MANONMANIAM SUNDARANAR UNIVERSITY
TIRUNELVELI

UG COURSES - AFFILIATED COLLEGES
B.Sc. Computer and Information Technology

(Choice Based Credit System)
(With effect from the academic year 2017 -2018)

Category of subjects	Title of the subjects	Contact Hrs/week	Credits
V Semester			
Core	Major – VII Relational Database Management System	5	4
	Major – VIII Software Engineering	4	4
	Major Practical-V Relational Database Management System – Lab	6	4
	Major – IX Data Mining and Data Warehousing	4	4
Part III	Major Elective – I (Group -A)	4	4
Part IV	Skill Based Common Subject Personality Development /Effective Communication /Youth Leader Ship	2	2
	Mini Project	5	4
Total		**30**	**26**
VI Semester			
Core	Major – X Data Communications And Networking	4	4
	Major – XI Multimedia Technology	4	4
	Major – XII .Net Programming	5	4
	Major Practical – VI .Net Programming Lab	6	4
Part III	Major Elective – II (Group -B)	4	4
	Major Project	7	7
Total		**30**	**27**

Major Elective	
Major Elective – I (Group – A)	E-Commerce
	Artificial Intelligence
	Internet Security
Major Elective – II (Group – B)	Web Programming
	System Programming
	Parallel Computing

MAJOR THEORY
RELATIONAL DATA BASE MANAGEMENT SYSTEM

L T P C
5 0 0 4

Preamble

- The area of relational database management system is crowded with a vast number of quality products..

- This paper aims to provide the students a strong foundation in database technology and to learn the fundamentals of data models to make a study of SQL and relational database design.

- Outcome: Knowledge about design RDBMS,SQL,PL/SQL will be obtained.

Unit - I
Introduction : Purpose of Database Systems – Data Models – Database Languages – Transaction Management – Storage Management – DBA – Database Users – System Structure. E-R Model – Entities and Entity sets – Relationship Sets – Mapping Constraints – E-R Diagram.

(15hrs)

Unit – II
Structure of Relational Databases : Relational Algebra – Tuple Relational Calculus – Domain Relational Calculus – Integrity Constraints – Normalization – Boyce – Codd Normal Form – Third Normal Form – Fourth Normal Form – Domain – Key Normal Form.

(15hrs)

Unit – III
Basic SQL Operations : Creating a Table – Insert – Rollback – Commit – Auto commit – Delete – Update – Select, From, Where and Order by – Single value tests – Single value tests – LIKE – Simple tests against a list of values – Combining Logic – Dropping tables – Dropping a Column – Creating a table from a table – Data Functions – Conversation functions – Translate – Decode – Creating a view – Advanced Sub queries – Outer Joins – Natural and Inner Joins – Union, Intersect & Minus – Synonyms – Indexes – Tables space – Clusters – Sequences.   (15hrs)

Unit – IV

Basics of Object : Relational Databases : Objects - Abstract Data Types - Nested tables – Varying arrays – Large Objects – References Object Views – Naming conventions for objects - structure of an object - Users, Roles and Privilege : Creating a user - Password management – Three Standard roles - Format for grant command - Revoking privileges – What users can Grant : Moving to another user – Create Synonym - Create a role - Granting privileges to a role - Granting a role to another role – Adding Password to a role - Removing password from a role - Enabling & Disabling Roles – Revoking Privilege from a role – Drop role.

(15hrs)

Unit - V

An Introduction to PL/SQL : PL/SQL Overview - Declaration section - Executable commands section – Exception handling Section – Triggers : Syntax – Types of Triggers : Row – Level – Statement – Level – before & after – Instead of Schema – Database - Level Triggers - Enabling & Disabling Triggers - Replacing & Dropping Triggers - Procedures, Functions & Packages : Syntax - Compile - Replace - Drop Procedure, Functions & Packages – Cursor Management.

(15hrs)

Text Books:
1. Abraham Silberschatz, Henry F.Korth, S.Sudarshan "Database System Concepts" McGraw – Hill Education, 2010.
2. Kevin Loney, George Koch And the Experts at TUSC, "ORACLE 9i The Complete Reference", Tata McGraw – Hill Publishing Company Ltd., New Delhi.
3. Database Systems RamezElmasri, Shankant B. Navathe – 6th Edition - Pearson.

