Semester – III				
Sr. No.	Subject Code	Subject Title	Internal Marks	External Marks
19	IT 31	Data Structure using C++	30	70
Objective: To learn the systematic way of solving problems, understand the different methods of organizing large amounts of data efficiently. Implement the different data structures and implement solutions for specific problems.				

UNIT	Unit Details
UNIT-1 *	**Overview Of C++ :** * Classes and Objects- Constructor, Destructor, Functions- Call by value, Call by reference, default arguments, inline function, Function Overloading, Inheritance- Single and Multiple, Function overriding, Generic Programming- Function and class templates.
UNIT-2	**Introduction to Data Structure:** Introduction, Data Definition, Data Object, Data Types, Data Structure, Algorithm, Implementation of Data Structure: ADT – Stack, Queue and List ADT.
UNIT-3	**Linked List :** Introduction, Concept, Implementation of Linear Linked List, Operation of Linked List - Creation, Display, Insertion, Deletion, Reversing a Linked List, Concatenation of Two Lists , Circular Linked List & Operation, Doubly Linked List & Operation, Doubly Circular Linked List & Operation.
UNIT-4	**Stack:** Introduction, Definition, Operation on Stack, Implementation of a Stack, Application of Stack - Recursion, Infix, Prefix & Postfix expression, Matching Parentheses in an Expression.
UNIT-5	**Queue:** Introduction, Definition of a Queue, Operation on a Queue, Implementation of Queue, Types of Queue - Circular Queue, Priority Queue, DeQueue, Application of Queue-(First Come First Serve Job Scheduling(FCFS)), Reversing Stack using Queue.
UNIT-6	**Tree :** Tree Terminology, Binary Tree, Binary Tree Representation, Binary Search Tree (BST), Creating BST, Binary Search Tree Traversal, Tree Traversal Techniques – Pre-order Traversal, In-order Traversal, Post-order Traversal, Operations on BST - Insertion, Deletion.
UNIT-7	**Binary Threaded Tree:** AVL tree, Operations on AVL - Insertion, Deletion and Searching, B tree - introduction to B tree, Operations on B- tree, insertion in B tree, deletion from B tree, Expression Tree, Threaded Binary Tree.
UNIT-8	**Graph :** Introduction, Graph Representation - Adjacency Matrix, Adjacency List, Graph Traversals - Depth First Search, Breadth First Search, Application of Graph -(Kruskal's algorithm).

* Note: The Unit -1 is to be considered as prerequisite for all other units. There will be no any questions based on this unit for university examination.

Reference Books:

Sr. No.	Title	Author/s	Publication	Edition
1	Data Structure Using OOP C++	E . Balagurusamy	The McGraw-Hill	2008
2	The Essence of Data Structures using C++	Ken Brownsey	Prentice Hall	2000
3	Data structures and Algorithms in C++	Michael T. Goodrich, R. Tamassia & Mount	Wiley student edition, John Wiley and Sons	2nd
4	Data structures using C and C++	Langsam, Augenstein & Tanenbaum	PHI.	2nd
5	Problem solving with C++, The OOP	W. Savitch	Pearson education	4th
6	The C++ Programming Language	Bjarne Stroustrup	Addison Wesley	2000

Semester – III				
Sr. No.	Subject Code	Subject Title	Internal Marks	External Marks
20	IT 32	Core Java Programming	30	70

Objective: To enable the students to understand the core principles of object oriented approach with the use of Java Language and to produce well designed, effective standalone applications. It will open the path for learning the new tactics in java for enhanced and flexible applications.

UNIT	Unit Details
UNIT-1	**Introduction:** History of Java, Features of Java, Object oriented concepts related to java, Java environment and tools (javac, java, applet viewer, javadoc, jdbc), garbage collection and finalize method, data types, variable, expressions, operators, and control structures, arrays, string and mutable string. Using collection bases loop for String, Tokenizing a String, Creating Strings using String Buffer and String Builder classes.
UNIT-2	**Objects and Classes:** instance variables and instance methods, constructors, method overloading and constructor overloading, access specifiers, abstract classes, wrapper classes, inheritance in java, single, multilevel, hierarchical, static and final keyword, runtime polymorphism, method overriding, use of super and this keyword. visibility control- public, private, friendly, protected access. **New features-** assertion, for each loop, varargs, static import, auto boxing & unboxing, Enum, covariant return type, annotation.
UNIT-3	**Packages and Interfaces:** package concept, creating user defined package, access control protection, defining interface, implementing interface, collections -list, map, set.
UNIT-4	**Exception handling:** exception handling fundamentals, exception types, exception hierarchy, try, catch, finally, throw, throws, user defined exception.
UNIT-5	**Multithreading:** Java thread model, working with Thread class and the runnable interface, thread priorities, inter thread communication, synchronization.
UNIT-6	**Input /Output & File Handling:** exploring java.io, Input streams and Output streams, FileInputStream and FileOutputStream, Binary and Character streams, Buffered Reader/ Writer, Object Serialization and Deserialization. Introduction to file handling, defining & opening a File, closing a File, Input/output operations on Files, Sequential and Random Access To Files.
UNIT-7	**GUI programming and Event handling:** **Applet:** applet life cycle, creating applet, inter applet communication, parameters to applet. **Advanced Window Tool:** Components and Graphics, layout managers- Border, Grid, Flow, Box, Card, Grid Bag, Containers, Frames and Panels. **Event handling:** event delegation model, event handling mechanisms,

	event classes, event listener interfaces, handling events using applets and awt, inner class, anonymous class and Adapter classes. **Swing**: Features of swing, swing components-JButton, JRadioButton, JtextArea, JComboBox, JTable, JProgressBar, JSlider, JDialog, JApplet Exploring controls, menus and layout managers.
UNIT-8	**Database Connectivity**: Java Database Connectivity (JDBC) architecture, Types of drivers, java.sql package, establishing connectivity and working with connection interface, working with statement, Prepared Statement, Callable Statement interface, working with Result Set interface, methods and fields, Resulset types, working with Result Set Metadata interface, connection pooling, Introduction to Report generation.

Reference Books:

Sr. No.	Title	Author/s	Publication	Edition
1	Programming with Java- A Primer	E. Balguruswami	TMH	4th
2	A Programmer's Guide to Java (tm) Certification	Khalid Mughal & Rolf W. Rasmussen	PEARSON	2nd
3	Java 2 Complete Reference	Herbert Schildt & Patric Naughton	TMH	7th
4	Core Java 2 Volume –II Advanced features	I Cay S. Horstmann, Fary Cornell	PEARSON	8th
5	Core Java for beginners	Sharanam Shah & vaishali shah	SPD	5th
6	Java 2 Programming Black Book	Holzner	DREAMTECH	5th

Semester – III				
Sr. No.	Subject Code	Subject Title	Internal Marks	External Marks
21	IT 33	Data Communication and Networks	30	70

Objective: Various types of computer networks, technologies behind networks and Application protocols, various communication protocols will be introduced to Students through this subject.

UNIT	Unit Details
UNIT-1 *	**Introduction to Networking & Data Communication:** * Basic Terminologies-Topologies, Devices, Types of Communication, Transmission Media-Twisted Pair, Coaxial Cable, Fiber optics, Wireless Transmission-Radio, Microwave, Infrared, Communications Types-Synchronous, Asynchronous, Types of Networks-LAN, MAN, WAN, Components of LAN, LAN Access Techniques-CSMA, CSMA/CD, CSMA/CA, Polling, Switching- Circuit Switching, Message Switching, Packet Switching, Connection oriented N/Ws, Connectionless N/Ws.
UNIT-2	**Reference Models:** The OSI Reference Model, The TCP/IP Reference Model, A Comparison of the OSI and TCP Reference Model.
UNIT-3	**Common Network Architecture:** Service Primitives, Example of N/Ws-P2P, X.25, Frame Relay, ATM, Ethernet, Wireless LANs - 802.11, 802.11x.
UNIT-4	**Broadband Networks:** ISDN(Integrated Service Digital Networks), ISDN System Architecture, Broad Band ISDN, ATM, Introduction to Very Small Aperture Terminal (VSAT).
UNIT-5	**Routing and IP:** Routing- concept, Routing for Mobile host, Routing Algorithms - The Optimality Principle, Shortest Path Routing, Distance Vector Routing, Hierarchical Routing, Broadcast Routing, Multicast Routing, IP-structure, Subnet Mask, Address Classes, The Next Generation Protocol:IPV6, Difference between IPV4 and IPV6, Internet Control Protocols-ICMP, ARP, RARP, Mobile IP, Sliding Window Protocol-one bit, Go back N, Selective Repeat.
UNIT-6	**DNS and SNMP:** DNS- concept, The DNS Name Space, Categories of Domain, Zones, Resource Records, Name Servers, DNS Protocols, DHCP and Scope Resolution. SNMP –The SNMP Model, ASN.1, SMI, MIB, The SNMP protocol, Network Management Tools- ping, ipconfig, tracert.

