

**DETAILED SYLLABUS**  
**MASTER OF SCIENCE (INFORMATION TECHNOLOGY)**  
**(MSC(IT))**  
**(EFFECTIVE FROM JULY 2011)**



Department of Computer Applications

Makhanlal Chaturvedi

Rashtriya Patrakarita Evam Sanchar Vishwavidyalaya

B-38, Press Complex, M.P. Nagar, Zone-I, Bhopal

Ph.: 4294448, 2768274 [www.mcu.ac.in](http://www.mcu.ac.in)

**SCHEME FOR  
MASTER OF SCIENCE (INFORMATION TECHNOLOGY)  
MSC(IT)  
(Effective From July 2011 Session)**

**SEMESTER -I**

Subject Code	Subject Name	Scheme			Theory Paper	Internal Evaluation	Practical Exams	Total Marks
		L	T	P				
1MSC(IT)1	Digital Electronics and Computer Organization	4			80	20		100
1MSC(IT)2	Computer Networking	4	1	3	80	20		100
1MSC(IT)3	Data structures and Algorithms Using C	4		3	80	20	25	125
1MSC(IT)4	Programming with VB. Net	4	1		80	20	25	125
1MSC(IT)5	Operating System	4			80	20		100
<b>Semester Total</b>								<b>550</b>

(\*L-Lecture, T-Tutorial, P-Practical)

**SEMESTER -II**

Subject Code	Subject Name	Scheme			Theory Paper	Internal Evaluation	Practical Exams	Total Marks
		L	T	P				
2MSC(IT)1	Software Engineering	4			80	20		100
2MSC(IT)2	Enterprise Resource Planning	4	1	3	80	20		100
2MSC(IT)3	Database Management System & Oracle	4		3	80	20	25	125
2MSC(IT)4	Programming with Java	4	1		80	20	25	125
2MSC(IT)5	Multimedia Applications	4			80	20		100
<b>Semester Total</b>								<b>550</b>

**SEMESTER -III**

Subject Code	Subject Name	Scheme			Theory Paper	Internal Evaluation	Practical Exams	Total Marks
		L	T	P				
3MSC(IT)1	Wireless & Mobile Networking	4			80	20		100
3MSC(IT)2	Advanced Java	4	1	3	80	20	25	125
3MSC(IT)3	Programming with ASP.Net	4		3	80	20	25	125
3MSC(IT)4	Business & Technical Communication	4	1		80	20		100
3MSC(IT)5(A)	Elective I Data Warehousing and Mining	4			80	20		100
3MSC(IT)5(B)	Software Testing & Project Management							
3MSC(IT)5(C)	Microprocessor & Assembly Language Programming							
<b>Semester Total</b>								<b>550</b>

**SEMESTER -IV**

Subject Code	Subject Name	Scheme			Theory Paper	Internal Evaluation	Practical Exams	Total Marks
		L	T	P				
4MSC(IT)1	Linux & Web Server Administration	4			80	20	25	125
4MSC(IT)2	Web Designing	4	1	3	80	20	25	125
4MSC(IT)3(A)	Elective II Distributed Systems	4		3	80	20		100
4MSC(IT)3(B)	Information Security							
4MSC(IT)3(C)	Advanced DBMS							
4MSC(IT)4	Project Work		4	4		40	160	200
<b>Semester Total</b>								<b>550</b>

**General Instructions:**

1. For passing the subject examination minimum 40% marks must be separately scored in Theory Paper, Practical Exams and Internal Evaluation in the subject.
2. For passing the semester, minimum aggregate marks must be 45% in the semester.

Course: - MSC(IT)  
 Sub Code: 1MSC(IT)1

Semester: I  
 Subject Name- - Digital Electronics and Computer  
 Organization

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
<b>UNIT-I</b> Introduction to Organization and Architecture: Computer Components, Computer Function, Interconnection Structures, Bus Interconnection, PCI. Input/Output - External Devices, I/O Modules, Programmed I/O, Interrupt-Driven I/O, Direct Memory Access, I/O Channels and Processors, The External Interface. Integer Representation, Integer Arithmetic, Floating Point Representation, Floating-Point Arithmetic.	8					8	
<b>UNIT-II</b> Computer memory organization - Computer Memory System Overview, Semiconductor Main Memory, Advanced DRAM Organization. Cache Memory, Hit ratio, Mapping techniques, Writing into cache, Magnetic Disk, RAID, Optical Memory, Magnetic Tape. Auxiliary Memory, Memory Hierarchy, Associative Memory, Virtual Memory, Address Space & Memory Space, Address Mapping, Page Table, Page Replacement, Segmentation.	8					8	
<b>UNIT-III</b> Computer Instructions - The Arithmetic and Logic Unit (ALU), Instruction sets - Machine Instruction Characteristics, Types of Operands, Types of Operations, Assembly Language. Addressing Modes and Formats, Addressing, Instruction Formats.	8					8	
<b>UNIT-IV</b> CPU structure and function: Processor Organization, Register Organization, The Instruction Cycle, Instruction Pipelining, The Pentium Processor.	8					8	
<b>UNIT-V</b> Control Unit Operation - Micro - Operations, Control of the CPU, Hardwired Implementation. Basic Concepts of Micro programmed Control.	8					8	
<b>TEXT &amp; REFERENCE BOOKS:</b> <ul style="list-style-type: none"> <li>• <i>COMPUTER ORGANIZATION AND ARCHITECTURE BY WILLIAM STALLINGS TMH PUBLICATION</i></li> <li>• <i>COMPUTER SYSTEM ARCHITECTURE: BY M. MORRIS MANO</i></li> <li>• <i>DIGITAL LOGIC AND COMPUTER DESIGN BY M. MORRIS MANO</i></li> </ul>							

	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
<b>UNIT-I</b> Use of communication and IT , Communication Mode- Simplex, Half Duplex, Full Duplex, Communication Channels - Twisted, Coaxial, Fiber Optic, Serial and Parallel Communication, Types of Network - LAN, WAN, MAN ,Internet etc., Topologies of LAN - Ring, Bus, Star, Mesh and Tree topologies, World Wide Web Internet Services, Analog & Digital Signal.	8					8	
<b>UNIT-II</b> Base Band, Broad Band, Multiplexer FDM, TDM, Modulation AM, FM, PM, Transmission Media, Modem. OSI Reference Model, Switching Technique, Message Switching, Circuit Switching, Packet Switching, Virtual Circuit, , IEEE Standards, 802.3, 802.4, 802.5.	8					8	
<b>UNIT-III</b> Fast Ethernet, FDDI Token Ring, Wireless LAN, Inter-Networking Devices, Bridge, Routers Gateways, Repeater, Routing Algorithms, Distance Vector Routing, Shortest Path Routing, Broadcast Routing, Multicast Routing, TCP/IP Protocol, IPV4 Addressing, Congestion Control, Traffic Shaping.	8					8	
<b>UNIT-IV</b> Comparison Between OSI and TCP/IP Models, TELNET, FTP, SMTP, MINE, UDP, URL (Uniform Resource Locater) HTTP , ISDN Channel, ISDN Services, Base Band ISDN, Broadband ISDN.	8					8	
<b>UNIT-V</b> Network Security : Network Security Issues, Firewalls – Need and Features of Firewalls, Types of Firewall Technology- Network Level and Application Level, IP Packets Filter Screening Routers, Limitations of Firewalls.	8					8	
<b>TEXT &amp; REFERENCE BOOKS:</b> <ul style="list-style-type: none"> <li>• <i>COMPUTER NETWORKING BY ANDREWS TANANBAUM</i></li> <li>• <i>UNDERSTANDING DATA COMMUNICATION OF NETWORKING BY WILLIAM A SHAY</i></li> <li>• <i>COMMUNICATION AND NETWORK BY LEWIS MACHENZIE</i></li> <li>• <i>DATA COMMUNICATION BY PRAKASH C GPTA</i></li> <li>• <i>DATA AND COMPUTER COMMUNICATION: BY WILLIAM STALLINGS</i></li> </ul>							

