

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

(Re-Accredited with 'A' by NAAC)

Master of Science

(Computer Science & Information Technology)

Batch (2014-16)



PG DEPARTMENT OF COMPUTER SCIENCE

Under Choice Based Credit System

M.Sc (Computer Science & Information Technology)

Regulation for Admission

Eligibility for the Course:

Candidates for admission to the M.Sc(Computer Science and Information Technology) course (Full-Time) should possess a Bachelor's degree of this university or an examination accepted as equivalent thereto, with a minimum aggregate of 55% marks, in Part III subjects with atleast one Mathematics paper at degree level / +2 level, other than languages.

Duration of the Course:

Full-Time M.Sc (Computer Science and Information Technology) Degree course shall be divided into four semesters of two years duration.

Eligibility for the Degree

- Candidates for the degree shall besides undergoing the prescribed course of the study, do practical work like case study, project report, prescribed field training etc., under the guidance of staff members and the Head of the Department.
- No candidate shall be eligible for the degree unless she has completed the prescribed course of the study in an Institution and has passed the prescribed examinations.
- No candidate shall be admitted to the examination unless she has put in not less than 60% attendance in terms of total number of working days and has produced a certificate from the Head of the Institution where she has studied that her progress and conduct have been satisfactory.

Passing Rules:

60% of marks are allotted for external evaluation and 40% of the marks are allotted for internal evaluation in each of the theory and practical subjects.

A Candidate is deemed to have passed in a subject if she gets a **minimum of 50%** of the total marks taking the University marks.

Pattern of Evaluation

For each paper there will be Internal Assessment (IA) and Semester Examination (External).

	Int.	Ext.	Total
Theory	40	60	100
Practical	40	60	100

IA Components

Theory			Practical		
Test	-	25	Lab	-	10
Assignment	-	5	Record	-	10
Seminar	-	10	Test & Viva	-	20
		-----			-----
		40			40
		-----			-----

ARULMIGU PALANIANDAVAR ARTS COLLEGE FOR WOMEN, PALANI
(AUTONOMOUS)

Regulations with regard to Examinations as per TANSICHE

A. Distribution of Marks for Internal and External Examinations

Course	Internal (40 Marks)	External (60 Marks)	Average of Passing Minimum
PG	20/40(50 %)	30/60(50%)	50/100

In internal as well as in external, the student should secure the passing minimum of 50 percent.

Distribution of Internal Marks: 40

Test	:	25
Seminar	:	10
Assignment	:	5
Total	:	40 Marks

B. 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

C. Revision of question Paper Pattern

Course	Objective Questions	Detailed Answer Requiring Question
PG	30% plus 10% logical question	60%

**EXTERNAL QUESTION PATTERN
(For Core and Elective Papers)**

Maximum : 60 marks

Time : 3 Hours

PART A

I. Answer ALL questions (Two question from each Unit) (10*1=10)

This may include multiple choice, true or false; fill up, very short answer and simple examples.

PART B

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

(Each Unit must have One or Two questions)

PART C

III. Answer any THREE questions out of FIVE question : (3*10=30)

(one question from each Unit)

**ARULMIGU PALANIANDAVAR ARTS COLLEGE FOR WOMEN,PALANI
(AUTONOMOUS)
Accredited with A by NAAC
(Affiliated To Mother Teresa Women's University)
Syllabus for
M.Sc., Computer Science & Information Technology (2014-2016)**

BOARD OF STUDIES / MEETING HELD ON 19.03.2014

UNIVERSITY NOMINEE

**Dr.(Mrs)M.Pushpa Rani ,
Professor&Head,
Department of Computer Science,
Mother Teresa Women's University,Madurai centre,
Madurai.**

SUBJECT EXPERTS

**Dr.A.Pathalakshmi M.Sc.,M.Phil.,P.hD.,
Associate Professor,
Department of computer science
M.V.M.Government Arts College(W),
Dindigul.**

**Dr.B.Srinivasan, M.C.A.,,M.Phil.,M.B.A.,P.hD.,
Associate Professor,
Department of computer science,
Gobichettipallayam,**

ARULMIGU PALANIANDAVAR ARTS COLLEGE FOR WOMEN, PALANI
COMMON ACADEMIC STRUCTURE IN AUTONOMY
PG DEPARTMENT OF COMPUTER SCIENCE
M.SC (CS&IT)
CORE STRUCTURE AS PER TANSCHÉ GUIDELINES FOR PG PROGRAM