UNIT-7	**Network Security:** Introduction to Threats, Virus, Hardware and Software Firewalls, Packet Filtering Firewalls, Stateful firewall, Application level firewall, Common Problem with Packet Filtering, SSL(Secure Socket, Layer), IPSec, Virtual Private Network, Traditional Cryptography, Secrete Key Algorithm, Public Key Algorithm, Digital Signature.
UNIT-8	**Network Applications:** Hyper Text Transfer Protocol (HTTP), Types of HTTP connections, HTTP methods, HTTP Request and Response Headers, Status Code, Email- Sending & Receiving Emails, Message Structure, Mail Exchangers – Delivering a message, Mail Boxes, MIME, SMTP, POP, IMAP, FTP, Telnet, Proxy Server, Proxy Web Servers.

* Note: The Unit -1 is to be considered as prerequisite for all other units. There will be no any questions based on this unit for university examination.

Reference Books:

Sr. No.	Title	Author/s	Publication	Edition
1	Computer Networks	Andrew S. Tanenbaum	PHI	3rd
2	Delight of Computer Network	Singh K. K.	Schitech	1st
3	Computer Networks	Sharma C. R.	Jaico	1st
4	Computer Networks and Internets	Comer D. E.	Pearson	5th
5	Firewalls and Internet Security	William R. Cheswick, Steven M. Bellovin, Aviel D. Rubin	Addison-Wesley	2nd
6	Data Communications & Networking	Behrouz Ferouzan	McGraw-Hill	3rd

Semester - III				
Sr. No.	Subject Code	Subject Title	Internal Marks	External Marks
22	IT 34	Software Project Management	30	70

Objective: To learn process of software project management, cost estimation, use of project management tools, configuration management, user roles and software teams.

UNIT	Unit Details
UNIT-1	**Project Management Framework:** Project Management Overview:- The Management Spectrum, the people, the product, the process, the project, the W5HH principle, Project Organization, Project Communication and Documentation, PMLC.
UNIT-2	**Risk Management:** Resource Allocation, Identification of Risks, Risk Analysis, Risk Planning and Monitoring.
UNIT-3	**Software Project Estimation:** Overview of Project Estimation, Method of Estimations COCOMO-I, COCOMO-II , DELPHI Cost Estimation ,Function Point Analysis.
UNIT-4	**Project Management Tools:** CPM & PERT, Project Management through Microsoft Project (Ms-Project) : Introduction , Gantt Chart.
UNIT-5	**Configuration Management:** Change Management Plan, Change Management Process, Versioning and Version Control, Defect Management, Release Management Process, Configuration Management Tools.
UNIT-6	**Software Team Management:** Team structure, Team Types, Team Management and Communication, Group Behavior, Leadership and Motivation, Performance Management.
UNIT-7	**Role of user in Project Management:** User role in Project Management, User role in PMLC, User role in System Implementation.
UNIT-8	**Case Studies:** Application of SPM concepts in information systems of any small and medium scale Industry such as SPM in Hospital information management System.

Reference Books:

Sr. No.	Title	Author/s	Publication	Edition
1	Software Project Management	Edwin Bennatan	Wiley	4th
2	Software Engineering	Roger S. Pressman	McGraw-Hill	7th
3	Software Engineering Concepts	Richard Fairly	TMH.	2nd
4	Software Project Management	S. A. Kelkar	PHI	3rd
5	Software Engineering	IAN Sommerville, Pearson	McGraw-Hill	8th
6	System Analysis and Design Methods	Whitten, Bently and Dittman	TMH	7th
7	Information Technology Project Management	Kathy Schwalbe	Course Technology	6th
8	Introduction to Software Project Management and Quality Assurance'',	Darrel Ince, H. Sharp and M. Woodman	Tata McGraw Hill, 1995.	2nd

Semester - III				
Sr. No.	Subject Code	Subject Title	Internal Marks	External Marks
23	IT 35	Advanced Database Management System	30	70

Objective: To acquaint the students with some relatively advanced issues in modern data management, information storage and retrieval. At the end of the course students should be able to gain an awareness of basic issues in object oriented data models, learn about the Web-DBMS integration technology and XML for Internet database applications, familiarize with some advanced topics

UNIT	Unit Details
UNIT-1 *	**Overview Of DBMS :** * Database and Need for DBMS, Characteristics of DBMS, Database Users, 3-tier architecture of DBMS (advantages over 2-tier), Data Models , Views of data-schemas and instances ,Data Independence, Codd's rules, Normalization, Keys
UNIT-2	**MySQL – Practical Approach: MySQL Basics:** Installing MySQL, Quick Tour **Designing and Creating Databases with MySQL:** Database Design Crash Course, Creating Databases, Tables, and Indexes **Using MySQL:** Inserting, Deleting, and Updating Data, Querying MySQL, Advanced Queries, Using MySQL Built-In Functions with SELECT **MySQL Table Types and Transactions:** Understanding MySQL's Table Types, Using Transactions with InnoDB Tables
UNIT-3	**Object Based Databases:** Overview, Complex Data Types, Structured Types & Inheritance in SQL, Table Inheritance, Array & Multiset Types in SQL, Object Identity & Reference Types in SQL, Persistent Programming Languages, Comparing RDBMS, OODBMS & ORDBMS, Database Design for ORDBMS, New Challenges in Implementing ORDBMS : Storage & Access Methods, Query Processing & Optimization.
UNIT-4	**Parallel Databases:** Introduction, Parallel Database Architecture, I/O Parallelism, Inter-Query & Intra-Query Parallelism, Inter – Operational & Intra – Operational Parallelism.
UNIT-5	**Distributed Databases:** Introduction to DDBMS, Architecture of DDBMS, Homogeneous & Heterogeneous databases, Distributed Data Storage, Distributed Database Design and Query Processing, Distributed Transaction Processing, Distributed Concurrency Control & Recovery, Two Phase, Three Phase – Commit Protocols, Availability, Distributed Catalog Management, Cloud based Databases.
UNIT-6	**Spatial and Temporal Data :**Time in Databases, Spatial & Geographic Data, Overview of Client Server Architecture, Databases & Web Architecture, N-tier Architecture, Business Logic – SOAP **Multimedia Databases :** The nature of Multimedia Data & applications, Data Management Issues, Open Research Problems, Applications.

UNIT-7	Emerging Database Technologies and Applications: Mobile Databases : Mobile Computing Architecture, Characteristics of Mobile Environments, Data Management Issues, Applications. Geographic Information Systems: GIS Applications, Components of GIS System, Characteristics of Data in GIS, Constraints in GIS, Data Management Requirements of GIS, Specific GIS Data Operations, An Example of GIS Software: ARC-INFO, Problems & Future Issues in GIS
UNIT-8	Knowledge Based Systems : Categories of Knowledge Based System, Expert System, Architecture of Expert System, Applications of Expert System, Features of Expert System, Integration of Expert in Database

* Note: The Unit -1 is to be considered as prerequisite for all other units. There will be no any questions based on this unit for university examination.

