MANNAR THIRUMALAI NAICKER COLLEGE

PASUMALAI, MADURAI– 625 004

(An Autonomous Institution Re- accredited with 'A' Grade by NAAC)

M.Sc(CS & IT) DEGREE COURSE

IN

COMPUTER SCIENCE & INFORMATION TECHNOLOGY SYLLABUS AND REGULATIONS

UNDER

CHOICE BASED CREDIT SYSTEM (CBCS)

(For those who are joining in 2015-2016 and after)

Objectives

- To equip the students with specific knowledge and skills for junior and middle positions of responsibilities in industrial and commercial organization.
- To organize instructions on the lines of professional course by adopting participative methods of learning.
- To assist the graduates in finding employment opportunities in business industry.
- To develop an attitude for scientific research in them.
- To enable the students find employment in public and private sector undertakings.

Eligibility for Admission

Candidates seeking admission to the M.Sc Degree course must have any degree (should have studied Computer Science or Mathematics as one of the subject in their degree course) of the Government of Tamil Nadu or any other state or its equivalent qualification.

Duration of the course

The duration of the course shall be two academic years comprising four semesters with two semesters in each academic year.

Subjects of Study

The main subjects of study offered for M.Sc(CS & IT) Degree Course shall consist of following:

Part III :

1. Core Subjects
2. Electives
3. Non Major Electives

Part III

The number of the core courses shall be 16, the elective subjects 2 and the non-major elective subject 1 cover courses.

Credits

The term 'credit' refers to the weightage given to a course, usually in relation to the instructional hours assigned to it. The total credits required for completing M.Sc(CS & IT) degree course is 90. The particulars of credits for individual components and courses are presented on Table 1.

The scheme of Examination

It is presented on Table 2.

Evaluation

The components for continuous internal assessment are:

Three tests and their average   --15 marks

Seminar /Group discussion   --5 marks

Assignment   --5marks

Total   --25marks

Pattern of the question paper (External Examination)

The question paper may have 3 parts.

Duration of the external examination is 3 hours

Part –A

Ten question (objective type with 4 alternatives)   10 x 1=10 Marks

Two question from each unit – No choice)

Part –B

Five question ('either …. or' type)   5 x 7=35 Marks

(One pair from each unit)

(Each answer not exceeding two pages)

Part –C

Three question out of five   3 x 10 =30 Marks

(Each answer not exceeding four pages)   ---------------

                              Total   75 Marks

Question paper pattern (Internal)

Same as in External

Note: No unit shall be omitted; not more than two questions from each unit

Minimum Marks for a Pass

1. 50% of the aggregate (Internal +External Examinations)

2. No separate pass minimum for the Internal Examinations

3. 34 marks out of 75 is the pass minimum for the External Examinations

MANNAR THIRUMALAI NAICKER COLLEGE
Madurai - 4
M.Sc(COMPUTER SCIENCE & INFORMATION TECHNOLOGY)
Table-1: COURSE PATTERN
(Those Who Joined in 2015 – 2016 and after)

Study Component	I Sem.	II Sem.	III Sem.	IV Sem.	Total Hrs/week	Total Credit	No.Of Papers	Total Marks
Part – III								
Core Subjects/ Elective	5(4) 5(4) 5(4) 5(4) 5(4) 5(4)	5(4) 5(4) 5(4) 5(4) 5(4) 5(5)	5(4) 5(4) 5(4) 5(4) 5(5)	0(15)	85	85	18	1800
Non Major Elective	-	-	5(5)	-	5	5	1	100
Total	30 (24)	30 (25)	30 (26)	(15)	90	90	19	1900

( ) – Credits

MANNAR THIRUMALAI NAICKER COLLEGE (AUTONOMOUS)
MADURAI – 4.
(Re-Accredited with 'A' Grade by NAAC)
CHOICE BASED CREDIT SYSTEM
DEPARTMENT OF COMPUTER APPLICATIONS
M.Sc(COMPUTER SCIENCE & INFORMATION TECHNOLOGY)
COURSE STRUCTURE
(W.e.f 2015 – 2016 batch onwards)

Subject Code	Subjects	No.of Papers	Hours/ Week	Credits	Maximum Marks		
					Int.	Ext.	Tot.
SEMESTER - I							
15PCTC11	Resource Management Techniques	1	5	4	25	75	100
15PCTC12	Computer Architecture	1	5	4	25	75	100
15PCTC13	Data Structures and Algorithms	1	5	4	25	75	100
15PCTC14	Relational Data Base Management System	1	5	4	25	75	100
15PCTC13P	Data Structures Using C++ Lab	1	5	4	40	60	100
15PCTC14P	Client Server Lab	1	5	4	40	60	100
	Total	6	30	24			600
SEMESTER - II							
15PCTC21	Data Communications and Networks	1	5	4	25	75	100
15PCTC22	Advanced Operating System	1	5	4	25	75	100
15PCTC23	Java Programming	1	5	4	25	75	100
15PCTC22P	Linux and Shell Programming Lab	1	5	4	40	60	100
15PCTC23P	Java Programming Lab	1	5	4	40	60	100
15PCTE2X	Elective – I (One from List-A)	1	5	5	25	75	100
	Total	6	30	25			600

SEMESTER - III							
Subject Code	**Subjects**	**No.of Papers**	**Hours/ Week**	**Credits**	**Maximum Marks**		
					Int.	**Ext.**	**Tot.**
15PCTC31	Software Engineering	1	5	4	25	75	100
15PCTC32	Dot Net Programming	1	5	4	25	75	100
15PCTC32P	Dot Net Programming Lab	1	5	4	40	60	100
15PCTC3P	Web Design Lab	1	5	4	40	60	100
15PCTE3X	Elective –II (One from List-B)	1	5	5	25	75	100
15PCTN31	Non Major Elective	1	5	5	25	75	100
	Total	6	30	26			600
SEMESTER - IV							
Subject Code	**Subject**	**No.of Papers**	**Hours/ Week**	**Credits**	**Maximum Marks**		
					Int.	**Ext.**	**Tot.**
15PCTC4PR	Project Work & Viva Voce	1	0	15	40	60	100

List – A for Elective - I

15PCTE21 - Software Testing and Quality Assurance.
15PCTE22 - Digital Image Processing.
15PCTE23 - Cloud Infrastructure and Services.

List – B for Elective - II

15PCTE31 – Current trends in Web Security.
15PCTE32 - Mobile Communications.
15PCTE33 – Semantic Web.

Non Major Elective

15PCTN31 – Multimedia Technologies.

DEPARTMENT OF COMPUTER APPLICATIONS

Class	: I M.Sc (CS & IT)	**Part**	: III (Core)
Semester	: I	**Hours Allotted**	: 75
Sub code	: 15PCTC11	**Credits**	: 04

RESOURCE MANAGEMENT TECHNIQUES

OBJECTIVES

- To be familiar with resource management techniques.
- To learn to solve problems in linear programming and Integer programming.
- To understand Network problems and queuing theory.
- To be exposed to CPM and PERT.

UNIT - I

Operations research (OR)- Definition - Operations research models – Solving OR Model - Phases of OR study – Linear Programming – Two variable LP model - Graphical solution - The Simplex method - Sensitivity analysis – Advanced Linear Programming - Revised Simplex Method.

UNIT - II

Duality and Post-optimal analysis - Definition of dual problem - Primal – Dual relationships - additional simplex method - Post optimal analysis – Transportation and its variants - Transportation Model - Assignment models - Transhipment models.

