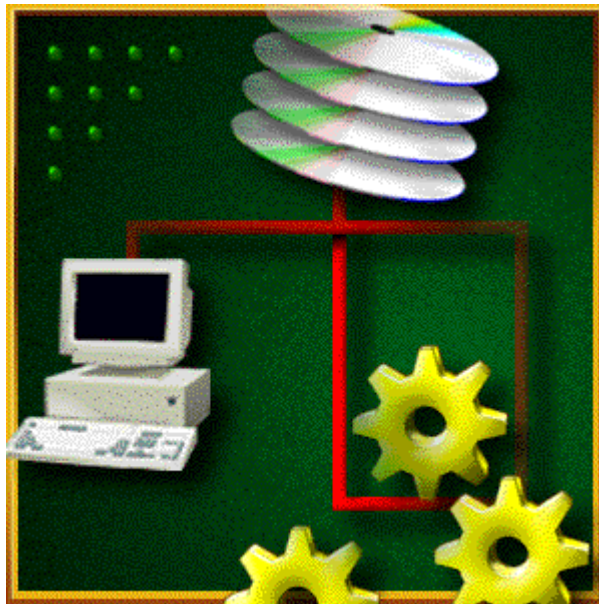


**ARULMIGU PALANIANDAVAR ARTS COLLEGE FOR
WOMEN,PALANI
(Accredited with B++by NAAC
(AUTONOMOUS)
M.Sc (Computer Science & Information Technology)
(With Effect from 2011)
(Batch 2011-14)**



PG DEPARTMENT OF COMPUTER SCIENCE

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 45% marks, in part III subjects with *atleast one maths 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 semester 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 member and the head of the Institution.
- 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 75% attendance in terms of total number of working days and has produced a certificate from the Head of the Institution where has studied certificate that her progress and conduct have been satisfactory.

Passing Rules:

75% of marks are allotted for external evaluation and 25% 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 and the sessional marks together with external minimum of 38 out of 75.

Pattern of Evaluation

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

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

IA Components**Theory**

Test	-	15
Assignment	-	5
Seminar	-	5

		25

Practical

Lab	-	10
Record	-	10
Test & Viva	-	20

		40

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

Semester	Title of paper	Hours	Marks			Credits
			Int.	Ext.	Total	
I	Core-I Principles of Information Technology	4	25	75	100	4
	Core-II Programming in C	4	25	75	100	4
	Core-III Relational Data Base Management System	4	25	75	100	4
	Core-IV Digital Electronics & Computer Organization	4	25	75	100	4
	Elective I	5	25	75	100	5
	Core V Lab I : Programming in C	4	40	60	100	2
	Core VI Lab II - Relational Data Base Management System	4	40	60	100	2
	TOTAL	29				25
II	Core-VII - Data Structures	4	25	75	100	4
	Core-VIII- Distributed Operating System	4	25	75	100	4
	Core-IX- Object Oriented Programming with C++	4	25	75	100	4
	Elective II	5	25	75	100	5
	Non Major Elective	5	25	75	100	5
	Core X-Lab-III Programming with C++	4	40	60	100	2
	Core XI-Lab-VI Visual Programming	4	40	60	100	2
	TOTAL	30				26

Semester	Title of paper	Hours	Marks			Credits
			Int.	Ext.	Total	
III	Core-XII- Software Engineering	4	25	75	100	4
	Core-XIII- Java Programming	4	25	75	100	4
	Core-XIV- Computer Graphics & Multimedia	4	25	75	100	3
	Elective III	4	25	75	100	5
	Elective IV	4	25	75	100	5
	Core XV-Lab-V JAVA Programming	5	40	60	100	2
	Core XVI-Lab-VI Multimedia & Web Technology Lab	5	40	60	100	2
	TOTAL	30				25
IV	Main Project				100	14

Elective-I

Numerical and statistical method
 E-Commerce & its applications
 System Simulation

Elective-II

Data Mining
 Digital Image Processing
 Neural Network

Elective-III

Computer Networks
 Compiler Design
 System Software

Elective-IV

Mobile Communications
 Client / Server Computing
 Embedded System

CORE COURSE I**PRINCIPLES OF INFORMATION TECHNOLOGY****Hours: 4****Credits: 4****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 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 — 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 – 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.

