional Testing - Structural Testing - Levels of Testing - Validation Testing.

UNIT V

What is Software Maintenance - Estimation of Maintenance Costs .

Text Book:

Software Engineering by K.K.Agarwal

CORE XI

JAVA LAB

Hours:5   **Credits:4**

Semester: IV

PROGRAMMING LIST

1. To perform addition of complex numbers using class and objects.
2. To perform multiplication of matrices using class 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

CORE XII

COMPUTER NETWORKS

Hours:5   **Credits:4**

Semester: V

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.

<u>**ELECTIVE III**</u>

NUMERICAL METHODS

Hours:3   **Credits:3**

Semester: V

Objectives

    1.To Understand the Concepts of Mathematics

    2.To Know the Various Techniques of Numerical Methods in problem solving

UNIT I

    Iterative Methods: Introduction – Beginning iterative method of Successive Bisection, False Position, Newton Raphson.(Problems Only)

UNIT II

    Solution of Simultaneous algebraic Equations: Introduction – Gauss Elimination – Pivoting – Refinement of the solution obtained by Gauss Elimination – Gauss Seidal iterative method(Problems Only)

. **UNIT III**

    Interpolation: Introduction – Lagrange interpolation – Difference – Tables .

    Least Squares Approximation of Functions : Introduction – Linear regression – polynomial regression – fitting exponential and trigonometric functions. (Problems Only)

UNIT IV

    Differentiation and Integration: Introduction – Formulae for numerical differentiation – numerical Integration Simpson's Rule – Gaussian Quadrature. (Problems Only)

UNIT V

    Numerical Solution of Differential Equations: Introduction – Euler's Method – Taylor Series – Runge-Kutta Methods (Problems Only)

    .

Text Book

    Computer Oriented Numerical Methods by V.Rajaraman, Prentice Hall of India Limited, 1997

Chapters: 2,3,4,5,6,7,8,9

SKILL BASED SUBJECT - III

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 – 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

Text Book:

1) **Quantitative Aptitude for Competitive Examination, by R.S.AGGARWAL, Revised Edition**
2) **A Modern approach to Verbal & Non Verbal Reasoning by Dr.R.S. AGGARWAL Unit - V**

<u>CORE XIII</u>

WEB TECHNOLOGY

Hours:5   Credits:4

Semester: VI

Objectives:

1. To understand the fundamentals steps in Website Creation.

2. To inculcate knowledge on .Net Framework.

Unit I:

Hyper Text Markup Language (HTML) – Introduction HTML tags – Commonly used HTML commands – Lists – Tables – Links – Frames.

Unit II:

Introduction to .NET - .NET Defined – The .NET Framework : Common Language Runtime – Base class Libraries - Visual Basic .NET. VB6 and VB .NET Differences: Data Type Changes - Arrays- Operators- User Defined Types- Null Values, Variables- Procedures- Properties- Control Flow- Form-based Application Changes- Application Types- Data Access.

Unit III

Variables ,Data Types and Operators :Data Types: Bits and Bytes – Numeric data Types – Character Data Types - Variables : Option Explicit – Option Strict – Constants. Assignment and Arithmetic Operators : Assignment Operator – Type Conversion – Arithmetic Operators – Input box function and returning – comparison and logical operators.

Unit IV

Controlling the flow of program : Control Structures – If statement – Select case Statements – Loops and Arrays: Loop Structures – Arrays – Procedures: Type of Procedures – Subroutines – Functions – More on Arguments.

Unit V

User Interface: Helper Forms – Message Boxes – Dialog Boxes – Owned Form- Menus and Toolbars: Menus: Creating a menu – Add functionality to the Menu Items – Enhancing the Menu – Disabling Items on Windows Forms Menus – Context Menu – Toolbars .