Semester	Title of paper	Hours	Marks			Credits
			Int.	Ext.	Total	
I	Core Paper I : Programming in C	6	40	60	100	5
	Core Paper II : Digital Electronics & Computer Organization	6	40	60	100	5
	Core Paper III : Relational Database Management System	6	40	60	100	5
	Core Paper IV : Programming in C Lab I	6	40	60	100	5
	Elective I	6	40	60	100	5
	TOTAL	30				25
II	Core Paper V : Object Oriented Programming with C++	6	40	60	100	5
	Core Paper VI : Introduction to Computer Algorithms	6	40	60	100	5
	Core Paper VII : Operating System	6	40	60	100	5
	Core Paper VIII : Object Oriented Programming with C++ Lab II	6	40	60	100	5
	Elective II	6	40	60	100	5
	TOTAL	30				25

Semester	Title of paper	Hours	Marks			Credits
			Int.	Ext.	Total	
III	Core Paper IX : Computer Graphics & Multimedia	6	40	60	100	5
	Core Paper X : Java Programming	6	40	60	100	5
	Core Paper XI : Data Mining	6	40	60	100	5
	Core Paper XII : Java Programming Lab III	6	40	60	100	5
	Elective III	6	40	60	100	5
	TOTAL	30				25
IV	Core Paper XIII : Software Engineering	6	40	60	100	5
	Core Paper XIV : Web Technology	6	40	60	100	5
	Project	18	40	60	100	5
	TOTAL	30				15

Elective-I

Information Technology
E-Commerce & its applications
System Simulation

Elective-II

Compiler Design
System Software
Neural Networks

Elective-III

Data Communication & Networking
Mobile Communication
Digital Image Processing

CORE PAPERS : 14

EIECTIVE PAPERS : 03

CORE PAPER I- *PROGRAMMING IN C*

Hours : 6

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 language – Structure of C program – Character set – Keywords – Identifiers - constants – variables – Data types - Storage class specifiers – Operators – Expressions – Assignment Statements - Type Modifiers –Functions.

UNIT - II:

IF statement – Nested If– switch – loops in C – while loop – do-while loop – break statement – continue statement – exit() function – Goto statement..

UNIT - III:

Single dimensional arrays – two dimensional arrays – Multidimensional array – General form of a function – Function declaration and prototypes -Functions with arguments – Call by value and call by reference – Calling functions with arrays – Recursion.

UNIT - IV :

String and string functions – Structures – Unions – Enumerated Data types – typedef statement – Pointers and Direction pointers – address operator – arrays and pointers.

UNIT - V :

Opening a file – Reading from a file – Closing a file – File opening modes – Writing to a file – Formatted disk I/O functions – Error handling during I/O Operation – Random Access to Files – Command Line Arguments.

REFERENCES BOOKS:

1. 'Programming in ANCI C', E.Balagurusamy, Fourth Edition, Tata McGraw-Hill Publishing Company.
2. 'Working with C' – Yashvanth Kanetkar, BPB Publication – B-14, Connaught place, New Delhi, (Chapters : 2-11)'Programming in C' Schaum Series, Second Edition.

CORE PAPER II - *DIGITAL ELECTRONICS AND COMPUTER ORGANIZATION*

Hours: 6

Credits : 5

Semester : I

Objectives:

- 1.To give knowledge on digital principles and digital circuits.**
- 2.To give a knowledge on memory organization.**

UNIT I:

Number Systems: Binary – Octal – Decimal – Hexa Decimal number system – Conversion: Decimal to Binary – Hexa Decimal to Binary – Hexa Decimal to Octal and vice – versa.

Arithmetic Operation: Binary arithmetic operation – Boolean algebra – Logic Gates – Boolean Simplification – K. Map – Sum of the product method – 1's and 2's complement.

UNIT II:

Combinational Circuits: Arithmetic Circuits: Half Adder – Full Adder – Half Subtractor – Full Subtractor – Multiplexer – Demultiplexer.

Sequential Circuits: Flip Flops: RS,JK, Flip-Flop.

UNIT III:

Instruction codes – Computer instructions – Timing and control – Execution of instruction. Central processor organization: Process bus organization – ALU – Stack organization – Instruction format – Addressing modes – data transfer and manipulation.