UNIT -III

Integer programming- Illustrative Applications – Integer programming algorithms – Travelling Salesperson Problem – Deterministic dynamic programming.

UNIT -IV

Classical optimization theory- Unconstrained problem – Constrained problem – Nonlinear Programming algorithm - Unconstrained Algorithm – Constrained Algorithm.

UNIT - V

Network Models- Scope and Definition – Minimal spanning tree – Shortest route problem – Maximum flow control - Critical Path Method (CPM) - Time charts and Resources Levelling - PERT.

TEXT BOOK(S)

1. Taha A.H.,**"Operations Research an Introduction"**, 8th Edition, PHI, 2011.

Unit I	:	Chapter 1.1, 1.2, 1.3, 1.6, 2.1, 2.2, 3.3, 3.6.
Unit II	:	Chapter 4.1, 4.2, 4.5, Chapter 5.
Unit III	:	Chapter 9, 10.
Unit IV	:	Chapter 18, 19.
Unit V	:	Chapter 6.

REFERENCE BOOK(S)

1. Kanti Swarup, R.K. Gupta, Manmohan, **"Operations Research"**, Sultan Chand & Sons, 2011.

2. R. Pannerselvam, **"Operations Research"**, PHI, 2009.

Class	: I M.Sc (CS & IT)	**Part**	: III (Core)
Semester	: I	**Hours Allotted**	: 75
Sub code	: 15PCTC12	**Credits**	: 04

COMPUTER ARCHITECTURE

OBJECTIVES

- To understand the basic structure and operation of digital computer and the hardware-software interface.
- To familiarize with arithmetic and logic unit and implementation of fixed point and floating-point arithmetic operations.
- To familiarize with hierarchical memory system including cache memories and virtual memory.
- To expose with different ways of communicating with I/O devices and standard I/O interfaces and the concept of pipelining.

UNIT-I

Data representation - Data types - complements, fixed point and floating point representation other binary codes, Error detection codes. Micro operations: Register transfer language, Register transfer, Bus and Memory transfer, Arithmetic, logic, and shift micro operations, Arithmetic logic shift unit.

UNIT- II

Basic Computer Organisation and design: Instruction Codes – Computer Registers – Computer Instructions – Timing And Control – Instruction Cycle – Memory Reference Instructions – Input-Output and Interrupt – Design of Basic Computer – Design of Accumulator logic. Input-output organization: Peripheral devices - I/O interface - Asynchronous data transfer - Modes of transfer - Priority interrupt - Direct Memory Access - I/O Processor - Serial communications.

UNIT- III

Central processing unit: General register and stack organizations, instruction formats - Addressing modes, Data transfer and manipulation - program control, RISC. Pipeline and Vector Processing: Pipelining: Arithmetic and instruction Pipeline, RISC pipeline - Vector processing and Array processors.

UNIT-IV

Micro programmed control: control memory - Address sequencing - Micro program example - Design of control unit. Computer Arithmetic: Addition and subtraction, Multiplication and Division algorithm, Floating point Arithmetic operations, Decimal Arithmetic Unit, Decimal Arithmetic operations.

UNIT-V

Memory organization - Memory hierarchy - Main memory - Auxiliary memory - Associative, Cache and Virtual memory, Memory Management Hardware - Multi processors – Characteristics, Interconnection structures, Inter processor arbitration, Inter Processor Communication and Synchronization, Cache Coherence.

TEXT BOOK(S)

1. M. Morris Mano, **"Computer System Architecture"**, 3rd Edition, Prentice Hall India, New Delhi, 2008.

      Unit I   : Chapter 3, Chapter 4.

      Unit II   : Chapter 5.1 to 5.7, 5.9 to 5.11.

      Unit III   : Chapter 8, Chapter 9.

      Unit IV   : Chapter 7, Chapter 10.

      Unit V   : Chapter 12, Chapter 13.

REFERENCE BOOK(S)

1. V.Carl Hamacher, Zvonko G.Vranesic.Safwat, G.Zaky, **"Computer Organization",** 4th Edition, Mcgraw Hill, 2002.

2. Raja Raman V, Radhakrishnan T, **"Digital Logic and Computer Organization"**, PHI, 2009.

MANNAR THIRUMALAI NAICKER COLLEGE
DEPARTMENT OF COMPUTER APPLICATIONS

Class : I M.Sc (CS & IT)		**Part** : III (Core)
Semester : I		**Hours Allotted** : 75
Sub code : 15PCTC13		**Credits** : 04

DATA STRUCTURES AND ALGORITHMS

OBJECTIVES

- To study various data structure concepts like Stacks, Queues, Linked List, Trees and Graphs.
- To overview the applications of data structures.
- To be familiar with utilization of data structure techniques in problem solving.
- To have a comprehensive knowledge of data structures and algorithm.

UNIT I

Introduction and Overview: Definition – Concept of Data Structures – Overview of Data Structures – Implementation of Data Structures. Arrays: Definition – Terminology – One dimensional array – Multidimensional arrays. Linked List: Definition – Single linked list – Circular Linked list – Double Linked lists – Circular Double Linked List – Applications of Linked Lists.

UNIT II

Stacks: Introduction – Definition – Representation of a stack – Operations on stacks – Applications of stacks. Queues: Introduction – Definition – Representation of Queues – Various Queue Structures – Application of Queues.

UNIT III

Trees: Basic Terminologies – Definition and Concepts – Representation of Binary Tree – Operations on a Binary Tree – Types of Binary Trees – B Trees. Graph: Introduction – Grpah Terminologies – Representation of Graphs – Operations on Graphs - Application of Graph Structure.

UNIT IV

Sorting and Searching Algorithms- Introduction – Searching Technique - Linear search – Binary search – Sorting Techniques - Bubble sort, Selection Sort, Insertion Sort, Quick Sort, Merge Sort, Heap sort and Radix Sort.

UNIT V

Algorithm analysis – Introduction to Algorithm – Algorithm Design Tools – Program Development – Time complexity – Asymptotic Notations – Space Complexity – Analysis of Searching and Sorting Algorithms – Algorithmic Strategies – Types of Algorithms - Divide and Conquer – Greedy algorithm - Dynamic programming – Back tracking.

TEXT BOOK(S)

1. Debasis Samanta, **"Classic Data Structures"**, 2nd Edition, PHI, 2009.

      Unit I : Chapter 1, Chapter 2, Chapter 3.

      Unit II : Chapter 4, Chapter 5.

      Unit III: Chapter 7, Chapter 8.

2. S. Sane & N.A. Deshpande, **"Data Structures and Algorithms"**, First Edition Technical Publications, Pune, 2006.

      Unit IV: Chapter 5.

      Unit V : Chapter 6.

REFERENCE BOOK(S)

1. Ellis Horowitz, Sartaj Sahni, Sanguthevar Rajasekaran, **"Fundamentals of Computer Algorithms"**, 2nd Edition, Universal Press, 2007.

2. Mark Allen Weiss, **"Algorithms, Data Structures, and Problem Solving with C++"**, Addison Wesley, 2003.

MANNAR THIRUMALAI NAICKER COLLEGE

DEPARTMENT OF COMPUTER APPLICATION

Class : **I M.Sc (CS & IT)**		**Part** : **III (Core)**
Semester : **I**		**Hours Allotted** : **75**
Sub code : **15PCTC14**		**Credits** : **04**

RELATIONAL DATABASE MANAGEMENT SYSTEM

OBJECTIVES

- To study the basic Concepts of database and its preliminary features.
- To provide a general introduction to relational model.
- To learn about ER diagrams.
- To make the students understand the Security Issues in Databases.
- To expose the students to SQL.