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.

CORE COURSE II
PROGRAMMING in C

Hours: 4

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 language – Structure of C program – Character set – Data types – Constants and Variables – constants – variables – Keywords – Type Modifiers – Storage class specifiers – functions – Operators – Expressions – Assignment Statements.

Unit - II

IF statement – Nest if – switch – loops in C – while loop – do-while loop – break statement – continue statement – exit() function – goto statement – console I/O functions – Unformatted console I/O functions – formatted console I/O functions.

Unit - III

Single dimensional arrays – two dimensional arrays – Multidimensional array – 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

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 the file – File opening modes – Writing to a file – Formatted disk I/O functions.

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 COURSE III
RELATIONAL DATABASE MANAGEMENT SYSTEMS

Hours: 4

Credits: 4

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 COURSE IV**DIGITAL ELECTRONICS AND COMPUTER ORGANIZATION****Hours: 4****Credits: 4****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. Mano M.M – Computer System Architecture, Prentice Hall of India, 1983. 3rd edition

E.1.1 .NUMERICAL ANALYSIS & STATISTICAL METHODS

Hours: 5

Credits: 5

Semester:I

Objectives:

- 1.To know the concept of numerical methods.**
- 2.To give the knowledge on interpolation.**

UNIT – I

Numerical solution of algebraic and transcendental equation – order of convergence – Bisection, false position and Newton – Raphson methods.

UNIT – II

Simultaneous linear algebraic equation: Gauss elimination methods – Gauss – Seidel iterative methods – power methods to find the largest eigen value and eigen vector.

UNIT – III

Interpolation: Finite differences – Gregory Newton's difference formulae – central difference – Gauss Central difference formulae – Divided difference – Newton's divided difference formulae – Lagrange's formula.

Numerical Integration & Differentiation : Newton's method to compute derivatives – Trapezoidal rule

UNIT – IV

Frequency Distribution : Measures of Central Tendency – Arithmetic Mean – Median – Mode – Geometric Mean – Harmonic Mean.

UNIT – V

Measures of Dispersion – Skewness and Kurtosis – Correlation – Rank Correlation – Regression.

Reference Books

1. Numerical Analysis , Pillai Bhagavathy S.A.Gupta
2. S.S.Sastry, "Introductory Methods of Numerical Analysis", Prentice Hall of India, New Delhi 1986.,4 th edition.
3. K.Venkatraman, "Numerical Methods in Science and Engineering ", National Publishing Co.,Madras.,5 th edition.
4. Dr.S.Arumugam, a.thangapandi Isaac, "Statistics", New Gamma Publishing House, Palayamkottai.

E 1.2 E-COMMERCE AND ITS APPLICATIONS

Hours: 5

Credits: 5

Semester: I

Objectives:

- 1.To inculcate knowledge on E-Commerce concept in the present IT world.**
- 2.To known 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 BOOK

- 1.Ravikalakota & Andrew Whinston, “Froniters of Electornic 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: 5

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 Variate 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
1. Narsingh Deo – System Simulation with Digital Computers. Garden. G – system Simulation.

CORE COURSE V**PROGRAMMING IN C – LAB I****Hours: 4****Credits: 2****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.

CORE COURSE-VI**RDBMS LAB II****Hours: 4****Credits: 2****Semester: I**

1. Table Creation and Manipulation
2. Working with Logical, Comparison, Conjunctive and Arithmetic Operators.
3. Retrieving rows with Character, Aggregate, Date functions.
4. Retrieving rows with Group functions and HAVING.
5. Retrieving rows with Sub Queries.
6. PL/SQL programs with Control Structures.
7. PL/SQL programs with Cursors.
8. PL/SQL programs with Exceptions Handling.
9. Creating and Calling Procedures
10. Creating and Calling Functions.

CORE COURSE VII DATA STRUCTURES

Hours : 4

Credits : 4

Semester:II

Objectives:

- 1.Basic terminology ,notations and operators.**
- 2.Stack,queue,linkedlist,tree and graph.**
- 3.Data Structures representations in memory ,operators and applications.**

UNIT I

Overview – Sparks – How to create Programs – How to Analyse 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 – Storage management – Garbage collection and compaction.