Reference Books:

Sr. No.	Title	Author/s	Publication	Edition
1	Database System Concepts	Abraham Silberschatz, Henry F. Korth & S. Sudarshan	McGraw Hill	6th
2	Database Management Systems	Ramakrishnan, Gehrke	McGraw Hill	3rd
3	Fundamentals of Database Systems	Elmasri, Navathe	PEARSON Education	5th
4	Database System Concepts	Peter Rob, Carlos Coronel	CENGAGE Learning	-
5	MySQL Tutorial	Luke Welling, Laura Thomson	PEARSON Education	-
6	Management Information System	Jawadekar	McGraw Hill	4th

Semester - III				
Sr. No.	Subject Code	Subject Title	Internal Marks	External Marks
24	MT31	Research Methodology and Statistical Tools	70	---
Objective: Research is a Tool which helps the Student to Identify, Understand and Solve Management Problems in Future Organization.				

UNIT	Unit Details
UNIT-1	**Research Process:** Meaning, Objectives and Motivation In Research, Types of Research, Research Approaches, Research Process, Validity and Reliability in Research, Obstacles in Accepting Research.
UNIT-2	**Hypothesis:** Problem Formulation, Hypothesis Formulation, Types of Hypothesis, Characteristics of Good Hypothesis, Testing of Hypothesis as a Concept.
UNIT-3	**Research Design:** Meaning and Significance of Research Designs, Features of a Good Research Design, Types of Research Design, Contents of Research Design.
UNIT-4	**Sample Design:** Census Vs. Sample, Steps in Sample Design, Determining the Size of Sample, Sampling Methods - Simple Random Sampling, Stratified Sampling, Systematic Sampling, Cluster Sampling and Selective Sampling.
UNIT-5	**Measurement Of Data:** Measurement and Scaling Techniques, Errors in Measurement, Tests of Sound Measurement, Scaling and Scale Construction Techniques.
UNIT-6	**Data Collection:** Types of Data, Sources of Data– Primary and Secondary Data, Methods of Collecting the Data. **Tools For Data Collection:** Steps in Questionnaire Design, Characteristics of a Good Questionnaire, Testing the Validity of the Data.
UNIT-7	**Data Presentation:** Presentation, Processing, Analysis and Interpretation of Data, Data Analysis Technique (Measures of Central Tendencies and Dispersions – Simple Numerical Calculations), Testing of Hypothesis- Large Sample Tests, Small Sample Tests – T, F Test Tests.
UNIT-8	**Report Writing:** Report Writing – Layout of a Research Report, Characteristics of a Good Research Report.

Note: Use of EXCEL, SPSS, etc. for Data Analysis is recommended.

Distribution of Marks:
- Internal Theory Exam will be for 40 marks
- Mini project (Case Study – field work Research) will be for 25 marks
- Attendance will be for 5 marks

Project Assessment:
- Project must be done in a group of 2 to 5 students
- Each project group should prepare N copies (N=1 Institute copy + m copies, where m indicates number of students in a group).

Reference Books:

Sr. No.	Title	Author/s	Publication	Edition
1	Research Methodology Methods & Techniques	C. R. Kothari	New Age International	2nd
2	Statistical Methods	S. P. Gupta	Sultan Chand, New Delhi	3rd
3	Business Research Methods	William G. Zikmund	Thomson South-Western	4th
4	Introduction to Quantitative Research Methods	Mark Balnaves and Peter Caputi	Sage Publications	1st
5	Research methodology Concepts and cases	Deepak Chawala, Neena Sondhi	Vikas Publication	7th

Web References:

1. http://www.stats.gla.ac.uk/steps/glossary/hypothesis_testing.html
2. http://www.hypothesisjournal.com/
3. http://www.sjsu.edu/faculty/gerstman/StatPrimer/
4. http://stattrek.com

Semester – III				
Sr. No.	Subject Code	Subject Title	Internal Marks	External Marks
25	IT 31L	JAVA Programming LAB	50	---
Objective: To impart practical implementation of the Java concepts learned.				

No.	Assignment Name
1	WAP to implement class in java.
2	WAP to perform basic operations on string.
3	WAP to use various control structures in java.
4	WAP to use array in java.
5	WAP to use String Buffer class.
6	WAP to implement String Builder class.
7	WAP to implement StringTokenizer use for strings in java.
8	WAP to implement constructor overloading.
9	WAP to implement use of method overriding.
10	WAP to implement use of abstract class.
11	WAP to implement use of access specifier.
12	WAP to implement use of super keyword.
13	WAP to implement use of assertion.
14	WAP to implement use of package.
15	WAP to implement inheritance.
16	WAP to implement interface.
17	WAP to implement arraylist and vector.
18	WAP to implement hashmap and hash table.
19	WAP to implement inbuilt exception handling.
20	WAP to implement user define exception handling.
21	WAP to implement multiple catch.
22	WAP to implement finally keyword.
23	WAP to implement nesting of try .. catch.
24	WAP to implement thread using Thread class.
25	WAP to implement thread using runnable interface.
26	WAP to implement thread priorities.
27	WAP to implement inter thread communication.
28	WAP to implement synchronization.
29	WAP to implement read a file using stream classes.
30	WAP to implement read a file using reader classes.
31	WAP to implement write a file using stream classes.
32	WAP to implement write a file using stream classes.
33	WAP to implement copy of a file using stream classes.
34	WAP to implement copy of a file using reader classes.
35	WAP to implement Random Access File.
36	WAP to implement serialization and deserialization.
37	WAP to implement an applet.
38	WAP to implement applet life cycle.
39	WAP to implement applet for passing a parameter from html.
40	WAP to implement all layout manager.
41	WAP to implement sample form using panel and frame.

42	WAP to implement all components.
43	WAP to implement event handling mechanism.
44	WAP to implement all events using applet.
45	WAP to implement all events using awt.
46	WAP to implement event handling mechanism using inner classes.
47	WAP to implement event handling mechanism using adapter classes.
48	WAP to implement swing components.
49	Write a Program using jdbc App to select records from db table.
50	Write a Program using jdbc which check whether connection with Database s/w is established or not.
51	Write a Program using jdbc which shows how to drop a database table.
52	Write a Program using jdbc which shows how to delete records from table.
53	Write a Program using jdbc on scrollable ResultSet.
54	Write a Program using jdbc by using all three jdbc statement objects.
55	Write a program on Parameter Metadata using JDBC.
56	Write a Application on PreparedStatement object using JDBC.
57	Write a program on java App to Excel Communication using JDBC.
58	Write a program on CallableSatement object using JDBC.

Semester – III				
Sr. No.	Subject Code	Subject Title	Internal Marks	External Marks
26	IT 32L	Mini Project based on Data Structure	50	---

Objective: To get in depth knowledge of Data Structure and C++. Students will get complete idea of developing an application is done through course.

Project Work: This mini project is based on subject data structure using C++ in semester III. Simple projects such as inventory Management System, Payroll System, job scheduling, hardware interface etc.

Project must be done in a group of 2 to 4 students.

- Final evaluation will be done by:
    1. Project Demonstration
    2. Power Point Presentation
- The marks of the mini project would be given on the basis of internal assessment of the project as given in the Course Structure.

General Instruction Regarding Preparation of Project Report
For MCA-II Semester – III

Typing :

(a) The typing shall be standard 12 pts in 1 ½ spaced using black ink only

(b) Margins must be Left 2 inches, Right 1.5 inches, Top 2 inches &Bottom 1.5 inches

(c) Paper A4 size

Project Report Copies : Each project group should prepare N copies (N=1 Institute copy + m copies, where m indicates number of students in a group).

Format For Title Page :

A

PROJECT REPORT

ON

<TITLE OF THE PROJECT>

BY

<NAME OF STUDENT/S>

UNDER THE GUIDANCE OF

<NAME OF GUIDE>

SUBMITTED TO

< NAME OF THE INSTITUTE>

FOR THE PARTIAL FULFILLMENT OF

MCA-II, SEM-III

<Year>

Project Report Contents :
- Title Page
- Project Completion Certificate
- Declaration
- Acknowledgement
- CONTENTS with printed Page Numbers

CHAPTER 1 : INTRODUCTION

1.1 Existing System and Need for System

1.2 Scope of Work

1.3 Operating Environment – Hardware and Software

1.4 Detail Description of Technology Used

CHAPTER 2 : PROPOSED SYSTEM

2.1 Proposed System

2.2 Objectives of System

2.3 User Requirements

CHAPTER 3 : ANALYSIS & DESIGN

3.1 Data Dictionary (Optional)

3.2 Table Specifications (Design) (Optional)

3.3 Menu Tree(Optional)

3.4 User interface Design (Screens etc.) (Optional)

3.5 Report Formats(Optional)

CHAPTER 4 : USER MANUAL

Operations Manual / Menu Explanation

DRAWBACKS AND LIMITATIONS

PROPOSED ENHANCEMENTS

CONCLUSION

BIBLIOGRAPHY

ANNEXURES :

ANNEXURE 1 : USER INTERFACE SCREENS (Optional)

ANNEXURE 2 : OUTPUT REPORTS WITH DATA (if any)

ANNEXURE 3 : SAMPLE PROGRAM CODE (which will prove sufficient development is done by the student)

Semester - III				
Sr. No.	Subject Code	Subject Title	Internal Marks	External Marks
27	SS 3	Soft Skills-III	30	---
Objective: To integrate the students about the basics of communication thereby enabling prepare to face successful interviews and Business presentations.				