UNIT – I

Introduction: Concept & Overview of DBMS, Purpose of Database Systems, Data Models, Database Languages, Database Administrator, Database Users, Three Schema architecture of DBMS. Entity-Relationship Model: Basic concepts, Design Issues, Mapping Constraints, Keys, Entity-Relationship Diagram, Weak Entity Sets, Extended E-R features.

UNIT – II

Relational Model: Structure of relational Databases, Relational Algebra, Relational Calculus, Extended Relational Algebra Operations, Views, and Modifying the Database. Integrity Constraints: Concept of DDL, DML, DCL. Basic Structure, Set operations, Aggregate Functions, Null Values, Domain Constraints, Referential Integrity, Functional dependencies, assertions, views, Nested Sub queries, Database security application development using SQL, Stored procedures and triggers.

UNIT – III

Relational Database Design: Pitfalls in relational database design, Different anomalies in designing a Database, Normalization using functional dependencies, Decomposition, Boyce-Codd Normal Form, 3NF, Normalization using multi-valued dependencies, 4NF, 5NF. Crash recovery: The storage hierarchy, Transaction model, Log-based recovery, Buffer management, check points, Shadow paging, Stable storage management.

UNIT – IV

An Introduction to PL/SQL: PL/SQL Overview -Declarations Section – Executable Commands Section – Conditional Logic – Loops – Cursors – Exception Handling Section. Triggers**:** Types of Triggers – Trigger Syntax – Enabling and Disabling Triggers – Replacing Triggers – Dropping Triggers.

UNIT – V

Procedures, Functions and Packages: Required system privileges - Executing Procedures – Required table privileges - Procedures vs. Functions – Procedures Vs. Packages – Create Function syntax – Create Package syntax – Initializing Packages – Compiling Procedures, Functions and Packages – Replacing Procedures, Functions and Packages – Dropping Procedures, Functions and Packages.

TEXT BOOK(S)

1. Abraham Silberschatz, Henry F.Korth, S.Sudarshan, **"Database System Concepts"**, 5th Edition, Tata McGraw-Hill, 2006.

       Unit I : Chapter 1, Chapter 2.

       Unit II : Chapter 3, Chapter 5.

       Unit III: Chapter 6, Chapter 10.

2. George Koch, Kevin Loney, **"Oracle 8: The Complete Reference"**, McGraw-Hill, 1999.

       Unit IV: Chapter 22, Chapter 23.

       Unit V : Chapter 24.

REFERENCE BOOK(S)

1. C. J. Date, **"An Introduction to Database Systems"**, 8th Edition, Addison Wesley, 2007.

2. James T. Perry, Joseph G. Lateer, **"Understanding Oracle"**, BPB, 2006.

MANNAR THIRUMALAI NAICKER COLLEGE
DEPARTMENT OF COMPUTER APPLICATIONS

Class	**: I M.Sc (CS & IT)**	**Part**	**: III (Core)**
Semester	**: I**	**Hours Allotted**	**: 75**
Sub code	**: 15PCTC13P**	**Credits**	**: 04**

DATA STRUCTURES LAB USING C++

1. Write programs to implement the following using an array.

   a) Stack ADT b) Queue ADT

2. Write programs to implement the following using a single linked list.

   a) Stack ADT b) Queue ADT

3. Write a program to perform the following operations:

   a) Insert an element into a Binary Search Tree.

   b) Delete an element from a Binary Search Tree.

   c) Search for a key element in a Binary Search Tree.

4. Write a program to perform the following operations on B-Trees and AVL-trees:

   a) Insertion. b) Deletion.

5. Write a program to solve the Single Source Shortest Path Problem. (Note: Use Dijkstra's algorithm).

6. Write a program that uses non-recursive functions to traverse a binary tree in:

   a) Pre-order b) In-order c) Post-order

7. Write a program for sorting a given list of elements in ascending order using the following sorting methods:

   a) Quick sort. b) Merge sort.

8. Write a program to implement dynamic programming algorithm to solve the all pairs shortest path problem.

9. Write a program that uses dynamic programming algorithm to solve the optimal binary search tree problem.

Class : **I M.Sc (CS & IT)**		**Part** : **III (Core)**
Semester : **I**		**Hours Allotted** : **75**
Sub code : **15PCTC14P**		**Credits** : **04**

CLIENT SERVER LAB

PL/SQL

1. Creating the Database (DDL Commands).

2. Manipulating and Querying the Database (DML Commands).

3. Using Built-in Functions.

4. Processing of Sub Queries.

5. Applying Joins.

6. Sorting the Database.

7. Programs using Control Statements.

8. Programs using Exception Handling.

9. Programs using Triggers.

10. Programs using Functions.

11. Programs using Procedures.

12. Programs using Packages.

FORMS & REPORT WRITER

1. Inventory control.

2. Banking.

3. Students mark list.

4. Library maintenance.

5. Payroll.

6. Invoice.

7. Railway reservation.

8. College Admission.

MANNAR THIRUMALAI NAICKER COLLEGE
DEPARTMENT OF COMPUTER APPLICATIONS

Class : I M.Sc (CS & IT)		**Part** : III (Core)
Semester : II		**Hours Allotted** : 75
Sub code : 15PCTC21		**Credits** : 04

DATA COMMUNICATIONS AND NETWORKS

OBJECTIVES

- To understand the concepts of data communications.
- To be familiar with the Transmission media and Tools.
- To study the functions of OSI layers.
- To learn about IEEE standards in computer networking.
- To get familiarized with different protocols and network components.

UNIT – I

Introduction- A Brief History – Applications – Computer networks - Categories of Network Standards and Standard Organization – Network Architecture - Open system and OSI model ICP/IP architecture. **Communication media and data transmission-** Analog and digital data transmission – modulation and demodulation - transmission media – wireless communications – data transmission basics - transmission media – interfacing – multiplexing. **Error detection and correction-** Types of errors – error detection – error correction.

UNIT – II

Data link control and protocol concepts- Flow control – error control – asynchronous protocols – synchronous protocols - High level data link control (HDLC). **Local area networks-** Types of networks and topology – LAN transmission equipment – LAN Installation and performance – Ethernet- IEEE Standard 802.3 – token bus- IEEE standard 802.4 – token ring- IEEE standard 802.3 – fibre distributed data interface (FDDI) – distributed queue dual bus (DQDB)- IEEE standard 802.6 – LAN operating systems and protocols – Ethernet technologies. **Wide area networks-** WAN transmission methods – WAN carrier types – WAN transmission equipment – WAN design and multicast considerations – WAN protocols.

UNIT - III

Integrated services and routing protocols- Integrating services – ISDN services – ISDN topology – ISDN protocols – broadband ISDN – Asynchronous transfer mode (ATM) – principal characteristics of ATM – Frame relay – comparison of ISDN, ATM and frame relay. **Wireless LANs-** WLAN applications – wireless LAN requirements – planning for wireless LANs – wireless LAN architecture – IEEE 802.11 protocol layer – IEEE 802.11 physical layer – designing the wireless LAN layout – WAP services.

