CURRICULUM-2015
MASTER OF INFORMATION TECHNOLOGY
(IV SEMESTER PROGRAMME)
SEMESTER-I

SL.NO	SUB CODE	SUBJECT NAME	L	T	P	C
Theory						
1	MMA101	Operation Research	3	1	0	4
2	MCS101	Data Structure and Algorithms	3	1	0	3
3	MIT101	Computer Networks & Security	3	1	0	3
4	MIT102	Advanced Computer Architecture	3	1	0	3
5	MIT103	Advances in Database	3	1	0	3
Practical						
6	MIT1L1	Networking Lab	0	0	6	2
7	MIT1L2	Data Structures Lab	0	0	6	2
Total Credits-20						

SEMESTER-II

SL.NO	SUB CODE	SUBJECT NAME	L	T	P	C
Theory						
1	MIT201	Object Oriented Software Engineering	3	1	0	3
2	MIT202	Web Technology	3	1	0	3
3	MIT203	Data Warehousing and Data Mining	3	1	0	3
4	MIT204	UNIX Internals	3	1	0	3
5	MIT2E1	Elective-I	3	1	0	3
Practical						
6	MIT2L1	Web Technology Lab	0	0	6	2
7	MIT2L2	UNIX Internals Lab	0	0	6	2
Total Credits-19						

SEMESTER-III

SL.NO	SUB CODE	SUBJECT NAME	L	T	P	C
Theory						
1	MIT301	Cloud Computing	3	1	0	3
2	MIT3E2	Elective-II	3	0	0	3
3	MIT3E3	Elective-III	3	0	0	3
Project						
5	MIT3P1	Project Phase-I	0	0	12	6
Total Credits-15						

SEMESTER-IV

SL.NO	SUB CODE	SUBJECT NAME	L	T	P	C
Project						
1	MIT4P2	Project Phase-II	0	0	24	12

L	T	P	C
3	1	0	4

TOTAL NO. OF CREDITS FOR THE PROGRAMME : 66

LIST OF ELECTIVES

SUB.CODE	SUBJECT NAME	L	T	P	C
MIT001	Component Based Technology	3	0	0	3
MIT002	High Speed Networks	3	0	0	3
MIT003	Network Protocols	3	0	0	3
MIT004	Network Administration	3	0	0	3
MIT005	Embedded Systems	3	0	0	3
MIT006	Bio-Informatics	3	0	0	3
MIT007	Mobile Communication	3	0	0	3
MIT008	Telecommunication Routing and Switching	3	0	0	3
MIT009	Medical Informatics	3	0	0	3
MIT010	Multimedia Compression Techniques	3	0	0	3
MIT011	E-Commerce	3	0	0	3
MIT012	Grid Computing	3	0	0	3
MIT013	Image Processing	3	0	0	3
MIT014	Software Project Management	3	0	0	3
MIT015	Software Metrics	3	0	0	3
MIT016	Soft Computing	3	0	0	3
MIT017	Enterprise Resource Planning	3	0	0	3
MIT018	Ontology and Semantic Web	3	0	0	3
MIT019	Online and Real Time Systems	3	0	0	3
MIT020	Virtualization Techniques	3	0	0	3
MIT021	Financial Project Management	3	0	0	3
MIT022	IT Service Management	3	0	0	3

MMA101 **OPERATIONS RESEARCH**

Course Objectives:

- Ability to understand and analyze managerial problems in industry so that they are able to use resources (capitals, materials, staffing, and machines) more effectively;
- Knowledge of formulating mathematical models for quantitative analysis of managerial problems in industry;
- Skills in the use of Operations Research approaches and computer tools in solving real problems in industry;
- Mathematical models for analysis of real problems in Operations Research.

Course Outcomes:

After successful completion of this course, the students should be able to

CO1: Recognize the importance and value of Operations Research and mathematical modeling in solving practical problems in industry

CO2: Formulate a managerial decision problem into a mathematical model

CO3: Understand Operations Research models and apply them to real-life problems;

CO4: Use computer tools to solve a mathematical model for a practical problem.

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	M	S								
CO2	S	S	M	S								
CO3	S	S		S								
CO4	S	S	M	S								

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

UNIT I **QUEUEING MODELS** **12**

Poisson Process – Markovian Queues – Single and Multi-server Models – Little's formula – Machine Interference Model – Steady State analysis – Self Service Queue

UNIT II **ADVANCED QUEUEING MODELS** **12**

Non- Markovian Queues – PollaczekKhintchine Formula – Queues in Series – Open Queueing Networks –Closed Queueing networks.

UNIT III SIMULATION 12

Discrete Even Simulation – Monte – Carlo Simulation – Stochastic Simulation – Applications to Queueing systems.

UNIT IV LINEAR PROGRAMMING 12

Formulation – Graphical solution – Simplex method – Two phase method Transportation and Assignment Problems.

UNIT V NON-LINEAR PROGRAMMING 12

Lagrange multipliers – Equality constraints – Inequality constraints – Kuhn – Tucker conditions – Quadratic Programming.

TOTAL(L:45+T:15) :60 PERIODS

TEXT BOOKS

1. *Winston.W.L. "Operations Research", Fourth Edition, Thomson Brooks/Cole, 2003.*
2. *Taha, H.A. "Operations Research: An Introduction", Ninth Edition, Pearson Education Edition, Asia, New Delhi, 2002.*

REFERENCES

1. *Robertazzi. T.G. "Computer Networks and Systems – Queuing Theory and Performance Evaluation", Third Edition, Springer, 2002 Reprint.*
2. *Ross. S.M., "Probability Models for Computer Science", Academic Press, 2002.*
3. *Trivedi.K.S., "Probability and Statistics with Reliability, Queueing and Computer Science Applications", John Wiley and Sons, 2nd Edition, 2002.*
4. *Hwei Hsu, "Schaum's Outline of Theory and Problems of Probability, Random Variables and Random Processes", Tata McGraw Hill Edition, New Delhi, 2004.*
5. *Yates. R.D. and Goodman. D. J., "Probability and Stochastic Processes", Wiley India Pvt. Ltd., Bangalore, 2nd Edition, 2012.*

MCS101 DATA STRUCTURE AND ALGORITHMS

Course Objectives:

- To provide knowledge in various data structures and algorithms.
- To introduce techniques for analyzing the efficiency of computer algorithms.