UNIT	Unit Details
UNIT-1	**Basic Elements of Communication**: Introduction-Definitions- Elements of Communication- Process of Communication- Characteristics of Communication- Role of Communication in Business.
UNIT-2	**Barriers to Communication**: Introduction- Physical Barriers- Semantic and Language Barriers- Socio-psychological Barriers-Organizational Barriers-Cross Cultural Barriers-Overcoming the Barriers
UNIT-3	**Methods of Communication (Verbal)**:Introduction-Attributes of Oral and Written Communication- Channels of Oral Communication-Channels of Written Communication **Interview**: Introduction- Types of Interviews- Employment Interview-Candidates preparation-Questions commonly Asked in Interviews-Answering Strategies.
UNIT-4	**Presentations**: Introduction-Finding out about the Environment-Preparing the text-Using Visual Aids-Your Appearance and Posture-Practicing Delivery of Presentation. **Job Application**: Introduction- Parts of a letter- Preparing Bio-data-Covering Letter- Conventional Application Letter

Reference Books:

Sr. No.	Title	Author/s	Publication	Edition
1	Business Communication	Urmila Rai / S. M. Rai	HPH	10th (2008)
2	Business Communication	K. K. Sinha	Galgotia	Reprint 2009
3	Business Communication	P. D. Chaturvedi / Mukesh Chaturvedi	Pearson	7th
4	Strategic Human Resource Management	Rajesh Viswanathan	HPH	2010
5	Business communication	Asha Kaul	PHI	2nd

Semester – IV				
Sr. No.	Subject Code	Subject Title	Internal Marks	External Marks
28	IT 41	Advanced Java Programming	30	70

Objective: To through the Students with the advanced concepts and make them learn to produce well designed, dynamic Web applications. Students can get a cutting edge to latest technologies, tools and frameworks related to java as per the industry requirements.

UNIT	Unit Details
UNIT-1	**Networking with Java:** Networking basics, Sockets, port, Internet addressing, URL, java.net – networking classes and interfaces, Implementing TCP/IP based Server and Client, Datagram – Datagram packet, Datagram server and client, URL connections.
UNIT-2	**Distributed Computing-RMI:** Introduction & Architecture of RMI , Java RMI classes and Interfaces ,Writing simple RMI application ,Parameter passing in remote methods (marshalling and unmarshalling).
UNIT-3	**Internet Transaction Basics:** web system architecture, Uniform Resource Locator, HTTP protocol basics, HTTP request & response, Cookies Basics ,Internet Payment Systems and Characteristics ,4C payment methods SET protocol for Credit card payment E-Cash, E-check Overview of Smart Card , E-commerce security ,Need of security.
UNIT-4	**Servlets:** Introduction, Servlet vs. CGI ,Tomcat/Web logic Configuration, directory structure for a web Application, Servlet API Overview, Writing and running Simple Servlet, Servlet Life Cycle, GenericServlet and HttpServlet, ServletConfig & ServletContext; Writing servlet to Handle Get and Post Methods, Reading user request data, Http Tunneling, Concept of cookie, Reading and writing cookies, Need of Session Management. Types of Session management, Request Dispatcher Servlet & JDBC, Writing thread safe servlets, Introduction to Servlet Listeners.
UNIT-5	**Java Server Pages-:** Why JSP?,JSP Directives, JSP API, Writing simple JSP page, Scripting Elements, Default Objects in JSP, JSP Actions, Managing Sessions using JSP, JSP with beans, JSP & Databases, Error Handling in JSP.
UNIT-6	**Advanced JSP:** Java Beans and JSP, Different scopes in a JSP page, custom tag handling- JSTL - c, x, frmt, sql, fn, Expression Language, (session, application),Tags c:out, c:set, c:if, c:catch, c:choose, c:when, c:otherwise, c:redirect, c:forEach, fmt: parseDate, fn:escapeXml, sql:query, sql: update, Implementing MVC Architecture.
UNIT-7	**Entity Java Bean:** Java Beans introduction, design pattern Writing simple bean ,Beans persistence and introspection , EJB, Architecture , Container classes, Interfaces EJB types-Session, Entity, Message Driven.
UNIT-8	**Introduction to Struts:** (A Web Application Framework) - struts-config.xml; Understanding MVC architecture; ActionServlet, Action Form, Action Mapping, Action classes.

Reference Books:

Sr. No.	Title	Author/s	Publication	Edition
1	Java All-In-One Desk Reference For Dummies	Doug Lowe	WILEY	2nd
2	Java 2 Programming Little Black Book	Alain Trottier	PARAGLY	--
3	E-commerce Fundamentals & Applications	Chan lee & Dillon Chang	WILEY	--
4	Inside Servlets	Dustine R. Callway	PEARSON	--
5	Java Server Programming Black Book	Kogent Solutions	DREAMTECH	
6	Struts: The Complete Reference	James Homes	TMH	2nd
7	Professional Java Server Programming	Simon Brown	WROX	2nd
8	Struts 2 for beginners	Sharanam Shah and vaishali shah	SPD	--
9	JSP complete reference	Hanna & Phil	WILEY	--

Semester - IV				
Sr. No.	Subject Code	Subject Title	Internal Marks	External Marks
29	IT 42	Advanced Development Technology	30	70
Objective: The course structure consists of .NET framework. Student will learn .Net Framework, C# language with OOPS concepts, Windows Applications, Windows application with database, ASP.Net and Database. This subject will also create foundation for student to learn other advanced technologies with .NET such as Ajax etc.				

UNIT	Unit Details
UNIT-1	**Introduction to .Net Framework:** Comparison .Net with Java, Introduction to .Net Framework, Architecture of .Net Framework, All components of .Net Framework, An overview of .Net Assemblies, Features of .Net Framework, Applications of .Net Technology, Introduction of Microsoft Visual Studio(IDE).
UNIT-2	**Fundamentals of C# Language:** C# Basic Syntax, Value Types & Reference Types, Type Conversion, Boxing & Unboxing, Flow Control, Array Manipulation, String Manipulation, Understanding Enum & Structure, Defining and using Properties and Indexer, Preprocessor.
UNIT-3	**Object Oriented Concepts with C#:** Classes & Objects, Member Function & Encapsulation, Constructor & Destructor, Static Member of Class, Encapsulation, Inheritance, Polymorphism, Operator Overloading, Abstract Classes, Partial Class, Sealed Class, Interfaces, Namespaces, Exception Handling, Delegates, Events.
UNIT-4	**Windows Applications:** All Windows Forms Control, Containers Controls, Menus & Toolbars, Data Controls, Printing Controls, Dialog Controls, Reporting Controls, MDI Form, Deploying Windows Application.
UNIT-5	**ADO .Net:** Introduction to File Handling with C#, ADO .Net Architecture, Data Providers & Dataset, Connection, Command, Dataset, Data Reader, Data Adapter, DataTable, XML.
UNIT-6	**ASP.Net:** Difference between classic ASP & ASP .Net, Overview of ASP.Net, ASP.Net Page Life Cycle, ASP.Net Standard Controls, Navigation Controls, Validation Controls, Login Controls, Data Controls, Web Part Controls, ASP.Net with ADO .Net
UNIT-7	**ASP.Net With Other Technologies:** Using CSS with ASP.Net , JavaScript with ASP.Net, Cross Page Posting, State Management, ASP.Net Master Page, ASP.Net Page Events, ASP.Net Web Control Events, Introduction of Ajax
UNIT-8	**Web Services:** Introduction to Web Services, HTTP, XML & web Services, Building ASP.Net web services, Consuming the Web Services.