UNIT – IV

Internetworking- Principles of internetworking – routing principles – internetwork protocols (IP) – shortcomings of IPv4 – IP next generation. **TCP reliable transport services-** Transport protocols – the services TCP provides to application – end – to – end services and datagram - transmission control protocol – user datagram protocol.

UNIT – V

Network application- Client server model – domain name system (DNS) – telnet – file transfer and remote file access – electronic mail. **Network management-** Goal of network management – network management standards – Network management model – infrastructure for network management – SNMP. **Network Security**- Fundamental Concepts – Identification and Authentication – Access control – A model for Network security - Securing Network Using Firewall – Intrusion Detection.

TEXT BOOK(S):

1. Brijendra Singh, **"Data Communications and Computer Networks"**, 2nd Edition, PHI, 2006.

      Unit I : Chapter 1 to Chapter 4.

      Unit II : Chapter 6 to Chapter 8.

      Unit III : Chapter 9, Chapter 10.

      Unit IV: Chapter 12, Chapter 13.

      Unit V : Chapter 14 to Chapter 16.

REFERENCE BOOK(S)

1. Behrouz A. Forouzan, **"Data Communication and Networking"**, TMH, 2005.
2. Achyut S.Godbole, **"Data Communications and Networks"**, TMH, 2005.

MANNAR THIRUMALAI NAICKER COLLEGE
DEPARTMENT OF COMPUTER APPLICATIONS

Class   : **I M.Sc (CS & IT)**   **Part**   : **III (Core)**

Semester   : **II**   **Hours Allotted** : **75**

Sub code   : **15PCTC22**   **Credits**   : **04**

ADVANCED OPERATING SYSTEM

OBJECTIVES

- To understand the Structure and Functions of OS.
- To study I/O management, Memory Management and File System.
- To understand foundations of Distributed Systems.
- To understand the system level and support required for Distributed System.
- To understand the issues involved in Process and Resource Management.
- To be exposed to the Basic concepts of Real Time Operating System.

UNIT – I

Introduction: What Operating Systems Do? - Computer-System Organization - Computer-System Architecture - Operating-System Structure - Operating-System Operations - Process Management - Memory Management - Storage Management - Protection and Security - Distributed Systems – Special Purpose Systems – Computing environment.

UNIT II

Distributed System Structures: Motivation - Types of Distributed Operating Systems - Network Structure - Network Topology - Communication Structure - Communication Protocols – Robustness - Design Issues - An Example: Networking.

UNIT III

Distributed File Systems: Background - Naming and Transparency - Remote File Access - Stateful Versus Stateless Service - File Replication - An Example - Distributed Coordination: Event Ordering - Mutual Exclusion – Atomicity - Concurrency Control - Deadlock Handling - Election Algorithms - Reaching Agreement.

UNIT IV

Real-Time Systems: Overview - System Characteristics - Features of Real-Time Kernels - Implementing Real-Time Operating Systems - Real-Time CPU Scheduling - Multimedia Systems: What Is Multimedia? - Compression - Requirements of Multimedia Kernels - CPU Scheduling - Disk Scheduling - Network Management - An Example.

UNIT V

The Linux System: Linux History - Design Principles - Kernel Modules - Process Management - Scheduling - Memory Management – File Systems - Input and Output – Inter process Communication - Network Structure – Security - Windows XP: History - Design Principles - System Components -Environmental Subsystems - File System - Networking - Programmer Interface.

TEXT BOOK(S)

1. Silbersehatz A., Galwin P.B., Greg Gagne, **"Operating System Concepts"**, John Wiley Sons, 2005.

       Unit I : Chapter 1.

       Unit II : Chapter 14.

       Unit III : Chapter 15, Chapter 16.

       Unit IV: Chapter 19, Chapter 20.

       Unit V : Chapter 21, Chapter 22.

REFERENCE BOOK(S)

1. Milenkovic M., **"Operating System Concept and Design"**, 2nd Edition, TMH, 2005.

2. Tanenbaum A.S., **"Operating System Design and Implementation"**, 3rd Edition, Prentice Hall, 2006.

MANNAR THIRUMALAI NAICKER COLLEGE
DEPARTMENT OF COMPUTER APPLICATIONS

Class : I M.Sc (CS & IT)   **Part** : III (Core)

Semester : II   **Hours Allotted** : 75

Sub code : 15PCTC23   **Credits** : 04

ADVANCED JAVA PROGRAMMING

OBJECTIVES

- To know about the Basics of Java.
- To learn Java Applets and AWT Components.
- To develop and to work with Swings.
- To understand Servlet, session and cookies.

UNIT I

The Genesis of Java: Java's Lineage - Why java is important to Internet - Java's Magic - The Java Buzz words. An overview of Java: Object-Oriented Programming - Data types, Variables and Arrays: Simple type - Variables - Type conversion and casting - Arrays. - Operators: Arithmetic - bit wise - relational - Logical - Assignment – '?' Operator – Operator Precedence. - Control statements - Selection - Iteration - Jump statements.

UNIT II

Introducing Classes: Class fundamentals - Declaring objects - Introducing methods - Constructors - this keyword - Garbage collection - finalize method. Inheritance: Basics - Using super - Multilevel Hierarchy - Method overriding - Abstract classes - final with inheritance. Packages and Interfaces: Packages - Access protection - Importing Packages - Interfaces. Exception Handling: Fundamentals - types - Uncaught exception - Nested try - throw - throws - finally.

UNIT III

Multithreaded Programming: Java Thread model - Main thread - creating a thread - Multiple threads - priorities - Synchronization - I/O basics - reading/writing console - PrintWriter class - reading and writing files - The Applet class: Applet Basics – Applet Architecture - Applet Skeleton - Applet display methods - Requesting - repainting - Status window - HTML APPLET tag – Passing parameter to Applets.

UNIT IV

Using AWT Controls, Layout managers and Menus: Control fundamentals - labels, buttons, check boxes, choice controls, lists, scroll bar, textfield, textarea, layout manager, menubars and menus, dialog boxes - Handling events using AWT components. A tour of Swing: JApplet – Icons and Labels – Buttons – Combo Boxes – Tables – Exploring Swing.

UNIT V

Java Beans: What is a Java Bean? – Advantages of Java Bean – Application Builder Tools – BDK – JAR Files – Introspection – Developing simple Bean Using BDK – Using Bound Properties – Using BeanInfo Interface – JavaBean API. Servlets: Background – Lifecycle of servlet – Simple servlet – The Servlet API – javax.servlet package – Reading servlet parameters – javax.servlet.http package – Handling HTTP requests and responses – Cookies – session tracking – Security issues.

TEXT BOOK(S)
1. Herbert Schildt, **"Java - The Complete Reference"**, TMH, 2006.

       Unit I : Chapter 1 to Chapter 5.

       Unit II : Chapter 6 to Chapter 10.

       Unit III : Chapter 11, Chapter 12.

       Unit IV: Chapter 21, Chapter 22, Chapter 26.

       Unit V : Chapter 25 to Chapter 27.