L	T	P	C
3	1	0	3

Course Outcomes:

After successful completion of this course, the students should be able to

CO1: Upon completion of the subject, students will be able to: Professional/academic knowledge and skills

CO2: Understand the properties of various data structures;

CO3: Identify the strengths and weaknesses of different data structures;

CO4: Design and employ appropriate data structures for solving computing problems;

CO5: Possess the knowledge of various existing algorithms;

CO6: Analyze and compare the efficiency of algorithms;

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S		M	S	S							
CO2	S		M	S	S							
CO3	S		M	S	S							
CO4	S		M	S	S							
CO5	S		M	S	S							
CO6	S		M	S	S							

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

UNIT – 1 INTRODUCTION 12

Basic concepts of objects oriented programming – Abstract data types – List – Implements –Arrays- Cursors, Pointers

UNIT – 2 BASIC DATA STRUCTURES 12

Stack, Queue- Implementation –Application Tress – Traversal – General – Binary – Expression Search Tree – AVL Trees – Splay Trees – B Trees

UNIT – 3 ADVANCED DATA STRUCTURES 12

Set – Basic Operation – Advanced Set Representation – Priority Queue – Applications – Graphs – Traversals- Representation

UNIT – 4 MEMORY MANAGEMENT 12

Issues – Storage allocation – Dynamic – Compaction, Garbage collection – Buddy Systems.

UNIT – 5 ALGORITHM ANALYSIS AND DESIGN 12

Algorithm Analysis – Sorting- Searching – design Techniques – Divide & Conquer – Greedy – Dynamic programming – Backtracking – Branch And Bound Knapsack – Traveling Salesman Problem – Graph Coloring – Queens Problem

TOTAL(L:45+T:15) :60 PERIODS

References:

1.Aho, Hopcroft , Ullman ,"Data Structure & Algorithm " , Pearson Education, 2005
2.SartajSahni," Data Structure, Algorithm and Application in C++", Second Edition, Universities Press.
3.Howrowitz, Sahni, Mehta, "Fundamental of Data Structure in C++", Universities Press.
4.M.A Weis , "Data Structure &Algorithm & Algorithm Analysis in C++", Benjamin Cummings , 112124
5.Sara Baase , " computer Algorithm – Introduction To Design and Analysis ", Pearson Education , 2005

MIT101 COMPUTER NETWORKS & SECURITY

L	T	P	C
3	1	0	3

Course Objectives:

- At the end of the course, the students will be able to:
- Build an understanding of the fundamental concepts of computer networking.
- Familiarize the student with the basic taxonomy and terminology of the computer networking area.
- Introduce the student to advanced networking concepts, preparing the student for entry Advanced courses in computer networking.
- Allow the student to gain expertise in some specific areas of networking such as the design and maintenance of individual networks.

Course Outcomes:

After successful completion of this course, the students should be able to

CO1: Identify some of the factors driving the need for network security.

CO2: Identify and classify particular examples of attacks.

CO3: Define the terms **vulnerability**, **threat** and **attack**.

CO4: Identify physical points of vulnerability in simple networks.

CO5: Compare and contrast symmetric and asymmetric encryption systems and their vulnerability to attack, and explain the characteristics of hybrid systems.

CO6: Explain the implications of implementing encryption at different levels of the OSI reference model.

CO7: Explain what is meant by data integrity and give reasons for its importance.

CO8: Describe methods of providing assurances about data integrity.

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1			M	S	M							
CO2			M	S	M							
CO3			M	S	M							

CO4			M	S	M							
CO5			M	S	M							
CO6			M	S	M							
CO7			M	S	M							
CO8			M	S	M							

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

UNIT 1 **12**

Introduction: the Uses of Computer Networks – Networks hardware – Network software Reference Models – Example of networks – Network standardization. -The physical layer: The theoretical basis for date communication – Guided Transmission media – Wireless transmission – PSTN – Mobile telephone –Communication satellite. The Data Link layer: Data link layer design issue – Error detection and correction – Elementary data link protocols – Sliding window protocols – Example of data link protocols – ETHERNET – 802.11, 802.16,Bluetooth – date link layer switching

UNIT II **12**

The Network layer: Network layer design issue- Routing algorithms- Congestion control algorithm- Internetworking – Networks layer in Internet. The Transport layer: Transport layer design issue – Transport protocols- Simple transport protocols – Internet transport protocols UDP, TCP.

UNIT III **12**

The application layer: Domain name system- Electronic mail- World Wide Web – Multimedia – Cryptography, digital signature – Communication security. Attacks – services – Mechanisms- Conventional Encryption – Classical and modern Techniques – Encryption Algorithm – Confidentiality.

UNIT IV **12**

PUBLIC KEY ENCRYPTION: RSA- Elliptic curve Cryptography – Number Theory Concepts
MESSAGE AUTHENTICATION: Hash Functions – Digest Function – Digital Signature – Authentication Protocols,

UNIT V **12**

SYSTEM SECURITY: Intruders- Viruses –Worms -Firewalls: Design Principles and Types – Trusted System

TOTAL(L:45+T:15) :60 PERIODS

References:

1.Andrew S.Tanenbaum," Computer Networks ", Pearson Education. 4th edition 2002.
2.William Stallings, "Data and computers communication", 7th Edition, Pearson Education, 2005.
3.DougalsE.Comer, "Internetworking with TCP/IP – Volume', 4th Edition, Pearson Education, 2005.
4.Forouson, "Data and Computer communication", Tata McGraw Hill.
5.William Stallings, "Cryptography & Network Security – Principle & Practice", Fourth Edition, Pearson Education, 2006.

MIT102 ADVANCED COMPUTER ARCHITECTURE

L	T	P	C
3	1	0	3

Course Objectives:

The aim of this module is to emphasize on the concept of a complete system consisting of asynchronous interactions between concurrently executing hardware components and device driver software in order to illustrate the behavior of a computer system as a whole.

Course Outcomes:

After successful completion of this course, the students should be able to

CO1: Knowledge and understanding

- Understand the advanced concepts of computer architecture.
- Exposing the major differentials of RISC and CISC architectural characteristics.

CO2: Cognitive skills (thinking and analysis).