Course: - MSC(IT)  
Sub Code: 1MSC(IT)3

Semester: I  
Subject Name- -Data Structure and Algorithms Using C

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
<b>UNIT-I</b> Introduction to Data Structures, Abstract Data Types Stacks - Introduction to Stack & Primitive Operation on Stack, Stack's Applications - Infix, Postfix & Prefix Expressions, Recursion, Multiple Stacks Queues -Introduction to Queues, Primitive Operations on Queues, Circular Queue, Dequeue, Priority Queue.	8	6				14	
<b>UNIT-II</b> Linked List - Introduction to Linked List, Memory Representation of Linked List, Operations on Linked List, Linked List Representation of Stack and Queue, Header Nodes. Types of Linked List - Doubly Linked List, Circular Linked List, Application of Linked List.	8	6				14	
<b>UNIT-III</b> Trees - Basic Terminology of Trees, Binary Trees, Tree Representations as Array & Linked List. Binary Tree Representation. Traversal of Binary trees - Inorder, Preorder & Postorder, Application of Binary Tree, Threaded Binary Tree, Balanced tree, AVL tree, B-tree	8	6				14	
<b>UNIT-IV</b> Analysis of Algorithm, Complexity with Big'O' Notation. Searching - Sequential Search, Binary Search and their Comparison. Sorting - External & Internal Sorting, Insertion Sort, Selection Sort, Quick Sort, Bubble Sort, Heap Sort, Comparison of Sorting Methods. Hashing, Collision Resolution Techniques.	8	6				14	
<b>UNIT-V</b> Graphs - Introduction to Graphs, Basic Terminology, Directed, Undirected & Weighted Graph, Representation of Graphs, Warshall's Algorithm for Path Matrix, Graph Traversals - Depth First & Breadth First Search. Spanning Trees, Minimum Spanning Tree, The Basic Greedy Strategy for Computing, Algorithm of Kruskal and Prim. Applications of Graphs : Shortest Path Problem using Dijkstra Method.	8	6				14	
<b>TEXT &amp; REFERENCE BOOKS:</b> <ul style="list-style-type: none"> <li>• <i>FUNDAMENTALS OF DATA STRUCTURE, BY S. SAWHNEV &amp; E. HOROWITZ</i></li> <li>• <i>DATA STRUCTURE: BY T TREMBLEY &amp; SORRENSON</i></li> <li>• <i>DATA STRUCTURE: BY LIPSCHUISTS (SCHAUM 'S OUTLINE SERIES MCGRAW HILL PUBLICATION)</i></li> <li>• <i>FUNDAMENTALS OF COMPUTER ALGORITHM: BY ELLIS HOROWITZ AND SARTAJ SAWHNEY</i></li> </ul>							

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
<b>UNIT-I</b> Introduction to .NET, .NET Framework features & architecture, CLR, Common Type System, MSIL, Assemblies: types of assemblies, class libraries, Introduction to visual studio, Project basics, types of project in .Net, IDE of VB.NET- Menu bar, Toolbar, Project Explorer, Toolbox, Properties Window, form designer, form layout, immediate window, Event driven Programming - Methods and events related with mouse and keyboard.	8	6				14	
<b>UNIT-II</b> The VB.NET Language- Console Programming, Declaring variables, Data Types, Scope & lifetime of a variable, Arrays, types of array, control array, Subroutine, Functions, Passing argument to functions, Optional Argument, Returning value from function, Control flow statements: Decisions and Conditional statement, Loop statement. Exceptions, Working with Forms: Creating Forms, Building User Interface Web Forms, Loading, showing and hiding forms, working with multiple forms, controlling One form within another.	8	6				14	
<b>UNIT - III</b> GUI Programming with windows form: VB.Net Controls, Text box control, label control, button control, Listbox, Combo box, checked box, Picture box, Radio button, Panel, scroll bar, Timer control, there Properties, Methods and events, adding controls at runtime. Dialog Boxes - Common dialog control: File, save, Print, Help, designing menus : creating menu and menu items, access & shortcut keys. MDI forms: Properties of Parent & child form, working with parent and child menus.	8	6				14	
<b>UNIT-IV</b> Object oriented Programming: Classes & Namespaces, objects, data members, Properties, Methods, raising and handling Events, constructors. Inheritance, Access Specifies: Public Private, Protected, overloading, overriding, Creating Interfaces, multiple interfaces, My Base & My Class keywords. Concept of OLE, The COM technology, Advantages of COM+, COM & .NET, Create User control, register user control, access com component in .net application, Deployment of .NET application.	8	6				14	
<b>UNIT-V</b> Accessing Database with ADO.NET (visually): Create connection with sever explorer, Creating data connection using data Connection, Command, Adapter, Dataset and DataReader controls, Data binding with data grid and basic controls. The Data Form wizard, Accessing Database using ADO.NET Object model (through code): create Connection object, Command object, DataAdapter object, DataSet object. Add, delete, move & update records to dataset. Executing SQL query, operation on data rows and columns.	8	6				14	
<b>TEXT &amp; REFERENCE BOOKS:</b> <ul style="list-style-type: none"> <li>• VB.NET PROGRAMMING BLACK BOOK BY STEVEN HOLZNER-DREAMTECH PUBLICATIONS</li> <li>• MASTERING VB.NET BY EVANGELOS PETROUTSOS- BPB PUBLICATIONS</li> <li>• INTRODUCTION TO .NET FRAMEWORK-WORX PUBLICATION</li> <li>• MSDN.MICROSOFT.COM/NET/</li> <li>• WWW.GOTDOTNET.COM</li> </ul>							

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
<b>UNIT– I</b> Definitions, Components and types of Operating system, Operating System Services, System Calls, System Programs, System Structure, System Design and Implementation, System Generations. I/O subsystem Overview, I/O hardware, Application I/O interface, Kernel I/O Subsystem.	8					8	
<b>UNIT–II</b> Process Concepts, Process State & Process Control Block, Process Scheduling, Scheduling Criteria, Scheduling Algorithms, Multiple-Processor Scheduling, Real-Time Scheduling, Threads Introduction	8					8	
<b>UNIT–III</b> The Critical Sections Problem, Semaphores, Classical Problem of Synchronization, Deadlock Characterizations, Method for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock, Combined Approach to Deadlock.	8					8	
<b>UNIT–IV</b> Storage management Logical Versus Physical Address Space, Swapping, Contiguous Allocating, Paging, Segmentation, Virtual Memory, Demand Paging, Performance of Demand Paging, Page Replacement, Page Replacement Algorithms, Thrashing, Demand Segmentation.	8					8	
<b>UNIT–V</b> Disk Scheduling, Disk Management, Swap Space Management, Disk Reliability, Stable Storage Implementation, File Concepts, Directory Structure, Protecting File system in Linux & Windows NT.	8					8	
<b>TEXT &amp; REFERENCE BOOKS :</b> <ul style="list-style-type: none"> <li>• OPERATING SYSTEM CONCEPTS BY SILBERSCHATZ &amp; GALVIN, ADDISON WESLEY PUBLICATION 6TH EDITION.</li> <li>• OPERATING SYSTEM CONCEPTS &amp; DESIGN BY MILAN MILEN KOVIC, TMH PUBLICATION</li> <li>• 3. OPERATING SYSTEMS BY WILLIAM STALLINGS</li> </ul>							



Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
<b>UNIT - I</b> Software : Software Characteristics and Applications, Software Engineering - A Layered Technology, Software Process Models - Linear Sequential Model, Prototype & RAD Model, Incremental Model and Spiral Model. Project Metrics : Software Measurement–Size Oriented, Function Oriented Metrics, Extended Function Point Metrics.	8					8	
<b>UNIT - II</b> Software Project Planning: Objectives, Decomposition Techniques, and Empirical Estimation Models. Analysis Concept and Principles: Requirement Analysis, Analysis Principles.	8					8	
<b>UNIT - III</b> Design Concepts and Principles: Design Process, Design Concepts, Design Principles, Effective Modular Design, Human Computer Interface Design, Interface Design Guidelines.	8					8	
<b>UNIT - IV</b> S/W Quality Assurance : Quality Concepts, Reliability S/W Testing Models : S/W Testing Fundamentals, White and Black Box Testing, Basic Path Testing, Testing Strategies : Strategic Approach to S/W Testing, Unit Testing, Integration Testing, Validation Testing, System Testing,	8					8	
<b>UNIT - V</b> S/W Reuse: Reuse Process, Classification and Retrieving Components, Economics of S/W Reuse, CASE: Introducing to CASE, Taxonomy of Case Tools.	8					8	
<b>TEXT &amp; REFERENCE BOOKS:</b> <ul style="list-style-type: none"> <li>• SOFTWARE ENGINEERING BY R.S.PRESSMAN</li> <li>• AN INTEGRATED APPROACH TO SOFTWARE ENGINEERING BY PANKAJ JALOTE</li> </ul>							

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
<b>UNIT - I</b> ERP Overview, Benefit, Common myths and evolving realities, Business Process Reengineering, Data ware Housing, Data Mining, LAP, Supply chain Management, ERP Drivers, Decision support system.	8					8	
<b>UNIT - II</b> ERP Domain, Present global and Indian market scenario, milestones and pitfalls, Forecast, Market players and profiles, Evaluation criterion for ERP product, ERP Life Cycle: Adoption decision, Acquisition, Implementation, Use & Maintenance, Evolution and Retirement phases.	8					8	
<b>UNIT - III</b> ERP -A Manufacturing Perspective, ERP Module, ERP Market, ERP implementation life cycle, Options of various paradigms, Identification of suitable platforms, Role of SDLC/SSAD, Object oriented architecture .Framework for evaluating ERP acquisition, Analytical Hierarchy Processes (AHP), Applications of AHP in evaluating ERP, Selection of Weights, Role of consultants, vendors and users in ERP implementation; ERP Implementation approaches and methodology, ERP implementation strategies, ERP Customization.	8					8	
<b>UNIT - IV</b> Critical success and failure factors for implementation, Model for improving ERP effectiveness, ROI of ERP implementation, Hidden costs, ERP success inhibitors and accelerators, Management concern for ERP success, Strategic Grid: Useful guidelines for ERP Implementations.	8					8	
<b>UNIT - V</b> Technologies in ERP Systems and Extended ERP, Case Studies Development and Analysis of ERP Implementations in focusing the various issues discussed in above units through Soft System approaches or qualitative Analysis tools, Learning and Emerging Issues, ERP and E-Commerce.	8					8	
<b>TEXT &amp; REFERENCE BOOKS:</b> <ul style="list-style-type: none"> <li>• 1.A. LEXIS LEON, "ENTERPRISE RESOURCE PLANNING", TMH</li> <li>• 2.BRADY, MANU, WEGNER, "ENTERPRISE RESOURCE PLANNING", TMH</li> </ul>							

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
<b>UNIT-I INTRODUCTION TO DATABASE SYSTEM</b> Database System Applications, Purpose of Database System, View of Data, Database Languages, Database Architecture, Structure of Relational Database, Database Schema, Keys, Relational Operations. Database Design Process, The ER Model, Constraints, Details of ER Diagram, ER Design Issues, Extended ER Features, The Relational Algebra.	8	6				14	
<b>UNIT-II</b> Relational database Design Features, First Normal Form, Functional dependency Theory, Decomposition Using Functional Dependency, 2NF, 3NF, BCNF, Join and Multivalve dependency, 4NF and 5 NF Query processing stages, Query interpretation, Equivalence of Expression, Query Execution statistics. Query Execution plan, Query Estimation, Query Evaluation.	8	6				14	
<b>UNIT-III</b> Transaction Atomicity and Durability, Transaction Isolation, Serializability, Transaction as SQL Statement, Concurrency Control and Recovery, Lock based Protocol, Deadlock handling, Multiple Granularity, Time stamped based Protocol, Validation Based Protocol, Failure classification, Recovery systems, Backup System .	8	6				14	
<b>UNIT-IV Introduction to SQL</b> Data Definition Language (DDL) - Creating, Altering & Dropping tables, Integrity Constant, Data Manipulation Language. (DML) Select, Insert, Update, Delete Commands, Transaction Control using SQL -Commit, Rollback, Save point command, Data, Controlling using SQL - Grant, Revoke, SQL functions.	8	6				14	
<b>UNIT-V Introduction to PL/SQL</b> Introduction to PL/SQL, PL/SQL Block Structure, Programming Features of PL/SQL, Using Cursor, Stored Procedure and Function, Package, Database triggers.	8	6				14	
<b>TEXT &amp; REFERENCE BOOKS:</b> <ul style="list-style-type: none"> <li>• AN INTRODUCTION TO DATABASE SYSTEM (3RD ED) BY C. J. DATE</li> <li>• DATABASE SYSTEM CONCEPTS: BY HENRY F. KORTH</li> <li>• DATABASE MANAGEMENT SYSTEMS BY LEON &amp; LEON, VIKAS, PUBLICATIONS.</li> <li>• AN INTRODUCTFION TO DATABASE SYSTEM BY BLPIN C. DESAI</li> <li>• THE ORACLE COOK BOOK BY LIEBSCHUTYZ, BPB PUBLICATIONS</li> <li>• ORACLE A BEGINNERS GUIDE BY MICHAEL ABBEY &amp; MICHAEL J. COREY, TMH PUBLICATIONS</li> <li>• ORACLE &amp; CLIENT SERVER BY BOBROSKI</li> <li>• SQL PL/SQL THE PROGRAMMING LANGUAGE OF ORACLE BY IVAN BAYROSS</li> </ul>							