UNIT IV:

I/O Unit: Peripheral devices – I/O interface – Asynchronous data transfer – interrupt handlings – DMA.

UNIT V:

Memory organization: Various semiconductor RAMs – disks, tape – ROM, PROM – cache memory (associative mapping-direct mapping – set associative mapping - virtual memory) – Associative memory-match logic - read & write operations.

REFERENCE BOOKS:

1. Digital Circuits and Design by S.Salivahanan and S.Arivazhagan, Vikas Publishing House Pvt. Ltd., New Delhi, 2000.3rd edition
2. Computer System Architecture by Moris Mano. M –, Prentice Hall of India, 1983. 3rd edition

CORE PAPER III- *RELATIONAL DATABASE MANAGEMENT SYSTEMS*

Hours: 6

Credits : 5

Semester : I

Objectives:

1.To include knowledge on RDBMS concepts and programming with oracle.

UNIT I:

Introduction – Data Models – Database languages – Transaction – Storage Management – Database administrator – Users – Overall system structure .

UNIT II:

Entity Relationship Model – Basic concepts – Mapping constraints – keys – E-R Diagram – design – reduction of E - R Diagram to tables. Relational Model – Structure – Relational Algebra – Tuple Relational Calculus – Domain Relational calculus - extended operations – Modifications on a database – views .

UNIT III:

SQL – basic structure – set operations – aggregate functions – Queries – derived relations - views – embedded SQL – other features.

UNIT IV:

Integrity constraints – Domain constraints – referential integrity – assertions – triggers – functional dependencies.

UNIT V:

Database System Architectures – Centralized Systems, Client – Server systems, Parallel Systems, Distributed Systems.

REFERENCE BOOKS:

1. Henry F.Korth and Abraham Silberschatz, “Database System Concepts”, 3rd edition, McGraw – Hill 1997.
2. Bipin C.Desai, “An Introduction to Database Systems”, West Publications, 6th edition, 1995.
3. C.J.Date, “An introduction to database systems”, Addison Wesley publications, 6th edition, 1995.

CORE PAPER IV - PROGRAMMING IN C LAB I

Hours: 6

Credits : 5

Semester : I

1. Checking
 - a. Prime Number
 - b. Armstrong Number
 - c. Odd / Even
 - d. Palindrome Number
2. Sum of digits & Reverse the digits using Switch case.
3. Sorting the numbers.
4. Matrix Manipulation.
5. Arithmetic operation Using Function.
6. Searching a number in the given Array.
7. Check for course eligibility.
8. Swap two numbers using pointers.
9. Create a structure with Stu-name, Reg-No and any five marks. And calculate total marks, Average and Result.
10. Create a Sequential file with Emp-Name, B-Pay,LIC, Age, Code, Department and Salary. Write another program to access the file and calculate the Net-pay and Cross – Pay.

ELECTIVE PAPERS 1.1. INFORMATION TECHNOLOGY**Hours: 6****Credits : 5****Semester : I****Objectives:**

- 1. To know the various aspects of an Information Technology.**
- 2. To understand the different phases of evaluation of Information Technology.**

UNIT I:

Information Technology Today – introduction to IT – information systems – software and data – IT in business and industry – 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 information technology – microprocessor – path of progress — 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 – 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 – network

applications – foundations of modern networks – Local Area Network – Wide Area Network – Link between networks: Devices, Media and Protocols – Dial-up access – high bandwidth personal connections.

UNIT V:

Multimedia : 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 your health – viruses – Computer crime – cryptography – burning issue.

REFERENCE BOOKS:

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

Chapters: 1,2,3,4,5,6,9,10,11& 13.

2.Fundamentals of Computers, Rajaraman V., 2/e Prentice Hall of India, New Mumbai, 1999.

3.Fundamentals of Information Technology. Alex Leon, Leon Techno publications, Chennai, 1999.

4.Understanding and Using Internet, Subhash Mehta, Global Business Press, New Mumbai, 1996.

E 1.2 E-COMMERCE AND ITS APPLICATIONS

Hours: 6

Credits : 5

Semester : I

Objectives:

- 1. To inculcate knowledge on E-Commerce concept in the present IT world.**
- 2. To know the internet basics.**

UNIT I:

Introduction: Electronic Commerce Frame Work – The anatomy of E-Commerce Applications – Electronic Commerce Consumer Applications – Electronic Commerce Organization Applications – The Network infrastructure for electronic Commerce: Components of the Highway – Network Access Equipment – Global Information Distribution Networks.