- Investigating modern design structures of Pipelined and Multiprocessors systems.
- Communication skills (personal and academic).
- Become acquainted with recent computer architectures and I/O devices, as well as the low-level language required to drive/manage these types of advanced hardware.

CO3: Practical and subject specific skills (Transferable Skills).

- Preparing selected reports that imply some emergent topics supporting material essence.

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	M	S							
CO2	S	S	S	M	S							
CO3	S	S	S	M	S							

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

UNIT I PIPELINING AND ILP 12

Fundamentals of Computer Design - Measuring and Reporting Performance - Instruction Level Parallelism and Its Exploitation - Concepts and Challenges - Overcoming Data Hazards with Dynamic Scheduling – Dynamic Branch Prediction - Speculation - Multiple Issue Processors – Case Studies.

UNIT II ADVANCED TECHNIQUES FOR EXPLOITING ILP 12

Compiler Techniques for Exposing ILP - Limitations on ILP for Realizable Processors - Hardware versus Software Speculation - Multithreading: Using ILP Support to Exploit Thread-level Parallelism - Performance and Efficiency in Advanced Multiple Issue Processors - Case Studies.

UNIT III MULTIPROCESSORS 12

Symmetric and distributed shared memory architectures – Cache coherence issues - Performance Issues – Synchronization issues – Models of Memory Consistency - Interconnection networks – Buses, crossbar and multi-stage switches.

UNIT IV MULTI-CORE ARCHITECTURES 12

Software and hardware multithreading – SMT and CMP architectures – Design issues – Case studies – Intel Multi-core architecture – SUN CMP architecture – IBM cell architecture.- hp architecture.

UNIT V MEMORY HIERARCHY DESIGN 12

Introduction - Optimizations of Cache Performance - Memory Technology and Optimizations - Protection: Virtual Memory and Virtual Machines - Design of Memory Hierarchies - Case Studies.

TOTAL(L:45+T:15) :60 PERIODS

REFERENCES

1.John L. Hennessey and David A. Patterson, " Computer Architecture – A quantitative approach", Morgan Kaufmann / Elsevier, 4th. edition, 2007.

2.David E. Culler, Jaswinder Pal Singh, "Parallel Computing Architecture : A hardware/ software approach" , Morgan Kaufmann / Elsevier, 11297.

3.William Stallings, " Computer Organization and Architecture – Designing for Performance", Pearson Education, Seventh Edition, 2006.

MIT103 **ADVANCES IN DATABASE**

L	T	P	C
3	1	0	3

Course Objectives:

This course is devoted to new database technology with emphasis on object orientation. The focus is mainly on the data modelling aspect. Other aspects handled are, e.g., transaction management, active mechanisms, and heterogeneous database management systems. The course provides a picture of existing database systems and concrete perspectives and is intended for the potential user of new database systems.

Course Outcomes:

After successful completion of this course, the students should be able to

By the end of this module, students should be able to:

CO1: Explain and evaluate the fundamental theories and requirements that influence the design of modern database systems

CO2: Assess and apply database functions and packages suitable for enterprise database development and database management

CO3: Critically evaluate alternative designs and architectures for databases and data warehouses

CO4: Discuss and evaluate methods of storing, managing and interrogating complex data

CO5: Explain and critically evaluate database solutions for data exchange

CO6: Analyze the background processes involved in queries and transactions, and explain how these impact on database operation and design.

CO/PO Mapping

(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1			S	S		S						
CO2			S	S		S						
CO3			S	S		S						
CO4			S	S		S						
CO5			S	S		S						
CO6			S	S		S						

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

UNIT- I **12**

Object Based Databases: Overview, complex Data Types, Structured Types and Inheritance in SL, table Inheritance, Array and Multiset Types in SQL, Object –Identity and Reference Types in SQL, Implementing O-R features, Persistent Programming Languages, ObjectRelational Mapping, Object – Oriented versus Object- Relational.

UNIT-II **12**

XML: Motivation, Structure of XML data, XML Document schema, Querying and Transformation, Application Program Interface to XML, Storage of XML data, XML applications.

UNIT-III **12**

Query processing: Overview, Measures of Query Cost, Selection operating, sorting, Join Operation, Other Operations, Evaluation of Expressions. Query Optimization: Overview, Transformation of Relational Expressions, Estimating Statistics of Expressing Results, Choice of Evaluation plans, Materialized Views.

UNIT-IV **12**

Parallel Databases: Introduction, I/O Parallelism, Interquery Parallelism, IntraqueryParallelism, Interoperation ParallelismQuery Optimization, Design of Parallel Systems. Distributed Databases: Homogenous and Heterogeneous Databases, distributed data storage, Distributed Transactions, Commit Protocols, concurrency Control in Distributed Databases, Availability, Distributed Query Processing, Heterogeneous Distributed Databases, cloud Based Databases, Directory systems.

UNIT-V **12**

Advanced Application development: Performance Tuning, Performance Benchmarks Other Issues in Application Development, Standardization Spatial and Temporal Data and Mobility:Motivation, Time in Databases, spatial and Geographical |Data, Multimedia Databases, Mobility and Personal databases

TOTAL (L:45+T:15): 60 PERIODS

REFERENCES

1. Abraham Silbershatz, Henry F Korth, S Sudharshan, "Database System Concepts", McGrawHill International Edition, Sixth Edition, 2010
2. ElmasriNavathe, Somayajulu, Gupta, " Fundamentals of Database Systems", Pearson Education, Fourth Edition, 2006.
3. CJ Date, A Kannan, S Swamynathan, "An Introduction to database Systems", Pearson Education, Eight Edition, 2006
4. Ramakrishna, Gehrke, "Database Management, "International Edition, Third Edition, 2003

MITILI **NETWORKING LAB**

L	T	P	C
0	0	6	2

Course Objectives:

At the end of the course students should

- be able to analyse a communication system by separating out the different functions provided by the network
- understand that there are fundamental limits to any communications system;
- understand the general principles behind multiplexing, addressing, routing, reliable transmission and other stateful protocols as well as specific examples of each;
- understand what FEC is and how CRCs work;
- be able to compare communications systems in how they solve similar problems;
- have an informed view of both the internal workings of the Internet and of a number of common Internet applications and protocols.

Course Outcomes:

After successful completion of this course, the students should be able to

CO1: Understand computer network basics, network architecture, TCP/IP and OSI reference models.