REFERENCE BOOK(S)

1. Balagurusamy E, **"Programming with Java"**, 3rd Edition, TMH, 2007.

2. Poornachandra Sarang, **Java 7 Programming"**, McGraw Hill, 2012.

MANNAR THIRUMALAI NAICKER COLLEGE

DEPARTMENT OF COMPUTER APPLICATIONS

Class	**: I M.Sc (CS & IT)**	**Part**	**: III (Core)**
Semester	**: II**	**Hours Allotted**	**: 75**
Sub code	**: 15PCTC22P**	**Credits**	**: 04**

LINUX/SHELL PROGRAMMING LAB

1. Execution of various Basic, file/directory handling and Utility commands.

2. Shell scripts to explore system variables such as PATH, HOME etc.

3. Execution of various system administrative commands.

4. Write a shell script to display list of users currently logged in.

5. Write a shell script that displays a list of all files in the current directory to which the user has read, write and execute permissions.

6. Write a shell script to delete all the temporary files.

7. Write a shell script that accepts a file name, starting and ending line numbers as arguments and displays all the lines between the given line numbers.

8. Write a shell script that deletes all lines containing a specified word in one or more files supplied as arguments to it.

9. Write a shell script that receives any number of file names as its arguments, checks if every argument supplied is a file or a directory and reports accordingly. Whenever the argument is a file, the number of lines on it is to be reported.

10. Write a shell script that receives any number of file names as its arguments, counts and reports the occurrence of each word that is present in the first argument file on other argument files.

11. Write Simple shell script for basic arithmetic and logical calculations.

12. Write a shell script to find the factorial of a given number.

13. Write a shell script to perform various operations on given strings.

14. Write an awk script to find the number of lines in a file that do not contain vowels i or o.

15. Write an awk script to find the number of characters, words and lines in a file.

16. Write a shell script to search an element from an array using binary searching.

17. Write a C program that takes one or more file/directory names as command line input and reports the following information on the file:

    (a) File type   (b) Number of links   (c) Time of last access   (d) Read, write and execute permissions

18. Write a C program that illustrates suspending and resuming processes using signals.

MANNAR THIRUMALAI NAICKER COLLEGE
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Class   **: I M.Sc (CS & IT)**   **Part**   **: III (Core)**

Semester : II   **Hours Allotted : 75**

Sub code : 15PCTC23P   **Credits**   **: 04**

JAVA PROGRAMMING LAB

1. Programs to implement method overloading in java.

2. Programs illustrating the implementation of various forms of inheritance (single, hierarchical, multilevel).

3. Programs implementing exception handling.

4. Programs to illustrate interfaces in java.

5. Programs to create package in java

6. Design of multithreaded programs in java.

7. Programs to manipulate strings.

8. Programs to draw various shapes using java applets.

9. Programs to handle various mouse events using java applets.

10. Programs to handle various key events using java applets.

11. Programs to handle various controls (textbox, label, combo box, dialog box) using java applets.

12. Programs to implement networking in java.

13. Write a java program to prepare student details using JDBC.

14. Write a simple program using java script.

15. Write a simple Servlet and JSP program.

MANNAR THIRUMALAI NAICKER COLLEGE
DEPARTMENT OF COMPUTER APPLICATIONS

Class : I M.Sc (CS & IT)   **Part** : III (Core)

Semester : II   **Hours Allotted** : 75

Sub code : 15PCTE21   **Credits** : 04

ELECTIVE – I
SOFTWARE TESTING AND QUALITY ASSURANCE

OBJECTIVES

- To create an awareness about the significance of software testing.
- To study the basic concepts involving software testing.
- To understand the quality control, quality assurance and testing issues.

UNIT – I

Testing Objectives and Overview: Software structure and Software testing - Purpose of testing – Dichotomies – A model for testing – Testing and Levels – Testing levels – Unit testing – Component testing – Integration testing – System testing – Interoperability testing – Performance testing – Regression testing – Acceptance testing – Pilot or Field Testing – Installation or Production testing.

UNIT - II

The Taxonomy of Bugs: Mistakes, bugs and failures – Taxonomy of Bugs – Consequence of Bugs – Flow Graphs and Path Testing: Path testing Basics – Steps in Path Testing – Construct Control Flow Graph – Arrive at Test Paths – Providing appropriate Inputs – Path Sensitizing – Path Instrumentation – Application of path testing – Effectiveness of Path testing.

UNIT - III

Transaction Flow Testing: Control flow chart and structure, Data and Transaction testing – Software functionality and Transactions – Transaction flow testing techniques – Data flow testing: Basics of Data flow testing – Data flowgraphs and their representation – Data object state and usage – Data Flow Anomalies – States off Data objects and Data Flow Anomalies – Static versus Dynamic Anomaly detection – Data Flowgraph testing Techniques – Strategies for Data flow testing – Test strategies – Application of Data flow testing.

UNIT - IV

Domain testing: Boundary value analysis – Equivalent partitioning - Boundary value analysis vs Equivalent partitioning – I/O Domain testing – Comparison testing – Domains and Interface testing – Domains and testability. Paths, Path Products and Regular Expression: Concepts – Procedure – Application – Regular Expression and Flow Anomaly Detection.

UNIT - V

Logic Based testing: Decision tables – Decision tables in Functional testing – Decision tables in Structural testing – Predicates and relational operators – Boolean algebra – Test case Design using Boolean algebra – Prime implicants. States, State Graphs and Transaction Testing: Object oriented systems and State graphs – State graph – General Properties – Good/Bad State Graph – Bugs in State graph – The Role of State graph – Strategies for State Graph based testing – State graph based test design- An example – Testability tips.

TEXT BOOK(S)

1. Arunkumar Khannur, **"Software Testing – Techniques and Applications"**, Pearson, 2011.

       Unit I : Chapter 1, Chapter 2.

       Unit II : Chapter 3, Chapter 4.

       Unit III : Chapter 5, Chapter 6.

       Unit IV: Chapter 7, Chapter 8.

       Unit V : Chapter 9, Chapter 10.

REFERENCE BOOK(S)

1. Boris Beizer, **"Software Testing Techniques"**, 2nd Edition, Dream Tech Press, 2003.

2. Paul C. Jorgensen, **"Software Testing: A Craftsman's Approach"**, 4th Edition, CRC Press, 2013.

MANNAR THIRUMALAI NAICKER COLLEGE
DEPARTMENT OF COMPUTER APPLICATIONS

Class : I M.Sc (CS & IT)		**Part** : III (Core)
Semester : II		**Hours Allotted** : 75
Sub code : 15PCTE22		**Credits** : 04

ELECTIVE – I
DIGITAL IMAGE PROCESSING

OBJECTIVES

- To understand Digital Image Processing fundamentals.
- To learn Image Transformation, Enhancement, Restoration and Compression Techniques.
- To implement various techniques for Segmentation of Images.
- To learn the Image Reconstruction operations.
- To implement Image Processing Techniques for suitable applications using MATLAB.

UNIT I

Digital Image Fundamentals – Introduction: What is Digital Image Processing - Origin – Fundamental steps in Digital Image Processing – Components – Elements of Visual Perception – Image Sensing and Acquisition – Image Sampling and Quantization – Relationships between pixels.