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
<b>UNIT-I</b> History and design features of JAVA, how java works, basics of JAVA, Applications and Applets, using the tools in JDK, javadoc, java, jdb etc. Applet Programming - Creating and executing Java applets, inserting applets in a web page, Java security.  JAVA Language- Keywords, Constants, Variables, and Data Types. Operators and Expressions, Decision making, Branching and Looping, Labeled Loops Statement, Jump statements: Break, Continue, and Return. Arrays and Strings-Creating an Arrays, one and two Dimension Arrays, String Array, String and String Buffer Classes.	8	6				14	
<b>UNIT-II</b> Classes, Objects and Methods Defining a class, adding variables and Methods, creating objects constructors, Wrapper Classes.  Inheritance, Basics types, using super, multi level hierarchy, abstract and final classes, object class, packages and interfaces, Access protection, Extending interfaces, packages.	8	6				14	
<b>UNIT-III</b> Exception Handling, Fundamentals exception types, uncaught exceptions, throws, throw, try -catch, final, built in exceptions, creating your own exceptions. Multithreading Fundamentals, Java Thread model : priorities, synchronization, messaging, thread class, Runnable interface, Interthread communication, suspending, resuming and stopping threads.	8	6				14	
<b>UNIT-IV</b> Input/Output -Basics, Streams, Byte and Character streams, predefined streams, reading and writing from console and files .Using standard Java Packages (lang,util,io) Networking -Basics, networking classes and interfaces, using java.net package, doing TCP/IP and Datagram programming.	8	6				14	
<b>UNIT-V</b> AWT Classes, Event Handling and Swing classes, AWT Programming, Working with windows, Graphics and Text, using AWT controls, Layout managers and menus, Handling image, animation, sound and video. Event Handling-Different mechanism, the Delegation Event Model, Event Classes, Event Listener interfaces, Adapter and Inner Classes. Java Swing -Japplet, Icons and Labels, Text fields, Buttons, Combo Boxes, Tabbed and Scroll Panes, Trees, Tables.	8	6				14	
<b>TEXT &amp; REFERENCE BOOKS:</b> <ul style="list-style-type: none"> <li>• <i>JAVA THE COMPLETE REFERENCE BY PATRICK NAUGHTON AND HERBERT SCHILDT. TMH PUBLICATION ISBN 0-07-463769-X</i></li> <li>• <i>PROGRAMMING WITH JAVA BY E. BALAGURUSWAMY TMH PUBLICATIONS ISBN 0-07-463542-5</i></li> <li>• <i>USING JAVA 1.2 BY JOSEPH WEBER. PHI – ISBN-81-203-1558-8</i></li> </ul>							

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
<b>UNIT -I</b> Introduction To Multimedia , Needs and Areas of use, Development Platforms for Multimedia Identifying Multimedia Elements Text, Images, Sound, Animation and Video, Making Simple Multimedia With PowerPoint , Concepts of Plain & Formatted Text, RTF & HTML Texts, Using Common Text Preparation Tools, Conversion to and From of Various Text Formats, Using Standard Software, Object Linking And Embedding Concept.	8					8	
<b>UNIT -II</b> Sound and its Attributes : Sound and Its Effects In Multimedia, Frequency, Sound Depth, Channels and its Effects on Quality and Storage, Size Estimation of Space of a Sound File, Sound Card Standard – FM Synthesis Cards, Waves Table Cards, MIDI And MP3 Files and Devices, 3D Sounds. Importance of Images Graphics in Multimedia, Vector and Raster Graphics, Image Capturing Methods, Scanner, Digital Camera Etc. Various Attributes of Images Size, Color, Depth Etc, Various Image File Format BMP, DIB, CIF, PIC, and TIF Format Their Features And Limitations.	8					8	
<b>UNIT –III</b> Basic of Video – Analog and Digital Video Type of Video , Digitization of Analog Video, Video Standard – NTSC, Pal, HDTV, Video Capturing Media /Instruments Videodisk Camcorder Compression Techniques, File Formats AVI, MJPG, MPEG, Video Editing and Movie Making Tools .	8					8	
<b>UNIT -IV</b> Animation and its Basic – Principals of Animation and its Use in Multimedia, Computer System Configuration and Peripherals Requirements, Software for Animation, Effects of Resolution, Pixel Depth, Image Size, on Quality and Storage, Types of Animation and applications.	8					8	
<b>UNIT -V</b> Introduction to virtual reality and its Applications, Virtual Reality Terminology Head Mounts Display (HMD), Boom, Cave, Input Devices and Sensual Technology, Characteristic If Immersive VR Shared Virtual Environments, Non Immersive VR, VRML, VR - Related Technology Application	8					8	
<b>TEXT &amp; REFERENCE BOOKS:</b> <ul style="list-style-type: none"> <li>• <i>MULTIMEDIA: MAKING IT WORK (4TH EDITION) BY THYVAUGHAN, TATA MCGRAW HILLS.</i></li> <li>• <i>MULTIMEDIA IN ACTION JAMES E SHUMAN VIKAS PUBLISHING HOUSE.</i></li> <li>• <i>MULTIMEDIA BASICS VOLUME / TECHNOLOGY, ANDREAS HOIZINGER, FIREWALL MEDIA (LAXMI PUBLICATIONS PVT. LID) NEW DELHI.</i></li> </ul>							

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
<b>UNIT-I :</b> <b>CELLULAR TRANSMISSION :</b> Radio Frequency Communications, Wireless Services Wireless & Mobile Computing, Cellular System Cell, Cells For Coverage, Cell Radius, Mobile Switching office, Hands off, Base Station, Frequency Reuse and Cluster, Micro Cell, Microwave Link.	8					8	
<b>UNIT-II:</b> <b>EDI &amp; ATM :</b> Advantage of EDI, Security of EDI Messages, Indian Scenario, Various Types of Switches, Crossbar Switches, Space Division Switches, Time Division Switches.	8					8	
<b>UNIT-III:</b> Basics of ISDN, Broadband ISDN and ATM, ATM Switches OPTICAL NETWORK : Optical Source, LED, Lasers, Edge-Emitting Laser. Direct Modulation, External Modulation, Photodiode, Optical Receiver, Optical Fiber.	8					8	
<b>UNIT-IV :</b> <b>WIRELESS NETWORK</b> WLL Time division duplex (TDD), FDD, TDMA wireless application Protocol, definition of 2.5G and 3G, Overview of 3G GSM and CDMA Services, FDMA, Blue tooth.	8					8	
<b>UNIT-V</b> Key services for the Mobile Internet Characteristics of the Mobile Internet current WAP Technology for Wireless application, HTTP, JAVA, HTML, XML, Scripting languages overview of WAP Architecture, Network Infrastructure Services supporting WAP Clients, Overview of WML.	8					8	
<b>TEXT &amp; REFERENCE BOOKS:</b> <ul style="list-style-type: none"> <li>• COMMUNICATION AND NETWORK BY LEWIS MACKENZIE (MCGRAW-HILL)</li> <li>• COMMUNICATION NETWORK FUNDAMENTAL CONCEPTS AND KEY</li> <li>• ARCHITECTURE BY ALBERTO LEON-GARCIA &amp; INDRA WIDJAYA (MCGRAWHILL)</li> <li>• COMPUTER NETWORK BY ANDREW S. TANENBAUM</li> <li>• UNDERSTANDING DATA COMMUNICATION &amp; NETWORKS BY WILLIAM A. SHAY</li> </ul>							