UNIT II:

The internet as a Network Infrastructure: The Internet Terminology Chronological History of the Internet – NSFNET – Architecture and Components – National Research and Education Network – National independent ISPs-Regional Level ISPs-Local Level ISPs-Service Provided Connectivity – internet Connectivity Options.

UNIT III:

Network Security and Firewalls: Client Server Network Security – Firewalls & Network Security – Data & Message Security – Challenge Response System – Encrypted Documents & Electronic Mail – Electronic Commerce & World Wide Web: Architectural Framework for Electronic Commerce – Technology Behind the Web – Security and the Web.

UNIT IV:

Electronic Payment System: Types of Electronic Payment Systems – Digital Token Based: Electronic Payment Systems Smart Card & Electronic Payment Systems – Credit Card Based Electronic Payment Systems – Risk & Electronic Payment

Systems –Designing Electronic Payment Systems – Inter Organizational Commerce & EDI.

Electronic Data Interchange – EDI Applications in Business – EDI – Implementations, MIME and value Added Networks: EDI Software Implementations – EDI Envelope for Message Transport – Value – Added Networks (VANS) –Internet – Based EDI.

UNIT V:

Information search and Retrieval – Electronic Commerce Catalogues or Directories – Information Filtering – Consumer Data Interface Emerging Tools – On Demand Education and Digital Copyrights: Computer Based Education on Demand – Software Agents: Characteristics and Properties of Agents – The Technology Behind Software Agents – Applets, Browsers and Software Agents.

REFERENCE BOOKS:

1. Ravikalakota & Andrew Whinston, “Frontiers of Electronic Commerce”, Addison Wesley, 2000.
2. Pete Loshin, & Paul A.Murphy, “Electronic Commerce”, 2nd E.d., Jaico Publishing House, 2000.

E 1.3 SYSTEM SIMULATION

Hours: 6

Credits : 5

Semester : I

Objectives:

- 1.To give the basic knowledge on various types of a system models.**
- 2. To know the concepts of acceptance rejection techniques and programming languages.**

UNIT I:

Introduction to Discrete Event System Simulation: Areas of applications – System and system environment. Components of a system – Discrete and Continuous systems, models of a system – types of a model.

UNIT II:

Random Number Generation: Techniques for generating random numbers – test for numbers – frequency tests – Runs tests – test for Auto Correlation – Gap tests – Poker tests.

UNIT III:

Random Variable Generation: Inverse transform techniques – Exponential distribution – uniform distribution, Weibull distribution – Triangular distribution – Empirical continuous distribution – Discrete distribution.

UNIT IV:

Acceptance rejection techniques: Poisson distribution, Gamma distribution – Design and evaluation of simulation experiments, Variance reduction techniques, Verification and Validation of simulation models.

UNIT V:

Programming considerations and languages: S, GASP, SIMSCRIPT, SIMULA, DYNAMO, GPSS.

REFERENCE BOOKS:

1. Jerry Banks – Discrete Events System Simulation, 2nd Edition.
2. Narsingh Deo – System Simulation with Digital Computers Garden. G – system Simulation.

CORE PAPER V- OBJECT ORIENTED PROGRAMMING WITH C++

Hours: 6

Credits : 5

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, Identifier, Variables, Operators, Manipulators, Expressions and Control Structures in C++.

UNIT II:

Functions in C++ - 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 – Type Conversion.

UNIT IV:

Inheritance – Single Inheritance – Multiple 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 – End – of – file detection – File pointers – Updating a file – Error handling during file operations – Command line arguments – Templates – Class Templates - Function Templates – Member Function Templates – Templates Arguments – Exception Handling.

REFERENCE BOOKS:

1. Object Oriented Programming with C++ by E. Balagurusamy, Tata McGraw Hill, New Delhi 2002. 4th edition.
2. Object oriented programming with ANSI & Turbo C++, Ashok N.Kamthane Pearson education.

CORE PAPERVI - *INTRODUCTION TO COMPUTER ALGORITHMS*

Hours: 6

Credits : 5

Semester : II

Objectives:

- 1. Basic terminology, notations and operators.**
- 2. Learnt to develop an algorithm.**

UNIT I:

Introduction: Algorithm-pseudo code for expressing algorithms-analysis-time complexity and space complexity-efficiency of algorithms –O-notation-Omega notation and Theta notation. DIVIDE AND CONQUER :General method-binary search-merge sort-quick sort.