UNIT II

Image Enhancement: Spatial Domain: Gray level transformations – Histogram processing – Basics of Spatial Filtering–Smoothing and Sharpening Spatial Filtering – Frequency Domain: Introduction to Fourier Transform – Smoothing and Sharpening frequency domain filters – Ideal, Butterworth and Gaussian filters

UNIT III

Image Restoration: Noise models – Mean Filters – Order Statistics – Adaptive filters – Band reject Filters – Band pass Filters – Notch Filters – Optimum Notch Filtering – Inverse Filtering – Wiener filtering

UNIT IV

Image Compression and Segmentation: Compression: Fundamentals – Image Compression models – Error Free Compression – Variable Length Coding – Bit-Plane Coding – Lossless Predictive Coding – Lossy Compression – Lossy Predictive Coding – Wavelet Coding – Compression

Standards – JPEG2000. Segmentation: Detection of Discontinuities–Edge Linking and Boundary detection – Region based segmentation

UNIT V

Representation and Description – Representation – Boundary Description – Regional Descriptors – Use of principal Components for description – Relational Descriptors – Object Recognition – Patterens and pattern classes – Recognition based on decision – theoretic methods – Structural methods.

TEXT BOOK(S)

1. Rafael C. Gonzalez, Richard E. Woods, **"Digital Image Processing"**, 3rd Edition, Pearson Education, 2010.

       Unit I : Chapter 1, Chapter 2.

       Unit II : Chapter 3, Chapter 4.

       Unit III : Chapter 5.

       Unit IV: Chapter 8, Chapter 10.

       Unit V : Chapter 11, Chapter 12.

REFERENCE BOOK(S)

1. Anil Jain K., **"Fundamentals of Digital Image Processing"**, PHI Learning PVT Ltd., 2011.

2. Rafael C. Gonzales, Richard E. Woods, Steven L., **"Digital Image Processing Using MATLAB"**, 3rd Edition, TMH PVT Ltd., 2011.

MANNAR THIRUMALAI NAICKER COLLEGE

DEPARTMENT OF COMPUTER APPLICATIONS

Class	: I M.Sc (CS & IT)	**Part**	: III (Core)
Semester	: II	**Hours Allotted**	: 75
Sub code	: 15PCTE23	**Credits**	: 04

ELECTIVE – I

CLOUD INFRASTRUCTURE AND SERVICES

OBJECTIVES

- To analyze the components of cloud computing and its business perspective.
- To evaluate the various cloud development tools.
- To collaborate with real time cloud services.
- To analyze the case studies to derive the best practice model to apply when developing and deploying cloud based applications.

UNIT - I

CLOUD INTRODUCTION – Introduction - Cloud computing definition - Characteristics – Cloud Models – Cloud services – Cloud- based Services & Applications. Cloud Concepts & Technologies: Virtualization – Load balancing – Scalability & Elasticity – Deployment – Replication – Monitoring – Software Defined Networking – Network Function Virtualization – MapReduce – Identity and Access Management – Service level agreement - Billing

UNIT – II

CLOUD SERVICES & PLATFORMS – Compute service – Storage services – Database Services – Application Services – Content Delivery Services – Analytics Services – Deployment & Management Services – Identity & Access Management Services – Open Source Private Cloud Software.

UNIT – III

CLOUD COMPUTING TECHNOLOGY – Hardware and Infrastructure: Clients – Security – Network – Services. **ACCESSING THE CLOUD** – Platforms – Web Applications – Web APIs – Web Browsers.

UNIT – IV

CLOUD STORAGE – Overview – Cloud Storage Providers – **STANDARDS** - Application – Client – Infrastructure – Service.

UNIT – V

CLOUD SECURITY – Introduction – CSA Cloud security Architecture 0 Authentication – Authorization – Data Security – Key management – Auditing. **CLOUD FOR INDUSTRY, HEALTHCARE & EDUCATION** – Cloud computing for Healthcare - Cloud computing for Transportation systems - Cloud computing for Manufacturing Industry - Cloud computing for Education.

TEXT BOOK(S)

1. Arshdeep Bahga, Vijay Madisetti, **"Cloud Computing – A Hands-On Approach"**, University Press, 2014.

       Unit I : Chapter 1, Chapter 2.

       Unit II : Chapter 3.

       Unit V : Chapter 12, Chapter 13.

2. Anthony T. Velte, Toby J. Velte, Robert Elsenpeter, **"Cloud Computing – A Practical Approach"**, TMH, 2010.

       Unit III : Chapter 5, Chapter 6.

       Unit IV: Chapter 7, Chapter 8.

REFERENCE BOOK(S)

1. Barrie Sosinsky, **"Cloud Computing Bible"**, Wiley Publishing, 2011.

2. Ray Rafaels, **"Cloud Computing: From Beginning to End"**, CreateSpace Independent Publishing Platform, 2015.

Class : II M.Sc (CS & IT)		**Part** : III (Core)
Semester : III		**Hours Allotted** : 75
Sub code : 15PCTC31		**Credits** : 04

SOFTWARE ENGINEERING

OBJECTIVES

- To impart sound knowledge to design and implement an efficient software system and manage the resources.
- To learn about generic models of software development process.
- To understand fundamental concepts of requirements engineering and Analysis Modelling.
- To understand the different design techniques and their implementation.
- To learn various testing and maintenance measures.

UNIT - I

The Product: The evolving role of Software – Software – A crisis – Myths. The Process: Software Engineering: A Layered Technology – Software Process – Process Models – Linear Sequential Model – Prototyping Model – RAD Model – Evolutionary Software Process Models – Process Technology – Product and Process

UNIT - II

Project Management Concepts: Management Spectrum – People – Product – Process – Project. Software Project Planning: Observations – Project Planning Objectives – Software Scope – Resources – Software project estimation – Decomposition Techniques – Empirical Estimation Models – Automated Estimation Tools.

UNIT - III

System Engineering: Computer Based Systems – System Engineering Hierarchy – Business Process Engineering: An overview – Product Engineering: An overview – Requirements Engineering – System Modelling. Analysis Concepts and principles: Requirement Analysis – Requirements

Elicitation for software – Analysis principles – Software Prototyping – Specification – Specification review. Analysis Modelling: Elements of Analysis model – Data Modelling – Functional Modelling and Information flow – Behavioural Modelling – Data Dictionary – Other Classical Analysis Methods.

UNIT - IV

Design Concepts and Principles: Design Process – Design Principles – Design Concepts – Effective Modular Design – Design Model – Design Documentation. Architectural Design: Software Architecture – Data Design – Styles – Analyzing alternative Architectural Design – Mapping requirements into a Software architecture – Transform Mapping – Transaction Mapping – Refining Architectural Design – User Interface Design: Golden rules – User Interface Design – Design Activities – Implementation Tools – Design Evaluation. Component-Level Design: Structured Programming – Comparison of Design Notations.

UNIT - V

Software Testing Techniques: Testing Techniques – Test case Design – White-Box Testing – Basis Path Testing – Control Structure Testing – Black-Box Testing – Testing for Specialized Environments, Architecture and Applications. Software Quality Assurance: Quality concepts – Software quality Assurance – Software reviews – Software reliability – SQA Plan. Software Configuration Management: Software Configuration management – SCM Process – Identification of Objects – Version Control – Change Control – Configuration Audit – Status Reporting – SCM Standards.

TEXT BOOK(S)

1. Roger S. Pressman, **"Software Engineering"**, TMH.

Unit I - Chapter 1, 2.

Unit II - Chapter 3, 5.

Unit III- Chapter 10, 11 12.

Unit IV- Chapter 13, 14, 15, 16.

Unit V - Chapter 17, 8, 9.

REFERENCE BOOK(S)

1.Behforooz,**"Software Engineering Fundamentals"**, OUP.

2. Ghezzi, **"Software Engineering"**, PHI.

3.Pankaj Jalote, **"An Integrated Approach to Software Engineering"**, NAROSA.