Reference Books:

Sr. No.	Title	Author/s	Publication	Edition
1	Programming in C#	Balgurusami	McGraw Hill	2nd
2	C# Programming Black Book	-	Kogent Dreamtech	Platinum
3	Pro C# 2008 and the .Net 3.5 Platform	Andrew Troelsen	APress	4th
4	ADO.NET Examples and Best Practices for C# Programmers	Peter D. Blackburn	Apress	--
5	Beginning ASP.NET 3.5		Wrox Publication	--
6	Programming ASP.NET 3.5	Jesse Liberty, Dan Maharry, Dan Hurwitz	O'Reilly	--
7	ASP.Net Complete Reference	Schildt	McGraw Hill	--

Semester – IV				
Sr. No.	Subject Code	Subject Title	Internal Marks	External Marks
30	IT 43	Data Warehousing and Data Mining	30	70
Objective: This course will be based on detailed study of data warehousing and data mining concepts. Topics will range from statistics to database, with a focus on analysis of large data sets. Another objective is to study the methodology of data warehousing and data mining to derive business rules for decision support systems.				

UNIT	Unit Details
UNIT-1	**Introduction to Data Warehouse**: Concept of Data warehouse, DBMS versus Data warehouse, Data warehouse architecture, Data marts, Metadata, Need of data warehouse in Industries, Multidimensional data model, Data warehouse measures.
UNIT-2	**Data Warehouse and OLAP**: OLTP (Online Transaction Processing), OLAP, Operations in OLAP. Advantages of OLAP Over OLTP. Types of OLAP Servers, Relational Online Analytical Processing versus Multidimensional Online Analytical Processing versus Hybrid Online Analytical Processing.
UNIT-3	**Designing of Data Warehouse**: Data cubes, Multidimensional database, Schema for multidimensional database: Stars, Snowflakes and fact constellations. Fact and dimension table, Designing fact tables, Partitioning, Partitioning strategy- Horizontal, Vertical partitioning.
UNIT-4	**Introduction to Data Mining:** Data explosion problem, What is data mining ?, KDD, Steps of KDD, Data models, Difference between normal query language and data mining, Data mining issues, Data mining metrics, Data mining problems, Potential applications of data mining.
UNIT-5	**Classification and Predication:** Definition of classification, Machine learning, Types of learning, Steps of classification, Introduction to classification algorithm, How to measure performance of classification problem, Introduction to statistical base algorithm, Implementation of Bayesins classification algorithm with example, Decision tress based algorithms.
UNIT-6	**Mining Association Rules in Large Databases**: Mining of association rules, The Apriori algorithm with example, Applications of association rule, Association rules from transaction database & relational database, Correlation analysis.
UNIT-7	**Cluster Analysis Introduction:** Cluster analysis, Types of data in cluster analysis, Classification of clustering algorithm, Hierarchical method, Applications of cluster.
UNIT-8	**Web Mining:** Web mining, Classification of Web data, Types of Web Mining, Crawlers, Web structure mining, Page rank, Hub, Applications of Web mining, and Introduction to Time series and Sequence data.

Reference Books:

Sr. No.	Title	Author/S	Publication	Edition
1	Data Warehousing Fundamentals	Paulraj Ponniah -	Wiley-India	2006
2	Data Warehousing, Data Mining And OLAP	Alex Berson, Stephen J. Smith	Tata McGraw Hill.	-
3	Data Warehousing: Concepts, Techniques, Products And Applications	C. S. R. Prabhu.	Eastern Economy Edition	3rd
4	Data Mining: Concepts And Techniques	Han J. And Kamber M.	Morgan Kaufmann, 2005	2nd
5	Introduction To Data Mining And Its Applications	S. Sumathi, S. N. Sivanandam	Springer	2006
6	Data Mining ,Introduction & Advanced Topics	Margaret H. Dunhan & Sridhar	Pearson Education	-

Semester - IV				
Sr. No.	Subject Code	Subject Title	Internal Marks	External Marks
31	IT 44	Design and Analysis of Algorithms	30	70

Objective: To understand and learn advance algorithms and methods used in computer science to create strong logic and problem solving approach amongst the students.

UNIT	Unit Details
UNIT-1	**Introduction to Algorithms and Complexity:** Algorithm, Analysis, Time Complexity & Space Complexity, Big O-notation, Omega Notation & Theta Notation, Study of GNU Profiler Tool.
UNIT-2	**Sorting Techniques:** Heap & Heap sort, Bubble Sort, Radix Sort, Selection Sort.
UNIT-3	**Divide and Conquer:** General Strategy, Finding the Maximum & Minimum, Binary Search, Quick Sort, Merge Sort.
UNIT-4	**Greedy Method:** General Strategy, Knapsack Problem, Change making & Machine Scheduling, Job Sequencing with Deadlines, Optimal Merge Patterns, Minimal Spanning Trees, Dijkstra's Algorithm.
UNIT-5	**Dynamic Programming:** General Strategy, Multistage Graphs, OBST, 0/1 Knapsack, Traveling Salesperson Problem, Flow Shop Scheduling.
UNIT-6	**Backtracking:** General Strategy, 8 - Queens Problem, Graph Coloring, 0/1 Knapsack.
UNIT-7	**Branch and Bound:** General Strategy, 0/1 Knapsack, Traveling Salesperson Problem.
UNIT-8	**Implementation of Advanced Algorithms:** Tower of Hannoi, N-Queens Problem, Knapsack Problem & 0/1 Knapsack problem (Implementations can be done using any Programming Language).

Reference Books:

Sr. No.	Title	Author/s	Publication	Edition
1	Fundamentals of Algorithms	Bressard	PHI Publications	5th
2	Fundamentals of computer Algorithms	Horowitz/Sahani	Galgotia.	2nd
3	Magnifying Data Structures	Arpita Gopal	PHI Publications	1st
4	Introduction to Algorithm	Thomas H Cormen & Charles E.L Leiserson	PHI Publications	2nd
5	Design and Analysis of Algorithms	A. V. Aho & J. D. Ullman	Addison Wesley	4th

	Semester - IV		
Sr. No.	**Subject Code**	**Subject Title**	**Internal Marks**	**External Marks**
32	MT 41	Optimization Techniques	30	70

Objective: To introduce linear programming, Decision analysis, Project Management and related optimization theories to solve real life / simulated problems.

UNIT	Unit Details
UNIT-1	**Introduction to Linear Programming** : Introduction to LP, Structure of Linear Programming Model, Assumptions of LP model, Advantages of using linear programming, Limitations and Application areas of Linear Programming Linear, General mathematical model of LPP, LPP model formulation.
UNIT-2	**Linear Programming:** Graphical method, Graphical Solution methods of Linear Programming problem, Special cases in LPP, Simplex Method, Standard form of LPP, Simplex algorithm for Maximization case , Simplex algorithm for Minimization case – Two phase method, Big-M method, Formulation of Dual LPP.
UNIT-3	**Transportation Problem:** Introduction, Mathematical model of TP, General mathematical model of TP, Transportation algorithm, Methods for finding initial solutions-NWCM,LCM,VAM, Test for optimality- MODI Method, Variations in TP.
UNIT-4	**Assignment Problem:** Introduction, Mathematical model of TP, General mathematical model of TP, Hungerian method to solve AP, Variations of AP-multiple solutions, maximization case, unbalanced AP, Restrictions on AP, Travelling Salesman Problem.
UNIT-5	**Introduction to Game Theory** : Introduction, Two person Zero-Sum games, Pure strategies(Minimax and Maximin Principles), Mixed Strategies and Excepted pay offs, Solution of 2 X 2 games, Rules of Dominance, Dominance solution of 2 X N and M X 2 games , Solution method for games without saddle point- Algebraic Method, Arithmetic Method.
UNIT-6	**Queuing Theory:** Structure of Queuing System, Characteristics of Queuing Models. Transient and Steady states of the System, Classification of Queuing models, Single Server Queuing models- Model I [(M/M/1):(∞/FCFS)], Model II – [(M/M/1): (∞/SIRO)], Model-III [(M/M/1) : (N/FCFS)].
UNIT-7	**Basics of PERT and CPM:** Difference between PERT and CPM. Arrow Networks diagrams, Time estimates, Earliest expected time, Latest – allowable occurrences time, Forward Pass Computation, Backward Pass Computation, Representation in Tabular Form, Critical Path.
UNIT-8	**PERT and CPM Evaluation:** Probability of meeting scheduled date of completion, Various floats for activities, Critical path updating projects. Project Crashing, Project Time-Cost Trade-off procedure, Selection of schedule based on Cost Analysis.