Text Book

1. Web Enabled Commercial Applications Development Using HTML, DHTML, JavaScript, Perl, CGI, (2nd Revised Edition), Ivan Bayross, (Unit I)

2.Visual Basic .NET Programming Bible by Bill Evjen,Jason Beres,et al. Copy Right 2002 by Wiley Dreamtech India (P) Ltd., - Unit II

3. Visual Basic .NET A Beginner's Guide by Jeffrey Kent, TATA Mc GRAW-HILL Edition 2002 – Unit III ,IV & V

<u>CORE XIV</u>

COMPUTER GRAPHICS

Hours:5   **Credits :4**

                                                                    Semester: VI

Objectives:

   1. To offer Concepts on basic Graphical Techniques.

   2. To study about Two Dimensional Transformations.

UNIT I

Application of Computer Graphics-Video Display Devices-Raster-scan systems-random-Scan system-Graphics Monitor-Input Devices-Hard –Copy Devices.

UNIT II

Output Primitives

Points and lines-DDA and Bresenhams lime algorithm-Circle generation algorithm -Circle generating algorithms-Ellipse Generating algorithm.

UNIT III

Attributes of output primitives

Line attributes-Curve attributes-Color levels Area-Fill attributes-Character attributes

UNIT IV

Geometric Transformations

Translation – Rotation – Scaling – Matrix representations and Homogeneous coordinates – composite Transformation – Reflection and Shear.

UNIT V

Viewing: The Viewing pipeline – Viewing coordinate Reference Frame – Window to View port coordinate transformation – Viewing functions – Clipping functions – point clipping – Line clipping – Curve clipping – Text clipping – Exterior clipping.

TEXT BOOK:

   1.   Computer Graphics – Donald Hearn and M.Pauline Baker PHI, Second Edition – 1994.

<u>**CORE XV**</u>

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 - 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:

1. Jewie Han, Michelins Kamber, "Data Mining :Concepts and Techniques"
2. Pang-Ning Tan, Michael Steinbach, Vipin Kumar, "Introduction to Data Mining" 2007.

<u>CORE XVI</u>

PROJECT WORK

Hours:5   **Credits   :4**

                                                                              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 5 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

Input and output

Details of modules and process logic

Limitations of the project

Tools/Platforms, Languages to be used

Scope of future applications

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 as follows:

Project Report -30 marks

VivaVoce -30 marks

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

CORE XVII

MULTIMEDIA LAB

Hours:5   **Credits:4**

Semester : VI

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.

ELECTIVE IV

PRINCIPLES OF INFORMATION TECHNOLOGY

Hours :3   **Credits: 3**
                                                                      Semester:VI

Objectives
       1.To have clear knowledge in basic IT Components
       2.To know the applications of Computers in Various fields.

UNIT-I

       Telecommunications: Introduction-Analog & Digital System—Modulation-Types-Techniques-Digital Modulation-Modems.

UNIT-II

       Multimedia: Introduction-Multimedia in Entertainment - Multimedia in Software Training-Multimedia on the Web-Multimedia in office work – Multimedia in Servers and Databases. Multimedia Tools :Applications - Sound & Music-Video-Presentation Types.

UNIT-III

       E-Commerce-Hypermedia-Geographic Information System(GIS).

UNIT-IV

       Computer In Business and Industries: Office Automation-Ergonomics-Office Automation Technologies and System .Computers In Home – Computers in Education Training.

UNIT –V

       Computers In Entertainment :Movies –Music- Advertising & Arts- Computers In Medicine –Computers in Science - Computers in Engineering :ED1- CAD/CAM-PDM.

TEXTBOOK

       Fundamentals of Information Technology by Alexis leon & Mathews leon

SKILL BASED SUBJECT - IV

SOFT SKILLS

Hours:2   **Credits:2**

Semester: VI

UNIT I: Soft skill

Attitude and Aptitude - Lateral Thinking - Time is money- Are Leaders born or made? - Team Building - Interpersonal Skills

UNIT II: Business Communication:

Business Communication in English - Presentation Skills - Business Correspondence

UNIT III: Group Dynamics :

Interviews -   Group Dynamics

UNIT IV: Internet and Soft Skills

Internet for Job Seekers

Resume Preparation.

Text Book

1. G.Ravichandran, S.P.Benjamin Elango and L.Arokiam, "Success through Soft Skills", ICT, 2007