Class	: II M.Sc (CS & IT) (Core)	**Part**	: III
Semester	: III	**Hours Allotted**	: 75
Sub code	: 15PCTC32	**Credits**	: 04

DOT NET PROGRAMMING

OBJECTIVES

- To learn the Basic Architecture of .NET framework.
- To understand the Overview of ODBC and Universal Data Access.
- To Familiarize with ADO.NET, Programming with Visual Studio.NET and Deployment.

UNIT I

Visual Basic 2008: Event Driven Programming – Visual Basic 2008 IDE – Creating simple application – Microsoft .Net Framework – Common Language Runtime – Writing Software – Information and Data – Working with variables – Comments and whitespaces – Data types – Storing Variables – Methods.

UNIT II

Controlling the flow: Making decisions – IF – Select case – Loops - Working with Data Structures – Arrays – Enumerations – Structures – Constants – ArrayList – Collections – Hashtable – Advanced Array Manipulation. Building Windows Applications: Responding to Events – Building Simple Applications – Creating More complex Applications – Using Multiple Forms.

UNIT III

Displaying Dialog Boxes: MessageBox – OpenDialog – SaveDialog – FontDialog – ColorDialog – PrintDialog. Creating Menus: Understanding Menu Features – Creating Menus – Context Menus. Debugging and Error Handling: Error types – Debugging – Error handling.

UNIT IV

Creating Windows Forms User Controls: Windows Forms Controls – Creating and Testing a user controls – Design Time or Run time – Command Link Control. Accessing Databases: What is a

database? – SQL SELECT – Queries in Access – Customer query – Data Access Components – Data Binding. ADO.NET – ADO.NET Classes in action – Data binding – LINQ to SQL.

UNIT V

ASP.NET:Thin-Client Architecture – Web forms versus Windows forms – Web apllications: the basic – Active server pages – Building Web Applications – Web Projects: Website Authentication. Deploying your application: What is Deployment – Creating Visual Studio 2008 Setup Application – User Interface Editor – Deploying Different Solutions.

TEXT BOOK(S)

1. Thearon Willis, **"Beginning Microsoft Visual Basic 2008"**, Bryan Newsome Wrox Publications, 2008.

Unit I - Chapter 1, 2,3.

Unit II - Chapter 4, 5,7.

Unit III- Chapter 8, 9, 10.

Unit IV- Chapter 14, 16, 17.

Unit V - Chapter 18, 19, 24.

REFERENCE BOOK(S)

1. Steven Holzner, **"Visual Basic .NET Programming - Black Book"**, Dreamtech Press, 2005.

2. Bill Shelton, Billy Hollis, **"Professional Visual Basic 2012 amd .NET 4.5 Programming"**, John Wiley & Sons, Wrox, 2013.

MANNAR THIRUMALAI NAICKER COLLEGE
DEPARTMENT OF COMPUTER APPLICATIONS

Class   : II M.Sc (CS & IT)   **Part   : III (Core)**

Semester : III   **Hours Allotted : 75**

Sub code : 15PCTC3P   **Credits   : 04**

WEB DESIGN-LAB

1. Create an Application form using various text formats.

2. Create our COLLEGE website using HTML Frame.

3. Create Mark sheet printing using HTML.

4. Create style sheets with the style elements.

5. Create calculator format using java script.

6. String manipulation-using functions.

7. Add a simple script using Click event.

8. Create a format of a bill for the departmental store products.

9. Create Employee details using CSS.

10. Create our department details using CSS.

11. Create Payroll system using CSS.

12. Change the color of the old image to new image.

13. Adding Filter effects to an image.

14. Creating a banner.

15. Animation – Using text, image and sound.

Class : **II M.Sc (CS & IT)**		**Part** : **III** (Core)
Semester : **III**		**Hours Allotted** : **75**
Sub code : **15PCTC32P**		**Credits** : **04**

DOT NET PROGRAMMING LAB

1. Dynamic Polymorphism

2. Exception Handling

3. File Handling

4. Serialization

5. Array list

6. Fetch data from database using disconnected architecture

7. Fetch data from database using data binding and navigation

8. Fetch data from database using active connection

9. Login page

10. Display number of bits

11. Register page

12. Combo box

13. Output caching

14. Fetch data from XML

15. Web service to perform calculations

16. Client application connected to web services to perform calculation

17. Web service to display data structure

18. Web application using web service data

MANNAR THIRUMALAI NAICKER COLLEGE
DEPARTMENT OF COMPUTER APPLICATIONS

Class   : II M.Sc (CS & IT)   Part   : III (Core)

Semester   : III   Hours Allotted : 75

Sub code : 15PCTE31   Credits   : 05

CURRENT TRENDS IN WEB SECURITY

OBJECTIVES

- To understand the design concept of cryptography and authentication.
- To learn the algorithm used for security.
- To realize the design concepts of server security.
- To study the importance of securing web applications.

UNIT – I

The Web Security Landscape: Web Security Problem – Risk Analysis and Best Practices. Cryptography Basics: Understanding Cryptography – Symmetric Key Algorithm – Public key algorithm – Message Digest Functions - Understanding SSL and TLS. What is SSL – SSL User's Point of View.

UNIT- II

Digital Identification I: Password, Biometrics and Digital Signature – Physical Identification – Using Public keys for identification – Real-World Public Key Examples. Digital Identification II: Digital Certificates, CAs and PKI: Understanding Digital Certificates with PGP – Third-Party Registrars – Public key infrastructure – Open Policy Issues.

UNIT – III

Privacy and Security for users: Understanding privacy – User-provided information – Log files – Understanding cookies - Web bugs. Privacy-Protecting Techniques: Choosing good service provider – picking great password – cleaning up – avoiding spam and junk mail – identity theft – Privacy-Protecting Technologies – Blocking Ads and crushing cookies – Anonymous browsing – secure email. Backups and Antitheft: Using backup – Preventing theft.

UNIT - IV

Physical Server Security: Planning for the forgotten threats – Protecting computer hardware and data – personnel. Host Security for servers: Current Host Security problems – Securing host computer – Minimizing risk – Operating securely – Secure remote access and Content updating - Firewalls and the web.

UNIT – V

Securing Web Applications: A Legacy of Extensibility and Risk – Rules to Code by – Securely using Fields, Hidden Fields and Cookies – Rules for programming languages – Using PHP securely - Writing scripts – Connecting to databases. Securing Web service: Protecting DNS and Domain Registration. Computer Crime: Criminal Hazards.

TEXT BOOK(S)

1. Simson Garfinkel and Gene Spafford, **"Web security, Privacy & Commerce"**, 11th Edition, O'REILLY, 2002.

Unit I - Chapter 1, 3, 5.

Unit II - Chapter 6, 7.

Unit III- Chapter 8, 9, 10.

Unit IV- Chapter 14, 15.

Unit V - Chapter 16, 18, 19.

REFERENCE BOOK(S)

1. Mike Shema, **"Web security Portable Reference"**, Tata McGrawHill, 2003.

2. David Mackey, **"Web Security for Network and System Administer"**, Course Technology, Cengage Learning, 2003.

MANNAR THIRUMALAI NAICKER COLLEGE
DEPARTMENT OF COMPUTER APPLICATIONS

Class : II M.Sc (CS & IT) (Core)		**Part** : III
Semester : III		**Hours Allotted** : 75
Sub code : 15PCTE32		**Credits** : 04

MOBILE COMMUNICATIONS

OBJECTIVES

- To study the concepts of mobile computing including access control.
- To understand Digital mobile phone systems, wireless LAN and the needed protocols.