UNIT IV

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

UNIT V

Graphs: Terminology and Representation – Traversals, connected components and spanning Trees, Shortest paths – Activity Networks and Critical paths.

Reference Books:

1. Fundamentals of Data Structures by Ellis Horowitz, Sartaj Sahini – Galgotia Publications, 1998.
2. Data Structure using C ,ISRD Groups,Tata McGraw Hill Publishing company Ltd.,
3. Let Us C, Yeswanth Kanetkar 5th edition.

CORE COURSE VIII
DISTRIBUTED OPERATING SYSTEM

Hours: 4

Credits: 4

Semester:II

Objectives:

- 1.To teach the fundamental aspects of distributing operating system.**
- 2.To give sufficient knowledge on synchronization.**
- 3.To known about security and production policies.**

UNIT – I

Distributed Computing Systems: Evolution – models – distributed operating system – issues in designing DOS-distributed computing environment.

UNIT – II

Communication in issues in distributed system: Protocols – features of a good message passing system – issues in IPC by message passing – synchronization – buffering – process addressing – failure handling – group communication.

UNIT – III

Synchronization: Clock: synchronization – event ordering – mutual exclusion – deadlock – election algorithms.

UNIT – IV

Process management: process migration – threads.

UNIT – V

Security: Potential attacks to computer systems – cryptography – authentication – access control – digital signatures design principles.

REFERENCE BOOKS

- 1.“Distributed Operating Systems Concepts and Design”, Pradeep K.Sinha, PHI,1998.Chapters: 1.2,1.3,1.5-1.7,2.5,3.2-3.5,3.8-3.10,6,8,11.
- 2.”Distributed Operating System”, Andrew S.Tanenbaum, Addison Wesley longman, (Singapore) Private Limited.

CORE COURSE IX
OBJECT ORIENTED PROGRAMMING WITH C++

Hours: 4

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

UNIT II

Functions in C++ - Main function – Function Prototyping – Call by reference – Function Overloading – Friend and Virtual Functions.

UNIT III

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

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 – End – of – file detection – File pointers – Updating a file – Error handling during file operations – Command line arguments – Templates – Exception Handling – Class

Templates- Function Templates – Member Function Templates – Templates Arguments – Exception Handling.

Reference Books:

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

E 2.1 DATA MINING

Hours: 5

Credits: 5

Semester:II

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 fields – Techniques – Issues Applicaton Areas Association rules – Methods – A Priori algorithm – Partition Algrithm – Princer Search Algorithm – Border Algorithm – Generalized association rule with Item constraints.

UNIT III

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

UNIT IV

Neural Network – Genetic Algorithm – Rough Sets – support vector machines.

UNIT V

Web Mining – Introduction – Web content mining – Web structure mining – web usage mining – text mining – hierarchy of categories – text clustering.

Reference Book:

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

E 2.2 DIGITAL IMAGE PROCESSING

Hours: 5

Credits: 5

Semester:II

Objectives:

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

UNIT I

What is Digital Image Processing? 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.

E 2.3 NEURAL NETWORK

Hours: 5

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, discriminant 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, limitations of perception.

THE MULTILAYER PERCEPTRON

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

UNIT IV

KOHENEN SELF – ORGANIZING NETWORKS

Introduction, the kohenen algorithm, weight training neighborhoods, reducing the neighborhoods, learning vector quantisation, 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. Fredric M. Ham, Ivica Kostanic, "Principles of Neuro computing for science of engineering" TMCH.

**NON MAJOR ELECTIVE
DISCRETE STRUCTURES**

Hours: 5

Credits: 5

Semester:II

Objectives:

- 1.To impart the knowledge on set theory and logic.**
- 2.To know the function and relations,graph theory and Trees.**

UNIT I

Set theory : Set notations – basic set operations – venn diagram – laws of set theory – principles of inclusion and exclusion – partition – minsets.

Logic : Proposition – logical operators – truth tables – normal forms – laws of logic – proofs in propositional calculus – mathematical induction.