Reference Books:

Sr. No.	Title	Author/s	Publication	Edition
1	Operation Research – Theory and Applications	J. K. Sharma	Macmillan India Limited	5th
2	Operation Research	Taha H. A.	Prentice Hall	7th
3	Operations Research	Kanti Swarup, Gupta P. K. & Man Mohan	Himalaya Publishing	13th
4	Optimization Methods in Operations Research and System Analysis	Mital K. V.	J. Wiley	2nd
5	Introduction to Operation Research	Research-Hiller F. & Lieberman G. J.	McGraw-Hill	9th
6	Fundamental of Queuing Theory	Gross Donald , Jonh F. Shortle	Wiley	4th
7	Critical Path Method	L.R. Shaffer J.B. Ritter W. L. Meyer	McGraw-Hill	3rd

Semester - IV				
Sr. No.	Subject Code	Subject Title	Internal Marks	External Marks
33	BME 41	**Business Scenario-Elective** Information System Audit and Governance	70	-
Objective: To create awareness about the values of Information and how the Information security practices are meticulously implemented in IT companies worldwide. Also to explain different threats, security control mechanisms and auditing tools used to protect IT assets				

UNIT	Unit Details
UNIT-1	**Introduction To Information Security:** History and Evaluation of Information Security CIA Triangle, Components of IS, Control in IT Environment, Information Security Management System, Components of ISMS and Conceptual Framework, Steps for Developing ISMS, Threats to Information Security, Risk to Information Systems, Information Security in Organization, Introduction to Cyber-Crimes and Attacks, Information Security Policy, Policy Definition and Security Life Cycle,
UNIT-2	**Protection of Information System:** Need for Protection of Information System, Types of Controls, IT General Control, Logical Access Control and Application Control, Technologies and Security Management Features
UNIT-3	**Information Security Policies and Standards:** IS a Security Policy, Procedures, Practices Standards and Guideline, IT Control and Control Objective. Segregations of Duties, A Structure and Framework of Compressive Security Policy, Policy Infrastructure, Policy Design Life Cycle and Design Processes, PDCA Model, Security Policy Standards and Practices - BS7799, ISO/IEC 17799, ISO 27001
UNIT-4	**IS Controls:** Input, Process, Validation, Output, Logical Access, Physical Access Database, Network, Environment, BCP, Evidence Collection, Evaluation and Reporting Methodologies
UNIT-5	**Concept Of Governance:** Risk and Compliance, Relationship Between Governance and Management, Role of Information Technology and IS Strategy In Business, Business Value from use of IT, Business Impact of IS Risk, Different types of Information Systems Risk, IS Risk Management Review, IT Compliance Overview-Role and Responsibilities of Top Management As Regards IT-GRC, Role of Information System Assurance, Overview of Governance Framework- COBIT, ITIL,IT Governance Maturity Model
UNIT-6	**Auditing Of Information System:** Different types of IS Audit and Assurance Engagements, Audit Procedure, Evaluation IT Dependencies for Audit Planning, Overview of Continuous Auditing, Auditing Information Systems-Approach Methodology and Standards
UNIT-7	**Business Continuity Planning and Controls:** IS Audit Planning, Performing an IS Audit, Best Practices and Standards for IS Audit, Reviewing General Controls, Application Controls, Application Control Review: Review of Control at Various Level's/Layers, Risk Auditing Tools -ISO 27001 ISMS TOOL KIT, NGS AUDITOR,ISO IES 27002 2005 IS audit Tool
UNIT-8	**Case Studies:** Based on Computer Threats and Security Measures Implementation, Security Control Policies Design, Hardware Software Requirement for Better Security Management

Reference Books:

Sr. No.	Title	Author/s	Publication	Edition
1	Information System Control and audit	Ron Weber	Pearson Education	3rd Impression 2009
2	Computer security	Alfred Basta, Wolf Halton	Course technology/cengage Learning	2009
3	Information security policies, procedures and standards	Thomas Pettier	M.G. Publication	2nd
4	CISA Review Manual 2012		ISACA	2011
5	Information Systems Security: Security Management, Metrics, Frameworks And Best Practices	Nina Godbole	Wiley India Pvt. Ltd.	1st
6	Information security Management Hand book	Harold F. Tipton	Auerbach publication	5th

Web reference:

1. www.isaca.org
2. www.itgi.org
3. www.iasb.org
4. www.searchsecurity.techtarget.com
5. www.secure-byte.com
6. www.security-internal-audit.com
7. www.ngssecure.com/services
8. www.pcisecuritystandards.org

Semester - IV				
Sr. No.	Subject Code	Subject Title	Internal Marks	External Marks
33	BME 41	**Business Scenario – Elective** Decision Support System	70	--
Objective: To learn DSS, DSS Tools, DSS implementation and its impact on organization. The course helps the students to aware about decision making in organization.				

UNIT	Unit Details
UNIT-1	**Decision Support Systems:** Decision Support Systems (DSS) Concept, Component of DSS, Architecture of DSS, Characteristics, Role of DSS in business, Knowledge bases DSS (KBDSS), MIS and Role of DSS
UNIT-2	**DSS Development:** Introduction to DSS development, Traditional system development life cycle, Alternate development methodologies, Prototyping :DSS Methodology
UNIT-3	**Tools for DSS development:** DSS Technology levels and tools, DSS development platform, DSS development tools selection, Team – developed DSS, End user Developed DSS, Development of DSS : Putting system together
UNIT-4	**Enterprise Decision Support System:** Enterprise system : Concept and definition, Evolution of executive and enterprise information system, Characteristics and capabilities of Executive Support System (ESS), Comparing Executive Information System (EIS) and DSS, data access, multidimensional analysis, presentation, Including soft information in enterprise systems
UNIT-5	**Organizational DSS**, Supply and value chain and decision support in organization, Computerized systems – Managerial Reporting Planning (MRP), Enterprise Resource Planning (ERP), Supply Chain Management (SCM), Frontline DSS, Future of DSS and EIS
UNIT-6	**Intelligent Decision Support System:** Concept of Artificial Intelligence and expert system, Importance of Knowledge in Decision Support, architecture of rule of based ES, benefits and limitations of rule based system for decision support
UNIT-7	**Implementation , integration and impacts:** Implementation : an overview, The major issues of implementation, Implementation strategies, System Integration: What and Why, Generic models of Managerial Support Systems (MSS)integration, Models of Expert System (ES) and DSS integration, Integration of EIS , DSS and ES, Intelligent DSS, Intelligent modeling, Examples of integrated systems

Reference Books:

Sr. No.	Title	Author/s	Publication	Edition
1	Decision Support Systems and Intelligent systems	Efraim Turban, Jay E. Aronson, Ting-Peng Liang	Pearson/Prentice Hall	6th , 2005
2	Management Information Systems	W . S. Jawadekar	PHI	2nd
3	Decision Support Systems for Business Intelligence	Vicki L. Sauter	John Wiley & Sons	2nd, 2010

Semester - IV				
Sr. No.	Subject Code	Subject Title	Internal Marks	External Marks
33	BME 41	**Business Scenario-Elective :** Knowledge Management	70	---
Objective:. This unit provides a detailed coverage of knowledge management concepts and methodologies which includes knowledge creation, knowledge architecture, and knowledge codification. The knowledge management tools and knowledge portals as well as the notions of knowledge transfer.				