UNIT II:

GREEDY METHOD: General method –Knapsack problem-job sequencing with deadlines-minimum-cost spanning trees: Prim’s and Kruskal’s algorithms-single source shortest paths: Dijkstra’s algorithm.

UNIT III:

DYNAMIC PROGRAMMING: General method-Multistage Graphs-All pairs shortest paths, Single source shortest paths-O/I Knapsack problem-Traveling sales person problem.

UNIT IV:

BACK TRACKING : General method-8 queen problem-sum of subsets problem-graph coloring-Hamiltonian cycles-Knapsack problem.

UNIT V:

BRANCH AND BOUND: Least Cost(LC) search, Bounding-LC branch and bound –FIFO branch and bound-Travelling sales person problem.

REFERENCE BOOKS:

- 1.Fundamentals of Computer Algorithms by Ellis Horowitz and Sahini – Galgotia Publications, 1998.
2. Fundamentals of algorithm by Gilles Brassard and Paul Bratley 1997 -, Prentice Hall of India Pvt .Ltd.
3. Mark Allen Weiss.2000.Data Structures and Algorithms analysis in c, Addition-wesley, Third Indian Reprint.

CORE PAPER VII - OPERATING SYSTEM

Hours: 6

Credits : 5

Semester : II

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, Process : Concepts, System Programmer's view Scheduling : Types of scheduler's algorithm and performance evaluation.

UNIT II:

Inter-Process Communication & Synchronization: Need for 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 View of the File Management.

UNIT IV:

Security and Production: Security Policies and Mechanisms, Authentication, Cryptography, Worms and Viruses.

UNIT V:

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

REFERENCE BOOKS:

1. Operating Systems (Concept and Design)-Milen Milankovic, II Edition, 1987, Tata McGraw-Hill INC (Chapters 1-9, 12, 13)
2. Operating System Concepts-Hames L.Peterson,Abraham.
3. Operating System Concepts-Silberschartz, Peterson and Galvin –Addision Wesley.

CORE PAPER VIII- LAB II
OBJECT ORIENTED PROGRAMMING WITH C++

Hours: 6

Credits : 5

Semester : II

1. Print the Stud – Name, Reg-No, 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, get various subject marks and write another program to access the file and calculate total mark, average and result.

ELECTIVE PAPERS 2.1 *COMPILER DESIGN*

Hours: 6

Credits : 5

Semester : II

Objectives:

- 1. To impart the knowledge on Parsing Techniques.**
- 2. To know the concept on code optimization and code generation.**

UNIT I:

Introduction to compiler – Phases in compilation – Finite automats and lexical analysis – syntactic specification of programming language.

UNIT II:

Basic parsing techniques - Parsers – Shift reduce parsing – Operator precedence parsing – Top down parsing – Predictive parsing.

UNIT III:

Syntax Directed Translation – Intermediate code – Postfix notation – Three address code – Quadruple and triples – Translation of assignment statements – Boolean expressions – Statements that alter the flow of control.

UNIT IV:

Symbol Tables – Content – Data Structure - Introduction to code optimization – Loop optimization - DAG representation of basic blocks – Value numbers – Algebraic laws.

UNIT V:

Code generation – Problems in code generation – Simple code generator – Register allocation and Assignment – Code generation from DAG – Peephole optimization.

REFERENCE BOOKS:

1. Alfred v Aho – principles of compiler design.
2. Alfred v Aho, jeffrey dulman ‘principles of compiler design’ – narosa new delhi.

E 2.2 SYSTEM SOFTWARE

Hours: 6

Credits : 5

Semester : II

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 Processors: Basic Macroprocessor functions – Machine Independent Macroprocessor features – Macroprocessor Design options.

UNIT V:

Compiler: Basic Compiler functions – Machine Dependent, Independent Compiler Features - Compiler Design options.

REFERENCE BOOKS:

1. System Software (An Introduction to System Programming) - III Edition – 1997 – Addison Wesley. Chapters: 1 – 5.
2. Leland – L.Back, “System Software – An Introduction to System Programming” Pearson Education Publishers III Edition, 2003.