UNIT II

Functions & relations :Relations: properties of relations – closure operations on relations – solution of recurrence relations – non homogeneous finite order linear recurrence relations. Functions: injective, surjective, bijective functions – composition, identity, inverse.

UNIT III

Graph theory : Graphs and digraphs – definitions – representation of graphs in a digital computer – application of graphs : Shortest path problem.

UNIT IV

Trees : Basic definitions – binary trees – traversal of binary trees – expression trees – postfix, prefix expressions.

UNIT V

Groups – subgroups – semigroups – monoids – sub semigroups and sub monoids.– coset and Lagrange's theorem – normal subgroups — homomorphism-homomorphism of semigroups and monoids –

REFERENCE BOOKS

1. J.P.Trembly and R.Manohar, 'discrete Mathematical Structures with Applications to Computer Science', McGraw Hill, 1987.
2. C.L.Liu, 'Elements of Discrete Mathematics', McGraw Hill, 1985.2nd edition.

CORE COURSE X
LABIII
PROGRAMMING WITH C++

Hours: 4

Credits: 2

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 C++ Mark, Maths mark, Science mark and write another program to access the file and calculate total mark, average and result.

CORE COURSE XI
LAB IV
VISUAL PROGRAMMING

Hours: 4

Credits: 2
Semester:II

1. Design a Scientific Calculator
3. Design a Multiplication Table using Flex Grid.
4. Mark sheet Preparation – Using DAO (with Report Generation)
5. Payroll Processing – Using ADO (with Report Generation)
6. To add and remove the items in a list box.
7. To change the background color and font using check box and option button.
8. To change the style of a shape using combo box.
9. Ms. Comm. Dialog control and Rich text box.
10. Digital Clock
11. Menu creation

CORE XII
SOFTWARE ENGINEERING

Hours: 4

Credits: 4

Semester:III

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

Software 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.

REFERENCE BOOKS

1. Software Engineering by K.K.Agarwal.
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 COURSE XIII
JAVA PROGRAMMING

Hours : 4

Credits : 4
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, 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 : 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 Thread-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.

Reference Books

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

CORE COURSE XIV
COMPUTER GRAPHICS & MULTIMEDIA

Hours: 4

Credits: 3

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

Graphics: Introduction – CRT – Video adapter card – Cable – LCD – Plasma display panel – Types of text – Font – Insertion of text – Text compression – File formats – Image.

UNIT II

Graphics: Advantages of graphics – Uses – Components of a graphics system – Coordinate system – Line drawing – Circle drawing – Filling algorithm – Clipping – Plotter – Transformation – 3D graphics – 3D modeling.

UNIT III

Audio: Acoustic – Fundamental characteristics of sound – Musical note and pitch – Elements of Audio system – Sound Card – Audio Transmission – Recording Services – Digital Audio Broadcasting – Audio and Multimedia – Voice Recognition and Response.

UNIT IV

Video: Animation – Compression – Types of Compression – Redundancies – Lossless - statistical Compression Techniques – GIF-JPEG.

UNIT V

Multimedia: Architecture – GUI – Distributed multimedia Applications – Computer Game – Virtual Reality.

REFERENCE BOOKS:

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

E 3.1 COMPUTER NETWORKS

Hours: 5

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 : Uses – Hardware – Software – Reference Models – Examples.

UNIT II

Physical Layer : Transmission Media – Wireless Transmission – Telephone System – Cellular Radio – Communication Satellites.

UNIT III.

Data Link Layer and Multiple Access Layer : Data Link Layer Design Issues – Elementary data link Protocols – Multiple Access Protocols, Ethernet.

UNIT IV

Network Layer : Network Layer Design Issues – Routing algorithms – Transport Layer: Design Issues – Elements of Transport Layer Protocol.

UNIT V

Application Layer : Network Security – E-Mail – WWW. – Multimedia.