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
<b>UNIT I</b> Introduction & Requirements - Introduction to HTML Java Server Pages – Basics – JSP Constructs – Scripting elements - directives - actions – beans – tags Introduction to apache tomcat server (installation & configuration)-start/stop tomcat services – run jsp page on tomcat	8	6				14	
<b>UNIT II</b> JSP implicit objects, Handling Request Parameters – Form Handling (text fields / text area ) – Handling multiple buttons/check boxes/radios/combos - Session Management – URL Rewriting - Hidden fields – cookies –	8	6				14	
<b>UNIT III</b> Introduction to Servlet- Servlet Life Cycle – ServletRequest & ServletResponse – Writing Servlets – Requirements & Configuration ServletRequest & ServletResponse Methods & use – sending different types of data	8	6				14	
<b>UNIT IV</b> Introduction to MySQL –features, installation & configuration, creating & managing database, MySQL Driver Java Database Connectivity (JDBC) with MySql –loading MySql driver – creating connection – Statement – ResultSet	8	6				14	
<b>UNIT V</b> Java Naming Directory Interfaces – JMS – Introduction – Topic – example of Topic & Queue – EJB – Basics – stateless / client creation – statefull client creation – Container Managed Persistence – Bean Managed Persistence	8	6				14	
<b>TEXT &amp; REFERENCE BOOKS :</b> <ul style="list-style-type: none"> <li>• <i>JAVA THE COMPLETE REFERENCE BY PATRICK NAUGHTON AND HERBERT SCHILDT. TMH PUBLICATION ISBN 0-07-463769-X</i></li> <li>• <i>PROGRAMMING WITH JAVA BY E. BALAGURUSWAMY TMH PUBLICATIONS ISBN 0-07-463542-5</i></li> <li>• <i>USING JAVA 1.2 BY JOSEPH WEBER. PHI – ISBN-81-203-1558-8</i></li> </ul>							

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
<b>UNIT I</b> HTML - Concepts of Hypertext, Versions of HTML, Elements of HTML syntax, Head & Body Sections, Building HTML documents, Inserting texts, Images, Hyperlinks, Backgrounds and Colour controls, Different HTML tags, Table layout and presentation, Use of front size & Attributes. List types and its tags, Use of Frames and Forms in web pages, ASP & HTML Forms.	8	6				14	
<b>UNIT II</b> Overview of C#, C# and .NET, similarities & differences from JAVA, Structure of C# program. Language features: Type system, boxing and unboxing, flow controls, classes, interfaces, Serialization and Persistence, Serializing an Object, Deserializing an Object. Delegates and Reflection.	8	6				14	
<b>UNIT III</b> Overview of Dynamic Web page, introduction & features of ASP.NET, Understanding ASP.NET Controls, Applications, Web servers, installation of IIS, Web forms, web form controls -server controls, client controls, Adding controls to a web form, Buttons, Text Box , Labels, Checkbox, Radio Buttons, List Box. Adding controls at runtime. Running a web Application, creating a multiform web project, Form Validation: Client side validation, server Side validation, Validation Controls : Required Field Comparison Range. Calendar control, Ad rotator Control, Internet Explorer Control.	8	6				14	
<b>UNIT IV</b> Overview of ADO.NET, from ADO to ADO.NET. ADO.NET architecture, Accessing Data using Data Adapters and Datasets , using Command & Data Reader, binding data to data bind Controls, Displaying data in data grid, XML in .NET , XML basics, attributes, fundamental XML classes: Document, Textwriter,Textreader. XML validations, XML in ADO.NET, The XML Data Documents.	8	6				14	
<b>UNIT-V</b> Web services: Introduction, State management- View state, Session state, Application state.SOAP, web service description language, building & consuming a web service, Web Application deployment. Caching, Threading Concepts, Creating Threads in .NET, managing threads, Thread Synchronization ,Security features of .NET, Role based security & Code access security, permissions,	8	6				14	
<b>TEXT &amp; REFERENCE BOOKS:</b> <ul style="list-style-type: none"> <li>• ASP.NET 3.5 BLACK BOOK (COVERS C# AND VB 2008 CODES) - DREAMTECH PUBLICATION</li> <li>• THE COMPLETE REFERENCE ASP.NET BY MATHEW MACDONALD - TMH</li> <li>• PROFESSIONAL ASP.NET- WROX PUBLICATION</li> <li>• INTRODUCTION TO .NET FRAMEWORK-WORX PUBLICATION</li> </ul>							



Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
<b>UNIT 1 Elements of Communication</b> The importance of communication through English at the present time, The process and factors of communication : sender, receiver, channel, code, topic, message, context, feedback, 'noise', filters and barriers , information loss and overload ,audience and purpose, Comparing general communication and professional communication .	8					8	
<b>UNIT 2 Sounds of English</b> Vowels, Diphthongs, Consonants, Consonant clusters, The International Phonetic Alphabet (IPA) ; Phonemic transcription , Problem sounds, Stress and Intonation.	8					8	
<b>UNIT III Value Based Reading and Writing.</b> The importance of developing reading skills, The sub-skills of reading, The importance of writing skills, The differences between speech and writing, The qualities of effective writing : coherence, cohesion, logical structuring and organization, clarity of language, stylistic variation. The writing Process: pre-writing, drafting, re-writing .	8					8	
<b>UNIT IV Soft Skills Practice.</b> Personality development, Participating in Group Discussion and Job Interviews, Time management Presentation skills ,Leadership skills ,Assertiveness, Lateral thinking ,Team work and Interpersonal skills, Emotional Intelligence, Self confidence and Courage, Attitude.	8					8	
<b>UNITV Self Presentation</b> Dress code, Business Card, Handshake, Telephone Etiquette, Email Etiquette, Dining Etiquette, Office Etiquette, International Business Etiquette, Approches to Professional Writing ,Writing a C.V,Resume, Applications, Reports, Business and social letters , Notices, Circulars and Memos.	8					8	
<b>TEXT &amp; REFERENCE BOOKS:</b> <ul style="list-style-type: none"> <li>• AN INTRODUCTION TO PROFESSIONAL ENGLISH AND SOFT SKILLS BY B.K.DAS ET AL., CAMBRIDGE UNIVERSITY PRESS.</li> <li>• BUSINESS COMMUNICATION TODAY BY BOVEE ET AL ( PEARSON)</li> <li>• BUSINESS COMMUNICATION BY MEENAKSHI RAMAN AND PRAKASH SINGH (OXFORD)</li> <li>• CRASH COURSE IN PERSONAL DEVELOPMENT BY BRIAN CLEGG ( KOGAN PAGE)</li> <li>• ACTIVITIES FOR DEVELOPING EMOTIONAL INTELLIGENCE BY ADELE B.LYNN (HRD PRESS)</li> <li>• LATERAL THINKING BY EDWARD DE BONO (PENGUIN) 16</li> <li>• PERSONALITY DEVELOPMENT AND SOFT SKILLS BY BARUN K.MITRA(OXFORD)</li> <li>• SOFT SKILLS BY DR K ALEX ( S.CHAND)</li> </ul>							