CO2: Identify and understand various techniques and modes of transmission

CO3: Describe data link protocols, multi-channel access protocols and IEEE 802 standards for LAN

CO4: Describe routing and congestion in network layer with routing algorithms and classify IPV4 addressing scheme

CO5: Discuss the elements and protocols of transport layer

CO6: Understand network security and define various protocols such as FTP, HTTP, Telnet, DNS

CO/PO Mapping

(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		S	S		S	W						
CO2		S	S		S	W						
CO3		S	S		S	W						
CO4		S	S		S	W						
CO5		S	S		S	W						
CO6		S	S		S	W						

Course Assessment methods:

Direct	Indirect
1.Lab Records & Observation Books 2. Model Lab Exam 3. End semester practical Exam 4.Viva Voce	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

LIST OF EXPERIMENTS:

1. Socket Programming
   a. TCP Sockets

b .UDP Sockets

   c. Applications using Sockets
2. Simulation of Sliding Window Protocol
3. Simulation of routing Protocols
4. Development of application such as DNS/HTTP/E_mail/Muliti_user Chat
5. Simulation of networking management protocols
6. Study of Networking Simulator Packages such as opnet, ns2, etc.

MIT1L2 DATA STRUCTURE LAB

L	T	P	C
0	0	6	2

Course Objectives:

- To develop skills to design and analyze simple linear and non linear data structures
- To Strengthen the ability to identify and apply the suitable data structure for the given real
- world problem
- To Gain knowledge in practical applications of data structures

Course Outcomes:

After successful completion of this course, the students should be able to

At the end of this lab session, the student will

CO1: Be able to design and analyze the time and space efficiency of the data structure

CO2: Be capable to identity the appropriate data structure for given problem

CO3: Have practical knowledge on the application of data structures

CO/PO Mapping

(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		S	S		S							
CO2		S	S		S							
CO3		S	S		S							

Course Assessment methods:

Direct	Indirect
1.Lab Records & Observation Books	1.Course & Survey
2. Model Lab Exam	2. Faculty Survey
3. End semester practical Exam	3. Industry
4.Viva Voce	4. Alumni

LIST OF EXPERIMENTS:

1. Min heap
2. Heaps
3. Leftist heap
4. AVL Tree
6. Tries
7. Quick sort
8. Convex hull
9. 0/1 Knapsack using Dynamic Programming
10. Graph coloring using backtracking

MIT201 OBJECT ORIENTED SOFTWARE ENGINEERING

L	T	P	C
3	1	0	3

Course Objectives:

- To learn about software prototyping, analysis and design
- To learn UML and its usage
- To estimate and scheduling of objects
- To implement and test an object.

Course Outcomes:

After successful completion of this course, the students should be able to

CO1: Demonstrate the conceptual, practical and technical skills of planning and monitoring a project planusing an appropriate CASE tool

CO2: Demonstrate an understanding of Agile Development

CO3: Describe in detail the theory, concepts and methods pertaining to the Unified Modelling Language (UML).

CO4: Create requirements using use case modelling concepts.

CO5: Demonstrate conceptual and technical skills in the analysis, design and implementation of a software system using Object Oriented Concepts.

CO6: Employ tools and techniques for Object Oriented Software Engineering,

CO7: Demonstrate an ability to adapt and solve problems in software development activities from specification to testing individually and as part of a team.

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S			S	M	M	S	S		
CO2	S	S	S			S	M	M	S	S		
CO3	S	S	S			S	M	M	S	S		
CO4	S	S	S			S	M	M	S	S		
CO5	S	S	S			S	M	M	S	S		
CO6	S	S	S			S	M	M	S	S		
CO7	S	S	S			S	M	M	S	S		

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

UNIT I INTRODUCTION 12

Software Engineering Paradigms - Software Development process models - Project & Process - Project management – Process & Project metrics - Object Oriented concepts & Principles.

UNIT II PLANNING & SCHEDULING 12

Software prototyping - Software project planning – Scope – Resources - Software Estimation - Empirical Estimation Models-Planning-Risk Management - Software Project Scheduling – Object Oriented Estimation & Scheduling.

UNIT III ANALYSIS & DESIGN 12 Analysis Modeling - Data Modeling - Functional Modeling & Information FlowBehavioral Modeling-Structured Analysis - Object Oriented Analysis - Domain Analysis-Object Oriented Analysis process - Object Relationship Model - Object Behaviour Model. Design Concepts & Principles - Design Process - Design Concepts - Modular Design – Design Effective Modularity - Introduction to Software Architecture - Data Design – Transform Mapping – Transaction Mapping – OOD - Design System design process- Object design process - Design Patterns.

UNIT IV IMPLEMENTATION & TESTING 12

Top-Down , Bottom-Up , object oriented product Implementation & Integration. Software Testing methods-White Box, Basis Path-Control Structure –BlackBox, Unit Testing- Integration testing Validation & System testing. Testing OOA & OOD models-Object oriented testing strategies.

UNIT V MAINTENANCE 12

Maintenance process-System documentation-program evolution dynamicsMaintenance costs Maintainability measurement – Case Studies

TOTAL (L:45+T:15):60 PERIODS

TEXT BOOKS

1. *Stephen R Schach, "Classical and Object-Oriented Software Engineering – With UML and C++", McGraw Hill, New Delhi, 2002.*
2. *Ivar Jacobson, "Object Oriented Software Engineering", Pearson Education, 1992*

REFERENCES

1. *Roger S.Pressman, Software engineering- A practitioner's Approach, McGraw-Hill International Edition, Fifth Edition , 2001.*
2. *Ian Sommerville, Software engineering, Pearson education Asia, Sixth edition, 2000.*
3. *PankajJalote- An Integrated Approach to Software Engineering, Springer Verlag, 1997.*
4. *James F Peters and WitoldPedryez, "Software Engineering – An Engineering Approach", John Wiley and Sons, New Delhi, 2000.*
5. *Ali Behforooz and Frederick J Hudson, "Software Engineering Fundamentals", Oxford University Press, New Delhi, 1996.*

MIT202 WEB TECHNOLOGY

L	T	P	C
3	1	0	3

Course Objectives:

- To understand the concepts and architecture of the World Wide Web.
- To understand and practice mark up languages
- To understand and practice embedded dynamic scripting on client side Internet Programming
- To understand and practice web development techniques on client-side

Course Outcomes:

After successful completion of this course, the students should be able to

CO1: Acquire knowledge about functionalities of world wide web
CO2: Explore markup languages features and create interactive web pages using them
CO3: Learn and design Client side validation using scripting languages
CO4: Acquire knowledge about Open source JavaScript libraries
CO5: Able to design front end web page and connect to the back end databases

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		M		M								S
CO2		M		M								S
CO3		M		M								S
CO4		M		M								S
CO5		M		M								S

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

UNIT I INTRODUCTION 12

History of the Internet and World Wide Web – HTML 4 protocols –HTTP, SMTP, POP3, MIME, IMAP- Introduction to JAVA Scripts – Object Based Scripting for the web. Structures – Functions –Arrays – Objects.