Reference :
1. Rajesh Narang - "Database Management Systems", PHI Learing Pvt. Ltd., 2006.
2. Raghu Ramakrishnan, Johannes Gehrke, "Database Management Systems", McGraw – Hill Education, 2002.
3. Michael Abbay, Mike Corey, Ian Abramson, "ORACLE 9i A Biginner"s Guide", TataMcGraw – Hill Publishing Company Ltd., New Delhi, 2002.
4. The Database Application Book using the MYSQL Database Gehani – Universities Press.

MAJOR PRACTICAL

L T P C
0 0 6 4

RELATIONAL DATA BASE MANAGEMENT SYSTEM – LAB LIST

1. Create a simple table and write three queries to process a table.
2. Demonstrate query processing using aggregate operators.
3. Write oracle code for demonstrating the correlated sub queries.
4. Write oracle code to create employee records and delete the retired employees and store it on to another table with same structure.
5. Create a course table and create a procedure that displays the instructor details, class details and student details of a particular table which the user inputs.
6. Write a database trigger before insert for each row on the course table not allowing transactions on Sundays and Saturdays.
7. Create a package that contains overloaded functions for
   i. Adding five integers
   ii. Subtracting two integers
   iii. Multiplying three integers
8. Write PL/SQL block to increase the salary by 10% if the salary is > 2500 and < 3000.
9. Write PL/SQL block to display the names of those employee getting salary > 3000. Create and insert records into the following tables. (Insert minimum 10 records in each table).
10. Create Student information table.
11. Create Department information table.
12. Create Instructor‟s information table.
13. Create Course information table.
14. Create Schedule type details.
15. Create Student grade information table in PL/SQL.

MAJOR THEORY

DATA MINING AND DATA WAREHOUSING

L T P C
4 0 0 4

Preamble

- To study about data mining techniques such as clustering, classification
- To know about fuzzy sets and neural network
- To know about data warehousing.
- Outcome :Skills about data mining techniques & data warehousing will be developed.

Unit – I

Introduction : Data Mining Tasks – Data Mining Vs Knowledge Discovery in Databases – Data Mining Issues – Data Mining Metrics – Social Implications of Data Mining – Data Mining from a Database Perspective.
Related Concepts – Database/OLTP Systems – Fuzzy Sets and Fuzzy Logic – Information Retrieval - DSS – Dimensional Modeling - OLAP - Web Search Engines - Statistics – Machine Learning – Pattern Matching.

(13hrs)

Unit – II
Data Mining Techniques: Introduction – A Statistical Perspective on Data Mining - Similarity Measures – Decision Trees – Neural Networks – Genetic Algorithms – Classification - Introduction – Statistical Based Algorithm – Distance Based Algorithms – Decision Tree - Based Algorithm - Neural Network - Based Algorithm - Rule Based Algorithms – Combining Techniques.

(12hrs)

Unit – III
Clustering : Introduction – Similarity and Distance Measures – Hierarchical Algorithms – Partitional Algorithms - Clustering Large Database - Clustering with Categorical Attributes – Comparison.
Association Rules - Introduction - Large Item Sets - Basic Algorithms - Parallel and Distributed Algorithms - Incremental Ruling - Advanced Association Rule Techniques - Measuring the Quality of Rules.

(12hrs)

Unit – IV

DataWare Housing: Definition – Delivery Process – System Process – Process Architecture – Database Schema – Partitioning Strategy – Aggregation – Data Marting – Meta Data.

(13hrs)

Unit – V

System and Data Warehousing : Process Managers – Hardware Architecture – Physical Layout – Security – Back Up and Recovery – Service Level Agreement – Operating Data Ware Housing – Planning – Tunning – Testing the Data Warehousing.

(10hrs)

Text Books :

1. Margarat H. Dunham and S. Sridhar, "Data Mining Introductory and Advanced Topics", Pearson Edition – Unit : I, II and III
2. Sam Anahory and Dennis Murray, "Data Ware Housing in the Real World, A Practical guide for Building Decision Support Systems", Pearson Education – Unit : IV & V.
3. Data Mining Techniques Arun K.Pujari- Third Edition-University Press.