REFERENCE BOOKS

- 1. Computer Network by Andrew S.Tanenbaenm PHI, III Edition, 1996.**
- 2. P.Green – Computer Network Architectures and Protocols, Pllenum Press, 1982**

E 3.2 COMPILER DESIGN

Hours: 5

Semester:III

Credits : 5

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 – syntatctic 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 – Quadrupole 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 D ULMAN ‘Principles of Compiler Design’ – Narosa New Delhi.**

E 3.3 SYSTEM SOFTWARE

Hours:4

Credits:5
Semester:III

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 4.1 MOBILE COMMUNICATION

Hours:4

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 4.2 CLIENT SERVER COMPUTING

Hours: 4

Credits: 5

Semester:III

Objectives:

- 1. To inculcate knowledge on Client/Server concept.**

UNIT I

Introduction to client/server computing – mainframe – 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) – Interprocess 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

UNIT V

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

REFERENCE BOOKS

1. Robert Orfali, Dan Harkey and Jerry Edwards, "Essential Client/server Survival Guide" John Willey and Sons Inc., 1996.
2. Patrick /smith and Steve Guengerich," Client/Server Computing", prentice Hall of India, Second Edition, 1997.

E 4.3 EMBEDDED SYSTEMS

Hours: 4

Credits: 5

Semester:III

Objectives:

- 1.To know the advanced hardware fundamentals.**
- 2. To impart the knowledge on interrupts and Embedded development Tools.**

UNIT I

Basics embedded systems – Hardware fundamentals – Advanced Hardware Fundamentals.

UNIT II

Interrupts – Embedded software and various architectures for it – Basics of RTOS.

UNIT III

RTOS services – Basic design using RTOS – Micro C/OS-II RTOS API calls and its design.

UNIT IV

Embedded development tools – Debugging techniques – Sample RTOS applications.

UNIT V

RTOS Program modeling concepts for single and multiprocessor system software development.

REFERENCE BOOKS:

1. **David E.Simon**, An embedded software primer, Pearson education, 2006
(ISBN 81 – 7808-045-1)
[Unit – I: (Chapters 1,2,3); Unit – II: (Chapters 4,5,6);
Unit – III: (Chapter 7,8); Unit – IV: (Chapters 9,10,11)]
2. Rajkamal, Embedded systems, Tata McGrawHill, 2005(ISBN0-07-049470-3)(Unit – 5Chapter 6)

CORE - XV
JAVA PROGRAMMING – LAB

Hours: 5

Credits: 2
Semester:III

1. Java inheritance and method overriding
2. Stack implementation using packages
3. Queue implementation using interfaces
4. Exception handling
5. Inter thread communication
6. Stream I/O & files
7. Design a clock and animate it.
8. Program to create a calculator using AWT
9. Program using JDBC
10. Post fix notation using swing

CORE – XVI
WEB & MULTIMEDIA LAB

Hours: 5

Credits: 2
Semester:III

1. Motion Tweening
2. Shape Tweening
3. Text Animation
4. Animation using Mask Layer
5. Animation using Guide Layer
6. Short story creation using scenes
7. Transforming Object using buttons
8. Creating a website for any institution
9. Creating a website for a marketing
10. Application format design using option and check box.

Pattern of the Question paper (External)

Time:3 Hours

Maximum Marks:60

PART A

(6*5=30)

I. Answer Any SIX out of NINE Questions.

PART B

(2*15=30)

II. Answer Any TWO out of FOUR Questions.

BOARD OF STUDIES MEETING WAS HELD ON 30.07.2007

University Nominee

Mrs.S.Vimala M.Sc M.Phil,
Assistant Professor,
Department of computer science
Mother Teresa Women's University,
Kodaikanal.

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,

Head, Dept. of Computer Science,
Cauvery College for Women,
Trichy – 620 018

2. Mr.S.Maheswaran,
Head, Dept. of Computer Science,
G.T.N. Arts College,
G.T.N. Nagar,

Dindigul – 624 005

Pattern of the Question Paper(External)

Maximum : 75 marks

Time : 3 Hours.

Part – A

I. Answer any Five questions: (5*3=15)

All questions carry equal marks. Out of 8 questions 5 should be answered.

Part – B

II. Answer any Three questions : (3*10=30)

All questions carry equal marks. Out of 5 questions 3 should be answered.

Part – C

III. Answer any Two questions(Either or Choice) : (2*15=30)

All questions carry equal marks.