UNIT	Unit Details
UNIT-1	**Understanding Knowledge:** Cognitive Psychology, Data, Information and Knowledge, Kinds of Knowledge, Expert Knowledge, Thinking and Learning in Humans
UNIT-2	**Knowledge Management Systems Life Cycle:** Challenges in KM Systems Development, Conventional Vs KM Systems Life Cycle (KMSLC), Key Differences, Key Similarities, KMSLC Approaches.
UNIT-3	**Knowledge Creation & Knowledge Architecture:** Knowledge Creation, Nonaka's Model of Knowledge Creation & Transformation, Knowledge Architecture, Acquiring the KM System.
UNIT-4	**Capturing the Tacit Knowledge:** Expert Evaluation, Developing Relationship with Experts, Fuzzy Reasoning & Quality of Knowledge Capture, Interviewing as a Tacit Knowledge Capture Tool **Some Knowledge Capturing Techniques:** On-Site Observation (Action Protocol), Brainstorming, Electronic Brainstorming, Protocol Analysis (Think-Aloud Method)
UNIT-5	**Knowledge Codification:** Modes of Knowledge Conversion, Codifying Knowledge, Codification Tools/Procedures, Knowledge Maps, Decision Table, Decision Tree, Frames, Production Rules, Case-Based Reasoning, Knowledge-Based Agents
UNIT-6	**Knowledge Developer's Skill Set:** Knowledge Requirements, Skills Requirements
UNIT-7	**System Testing/Deployment:** Quality Assurance, Knowledge Testing, Types of testing, Issues, Logical Testing Approaches, User Acceptance Testing Approaches, Test Team/Plan, Managing Test Phase, System Deployment
UNIT-8	**Transferring and Sharing Knowledge:** Fundamentals, Prerequisites for Transfer Methods of Knowledge Transfer, Types of Problems, Transfer Strategies, Inhibitors of Knowledge Transfer, Types of Knowledge Transfer, Collective Sequential Transfer, Explicit Inter team Transfer, Tacit Knowledge Transfer, Role of Internet

Reference Books:

Sr. No.	Title	Author/s	Publication	Edition
1	Knowledge Management	Sudhir Warier	Vikas Publications	Illustrated
2	Knowledge Management Systems	Stuart Barnes, Thomson Learning.	Cerigage Learing EMEA	1st
3	Developing Expert System for Business –	Chandler/Liang.	Prentice Hall	1st
4	Knowledge Management	Pankaj Sharma,	APH Publishing	2nd
5	Knowledge Management,	Elias M. Awad, Hassan M. Ghaziri,	Pearson	3rd
6	Leading with Knowledge,	Madanmohan Rao	Tata Mc-Graw Hill	1st

Semester – IV				
Sr. No.	Subject Code	Subject Title	Internal Marks	External Marks
33	BME 41	**Business Scenario – Elective :** Customer Relationship Management	70	-
Objective: The aim is to provide tools and techniques along with an understanding to the students as how to enhance shareholder value by shifting from a Market Share mindset to obtaining higher Share of Individual Customer's Business i.e. Enhancing Lifetime Value of Customers				

UNIT	Unit Details
UNIT-1	**Introduction to CRM:** What is customer? How do we define CRM? CRM technology components, customer life style, customer interaction. Difference between CRM and e-CRM, features of e-CRM.
UNIT-2	**Sales Force Automations (SFA):** Definition and need of SFA, barriers to successful SFA functionality, technological aspect of SFA, data synchronization, flexibility and performance, reporting tools.
UNIT-3	**Enterprise Marketing Automation (EMA):** Components of EMA, marketing campaign, campaign planning and management, business analytic tools, EMA components (promotions, events loyalty and retention programs), response management.
UNIT-4	**Services Industry – Call Center:** Meaning, customer interaction, the functionality, technological implementation, what is ACD (Automatic Call Distribution), IVR (Interactive Voice Response), CTI (Computer Telephony Integration), web enabling the call center, automated intelligent call routing, logging & monitoring.
UNIT-5	**Implementing CRM:** Pre implementation, kick off meeting, requirements gathering, prototyping and detailed proposal generation, development of Customization, Power use beta test and data import, training, roll out and system hand off, ongoing support, system optimization, follow up.
UNIT-6	**Application Service Provider:** Who are ASP's? Their role and function, advantages and disadvantages of implementing ASP.
UNIT-7	**Impact of CRM on IT Marketing:** Meaning, how does the traditional distribution channel structure support customer relationship, emerging channel trends that impact CRM.
UNIT-8	**Applications of CRM:** CRM practices in retail industry, hospitality industry, banking industry, telecom industry, aviation industry, Multimedia Contact Canter, Important CRM software's.

Reference Books:

Sr. No.	Title	Author/s	Publication	Edition
1	CRM at the speed of light	Paul Greenberg	YMH	2nd
2	Customer Relationship Management	V. Kumar, Werner J. Reinartz	WILRY India	1st
3	Customer Relationship Management	Kristin Anderson & Carol Kerr	TM	1St
4	E-CRM- Concepts and Cases	Madhavi Garikaparthi	ICFAI Publication	1st
5	Management Information Systems: Managing the Digital firms	Louden, Kenneth C. & Jane P. Loudon	Prentice - Hall	10th
6	E-CRM: personalization technologies for the Web	Colin Brash, Duncan Chapple	Cassandra Millhouse Publication	2nd
7	Customer Relationship Management	Mohammed, H. Peeru & A. Sagadevan	Vikas Publishing House, Delhi.	1st
8	CRM-Essential Customer Strategies for the 21st Century	Paul Greenberge	Tata McGraw Hill	1st

Semester - IV				
Sr. No.	Subject Code	Subject Title	Internal Marks	External Marks
33	BME 41	**Business Scenario – Elective** IT for Management	70	--
Objective: The primary objective is to familiarize the student with basic concepts of information technology and their applications to business processes. Through this subject it is intended to familiarize the students with the computer hardware and software applications for data/file management.				

UNIT	Unit Details
UNIT-1	**Information Techniques-Concept and Management:** Information systems concept and definitions, classifications of IS, Transactional and Functional Processing, Operational, Managerial and strategic Systems, Information Infrastructure and Architecture, Managing Information Resources.
UNIT-2	**Business Process Reengineering:** Basic Concept and the need for BPR – Definitions, Need, Problem of stovepipe, Principles of BPR and the role of IT – Characteristics of BPR, Methodologies and Framework for BPR, The enabling role of IT, BPR and restructuring the Organization – From mass Production to Mass customization, Cycle time reduction, Restructuring organizations,
UNIT-3	**Strategic Information Systems:** Strategic Advantage and Information Technology, Porter's Competitive Forces Model and Strategies, Strategic Information Systems Frameworks, A framework for Global Competition, Strategic Information Systems Applications
UNIT-4	**IT in Business:** E-business Architecture, E business strategy and productivity, E-commerce – Meaning, Scope, Type, and Applications (e-banking, e-trading, e-payment), E-governance – Need, Scope, Challenges, applications
UNIT-5	**Intelligent Support System:** Artificial Intelligence and Intelligent Behavior, Comparing artificial and natural intelligence, conventional verses AI Computing, The commercial Artificial Intelligence Field
UNIT-6	**Functional Business Systems:** Enterprise Resource Planning – Concept, Implementation types, ERP Implementation life cycle, Customer Relationship Management – Concept, Component, Implementation life cycle, Supply Chain Management – Concept, CASE STUDY related to ERP, SCM
UNIT-7	**Impact of IT on Organizations, Individuals and Society:** Effects of IT, Ethical Issues, Impacts on Organizations, Impact on Individuals at work, social Impacts and the internet community
UNIT-8	**Management Challenges:** Management issues – Security and Control, Quality Assurance, Ethical and Social Dimensions, Information Systems Leadership

Reference Books:

Sr. No.	Title	Author/s	Publication	Edition
1	Management Information Systems: Text & Cases	Jawadekar W. S	Tata McGraw Hill	4th , 2010
2	Management Information Systems	Girdhar Joshi	Paperback	1st
3	Information Technology for Management: Transforming Organizations in the Digital Economy	Efraim Turban, & Linda Volonino	Wiley India	7th, 2007
4	MIS Managing Information Systems in Business, Government and Society	Rahul De	Wiley India	1st, 2012
5	Management Information Systems: Managing the Digital Firm	Loudon, Kenneth C. & Jane P. Loudon	Prentice-Hall	10th, 2007
6	Data Mining Techniques	Arun Pujari	Universities Press (India) Pvt. Ltd	2nd, 2010
7	An Introduction to DBMS	C. J. Dates	Addison-Wesley	8th , 2004
8	Introduction to Information Technology	Rainer, Potter & Turban	John Wiley & Sons	2nd, 2003

Semester – IV				
Sr. No.	Subject Code	Subject Title	Internal Marks	External Marks
34	IT 41L	Advanced JAVA Programming LAB	50	-
Objective: To impart practical implementation of the Advanced Java concepts learned.				