Reference :

1. Jiawettan Champaign MichelineKamber, University of Illions at Urbana "Data Mining : Concepts and Techniques 2 – ed", Morgan Kaufann Publishers.

MAJOR THEORY
SOFTWARE ENGINEERING

L T P C
4 0 0 4

Preamble

- To learn the methodologies involved in the development and maintenance of software over its entire life cycle and
- To understand the concepts of modeling, implementation and various testing strategies and the use of CASE Tools.
- Outcome : Obtain knowledge in software development process,testing & maintenance as well as CASE Tools.

Unit – I
Software Engineering : Definition ,Software Engineering Activities, Skills and challenge – Components of Software Engineering : SSAD and OOSAD – Software Life Cycle Model – Software Development Model – CMM for Process Improvement- Software Process Model – Software Estimation : Size Effort and Cost : Software Metrics : Introduction – Estimation of Effect and Schedule – COCOMO – Software Cost Estimation.

(13hrs)

Unit – II

Software Quality Assurance : Testing Techniques for SQA – Software Testing Strategies – Software Engineering Tools – Introduction – Analysis Tools – Requirements Engineering - Work Breakdown Structure - Prototyping – System Analysis – System Modeling – Structure System Analysis – Software Requirement Specification.

(11hrs)

Unit – III
System Design : Introduction – Data Structure and Database Design- Design Development Process – System Design Architecture – System Behavior design – Architecture and Choices – Architecture and Non – Functional Requirements – Design Specification Documentation – User Interface Design – User Interface Analysis and Design – Guidelines for Designing UI Components – Procedural Design.

(11hrs)

Unit – IV

Object Oriented Approach and Technology : Basis of Objects – Object Properties – Object Oriented System Development Cycle – UML – Static Class Diagrams – Use Case Diagrams – Behavior Diagrams.

(12hrs)

Unit – V

Software Project Management : Introduction -- Basic Concepts – Project Management – Software Development Process Management – Management of Software Workflows – Evaluation of Workflow Process – Integration of Software Engineering Management and Project Life Cycle – Testing for Quality – Functional Testing – System Testing – User Satisfaction Testing – Test Cases and Test Plans – Software System Maintenance.

(13hrs)

Text Book :

1. Waman S. Jawadekar, "Software Engineering Principles and Practice". Tata McGraw Hill Education Private Limited, New Delhi.

Reference :

1. Roger S. Pressman, "Software Engineering A Practitioner Approach", McGraw – Hill Higher Education.
2. Timothy C. Lethbridge and Robert Laganiere, "Object – Oriented Software Engineering", Tata McGraw – Hill Publishing Company Limited, New Delhi.
3. Ian Sommerville, "Software Engineering", Pearson Education Pte.Ltd.Delhi

MAJOR THEORY
DATA COMMUNICATIONS AND NETWORKING

L T P C
4 0 0 4

PREAMBLE
- To learn the concepts, terminologies and technologies used in modern days data communication and computer networking.
- To understand the functions of different networking layers.
- To make the students to get familiarized with different protocols and network components.
- Outcome : Students are obtained skills in different networking layers, protocols,& components while data communication.

Unit – I:
Data Communication : Standard Organizations - Line Configuration - Topology - Transmission Mode – Categories of Networks – Internet Works – The Model – Functions of the Layers. Transmission of Digital Data : Interfaces and Modems - Digital Data Transmission - DTE - DCE Interface - other Interface Standards.

(12hrs)

Unit – II
Transmission Media: Guided Media - Unguided Media - Multiplexing - Many to one/one to Many, Frequency – Division Multiplexing (FDM), Wave – Devision Multiplexing (WDM), Time – Division Multiplexing (TDM).

(12hrs)

Unit – III
Error Detection and Correction : Types of Errors - Detection - Redundancy - Vertical Redundancy Check (VRC) – Longitudinal Redundancy Check (LRC) – Cycle Redundancy Check (CRC) - Checksum – Error Correction. Data Link Control - Line Discipline – Flow Control – Error Control.

(12hrs)

Unit – IV
Switching : Circuit Switching - Packet Switching - Message Switching - Integrated Services - Digital Network (ISDN) - Services - History - Subscribe Access to the ISDN – The ISDN Layers - Broadband ISDN - Future of ISDN.