UNIT II DYNAMIC HTML 12

Introduction – Object refers, Collectors all and Children. Dynamicstyle, Dynamic position, frames, navigator, Event Model – On check– On load – Onenor – Mouse rel – Form process – Event Bubblers – Filters – Transport with the Filter – Creating Images – Addingshadows – Creating Gradients – Creating Motion with Blur – DataBinding – Simple Data Binding – Moving with a record set – Sorting table data – Binding of an Image and table.

UNIT III MULTIMEDIA 12

Audio and video speech synthesis and recognition – ElectronicCommerce – E-Business Model – E-Marketing – Online Paymentsand Security – Web Servers – HTTP request types – SystemArchitecture – Client Side Scripting and Server side Scripting –Accessing Web servers – IIS – Apache web server.

UNIT IV DATABASE- ASP – XML 12

Database- Relational Database model – Overview, SQL – ASP –Working of ASP – Objects – File System Objects – Session trackingand cookies – ADO – Access a Database from ASP – Server side Active-X Components – Web Resources – XML – Structure in Data– Name spaces – DTD – Vocabularies – DOM methods.

UNIT V SERVLETS AND JSP 12

Introduction – Servlet Overview Architecture – Handling HTTPRequest – Get and post request – redirecting request – multi-tierapplications – JSP – Overview – Objects – scripting – Standard Actions – Directives.

TOTAL (L:45+T:15):60 PERIODS

TEXT BOOK

1. *Deitel&Deitel, Goldberg, Internet and World Wide Web –How to Program, Pearson Education Asia, 2001.*

REFERENCES

1. *Eric Ladd, Jim O' Donnel, Using HTML 4, XML and JAVA,Prentice Hall of India, QUE, 1999.*
2. *Aferganatel, Web Programming: Desktop Management, PHI,2004.*
3. *Rajkamal, Web Technology, Tata McGraw-Hill, 2001.*

MIT203 DATA WAREHOUSING AND DATA MINING

L	T	P	C
3	1	0	3

Course Objectives:

Students will be enabled to understand and implement classical models and algorithms in data warehousing and data mining. They will learn how to analyze the data, identify the problems, and choose the relevant models and algorithms to apply. They will further be able to assess the strengths and weaknesses of various methods and algorithms and to analyze their behavior.

Course Outcomes:

After successful completion of this course, the students should be able to

CO1: Design and security issues and architectures and network technologies for building, deploying and managing data

CO2:warehouses, data mining, data visualisation and decision support computing systems

CO3: Distributed data management and practice for modern computer systems

CO4: Data mining technologies for modern computer systems

CO5: Advanced modelling techniques for building modern computer systems involving Data Warehouses.

CO6: Business, industrial and commercial context of building data warehouses and data mining software systems

CO/PO Mapping

(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		M		S	S				S			
CO2		M		S	S				S			
CO3		M		S	S				S			

CO4		M		S	S				S			
CO5		M		S	S				S			
CO6		M		S	S				S			

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

UNIT I **12**

Data Warehousing and Business Analysis: - Data warehousing Components –Building a Data warehouse – Mapping the Data Warehouse to a Multiprocessor Architecture – DBMS Schemas for Decision Support – Data Extraction, Cleanup, and Transformation Tools –Metadata – reporting – Query tools and Applications – Online Analytical Processing (OLAP) – OLAP and Multidimensional Data Analysis.

UNIT II **12**

Data Mining: - Data Mining Functionalities – Data Preprocessing – Data Cleaning – Data Integration and Transformation – Data Reduction – Data Discretization and Concept Hierarchy Generation.

Association Rule Mining: - Efficient and Scalable Frequent Item set Mining Methods – Mining Various Kinds of Association Rules – Association Mining to Correlation Analysis– Constraint-Based Association Mining.

UNIT III **12**

Classification and Prediction: - Issues Regarding Classification and Prediction – Classification by Decision Tree Introduction – Bayesian Classification – Rule Based Classification – Classification by Back propagation – Support Vector Machines – Associative Classification – Lazy Learners – Other Classification Methods – Prediction – Accuracy and Error Measures – Evaluating the Accuracy of a Classifier or Predictor – Ensemble Methods – Model Section.

UNIT V **12**

Cluster Analysis: - Types of Data in Cluster Analysis – A Categorization of Major Clustering Methods – Partitioning Methods – Hierarchical methods – Density-Based Methods – Grid-Based Methods – Model-Based Clustering Methods – Clustering High-Dimensional Data – Constraint-Based Cluster Analysis – Outlier Analysis.

UNIT V **12**

Mining Object, Spatial, Multimedia, Text and Web Data:Multidimensional Analysis and Descriptive Mining of Complex Data Objects – Spatial Data Mining – Multimedia Data Mining – Text Mining – Mining the World Wide Web.

TOTAL (L:45+T:15) :60 PERIODS

REFERENCES

1. *Jiawei Han and MichelineKamber "Data Mining Concepts and Techniques" Second Edition,*

2. *Elsevier, Reprinted 2008.*

3. *Alex Berson and Stephen J. Smith "Data Warehousing, Data Mining & OLAP", Tata McGraw – Hill Edition, Tenth Reprint 2007.*

4. *K.P. Soman, ShyamDiwakar and V. Ajay "Insight into Data mining Theory and Practice", Easter Economy Edition, Prentice Hall of India, 2006.*

5. *G. K. Gupta "Introduction to Data Mining with Case Studies", Easter Economy Edition, Prentice Hall of India, 2006.*

6. Pang-Ning Tan, Michael Steinbach and Vipin Kumar "Introduction to Data Mining", Pearson Education, 2007.

MIT204 **UNIX INTERNALS**

L	T	P	C
3	1	0	3

Course Objectives:

To get thorough understanding of the kernel..
To understand the file organization and management.
To know the various system calls.
To have a knowledge of process architecture, process control & scheduling and memorymanagement.