UNIT – I

Introduction – Application – Short history of wireless communication – Market for Wireless communication – Simplified Reference Model. Wireless Transmission: Frequencies for Radio transmission – Signals – Antennas – Signal Propagation - Multiplexing – Modulation – Spread Spectrum and Cellular Systems.

UNIT – II

Medium Access Control: Motivation for a specialized MAC – SDMA – FDMA – TDMA - CDMA – Comparisons. Telecommunication Systems: GSM – DECT – TETRA – UMTS and IMT-2000.

UNIT – III

Satellite Systems – History – Applications - Basics – Routing - Localization – Hand Over – Examples. Wireless LAN – Infra red vs radio transmission – Infrastructure and ad-hoc networks - IEEE S02.11 – Hyper LAN – Bluetooth.

UNIT – IV

Mobile network layer - Mobile IP – Dynamic host configuration protocol – Mobile Ad-hoc Networks. Mobile transport layer: Traditional TCP - Classical TCP Improvements – TCP over wireless networks – Performance enhancing proxies.

UNIT – V

Support for Mobility: File systems – World Wide Web – Wireless Application Protocol – i-node – SyncML – WAP.

TEXT BOOK(S)

1. Jochen Schiller, **"Mobile Communications"**, 2nd Edition, Pearson Education, Delhi, 2003.

Unit I - Chapter 1, 2.

Unit II - Chapter 3, 4.

Unit III- Chapter 5, 7.

Unit IV- Chapter 8, 9.

Unit V - Chapter 10.

REFERENCE BOOK(S)

1. William Stallings, **"Wireless Communications and Networks"**, 2nd Edition, Pearson Education, Delhi, 2004.

2. Asoke K Talukder, **"Mobile Computing – Technology, Applications and Service Creation"**, 2/e, TMH, 2011.

MANNAR THIRUMALAI NAICKER COLLEGE

DEPARTMENT OF COMPUTER APPLICATIONS

Class : II M.Sc (CS & IT) (Core)		**Part : III**
Semester : III		**Hours Allotted : 75**
Sub code : 15PCTE33		**Credits : 05**

SEMANTIC WEB

OBJECTIVES

- To understand the concepts of semantic web technology.
- To appreciate the merits of semantic web over traditional web.
- To learn RDF and its taxonomy and ontology.
- To describe OWL and its usage in semantic web.
- To understand various technologies related to semantic web services.

UNIT I

Traditional web to semantic web – WWW and its usage- meta data and its creation, addition in the web page; meta data tools - search engines for semantic web –search engine for web page mark up problem and query building problem.

UNIT II

RDF and its basic elements-Why we need RDF-RDF triples-RDF tools- Fundamental rules of RDF-relationship between DC, and RDF and XML and RDF – RDFs, Taxonomy and Ontology: Core elements of RDF- ontology and taxonomy - inferencing based on RDF.

UNIT III

The basics idea of Web ontology language– OWL to define classes- OWL to define properties-set operators-Three faces of OWL-Ontology Matching and Distributed Information- Validating OWL ontology: Development tools – Validate OWL Ontology – Understand Ontology.

UNIT IV

Web services – web services standards – From web services to semantic web services – OWL-S: An Upper ontology – What is Upper Ontology? - Concept of OWL-S and its building blocks – Validating OWL-S – What are Semantics? – WSDL-S: WSDL-S - OWL-S to UDDI mapping.

UNIT V

Swoogle - architecture, usage and examples of using Swoogle; FOAF – Explanation, vocabulary – creating FOAF documents – Markups: overview of semantic markup – Markup manually/Using Tools – issues.

TEXT BOOK(S)

1. Liyang Yu , Chapman & Hall/CRC, **"Introduction to the Semantic Web and Semantic web Services"**, Taylor & Francis group, 2007.

Unit I - Chapter 1, 2.

Unit II - Chapter 3, 4.

Unit III- Chapter 5, 6.

Unit IV- Chapter 11, 12, 13.

Unit V - Chapter 7, 8.

REFERENCE BOOK(S)

1. Johan Hjelm, **"Creating the Semantic Web with RDF "**, Wiley, 2001.

2. Jeffrey T. Pollock, **"Semantic Web for Dummies"**, Wiley, 2009.

Class : II M.Sc (CS & IT) **(NME)**		**Part**	: III
Semester : III		**Hours Allotted**	: 75
Sub code : 15PCTN31		**Credits**	: 05

MULTIMEDIA TECHNOLOGIES

OBJECTIVES

- To learn the Multimedia components and its Uses.
- To understand the Compression technologies.
- To study overview of Text and Graphics.
- To learn simple animation using Flash.

UNIT I

Introduction to Multimedia: Overview – What is Multimedia? – Components of multimedia – Multimedia Building blocks – Scope of Multimedia – Uses of Multimedia – Overview – Application purpose – Taxonomy – Examples – Electronic Performance Support Systems.

UNIT II

Interaction technologies and Devices: Overview – Human Computer Interface – Input/Output technologies – Combined Input-Output Device – Storage technologies – Communication and Network Technologies – Processing Technologies – Compression Technologies for Multimedia: Overview – The need for compression – Compression basics – Lossless/Lossy Compression techniques.

UNIT III

Text: Overview – Implications of Digital text – Visual representation of text-Font – Digital representation of Characters-Character codes – Formatting Text – Hypertext and Hypermedia – Uses and Applications – Digital Image: Overview – Uses of images and Graphics – Image representation – Image Acquisition – Picture Display – Working with image.

UNIT IV

Computer Graphics and Image editing: Overview – Uses of Computer Graphics – Representation of Computer graphics – 2D graphics transformation – Working with graphics – Basic Editing Steps – Digital Audio: Overview – Producing Digital Audio – Psychoacoustics – Representation of Audio files – Video and Animation: Overview – Digital Video – MPEG standards – MPEG video compression – Creating Digital Video – Animation – File formats.

UNIT V

Creating Animation in Flash: Overview – Introduction to Flash Animation – Working with Timeline and Frame based Animation – Working with timeline and Tween based Animation – Understanding layers – Action script – Technology trends – Internet and WWW – Overview – Working with Internet and WWW – Network Architecture – Web pages - Making web pages interactive and dynamic – Design considerations for the web – Ethical issues.

TEXT BOOK(S)

1. Banerji Ashok, Ananda Mohan Ghosh, **"Multimedia Technologies"**, TMH, 2009.

Unit I - Chapter 1, 2.
Unit II - Chapter 3, 4.
Unit III- Chapter 5, 6.
Unit IV- Chapter 7, 8, 9.
Unit V - Chapter 10, 12.

REFERENCE BOOK(S)

1. Tay Vaughan, **"Multimedia Making It Work "**, Ninth Edition, Mc Graw Hill, 2014.
2. Nick Vandome, **"Flash MX in Easy Steps"**, TBS, 2002.

Class	: II M.Sc (CS & IT)		**Part**	: III
Semester	: IV		**Hours Allotted**	:
Sub code	: 15PCTC4PR		**Credits**	: 15

PROJECT WORK & Viva – Voce

- This course is to train the student in executing a project and preparing the report of work done.

- The project work is to be carried out either in a software industry or in an academic institution for the entire semester and the report of work done is to be submitted to the University.