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
<b>UNIT-I</b> Data ware housing Definition, usage and trends, DBMS vs. data warehouse, Data marts, Metadata Data mining definition & application, DBMS vs. data mining, KDD versus data mining, data mining techniques, Data Preprocessing: need, data cleaning, integration & Transformation.	8					8	
<b>UNIT-II</b> Multidimensional data mode, Data cubes, Schemas for Multidimensional Database: stars, snowflakes and fact constellations, Data warehouse process & architecture, OLTP vs. OLAP, types of OLAP, ROLAP vs. MOLAP, 3 – Tier data warehouse architecture.	8					8	
<b>UNIT-III</b> Association Rule Mining, Single-Dimensional Boolean Association Rules Apoiri algorithm, FP growth, Multi-Level Association Rules from Transaction Databases	8					8	
<b>UNIT-IV</b> Classification and Prediction, Concepts of Decision Tree Induction and Bayesian Classification Cluster Analysis, Categorization of methods, Partitioning methods, K-Means algorithm, Outlier Analysis ,Hierarchical methods.	8					8	
<b>UNIT-V</b> Multidimensional Analysis and Descriptive Mining of Complex Data Objects, Spatial Databases, Multimedia Databases, Time Series and Sequence Data, Text Databases, Web Mining concepts	8					8	
<b>TEXT &amp; REFERENCE BOOKS:</b> <ul style="list-style-type: none"> <li>• <i>DATA MINING – CONCEPTS &amp; TECHNIQUES; JIAWEI HAN &amp; MICHELINE KAMBER – ELSEVIER</i></li> <li>• <i>DATA WAREHOUSING FUNDAMENTALS; PAULRAJ PONNIAH, WILEY</i></li> <li>• <i>DATA MINING TECHNIQUES; ARUN PUJAR; 2001, UNIVERSITY PRESS; HYDERBAD.</i></li> <li>• <i>INTRODUCTION TO DATA MINING WITH CASE STUDIES; G.K. GUPTA, PHI</i></li> </ul>							

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
<b>UNIT-I</b> <b>Testing Basics And Development Models:</b> Principals and Context of Testing In Software Production, Software Quality Control and its Relation With Testing, Validating And Verification, White Box <b>Testing:</b> White Box Testing - Static Testing, Structural Testing-Unit ,Code, Functional Testing, Code and Complexity Testing,.	8					8	
<b>UNIT -II</b> <b>Black Box Testing-</b> Positive and Negative Testing, Boundary Value Testing, Equivalence Partitioning, User Documentation Testing, Integration Testing: Introduction and types of Integration Testing, Scenario Testing, System and Acceptance Testing- Acceptance Testing.	8					8	
<b>UNIT -III</b> <b>Performance Testing-</b> Introduction, Factors Related too Performance Testing, Methodology For Performing Testing, Regression Testing, Overview Testing Tools: Win runner, Load runner, Test Director.	8					8	
<b>UNIT -IV</b> <b>Software Project Management:</b> Overview, Software Project Management Framework, Problems in Software Projects. Scope Management, Communication Techniques and Tools. Requirement Specifications, Resources types for a Software Projects.	8					8	
<b>UNIT -V</b> <b>Software Project Estimation:</b> Work Breakdown Structure (WBS), Steps in WBS, Measuring Efforts for a Project, Project Scheduling: Scheduling and its Need, Scheduling Basics, Gant Chart,	8					8	
<b>TEXT &amp; REFERENCE BOOKS:</b> <ul style="list-style-type: none"> <li>• <i>SOFTWARE TESTING: PRINCIPLES AND PRACTICE BY GOPALASWAMY AND SRINIUSAN, 81775812 LX. PUBLISHER, PEARSON EDUCATION INDIA. ISBN, 81775812 LX.</i></li> <li>• <i>SOFTWARE TESTING T OOLS : COVERING WINRUNNER, SILK T EST, LOADRUNNER, JMETER AND T ESTDIRECTOR WITH CASE BY DR. K. V.K.K. PRASAD, ISBN: 8177225324, WILEY DREAMTECH,</i></li> <li>• <i>HTTP://WWW.COLUMBIA.EDU/-JM221 7/</i></li> <li>• <i>BASICS OF SOFTWARE PROJECT MANAGEMENT BY NIIT ,, PRENTICEHALL OFLNDIA,ISBN 81-203-2490-0</i></li> <li>• <i>SOFTWARE PROJECT MANAGEMENT BY BOB HUGHES &amp; MIKE COTTERELL, T ATA MCGRAW HILL, ISBN 0-07-061 985-9</i></li> </ul>							

**Course: - MSC(IT)**  
**Sub Code: 3MSC(IT)5(C)**

**Semester: III**  
**Subject Name- -Microprocessor and Assembly language Programming**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
<b>UNIT-1 MICROPROCESSOR ARCHITECTURE &amp; ALP</b> Microprocessors, Microcomputers, and Assembly Language, The 8085 Programming Model, Instruction, Data Format, and Storage, 8085 Microprocessor Architecture and its operation, Microprocessor initiated operation, Bus organization of 8085, Registers, Memory unit of 8085, Instruction decoding & execution, 8085-Based single board Microcomputer, Pin out Diagram of 8085, Bus timings, ALU of 8085 and its flags.	8					8	
<b>UNIT-II PROGRAMMING OF MICROPROCESSOR</b> Instruction set of 8085, Classification of Instructions, Addressing Modes, Data transfer operation commands, Arithmetic operation commands, Logic operation commands, Branch operation commands, Writing and debugging simple assembly Language Program, developing assembly Language Program, Writing programs using an assembler, Branching looping and Indexing. Programming Techniques, Looping, Counting and Indexing, Additional Data Transfer and 16-Bit Arithmetic Instructions, Arithmetic Operations Related to Memory, Logic Operations: Rotate, Logic Operations: Compare, Dynamic Debugging	8					8	
<b>UNIT-III STACKS, SUBROUTINE AND ADVANCED INSTRUCTIONS</b> Counters and Time Delays, Stack, Subroutine, Restart, Conditional Call, and Return Instructions, Advanced instructions - LHL, SHLD, XCHG, PUSH, POP, XTHL, PCHL, Assembly Programs of addition, subtraction, multiplication and division of multi byte signed and unsigned numbers, Interrupts, Microprocessor-Based Software Development Systems, Operating Systems and Programming Tools, Assemblers and Cross-Assemblers, Writing Programs Using a Cross- Assembler.	8					8	
<b>UNIT – IV INTERFACING THE I/O PERIPHERALS</b> I/O device, Interfacing devices, I/O ports, 8255 programmable peripherals interfacing, Basic Interfacing concepts, Interfacing output display, Interfacing input key board, Memory mapped I/O, I/O mapped I/O, Data Transfer (synchronize and asynchronies), 8085 Interrupts (Hardware and Software), 8085 Vectored Interrupts,	8					8	
<b>UNIT-V - PROGRAMMABLE PERIPHERAL AND ADVANCED DEVICES</b> Basic Concepts in Programmable Devices, 8253 programmable interfacing timer, DMA (Direct memory Access), DMA Controller, Extending 8-Bit Microprocessor Concepts to Higher Level Processors and Microcontrollers, 16-Bit Microprocessors, BASICS OF 8086, High-End-High-Performance Processors, Single-Chip Microcontrollers	8					8	
<b>TEXT &amp; REFERENCE BOOKS:</b> <ul style="list-style-type: none"> <li>• <i>MICROPROCESSOR ARCHITECTURE, PROGRAMMING &amp; APPLICATIONS WITH 8085. RAMESH GAONKAR, PENRAM PUBLISHING LTD.</i></li> <li>• <i>MICROPROCESSORS AND INTERFACING BY D.V. HALL TMH, 2ND EDITION.</i></li> <li>• <i>IBM PC ASSEMBLY LANGUAGE PROGRAMMING BY PETER ABLE, PHI</i></li> <li>• <i>FUNDAMENTALS OF MICROPROCESSORS AND MICROCOMPUTERS BY B. RAM, DHANPAT RAI PUBLICATIONS. 5TH EDN.</i></li> </ul>							