Sr. No.	Assignment Name
1	WAP to implement client and server using TCP/ IP.
2	WAP to implement client and server using datagram.
3	WAP to implement multichat server.
4	WAP to implement RMI.
5	WAP to implement multichat server using RMI.
6	WAP to implement Servlet for displaying Hello.
7	WAP to implement Servlet to take values from client and display it.
8	WAP to use HttpServlet, GenericServlet.
9	WAP to use Request Dispatcher.
10	WAP to implement Session Management using all Four types.
11	WAP to use Http Response and Http Request.
12	WAP to implements ServletConfig and ServletContext.
13	WAP to use JDBC with Servlet.
14	WAP to use Servlet Listeners
15	WAP to implement JSP.
16	WAP to implement use of JSP Directives.
17	WAP to implement use of Actions.
18	WAP to implement use of implicit objects.
19	WAP to implement session.
20	WAP to implement JSP using JDBC
21	WAP to implement error handling.
22	WAP to demonstrate use of expression language.
23	WAP to demonstrate use of custom tags.
24	WAP to demonstrate use of MVC
25	WAP to implement Session bean, Entity bean and Message Driven bean.
26	WAP to implement simple hello example using struts and eclipse.

Semester – IV				
Sr. No.	Subject Code	Subject Title	Internal Marks	External Marks
35	IT 42L	Mini Project based on ADT	50	---

Objective: To develop a Web Application or Windows Application using the C#.Net and ASP .Net students have learnt during the course.

Project Work: This mini project is based on subject ADT in semester IV. Simple projects such as inventory Management System, Payroll System, Online Reservations, Social Networking etc can be developed as a project work. This project will give handon experience on software development.

- Project must be done in a group of 2 to 4 students.
- Project must include MDI parent for Windows Application and Master pages for Web Application with database connectivity and validations.
- Use MYSQL, Oracle or SQL Server as a Database.
- Final evaluation will be done by:
  1. Project Demonstration
  2. Power Point Presentation
- The marks of the mini project would be given on the basis of internal assessment of the project as given in the Course Structure.

General Instruction Regarding Preparation of Project Report For MCA-II Semester – IV

Typing :
(a) The typing shall be standard 12 pts in 1 ½ spaced using black ink only
(b) Margins must be Left 2 inches, Right 1.5 inches, Top 2 inches &Bottom 1.5 inches
(c) Paper A4 size

Project Report Copies : Each project group should prepare N copies (N=1 Institute copy + m copies, where m indicates number of students in a group).

Format For Title Page :

A

PROJECT REPORT

ON

<TITLE OF THE PROJECT>

BY

<NAME OF STUDENT/S>

UNDER THE GUIDANCE OF

<NAME OF GUIDE>

SUBMITTED TO

< NAME OF THE INSTITUTE>

FOR THE PARTIAL FULFILLMENT OF

MCA-II, SEM-IV

<Year>

Project Report Contents :
- Title Page
- Project Completion Certificate
- Declaration
- Acknowledgement
- CONTENTS with printed Page Numbers

CHAPTER 1 : INTRODUCTION

1.1 Existing System and Need for System

1.2 Scope of Work

1.3 Operating Environment – Hardware and Software

1.4 Detail Description of Technology Used

CHAPTER 2 : PROPOSED SYSTEM

2.1 Proposed System

2.2 Objectives of System

2.3 User Requirements

CHAPTER 3 : ANALYSIS & DESIGN

3.1 Data Dictionary

3.2 Table Specifications (Design)

3.3 Menu Tree(Web Site Map) - optional

3.4 User interface Design (Screens etc.)

3.5 Report Formats(Optional)

CHAPTER 4 : USER MANUAL

Operations Manual / Menu Explanation

DRAWBACKS AND LIMITATIONS

PROPOSED ENHANCEMENTS

CONCLUSION

BIBLIOGRAPHY

ANNEXURES :

ANNEXURE 1 : USER INTERFACE SCREENS

ANNEXURE 2 : OUTPUT REPORTS WITH DATA (if any)

ANNEXURE 3 : SAMPLE PROGRAM CODE (which will prove sufficient development is done by the student)

Semester - IV				
Sr. No.	Subject Code	Subject Title	Internal Marks	External Marks
36	SS 4	Soft Skills-IV	30	---
Objective: Enrich the students about Nonverbal aspects of Communication as well Work Ethics, Etiquettes, Cultural aspects and more especially cross cultural values of Communication				

UNIT	Unit Details
UNIT-1	**Non-Verbal Communication (Kinesics or Body Language):**Introduction-Importance of Body Language- Functions of Body Language- Facial Ex`pression- Gestures-Head, Body Shape and Posture-Appearance-Effective use of Body Language- Advantages- Limitations.
UNIT-2	**Paralanguage or Para linguistics:** Introduction- Pitch Variation- Speaking Speed- Pause- Non fluencies- Volume variations- Proper word stress- Advantages- Limitations.
UNIT-3	**Ethics and Etiquettes:** Introduction-Ethics-Business Ethics- Benefits at Work place-Ethics of an IT Professional- Etiquettes- Importance of Etiquettes - Etiquettes in Social and Official settings-Office Etiquettes- E-mail Etiquettes -Telephone Etiquettes- Civic Sense
UNIT-4	**Culture and Communication:** Introduction-Importance- Problems of Cultural Diversity- Implication for verbal Communication- Implication for Non-verbal Communication **Other Skills:** Managing Time- Exposure to work Environment and Culture- Improving personal Memory- Study Skills-Rapid Reading-Notes Taking-Problem Solving-Creativity

Reference Books:

Sr. No.	Title	Author/s	Publication	Edition
1	Business Communication	Urmila Rai / S. M. Rai	HPH	10th (2008)
2	Business Communication	K. K. Sinha	Galgotia	Reprint 2009
3	Business Communication	P. D. Chaturvedi / Mukesh Chaturvedi	Pearson	7th
4	Strategic Human Resource Management	Rajesh Viswanathan	HPH	2010
5	Business communication	Asha Kaul	PHI	2nd

		Semester - IV		
Sr. No.	Subject Code	Subject Title	Internal Marks	External Marks
3	BM E1	Enterprise Resource Planning	30	70
Objective: To learn ERP systems its structure, modules, benefits, implementation And post implementation issues through real-life cases.				

Unit	Unit Details
Unit-1	**Enterprise Resource Planning :** Introduction-What Is ERP? Need of ERP, Advantage of ERP, Growth of ERP
Unit-2	**ERP and related technologies :** Business Process Re-engineering Management Information System (MIS), Decision Support System (DSS), Executive Support System (ESS), Data Warehousing, Data Mining, On-Line Analytical Processing. (OLAP), Supply Chain Management, Customer Relationship Management
Unit-3	**ERP Modules and Vendors:** Finance Production Planning, Control and Management, Sales and Distribution, Human Resource Management, Inventory Control System, Quality Management, ERP market
Unit-4	**ERP Implementation Life Cycle:** Evaluation and selection of ERP package Project planning, Implementation, Team Training and Testing, End User Training and Going Live, Post Evaluation and Maintenance
Unit-5	**ERP Case Studies :** Post Implementation review of ERP packages in manufacturing, Services and Others, Organizations

Reference Books:

Sr. No.	Title	Author/s
1	Enterprise Resource Planning	Alexis Leon
2	ERP Ware: ERP Implementation Framework	V.K. Garg & N.K. Venkita Krishnan
3	ERP Concepts & Planning	V.K. Garg & N.K. Venkita Krishnan