Course Outcomes:

After successful completion of this course, the students should be able to

CO1: Implementation of Unix process management and scheduling.
CO2: Implementation of a virtual memory system.
CO3: Implementation of some local and distributed file systems.
CO4: Implementation of socket based intercrosses communication.
CO5: Implementation of the internet protocols TCP and IP

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1				M								S
CO2				M								S
CO3				M								S
CO4				M								S
CO5				M								S

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

UNIT I OVERVIEW 12

General Overview of the System : History – System structure – User perspective – Operating system services – Assumptions about hardware. Introduction to the Kernel : Architecture of the UNIX operating system – Introduction to system concepts. The Buffer Cache: Buffer headers – Structure of the buffer pool – Scenarios for retrieval of a buffer– Reading and writing disk blocks – Advantages and disadvantages of the buffer cache.

UNIT II FILE SUBSYSTEM 12

Internal representation of files: Inodes – Structure of a regular file – Directories – Conversion of a path name to an Inode – Super block – Inode assignment to a new file – Allocation of disk blocks.

UNIT III SYSTEM CALLS FOR THE FILE SYSTEM 12

Open – Read – Write – File and record locking – Adjusting the position of file I/O – Lseek – Close – File creation – Creation of special files – Changing directory, root, owner, mode – stat and fstat – Pipes – Dup – Mounting and unmounting file systems – link – unlink.

UNIT IV PROCESSES 12

Process states and transitions – Layout of system memory – The context of a process – Saving the context of a process – Manipulation of the process address space - Sleep. Process Control : Process creation – Signals – Process termination – Awaiting process termination – Invoking other programs – user id of a process – Changing the size of a process - Shell – System boot and the INIT process– Process Scheduling.

UNIT V MEMORY MANAGEMENT AND I/O 12

Memory Management Policies : Swapping – Demand paging. The I/O Subsystem : Driver Interface – Disk Drivers – Terminal Drivers– Streams – Inter process communication.

TOTAL(L:45+T:15): 60 PERIODS

TEXT BOOKS

1. *Maurice J. Bach, "The Design of the Unix Operating System", First Edition, Pearson Education, 1999.*

REFERENCES

1. *B. Goodheart, J. Cox, "The Magic Garden Explained", Prentice Hall of India, 1986.*
2. *S. J. Leffler, M. K. Mckusick, M. J. .Karels and J. S. Quarterman., "The Design and Implementation of the 4.3 BSD Unix Operating System", Addison Wesley, 1998.*

MIT 2L1 WEBTECHNOLOGY LAB

L	T	P	C
0	0	6	2

Course Objectives:

- Choose best technologies for solving web client/server problems
- Create conforming web pages
- Use Javascript for dynamic effects
- Use Javascript to validate form input entry
- Use appropriate client-side or Server-side applications
- Write Perl/CGI scripts
- Write PHP scripts
- Create adaptive web pages
- Implement cookies
- Install a web server application
- Deploy Java Applets and Servlets
- Create an XML application

Course Outcomes:

After successful completion of this course, the students should be able to

CO1:Explain the history of the internet and related internetconcepts that are vital in understanding web development.

CO2:Discuss the insights of internet programming andimplement complete application over the web.

CO3:Demonstrate the important HTML tags for designingstatic pages and separate design from content using

CO4: Cascading Style sheet.

CO5: Utilize the concepts of JavaScript and JavaUse web application development software tools i.e.Ajax, PHP and XML etc. and identify the environmentscurrently available on the market to design web sites.

CO/PO Mapping

(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M	S	S		S							
CO2	M	S	S		S							
CO3	M	S	S		S							
CO4	M	S	S		S							
CO5	M	S	S		S							

Course Assessment methods:

Direct	Indirect
1.Lab Records & Observation Books	1.Course & Survey
2. Model Lab Exam	2. Faculty Survey
3. End semester practical Exam	3. Industry
4.Viva Voce	4. Alumni

LIST OF EXPERIMENTS:

1.client Server Scripting Programs
2.simulation of Email and File Transfer Protocols.
3.Development of Web Services
4.XML and Databases.
5.Server Application
6.Web Customization.
7.Development of E- Business Application

TOTAL :45 PERIODS

MIT2L2 UNIX INTERNALS LAB

L	T	P	C
0	0	6	2

Course Objectives:

This course introduces the UNIX operating system . It also describes UNIX system programming tools and UNIX internals. It will focus on how to get things done in UNIX and will cover UNIX environment ,the UNIX shells, Important utilities in UNIX, C programming tools, Networking Utilities ,System programming system calls, files, processes, sockets and pipes ,Overview of Operating system Internals: kernel, inodes, files and processes .Upon completion of this course, students will be able to describe the way the following components are implemented: Memory management ,Process management, System calls ,Interrupt and exceptions, Virutal memory ,File systems etc.

Course Outcomes:

After successful completion of this course, the students should be able to

On completion of this course the student should be able to:

CO1: Identify and use UNIX/Linux utilities to create and manage simple file processing operations, organize directory structures with appropriate security, and develop shell scripts to perform more complex tasks.
CO2: Effectively use the UNIX/Linux system to accomplish typical personal, office, technical, and software development tasks.
CO3: Monitor system performance and network activities.
CO4: Effectively use software development tools including libraries, preprocessors, compilers, linkers, and make

files.

CO5: Comprehend technical documentation, prepare simple readable user documentation and adhere to style guidelines.
CO6: Collaborate in teams on system tasks.