E 2.3 NEURAL NETWORKS

Hours: 6

Credits : 5

Semester : II

Objectives:

- 1. To understand the fundamental on Pattern Recognition.**
- 2. To inculcate the knowledge on Neural Network Techniques.**

UNIT I:

INTRODUCTION

Humans and Computers: The structure of the Brain, Learning in Machines, the Differences.

UNIT II:

PATTERN RECOGNITION

Introduction, Pattern Recognition in Perspective, Pattern recognition – a definition, feature vectors and feature space, discriminate functions, classification techniques. Linear classifiers statistical techniques, Pattern Recognition – a summary.

UNIT III:

THE BASIC NEURON

Introduction: Modeling the single neuron, learning in simple neurons, the perception a vectorial perspective, the perception learning rule, proof, and limitations of perception.

THE MULTILAYER PERCEPTRON

Introduction, altering the perception model, the new model the learning rule, the multiplayer perception algorithm, the XOR problem revisited applications of multiplayer perception.

UNIT IV:

KOHENEN SELF – ORGANIZING NETWORKS

Introduction, the kohenen algorithm, weight training neighborhoods, reducing the neighborhoods, learning vector quantization, the Phonetic typewriter.

HOPFIELD NETWORKS

The Hopfield model, the energy landscape, the Boltzmann machine, constraint satisfaction.

UNIT V:

ADAPTIVE RESONANCE THEORY

Adaptive resonance theory, architecture and operation, ART algorithm, training the ART network, clarification, conclusion, summary of ART. Hardware and Software implementations, Optical Computing, Optical Computing and neural networks.

REFERENCE BOOKS:

1. Neural Computing: An introduction R.Beale & T.Jackson, Adam Hilger, 1990.
2. James A.Freeman,David M.Skapura-“Neural Networks-Algorithm,Application,and Programming techniques” Pearson Education.
3. Fredic M.Ham,IvicalKostanic,”Principles of Neuro computing for science of engineering”TMCH.

CORE PAPER IX - COMPUTER GRAPHICS & MULTIMEDIA

Hours: 6

Credits : 5

Semester : III

Objectives:

- 1. Learnt the concepts of Graphics.**
- 2. Learnt the concepts of two and three dimensional objects.**
- 3. To know the basic and various elements of multimedia.**

UNIT I:

Applications of computer Graphics – Video display devices – Raster-Scan Systems – Random-Scan Systems – Input Devices : Data Glove – Digitizers – Image Scanners – Touch Panel – Light Pen – Voice Systems.

UNIT II:

Output Primitives : Points and Lines – Line Drawing Algorithm : DDA Algorithm – Bresenham's Algorithm – Circle-Generating Algorithm – Ellipse Generating Algorithm.

UNIT III:

Line Attributes – Curve Attributes –Color and grayscale Levels – Area-Fill Attribute – Character Attributes.

Geometric Transformations:

Translation – Rotation - Scaling – Matrix Representations – Composite Transformations.

UNIT IV:

Multimedia : Introduction – Multimedia Presentation and Protection – Characteristics of a Multimedia Presentation – Multiple Media – Uses of Multimedia – Text – Image: Introduction – Image types – Seeing color – Color Models – Basic Steps for image processing - Audio.

UNIT V:

Video : Introduction – Analog video camera – Transmission of Video signals – Video signal format– Video file formats and CODECs – video editing software – Animation : Uses of Animation – Types of Animation – Principles of Animation – Some technique of Animation – 3D Animation – Compression : Types of Compression – JPEG Image coding standard – MPEG Standard – Virtual Reality.

REFERENCE BOOKS:

1. "Principles of Multimedia" by Ranjan Parekh.
- 2."Computer Graphics",Donald Hearn, M.Pauline Baker, Prentice Hall of India Edition II.
- 3."Using Macromedia Flash MX", by Michael Hurwicz, Laura McCabe, Techmedia, special Edition.

CORE PAPER X - JAVA PROGRAMMING

Hours: 6

Credits : 5

Semester : III

Objectives:

- 1. To inculcate knowledge on java programming concepts.**
- 2. To create wide range of application and applets using Java.**

UNIT I:

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

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

UNIT IV:

Multithreaded Programming: Introduction - 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 Graphs - Using Control Loops in Applets.