(12hrs)

Unit – V

Frame Relay : Introduction – Frame Relay Operation – Frame Relay Layers – Congestion Control Leaky Bucket Algorithm - Traffic Control. Networking and Internetworking devices – Repeaters – Gateways – Other Devices – Routing Algorithm, Distance Vector Routing – Link State Routing.

(12hrs)

Text Book :

1. Data Communications and Networking - "Behrouz A Foruzan", Tata McGraw Hill Publishing Company Limited, New Delhi. 2nd Edition 2006.
2. Data Communications and Networking – Wayne Tomain - Pearson.

Reference Book :

1. Computer Networks – "Andrew S. Tanenbaum", - Prentice Hall of India, 4th Edition, 2006.
2. Data and Computer Communications "William Stallings Prentice Hall of India 2007.

MAJOR THEORY
MULTIMEDIA TECHNOLOGY

L T P C

PREAMBLE   **4 0 0 4**

- To impart the fundamental concepts of Multimedia.
- To study the graphics techniques and algorithms, multimedia concepts.
- To enable the students to develop their creativity.
- Outcome : Basic ideas of images,audio,video & animation are obtained.

Unit – I
Introduction : Multimedia Presentation and Production - Characteristics of Multimedia. Presentation – Multiple Media – Utilities of Multi - sensory perception – Hardware and Software, Requirements. Digital Representation : Analog Representation – Waves – Digital. Representation – Need for Digital Representation – Analog to Digital Conversion – Digital to Analog Conversion.Text : Types of Text – Unicode Standard – Font – Insertion of Text – Text Compression – File Formats.

(12hrs)

Unit – II
Image : Image Types – Seeing Color – Color Models – Basic Steps for Image Processing - Scanner - Digital Camera - Interface Standards - Specification of Digital Images – CMS – Device Independent Color Models – Image Processing Software - File Formats – Image Output on Monitor and Printer.

(12hrs)

Unit – III
Audio : Introduction – Acoustics – Nature of Sound Waves – Fundamental Characteristics of Sound – Microphone – Amplifier – Loudspeaker – Audio Mixer – Digital Audio – Synthesizers – MIDI – Basics of Staff Notation – Sound Card – Audio Transmission - Audio File Formats and CODECs - Audio Recording Systems – Audio and Multimedia – Voice Recognition and Response – Audio Processing Software.

(12hrs)

Unit – IV
Video : Analog Video Camera – Transmission of Video Signals – Video Signal Formats – Television Broadcasting Standards - Digital Video - Digital Video Standards - PC Video – Video Recording Formats and Systems – Video File Formats and CODECs – Video Editing – Video Editing Software.

(12hrs)

Unit – V

Animation :

Types of Animation – Computer Assisted Animation – Creating Movement – Principles of Animation – Some Techniques of Animation – Animation on the Web – Special Effects – Rendering Algorithms. Compression : MPEG – 1 Audio – MPEG – 1 Video – MPEG – 2 Audio – MPEG – 2 Video.

(12hrs)

Text Books :

1. Principles of Multimedia – Ranjan Parekh, 2007, TMH.

Reference Books :

1. Multimedia : Making it Work – Tay Vaughan, 7th Edition, TMH.
2. Comdex Multimedia And Web Design – Vikas Gupta, Dream Tech Press 2007.
3. Multimedia Applications – Ralf Steinmetz, KlaraNahrstedt – Springer – International Edition.

MAJOR THEORY
NET PROGRAMMING

L T P C
5 0 0 4

PREAMBLE

- The objective of this course is to teach the design of web application for the students who already have mastered the fundamentals of the language.
- Students will learn to build and test larger projects using procedures, objects, debugging tools and data files.
- Outcome: Students can develop programme in .Net application, HTML,XML&ADO access.

Unit – I
The .NET Frame Work : Learning the .NET Languages - Introduction to ASP.NET and IIS – Types, Objects and Name Spaces – ASP .NET Application – Building ASP.NET Website.

(15hrs)

Unit – II
Web Form Fundamentals : HTML Controls – Web Controls – Validation Controls – Navigation Controls – Data Controls – Login Controls – CSS – Working with CSS in Web Developer – More Programs.