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		S	S		S							
CO2		S	S		S							
CO3		S	S		S							
CO4		S	S		S							
CO5		S	S		S							

Course Assessment methods:

Direct	Indirect
1.Lab Records & Observation Books	1.Course & Survey
2. Model Lab Exam	2. Faculty Survey
3. End semester practical Exam	3. Industry
4.Viva Voce	4. Alumni

LIST OF EXPERIMENTS:
Use of Unix/Linux – User Commands – Editors - Shell programming

1.C/C++ programming on Unix/Linux – use of make, version control
2.Use of system calls – files – processes – I/O – IPC
3.Experiments using C of mini unix systems (such as Minix) – File system – Processes – Memory Management – Drivers
4.Unix / Linux sources – build, run kernel – small modifications

TOTAL :45 PERIODS

L	T	P	C
3	1	0	3

MIT301 CLOUD COMPUTING

Course Objectives:

- the fundamental ideas behind Cloud Computing, the evolution of the paradigm, its applicability; benefits, as well as current and future challenges;
- the basic ideas and principles in data center design and management;
- different CPU, memory and I/O virtualization techniques that serve in offering software, computation and storage services on the cloud;
- about cloud storage technologies and relevant distributed file systems;

- the variety of programming models and develop working experience in one of them.

Course Outcomes:

After successful completion of this course, the students should be able to

CO1: Explain the ***core concepts*** of the cloud computing paradigm: how and why this paradigm shift came about, the characteristics, advantages and challenges brought about by the various models and services in cloud computing.

CO2: Apply the fundamental concepts in ***datacenters*** to understand the tradeoffs in power, efficiency andcost.

CO3: Discuss ***system virtualization*** and outline its role in enabling the cloud computing system model.

CO4: Illustrate the fundamental concepts of ***cloud storage*** and demonstrate their use in storage systems such as Amazon S3 and HDFS.

CO5: Analyze various ***cloud programming models*** and apply them to solve problems on the cloud.

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		S		S	S					M		
CO2		S		S	S					M		
CO3		S		S	S					M		
CO4		S		S	S					M		

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

UNIT I CLOUD ARCHITECTURE AND MODEL 12

Technologies for Network-Based System – System Models for Distributed and Cloud Computing – NIST Cloud Computing Reference Architecture - Cloud Models:- Characteristics – Cloud Services – Cloud models (IaaS, PaaS, SaaS) – Public vs Private Cloud –Cloud Solutions - Cloud ecosystem – Service management – Computing on demand.

UNIT II VIRTUALIZATION 12

Basics of Virtualization - Types of Virtualization - Implementation Levels of Virtualization - Virtualization Structures - Tools and Mechanisms - Virtualization of CPU, Memory, I/O -Devices - Virtual Clusters and Resource management – Virtualization for Data-center -Automation.

UNIT III CLOUD INFRASTRUCTURE 12

Architectural Design of Compute and Storage Clouds – Layered Cloud Architecture –Development – Design Challenges - Inter Cloud Resource Management – Resource Provisioning and Platform Deployment – Global Exchange of Cloud Resources.

UNIT IV PROGRAMMING MODEL 12

Parallel and Distributed Programming Paradigms – MapReduce , Twister and Iterative Map Reduce – Hadoop Library from Apache – Mapping Applications - Programming Support -Google App Engine, Amazon AWS - Cloud Software Environments -Eucalyptus, OpenNebula, OpenStack, Aneka, CloudSim

UNIT V SECURITY IN THE CLOUD ` 12

Security Overview – Cloud Security Challenges and Risks – Software-as-a-Service Security – Security overnance – Risk Management – Security Monitoring – Security Architecture Design – Data Security – Application Security – Virtual Machine Security - Identity Management and Access Control – Autonomic Security.

TOTAL(L:45+T:15):60 PERIODS

REFERENCES:

1. Kai Hwang, Geoffrey C Fox, Jack G Dongarra, "Distributed and Cloud Computing, From Parallel Processing to the Internet of Things", Morgan Kaufmann Publishers, 2012.

2. John W.Rittinghouse and James F.Ransome, "Cloud Computing: Implementation, Management, and Security", CRC Press, 2010.

3. Toby Velte, Anthony Velte, Robert Elsenpeter, "Cloud Computing, A Practical Approach", TMH, 2009.

4. Kumar Saurabh, "Cloud Computing – insights into New-Era Infrastructure", Wiley India,2011.

L	T	P	C
3	0	0	3

MIT001 COMPONENT BASED TECHNOLOGY

Course Objectives:

- Introduces in depth JAVA,Corba and .Net Components
- Deals with Fundamental properties of components, technology and architecture and middleware.
- Component Frameworks and Development are covered indepth.

Course Outcomes:

After successful completion of this course, the students should be able to

CO1: Describe and use principles for building software systems from components

CO2: Demonstrate knowledge of technologies and standards for distributed object-based components

CO3: Design component-based software systems using well-structured design methods

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak	
COs	Programme Outcomes(POs)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1			S	S					S			S
CO2			S	S					S			S
CO3			S	S					S			S

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

UNIT-I INTRODUCTION 9

Software componets- objects- fundamental properties of component technolofy- modules – interfaces- callbacks- directory services – component architecture- component and middleware

UNIT-II JAVA COMPONENT TECHNOLOGIES 9

Thread- java beans- event and connections- properties- introspection- JAR files- reflection- object serialization – enterprise Java Beans- distributed object models- RMI and RMI-IIOP

UNIT-III COBRA TECHNOLOGIES 9

Java and COBRA- Inreface definition language- object request broker- system object model- portable object adapter- COBRA services- COBRA componemt model- containers- application server- model driven architecture

UNIT-IV COM AND .NET TECHNOLOGIES 9

COM- Distributed COM- object reuse- interface and versioning- dispatch interfaces- connectable objects- OLE containers and services- Active x controls- .Net components- assemblies- appdomains- contexts- reflection- remoting

UNIT-V COMPONENT FRAMEWORK AND DEVELOPMENT 9

Connectors- contexts- EJB containers- CLR contexts and channels- Black Box component framework- directory objects- cross development environment- component oriented programming- component design and implementation tools- testing tools- assembly tools

TOTAL:45 PERIODS

TEXT BOOKS:

1. *Component Software: Beyond Object-Oriented Programming, Pearson Education publishers, 2003*
2. *G. SudhaSadasivam, "Component Based Technology", Wiley India, 2008.*

L	T	P	C
3	0	0	3

REFERENCES:

1. *Ed Roman, "Enterprise Java Beans", Third Edition ,Wiley, 2004*

MIT002 HIGH SPEED NETWORKS

Course Objectives:

To facilitate the students on the basis of ATM and Frame relay concepts and explain the various types of LAN's and to know about their applications.