REFERENCE BOOKS:

1. E.Balagurusamy "Programming with JAVA". 4th edition.
2. The complete Reference JAVA 2 Herbert Schildt 3rd edition.

CORE PAPER XI - *DATA MINING*

Hours: 6

Credits : 5

Semester : III

Objectives:

- 1.To present fundamentals of Data Warehousing.**
- 2.Understood the concept of Data Mining.**
- 3.Learnt Classification, Clustering and Data Warehousing and neural Networks .**

UNIT I:

Data Warehousing : Introduction – Definition – Multidimensional Data Model
OLAP operations – Warehouse Schema – Architecture – Metadata – OLAP Engine -
backend process.

UNIT II:

Data Mining – Definition – Comparison with other Related Areas – Techniques –
Issues and Challenges - Application Areas.

UNIT III:

Association rules – Methods – A Priori algorithm – Partition Algorithm – Princer
Search Algorithm – Border Algorithm – Generalized association rules –Association
Rules with Item constraints.

UNIT IV:

Clustering Techniques – Paradigms – Algorithms – CLARA – CLARANS -
Hierarchical clustering – DBSCAN – Categorical Clustering Algorithms – STIRR
Decision Trees – Tree construction principle – Best split – Splitting indices – CART –
ID3.

UNIT V:

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

REFERENCE BOOKS:

1. "Data Mining techniques" by Arun K Pujari – Universitites Press – 2001.
2. "Data Mining introductory and Advanced Topics" by Margaret H.Dunham, S.Siridhar" Pearson Education 2003,.
3. C.S.R.Prabhu,"Data Warehousing Concepts techniques", Products and Application PHI 2nd Edition.

CORE PAPER XII LAB III - JAVA PROGRAMMING

Hours: 6

Credits : 5

Semester : III

1. Develop a Java program using Inheritance and method overriding.
2. Create and import packages.
3. Create and implement interfaces.
4. Apply Exception handling .
5. Inter thread communication.
6. Applet coding for Simple Drawing.
7. Applet coding to create different controls.
8. Applet coding to apply Graphics Methods.
9. Applet coding to design a webpage.

ELECTIVE PAPERS 3.1 DATA COMMUNICATIONS AND NETWORKING

Hours : 6

Credits : 5

Semester : III

Objectives:

- 1. To know about the concept of various Transmission media.**
- 2. To impart knowledge on internet protocols.**
- 3. To offer concepts of network security.**

UNIT I:

Introduction to Networks, internet, protocols and standards, the OSI model, layers in OSI model, TCP/IP suite, Addressing, Analog and digital signals.

Physical Layer: digital transmission, multiplexing, transmission media, circuit, switched networks, datagram networks, virtual circuit networks, switch and Telephone Network.

UNIT II:

Data Link Layer : Introduction, Block coding, cyclic codes, checksum, framing, flow and error control, Noiseless channels, noisy channels, HDLC, point to point protocols.

Medium Access sublayer: Random Access ,controlled Access ,channelization ,Ethernet.

UNIT III

Connecting LAN, backbone networks and virtual LANs, Wireless WANs, SONET, frame relay and ATM.

Network Layer: Logical Addressing ,Internetworking, tunneling ,address mapping ,ICMP, IGMP, forwarding ,uni –cast routing protocols, multicast routing protocols.

UNIT IV:

Transport Layer: Process to Process delivery, UDP and TCP protocols, SCTP,datatraffic.Congestion,Congestion control, Qos integrated services, differentiated services, Qos in switched networks.

UNIT V :

Application Layer : Domain name space, DNS in internet , E-Mail, WWW, HTTP, SNMP, Multimedia, Network Security.

REFERENCE BOOKS :

1. Data Communications and Networking-Behrouz A. Forouzan, Four Edition TMH, 2006.
2. Computer Network by Andrew S. Tanenbaum PHI, III Edition, 1996.

E 3.2- MOBILE COMMUNICATION**Hours : 6****Credits : 5**
Semester : III**Objectives:**

- 1.To know about the concept of various communication devices.**
- 2.To impart knowledge on internet protocols and formats.**
- 3.To offer concepts of wireless Technology.**

UNIT I:

Introduction: Applications – A Short history of wireless Communication – A Market of Mobile Communications – Some open Research topics – A simplified reference model.

Wireless transmission: Frequencies for radio transmission – signals – Antennas - Signal Propagation. Multiplexing – Modulation – spread spectrum – Cellular system.