(15hrs)

Unit - III
State Management : Session – View – Query String – Cookies – Tracing – Logging – Error Handling – User Controls – ASP.NET Ajax – Example Programs.   (15hrs)

Unit – IV
ADO.NET : Over View of ADO.NET – ADO.NET Access – Data Binding – Data List – DATA Grid and Repeaters – Working with Data base – Sample Programs.

(15hrs)

Unit – V
XML : Using XML – XSD – XSLT – Web Services – Creating Web Services – Using Web Services – Caching – ASP.NET Security.

(15hrs)

Text Book :
1. Mathew Mac. Donald, "ASP.NET The complete Reference", Tata McGraw – Hill Publishing Company Ltd., New Delhi.
2. ImarSpanjaars, ASP.NET 3.5 in C# and V.B. : "Wiley India Pvt Ltd.

Reference :
1. O"REILLY, Jesse Liberty, Dan Hurwitz and Brain Mac Donald, "Learning ASP.NET 3.5", II Edition.

MAJOR PRACTICAL

L T P C
0 0 6 4

NET PROGRAMMING – LAB LIST

1. Arithmetic Operations Using Text Box and Button
2. Adding and Removing Items in runtime using Drop Down List and List Box.
3. Upload and display Image using File Up Load Control.
4. Display Date, Day, Month, Year, Day of Week, Day of the Year using Calendar Control.
5. Create an Advertisement using Ad rotator Control.
6. Create a Registration form and apply ASP.NET validation Controls.
7. Binding data in Grid view using Source.
8. Create small pay roll.
9. Create user control with Source.
10. Create a Login Page using Session Variable.
11. Create Student Mark List using SQL Provider.
12. Grid View, Edit, Update, Cancel and Delete using Source.
13. Create a Crystal Report.
14. Create a Simple Web Page Using CSS.
15. Create a Master Page.

GROUP A (MAJOR ELECTIVE – I)

MAJOR ELECTIVE THEORY : E- COMMERCE

L T P C
4 0 0 4

PREAMBLE

- To impart the fundamental concepts of E-Commerce.
- To study the traditional transactions & E-Payment System.
- To enable the students to develop Cybercash model Of security.
- Outcome:students can develop E-commerce system for different Business as well as cybercash model of security.

Unit – I

Introduction to E-Commerce : Networks – Transactions – Commercial Transactions – Why use E – Commerce – Internet and other Novelties – Advantages of E – Commerce – Electronic Transactions Today - World Wide Web.

(12hrs)

Unit – II

Security Technologies : Why Internet Is Unsecure – Internet Security Holes – Cryptography : Objectives – Codes and Ciphers – Breaking Encryption Schemes – DES Cryptographic Applications – Digital Signature – Nonrepudiation an Message Integrity.

(12hrs)

Unit – III

Traditional Transactions : Updating – Offline and Online Transaction – Secure Web Servers – Required Facilities – Digital Currencies and Payment Schemes – Protocol for the Public Transport – Security Protocols – Credit Card Business Basics.

(12hrs)

Unit – IV

Online Commerce Options : Functions and Features - Payment Systems : Electronic, Digital and Virtual Internet Payment Schemes – Account Setup and Costs – Virtual Transaction Process – InfoHaus – Security Considerations.

(12hrs)

Unit – V

CyperCash : Model – Security – Customer Protection – Client Application – Selling through CyperCash – Servers and Commercial Environments – Payment Methods – Server Market Orientation – Netscape Commerce Server – Microsoft Internet – Servers – Smart Cards.   (12hrs)

Text Books :

1. Pete Loshin, "Electronic Commerce", 4th edition, An imprint ofdlaxmi publications pvt. Ltd., New Delhi 2004.
2. Greestein, "E-Commerce", Tata Mc – Graww Hill Pvt. Ltd., 2000.
   3.E-Commerce Kenneth C.Lauden Carel Guercio Traver-10th Edition-Pearson.

MAJOR ELECTIVETHEORY : ARTIFICIAL INTELLIGENCE

L T P C
4 0 0 4

PREAMBLE

- To learn the concepts, terminologies and technologies used in Artificial Intelligence.
- To study different types of AI algorithm.
- To make the students to study about Expert Systems.
- Outcome: students will obtain knowledge in AI algorithm & Expert Systems.