Unit	Lectures	Practical's	Workshop	Demo	Field Visits	Total Hours	Remarks
<b>UNIT – I</b> Linux introduction and file system - Basic Features, Different flavors of Linux. Advantages, Installing requirement, Basic Architecture of Unix/Linux system, Kernel, Shell. Linux File system-Boot block, super block, Inode table, data blocks, How Linux access files, storage files, Linux standard directories. Commands for files and directories cd, ls, cp, md, rm, mkdir, rmdir, pwd, file, more, less, creating and viewing files using cat, file comparisons – cmp & comm, View files, disk related commands, checking disk free spaces. Partitioning the Hard drive for Linux, Installing the Linux system, System startup and shut-down process.	8	6				14	
<b>UNIT-II</b> Essential linux commands Understanding shells, Processes in linux - process fundamentals, connecting processes with pipes, Redirecting input output, manual help, Background processing, managing multiple processes, changing process priority with nice, scheduling of processes at command, cron commands, kill, ps, who, sleep, Printing commands, touch, file related commands - wc, cut, dd, etc. Mathematical commands- bc, expr. Creating and editing files with vi & vim editor.	8	6				14	
<b>UNIT-III</b> System administration: Common administrative tasks, configuration and log files, Role of system administrator, Managing user accounts-adding & deleting users, changing permissions and ownerships, Creating and managing groups, modifying group attributes, Temporary disable user's accounts, creating and mounting file system, file security & Permissions, becoming super user using su. Getting system information with uname, host name, disk partitions & sizes, users, kernel. Backup and restore files, installing and removing packages with rpm command. KDE & Gnome graphical interfaces.	8	6				14	
<b>UNIT-IV</b> Shell programming- Basic of shell programming, Various types of shell available in Linux, comparisons between various shells, shell programming in bash, read command, conditional and looping statements, case statements, parameter passing and arguments, Shell variables, system shell variables, shell keywords, Creating Shell programs for automate system tasks. Simple filter commands – pr, head, tail, cut, paste, sort, uniq, tr. Filter using regular expressions – grep, egrep, and sed.	8	6				14	
<b>UNIT-V</b> Basic networking administration: Setting up a LAN using Linux, choosing peer to peer vs client/server model, setting up an Ethernet Lan, configuring host computers, checking Ethernet connecting, connecting to Internet, common networking administrative tasks, configuring Ethernet, initializing Ethernet Interface, ifconfig, netstat and netconfig commands, TCP/IP network, DNS services, routing using Linux Installation & Administration of mail server, ftp server and Apache web server.	8	6				14	
<b>TEXT &amp; REFERENCE BOOKS:</b> <ul style="list-style-type: none"> <li>• UNIX - CONCEPTS &amp; APPLICATIONS (THIRD ED.) - SUMITABHA DAS, TATA MCGRAW HILL PUBLICATIONS.</li> <li>• UNIX FOR PROGRAMMERS AND USERS (THIRD ED.) - GRAHAM GLASS &amp; KING ABLES, PEARSON EDUCATION INDIA.(LOW PRICES EDITION).</li> <li>• FEDORA CORE 6 BIBLE</li> <li>• RED HAT LINUX 9 BIBLE – CRISTOPHER NEGUS, IDG BOOKS INDIA LTD.</li> <li>• USING LINUX BY JACK T ACKETT, DAVID GUNTER, PHI, EEE EDITION</li> <li>• LINUX INSTALLATION AND ADMINISTRATION, NICHOLAS WELLS, COURSE TECHNOLOGY (VIKAS PUBLISHING, NEW DELHI).</li> <li>• UNIX SHELL PROGRAMMING - YASHWANT KANETKAR, BPB PUBLICATIONS,</li> <li>• RED HAT LINUX UNLEASHED T ECHMEDIA (BPB PUBLICATIONS)</li> <li>• LINUX NETWORKING AND SECURITY - WELLS, COURSE T ECHNOLOGY (VIKAS PUBLISHING, NEW DEIHI</li> </ul>							

Unit	Lectures	Practical	Worksho	Demo	Field	Total	Remarks
<b>UNIT-I</b> Introduction to PHP, History of PHP, Versions of PHP, Features of PHP, Advantages of PHP over Other Scripting Languages, Installation and Configuration of PHP, Data Types in PHP, PHP Syntax, Comments, PHP Variables and Constants, Scope of Variables, PHP String, String Manipulation, PHP Operators, Precedence of Operators, Expressions, Creating a PHP Script, Running a PHP Script, Basic HTML, Embedding PHP in HTML, Passing Information between Pages, PHP \$_GET, PHP \$_POST.	8	6				14	
<b>UNIT-II</b> PHP Conditional Statements, PHP Looping Statements, Break, Continue, Exit, PHP Functions: Built-in and User Defined Function, Regular Expression Functions, Mathematical, Date and Time Functions, PHP Arrays: Creating Array and Accessing Array Elements, PHP File Permissions, Working with Files: Opening, Closing, Reading, Writing a File; Working with Directory: Creating, Deleting, Changing a Directory.	8	6				14	
<b>UNIT-III</b> <b>Working with Forms &amp; Databases:</b> Introduction to a Web Form, Processing a Web Form, Validating a Web Form, PHP-Supported Databases; Using PHP & My SQL: Installation and Configuration of My SQL on Windows, Checking Configuration, Connecting to Database, Selecting a Database, Adding Table and Altering Table in a Database, Inserting, Deleting and Modifying Data in a Table, Retrieving Data, Performing Queries, Processing Result Sets.	8	6				14	
<b>UNIT-IV</b> Input Validation, PHP with Client Side Scripting Language, Exception and Error Handling in PHP, Cookies and Session Handling,	8	6				14	
<b>UNIT-V</b> Code Re-use, require(), include(), and the include_path, File System Functions and File Input and Output, File Uploads, Use of CSS, Introduction to Object Oriented Programming with PHP, Installing and Configuring Apache to use PHP on Windows, php.ini File,	8	6				14	
<b>TEXT &amp; REFERENCE BOOKS:</b> <ul style="list-style-type: none"> <li>• <i>PHP &amp; MY SQL, BY VIKRAM VASWANI, TMH PUBLICATIONS</i></li> <li>• <i>PHP ESSENTIALS, BY JULIE C. MELONI, BPB PUBLICATIONS</i></li> <li>• <i>PHP 5 AND MY SQL BIBLE, BY TIM CONVERSE AND JOYCE PARK, WILEY-DREAMTECH INDIA PUBLICATIONS</i></li> <li>• <i>WEB TECHNOLOGIES, BLACK BOOK, DREAMTECH PRESS</i></li> <li>• <i>ATKINSON, LEON. CORE PHP PROGRAMMING, NEW YORK: PRENTICE HALL</i></li> <li>• <i>LEARNING PHP 5, BY DAVID SKLAR PUBLISHER O'REILLY MEDIA</i></li> <li>• <i>MASTERING PHP, BY CHARLES, PUBLISHER: BPB</i></li> <li>• <i>EXPERT PHP AND MYSQL, WROX PROGRAMMER TO PROGRAMMER, WROX PRESS, 2010</i></li> <li>• <i>PHP FOR ABSOLUTE BEGINNERS, APRESS, 2009</i></li> <li>• <i>SAMS TEACH YOURSELF CSS IN 24 HOURS (2ND EDITION), SAMS PUBLISHING, 2006</i></li> <li>• <i>HTTP:// WWW.PHPBUILDER.COM</i></li> <li>• <i>HTTP://PHP.FAQTS.COM</i></li> </ul>							