UNIT II:

Medium Access control: Motivation for a specialized MAC – SDMA - FDMA – TDMA – CDMA – comparison of S/T/F/CDMA.

Telecommunication systems: GSM – DECT – TETRA – UMTS and IMT-2000

UNIT III:

Satellite systems: History – applications- basics. Broadcast systems: cyclical repetition of data – Digital audio broadcasting – Digital video broadcasting – Convergence of broadcasting and mobile communications.

UNIT IV:

Wireless LAN: Infrared vs radio transmission – Infrastructure and ad-hoc network – IEEE 802.11 – HIPERLAN – Bluetooth.

Mobile Network layer: Mobile IP – Dynamic host configuration protocol – Mobile ad-hoc networks.

UNIT V:

Mobile transport layer: Traditional TCP – Classical TCP improvements – TCP over 2.5/3G wireless networks – Performance enhancing proxies.

REFERENCE BOOKS:

1. Principles of Mobile Computing – Uwe Hansmann, Lothar Merk, Martin S.Nicklous, Thomas Stober, Springer – Second Edition – 2003.
2. “Mobile Communications” Addison Wesley, 2003, Jochen H.Schiller IInd Edition.
3. Raffat A Dayen “ Mobile Data & Wireless Lan Technologies” Prentice Hall, 1997.

E 3.3 DIGITAL IMAGE PROCESSING**Hours: 6****Credits : 5****Semester : III****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 Quantisation – 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 – Interpixel 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.

REFERENCE BOOKS:

1. Digital Image Processing Rafael C. Gonzalez & Richard. E. Woods Addison – Wesley publishing Company Inc.(Third Indian Reprint, 2000).
2. Anil K.jain, ”Fundamentals Digital Image Processing”,Pearson Education.
3. B.Chandra and D.Dutta Majundar, ”Digital Image Processing and Analysis”,Prentice Hall of India private Ltd.,New Delhi.

CORE PAPER XIII - SOFTWARE ENGINEERING

Hours: 6

Credits : 5

Semester : IV

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 – Software Engineering Definition – 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 :

Software design: Design Definition – Function Oriented Design – Software Testing : A Strategic Approach to Software Testing – Testing : Functional Testing – Structural Testing – Levels of Testing – Validation Testing.

UNIT V :

Software Maintenance – Estimation of Maintenance Costs.

REFERENCE BOOKS:

1. Software Engineering by K.K.Agarwal,3rd Edition.
2. Software Engineering :A Practical approach by Roger S.Pressman – McGraw Hill – 1987 Edition.
3. Rajib Mall, “Fundamentals of Software Engineering”, PHI Second Edition.

CORE PAPER XIV - *WEB TECHNOLOGY*

Hours: 6

Credits : 5

Semester : IV

Objectives:

- 1. To understand the fundamentals steps in Website Creation.**
- 2. To inculcate knowledge on .Net Framework.**

Unit I:

Creation of Information Files – The functionality of a Web Server and a Web Browser – Browser Basics : Common Browser features – Internet Explorer – Netscape Navigator

Unit II:

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

Unit III:

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 IV:

Variables, and Data Types : Data Types: Bits and Bytes – Numeric data Types – Character Data Types - Variables : Option Explicit –Option Strict – Constants.

Unit V:

Assignment and Arithmetic Operators : Assignment Operators – Type Conversion: Widening conversions – Narrowing Conversions-Type Conversion Keywords – Arithmetic Operators –Combining arithmetic and assignment operators – Input box function and returning values

REFERENCES BOOKS:

1. Web Enabled Commercial Applications Development Using HTML, DHTML, JavaScript, Perl, CGI, (2nd Revised Edition), Ivan Batross, Chapters 1, 9, 19, 20.(Unit I & II)
2. Visual Basic .NET Programming Bible by Bill Evjen, Jason Beres, et al. Copy Right 2002 by Wiley Dreamtech India (P) Ltd., 3 .Visual Basic.NET .
3. Visual Basic .NET A Beginner's Guide by Jeffrey Kent, TATA McGraw Hill Edition.

PROJECT & VIVA VOCE

Hours : 18

Credits : 5

Semester : IV

The objective of the project is to motivate the m 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 18 hours/week for one (semester IV) 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
- Data Flow Diagram
- 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

Viva Voce - 30 marks.