Unit – I

Artificial Intelligence: The AI Problem – What is an AI Technique? - Tic - Tac - Toe – Defining the Problem as a State Space Search - A Water Jug Problem - Control Strategies – Breadth – First Search – Depth – First Search – Heuristic Search – Problem Characteristics.

(12hrs)

Unit – II

Generate and Test : Hill Climbing – Best – First Search – The A* Algorithm – Problem Reduction – AND – OR Graphs – The AO * Algorithm – Means – Ends Analysis.

(12hrs)

Unit – III

Knowledge Representation Issues : Representation and Mappings - Approaches to knowledge Representation – Using Predicate Logic – Representing Simple Facts in Logic – Representation Simple Facts in Logic – Representing Instance and Isa Relationships – Computable Functions and Predicates.

(!3hrs)

Unit – IV

Game Playing : The Minimax Search Procedure - Adding Alpha - Beta Cutoffs - Planning : An Example Domain : The Blocks World - Components of a Planning System – Goal Stack Planning – Undertaking : What is Undertaking? – What is Understanding? – What Makes Understanding Hard?

(12hrs)

Unit – V

Expert Systems : Representing and Using Domain Knowledge – Expert System Shells – Explanation – Knowledge Acquisition – Perception And Action : Real – Time Search – Perception – Action – Robot Architectures.

(11hrs)

Text Books :

1. Elaine Rich, Kevin Knight, "Artificial Intelligence", Tata MCGraw – Hill Publishing Company Limited, New Delhi.

Reference :

1. Stuart Russell, Peter Norving, "Artificial Intelligence, A Modern Approach", PHI Learning Private Limited.
2. Dan W. Patterson "Introduction to Artificial And Expert Systems", PHI Learning Private Limited.

MAJOR ELECTIVE THEORY : INTERNET SECURITY

L T P C
4 0 0 4

PREAMBLE

- To learn the basic concepts of computer security.
- To know the different classes of attack in security.
- To make the students to get familiarized with firewalls,proxy servers & cryptography.
- Outcome: Knowledge will be obtained in internet security attacks,cryptography concepts.

Unit – I

Introduction : Why require a security? – Picking a Security Policy – Strategies for a Secure Network – The Ethics of Computer Security – Security Threats and levels – Security Plan (RFC 2196).

(12hrs)

Unit – II

Classes of Attack : Stealing Passwords – Social Engineering – Bugs and Backdoors – Authentication Failures – Protocol Failures : Information Leakage – Exponential Attacks – Viruses and Worms – Denial – of – Service Attacks – Botnets – Active Attacks.

(12hrs)

Unit – III

Computer Security : What are Viruse, Trojan Horse, Worms? – How to protect the computer against virus – What is the Structure of Viruse?

(12hrs)

Unit – IV

Firewalls and Proxy Servers : Kinds of Firewalls : Packet Filters – Application – Level Filtering – Circuit – Level Gateways – Dynamic Packet Filters – Distributed Firewalls – What Firewalls Cannot Do – Filtering Services : Reasonable Services to Filter – Digging for Worms – Packet – Filtering – Implementing Polices (Default allow, Default Deny) on Proxy.

(12hrs)

Unit – V

Cryptography : Introduction to Basic Encryption and Decryption, Diffie – Hellman Key Exchange – Concept of Public Key and Private Key – Digital Signatures.

(12hrs)

Text Book :

1. William R. Cheswick, Steven M. Bellovin and Aviel D. Rubin, "Firewalls and Internet Security: Repelling the Wily Hacker", Second Edition, Pearson Education.

Reference :

1. Speed, "Internet Security : A Jumpstart For Systems Administrators And IT Managers", Elsevier India.
2. BehrouzForouzan, "Cryptography And Network Security E/2", Tata McGraw Hill Education.

GROUP B (MAJOR ELECTIVE – II)

MAJOR ELECTIVETHEORY: WEB PROGRAMMING

L T P C
4 0 0 4

PREAMBLE

- To learn the concepts, terminologies and technologies used in web programming.
- To know about the functions of XHTML.
- To make the students to get familiarized with java script & server side programming.
- Outcome :Basic ideas in XHTML,java script ,server & client side web programme will be developed.