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
<b>UNIT -I</b> Introduction to the distributed systems, Pros and Cons of distributed processing, Hardware & Software concept, Design issues, Layered protocols, Client server model, Addressing Primitives & Implementation issues, ATM Layers & Switching.	8					8	
<b>UNIT- II</b> RPC Basic operation, Parameter passing, Binding, Implementation issues, Design issues in group communication, Clock synchronization, Mutual exclusion, Election Algorithms	8					8	
<b>UNIT -III</b> Automatic transaction, Deadlocks in distributed system, Thread usage, System models Processor allocation, design and implementation issues, Algorithms	8					8	
<b>UNIT-IV</b> Scheduling in distributed systems, Fault tolerance, Introduction to real time distributed system, Distributed file system design & implementation,	8					8	
<b>UNIT-V</b> Distributed shared memory, Architecture, Design & implementation issues, Granularity, consistency models, Replacement strategy	8					8	
<b>TEXT &amp; REFERENCE BOOKS</b> <ul style="list-style-type: none"> <li>• ANDREW S TANENBAUM: DISTRIBUTED OPERATING SYSTEM, PEARSON EDUCATION ASIA 2001</li> <li>• DISTRIBUTED OPERATING SYSTEM: P K SINHA</li> </ul>							

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
<b>UNIT I</b> Security Attacks (Interruption, Interception, Modification and Fabrication), Security Services (Confidentiality, Authentication, Integrity, Non-repudiation, access Control and Availability) and Mechanisms.	8					8	
<b>UNIT II</b> Conventional Encryption Principles, Conventional encryption algorithms, cipher block modes of operation, Secure Hash Functions.	8					8	
<b>UNIT III</b> Public key cryptography principles, public key cryptography algorithms, digital signatures, digital Certificates, Certificate Authority and key management Kerberos, X.509 Directory Authentication Service.	8					8	
<b>UNIT IV</b> Email privacy: - E-Mail Security, IP security, Web security. Overview, IP Security Architecture, Combining Security Associations and Key Management.	8					8	
<b>UNIT V</b> Introduction of Cyber Crime, Categorizing cyber crime, perception of cyber criminals: hackers, insurgents and extremist groups, Information Warfare- concept, information as an intelligence weapon, attacks and retaliation, attack and defense. Cyber Law	8					8	
<b>TEXT &amp; REFERENCE BOOKS :</b> <ul style="list-style-type: none"> <li>• NETWORK SECURITY, KAUFMAN, PEARLMAN AND SPECINER, PEARSON EDUCATION.</li> <li>• INFORMATION WARFARE : CORPORATE ATTACK AND DEFENSE IN DIGITAL WORLD, WILLIAM HUTCHINSON, MATHEW WARREN, ELSEVIER.</li> <li>• NETWORK SECURITY ESSENTIALS (APPLICATIONS AND STANDARDS) BY WILLIAM STALLINGS PEARSON EDUCATION.</li> <li>• FUNDAMENTALS OF NETWORK SECURITY BY ERIC MAIWALD (DREAMTECH PRESS)</li> <li>• CRYPTOGRAPHY AND NETWORK SECURITY, THIRD EDITION, STALLINGS, PHI/PEARSON</li> <li>• PRINCIPLES OF INFORMATION SECURITY, WHITMAN, THOMSON.</li> <li>• NETWORK SECURITY: THE COMPLETE REFERENCE, ROBERT BRAGG, MARK RHODES, TMH</li> <li>• INTRODUCTION TO CRYPTOGRAPHY, BUCHMANN, SPRINGER.</li> </ul>							



Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
<b>UNIT 1 Object-Oriented Databases:</b> Overview of Object-Oriented concepts, Object identity, Object structure, and type constructors, Encapsulation of operations, Methods, and Persistence, Type hierarchies and Inheritance, Type extents and queries, Complex objects; Database schema design for OODBMS; OQL, Persistent programming languages; OODBMS architecture and storage issues; Transactions and Concurrency control, Example of ODBMS.	8					8	
<b>UNIT II . Object Relational and Extended Relational Databases.</b> Database design for an ORDBMS – Nested relations and collections; Storage and access methods, Query processing and Optimization; An overview of SQL3, Implementation issues for extended type; Systems comparison of RDBMS, OODBMS, ORDBMS.	8					8	
<b>UNIT III .Parallel and Distributed Databases and Client-Server Architecture:</b> Architectures for parallel databases, Parallel query evaluation; Parallelizing individual operations, Sorting, Joins; Distributed database concepts, Data fragmentation, Replication, and allocation techniques for distributed database design; Query processing in distributed databases; Concurrency control and Recovery in distributed databases. An overview of Client-Server architecture.	8					8	
<b>UNIT IV. Databases on the Web and Semi Structured Data:</b> Web interfaces to the Web, Overview of XML; Structure of XML data, Document schema, Querying XML data; Storage of XML data, XML applications; The semi structured data model, Implementation issues, Indexes for text data	8					8	
<b>UNIT V Enhanced Data Models for Advanced Applications</b> Active database concepts. Temporal database concepts.; Spatial databases, Concepts and architecture; Deductive databases and Query processing; Mobile databases, Geographic information systems.	8					8	
<b>TEXT &amp; REFERENCE BOOKS:</b> <ul style="list-style-type: none"> <li>• <i>ELMASRI AND NAVATHE, FUNDAMENTALS OF DATABASE SYSTEMS [4E], PEARSON EDUCATION</i></li> <li>• <i>RAGHU RAMAKRISHNAN, JOHANNES GEHRKE, DATABASE MANAGEMENT SYSTEMS [3E], MCGRAW-HILL</i></li> <li>• <i>KORTH, SILBERCHATZ, SUDARSHAN, DATABASE SYSTEM CONCEPTS, MCGRAW-HILL.</i></li> <li>• <i>PETER ROB AND CORONEL, DATABASE SYSTEMS, DESIGN, IMPLEMENTATION AND MANAGEMENT, THOMSON LEARNING.</i></li> <li>• <i>C.J.DATE, LONGMAN, INTRODUCTION TO DATABASE SYSTEMS, PEARSON EDUCATION</i></li> </ul>							

## INTERNAL EVALUATION

For internal evaluation wherever required as per scheme, the concerned faculty members must keep a detailed record of activities performed. At least 2 tests must be conducted evenly distributed in the semester and syllabus, each having a weightage of 25% (in case more than 2 tests conducted, best 2 performance may be considered). Further the entire semester attendance be evaluated for 25% weightage and fully a comprehensive subject viva on the assignments (at least two) shall have a weightage of 25%.

The record for every students must be maintained at least for 6 months after the end of examination, foil/counter foil must be submitted to the Examination Section before the start of theory examination. The format (for 20 marks weightage) is attached herewith.

1. Subject code
2. Subject name
3. Year
4. Study Institute code
5. Name & address of Study Institute
6. Name of Class Coordinator

Roll No.	Enrollment No.	Test-1 Marks MM-5	Test-2 Marks MM-5	Attendance MM-5	Viva MM-5	Total MM-20

Signature of Class Coordinator

Signature of Head of Institute