Unit – I
Introduction to Internet and World Wide Web : Components to Enable Internet Access – Features of Internet Explorer and Firefox – Browser Setting – Web 2.0. – Search Engines – Content Networks – User Generated Content - Blogging – Social Networking and Media Tagging - RIA – Web Services, Mashups, Widgets and Gadgets – Location Based Services – Web 2.0. Models.

(12hrs)

Unit – II

Introduction to XHTML : Structure of XHTML Document – Headings – Links – Images – Lists – Tables – Forms – Frames – Internal Linking – Web Page Design – Introduction to CSS – Inline Styles – Embedded Style Sheets – Conflicting Styles – Liking External Style Sheets – Positioning Elements – Backgrounds – Element Dimensions – Box Model and Text Flow – Media Types – Drop Down Menu – User Style Sheets – Sample Web Applications.

(10hrs)

Unit – III
Introduction to Java Script: Structure of Java Script – Sample Programs – Memory Concepts – Operators – I/O Structures – Control Structures : Selection and Multiple Selection Structures – Repetition Structures – break and continue structures – Functions : Programmer Defined Functions - Function Definition – Scope Rules - Global Functions – Recursion – Example Programs.

(13hrs)

Unit – IV

Arrays : Declaring and Allocating Arrays – Passing Arrays to Functions – Multidimensional Arrays – Objects : Object Technology Concepts – Various JavaScript Objects – DOM Nodes and Trees – DOM Collections – Events and Event Models – XML Basics – XML Namespaces – DTD – XML Schema Documents – XML Vocabularies – XSL – RSS – ActiveX Controls Sample Web Applications.

(13hrs)

Unit – V :

Server Side Programming : Web Servers : HTTP Transactions – IIS and Apache Servers – Databases : MySQL – ADO.NET Object Model – JDBC – PHP : PHP Basics – Form Processing – Dynamic Content – ASP.NET 2.0. Introduction – Developing Sample Web Application – Web Controls – Session Tracking – Case Studies.

(12 hrs)

Text Books :

1. Deitel, Deitel, "Internet & World Wide Web- How to Program", 4th Edition, Pearson Education, 2009.

MAJOR ELECTIVE THEORY : SYSTEMS PROGRAMMING

L T P C
4 0 0 4

PREAMBLE

- To learn the basic concepts of assemblers, loaders & assembly language.
- To understand the design of assemblers & loaders
- To make the students to get familiarized with different phases of compilers.
- Outcome : Basic ideas about assemblers, loaders, & compilers are obtained.

Unit – I

Evolution of the components of a Programming System : Assemblers – Loaders – Macros – Compilers – Formal Systems. MACHINE STRUCTURE, MACHINE LANGUAGE, AND ASSEMBLY LANGUAGE : General Machine Structure – Machine Language – An Assembly Language.

(12hrs)

Unit – II

ASSEMBLERS : General Design Procedure – Design of Assembler – Table Processing : Searching and Sorting – Linear Search – Binary Search – Sorting – Interchange Sort – Shell Sort – Bucket Sort – Radix Exchange Sort – Address Calculation Sort – Comparison of sorts – hash or random entry searching.

(12hrs)

Unit – III

MACRO LANGUAGE AND THE MACRO PROCESSOR : Macro Instructions – Features of a Macro Facility – Macro Instructions Arguments – Conditional Macro Expansion – Macro Calls within Macros – Macro Instruction Defining Macros – Implementation within a Assembler.

(12hrs)

Unit – IV

LOADERS : Loader Schemes – Compile and – go – Loaders – General Loader Scheme – Absolute Loaders – Subroutine Linkages – Relocating Loaders – Direct – Linking Loaders - Other Loader Schemes - Binders, Linking Loaders, Overlays, Dynamic Binders – Design of an Absolute Loader – Design of a Direct – Linking Loader – Specification of problem – Specification of Data Structure – Format of a Data Bases – Algorithm.

COMPILERS : PART I

Statement of Problem – Recognizing Basic Elements – Recognizing Syntactic Units and Interpreting Meaning – Intermediate Form – Storage Allocation – Code Generation – Optimization (Machine – Independent) – optimization (Machine – dependent) – Assembly Phase – General Model of Compiler.

(12hrs)

Unit – V

PART 2 : Phases of the Compiler : Lexical Phase – Syntax Phase – Interpretation Phase – Optimization – Storage Assignment – Code Generation – Assembly Phase – Phase of a Compiler.
Part – 3 – Data Structures – Recursion, call and return statements – storage classes – use – implementation – Block Structure – Nonlocal go to"s – Interrupts – Pointers.

(12hrs)

Text Book

1. "Systems Programming", John J. Donovan, McGraw – Hill International Editions.

MAJOR ELECTIVE THEORY : PARALLEL COMPUTING

L T P C
4 0 0 4

PREAMBLE

- To learn the concepts, terminologies and technologies used in modern days parallel computing.
- To understand the designing   parallel algorithms & master slave programming.
- To make the students to get familiarized with distributed systems.
- Outcome : Design knowledge in Parallel algorithms & master slave programming will be acquired.

Unit – I
Introduction to Parallel Processing : Definition – Serial Vs Parallel Communication – Data Transfer Modes – Why use Parallel Processing – Parallel Processing Architecture – Types of Parallelism – Multi Processing – SISD – SIMD.

(12hrs)

Unit – II
Introduction to Distributed Environment : Introduction – Client – Server Paradigm – Threads in Distributed Systems – Remote Procedure Call – Remote Object Invocation – Message Oriented Communication – Unicasting – Group Communication – Reliable and Unreliable Multicasting.

(12hrs)

Unit – III
Designing Parallel Algorithms: Methodological Design – Partitioning – Communication – Agglomeration – Mapping – Design and Development of Parallel Processing Systems – Unix Work Station Clusters.

(12hrs)

Unit – IV
Master Slave Programming : Threads and Multi Threaded Programming – Scheduling – Concurrency – MISD – MIMD – Semaphore – DeadLock – Live Lock – Designing Parallel Programs.

(12hrs)

Unit – V

Introduction to Fault Tolerance : Distributed Commit Protocol – Distributed File System Architecture – Issues in Distributed File Systems – Distributed Object – Based System – CORBA – com.

(12hrs)

Text Book
1. An Introduction to Paralleln Computing, Design and Analysis of Algorithms, 2nd Edition, A. Grama, V. Kumar, A. Gupta, Addison Wesley, 2003
2. Parallel Computing : Theory and Practice, M J Quinn, McGraw Hill, 1996.
3. Parallel Processing Architecture – Introduction to Computers and Information Technology, D. Glory Ratna Mary, S. Selvanayahi, V. Joseph Peter, Shekina Publications.

Reference Books

1. MukeshSinghal, "Advanced Concepts in Operating Systems", McGraw Hill Series in Computer Science, 1994.
2. George Coulouris, Jean Dollimore, Tim Kindberg, "Distributed Systems Concepts and Design", Third Edition, Pearson Education Asia, 2002.

Mini Project

L T P C

0 0 5 4

Students are to take up sample project development activities with the guidelines given below

Preparing a project- brief proposal including

- Problem Identification
- Developing a model for solving the problem
- A statement of system /process specification proposed to be developed (Data Flow Diagram)
- List of possible solution including alternatives and constraints
- Cost benefit analysis
- Time line activities

A report highlighting the design finalization [Based on functional requirements & standards (if any)]

A presentation including the following

- Implementation phase (Hardware/Software/both)
- Testing & Validation of the developed system
- Learning in the project

Consolidated report preparation

SEMESTER VI
Major project

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The objective of the project is to enable the students to work in a project of latest topic/research area/industrial applications. Each project student shall have a guide who is a faculty member.

During this semester the students are expected to do literature survey, formulate the problem and form a methodology of arriving at the solution of the problem. Also during this semester,the students are expected to complete the project and submit a full-fledged report comprising of the complete system developed along with implementation and test results.

The departmental committee shall examine the students and the evaluation is based on continuous internal assessment comprising of two reviews.

After two reviews internal is based on seminar demo and Internal viva-voce will be given by the guide. At the end of the semester, a viva-voce examination will be conducted.