Course Outcomes:

After successful completion of this course, the students should be able to

CO1: List techniques used to achieve 100 and 1000 Mb/s in Ethernet
CO2: Understand each field in IPv4 and IPv6
CO3: Appreciate the challenges in design of Wireless Sensor Networks
CO4: Suggest modification for protocols in Ad Hoc networks
CO5: Categorize layers in ATM protocol
CO6: Understand switching in ATM and Frame Relay networks
CO7: Calculate the number of ATM cells in ATM sublayers

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		S	S		S							
CO2		S	S		S							
CO3		S	S		S							
CO4		S	S		S							
CO5		S	S		S							
CO6		S	S		S							
CO7		S	S		S							

Course Assessment methods:

Direct	Indirect
1. Internal Tests	1.Course & Survey

2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	2. Faculty Survey 3. Industry 4. Alumni

UNIT-I HIGH SPEED LANS 9

Fast Ethernet technology,FDDI,SONET and SDH standards.Performance of HIGH SPEED LAN Throughput,delay and reliability,Wavelengh division multiplexed LA-Routing and switching in WDM networks,Giga bit LAN

UNIT-II BISDN AND FAST PACKET SWITCHING 9

Overview os ISDN-User interface,architecture and limitation of narrow band ISDN(N-ISDN) and evolution of broad band ISDN(B-ISDN),Fast packet switching architecture- Batcher Banyan architectures and their performance analysis

UNIT-III ASYNCHRONOUS TRANSFER MODE NETWORKS 9

ATM protocol architecture.ATM adaptation layer,packet switching techniques VP/VC encapsulation.TM cells header interception,Source characteristics and source modeling.

UNIT-IV ATM TRAFFIC MANAGEMENT 9

Traffic management issue in ATM-Resoursemanagement,connection management policing,and reactive control principles.Fundamentals of Asyncrhronous multiplexing Markov modulated processes discreate time traffic modeling and queue analysis,application to CAC,leaky bucket and ECN/ICN.

UNIT-V ATM SIGNALLING AND DATA COMMUNICATION OVER ATM 9

ATM signaling fundamentals.TCP/IP over ATM-challenges and proposals.LAN emulator over ATM.Performance of Data communication over ATM

TOTAL:45 PERIODS

L	T	P	C

REFERENCES:

1. *Craig partridge,gigabitnetworking,Addison Wesley,1997.*
2. *Stallings W,ISDN-BISDN with frame relay and ATM, P.H International,1995*
3. *R.Onvural,Asynchronous Transfer Mode Network_PerformanceIssue,Artech House,1995.*
4. *W.Stallings,High Speed Networks,TCP/IP and design principles,PHI,1998*

MIT003 **NETWORK PROTOCOLS**

3	0	0	3

Course Objectives:

This module introduces students to computer networks and concentrates on building a firm foundation for understanding Data Communications and Computer Networks. It is based around the OSI Reference Model which deals with the major issues in the bottom four (Physical, Data Link, Network and Transport) layers of the model. Students are also introduced to the areas of Network Security and Mobile Communications. This module provides the student with fundamental knowledge of the various aspects of computer networking and enables students to appreciate recent developments in the area.

Course Outcomes:

After successful completion of this course, the students should be able to

CO1: Analyze the requirements for a given organizational structure and select the most appropriate networking architecture and technologies;

CO2: Have a basic knowledge of the use of cryptography and network security;

CO3: Specify and identify deficiencies in existing protocols, and then go onto formulate new and better protocols;

CO4: Analyze, specify and design the topological and routing strategies for an IP based networking infrastructure

CO5: Have a working knowledge of datagram and internet socket programming

CO/PO Mapping

(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		S	S		S							
CO2		S	S		S							
CO3		S	S		S							
CO4		S	S		S							
CO5		S	S		S							

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

UNIT-I BASIC PROTOCOLS **9**

Window based protocols,HDLC-family_SDLC,LLC,LAPD,802.X,protocol family 802.3,8032.5 Compansion of data link protocols,Network Layer Protocol x.25 protocols,routingprotocols,SPX and IPX protocols

UNIT-II INTERNET PROTOCOLS 9

IP-addressing schemes,address revolution protocol,IP_datagram and headers details,IP-routing schemes,route discovery protocol,SLIP and PPP protocols,Internet Control Message Protocol(ICMP),IP version 6,mobile IP

UNIT-III TRANSMISSION CONTROL PROTOCOLS 9

TCP protocol-option TCP and UDP,TCP segment structure-Interpretation of headers,window based flow and congestion control using TCP,socketabstraction,Berkeley socket and Winsock,Winsock programming,

UNIT-IV APPLICATION PROTOCOLS 9

Simple mail transfer protocol,FTP and TFTP,Remote Procedure call,Telnet,Network File system,World wide web,servers and browsers,Introduction to web design

UNIT-V NETWORK MANAGEMENT 9

General structure,information extraction and collection instruments,line monitors data scopes,networkmonitor,communitcationmonitor.securitymonitor.Congigurationmanagement,changemanagement,faultmanagement,securitymanagement,accuracymanagement,Network capacity planning fundamentals

L	T	P	C
3	0	0	3

TOTAL (45+15):60 PERIODS

REFERENCES

1. *U,Black,TCP/IP and Related protocols,McGraw Hill,1995*
2. *Terplan,communication network managements,PHI,1992*
3. *D.E Corner,internetworking with TCP/IP_VOL1.Phd,3rd edition,1998*
4. *Udupa,network management system essentials,McGraw Hill,1995*

MIT004 NETWORK ADMINISTRATION

Course Objectives:

This addresses key technology management issues as they are applied to information resources management (IRM) for information centers and information services. It also include fundamentals of networking and telecommunications covering LAN's to "information Superhighways." It covers techniques for management of communication resources and services and information to oversee the network administration and network system management.

Course Outcomes:

After successful completion of this course, the students should be able to

CO1:A basic understanding of management information system terminology.

CO2: The components and the operations, managerial, and strategic roles of information systems within anorganziation.

CO3: The major concepts, development, and managerial implications involved in computer hardware, software, database management, and telecommunications technologies.

CO4: How information technology is used in modern information systems to support end-user applications, enterprise operations, e-Commerce, and managerial decision making.

CO5: The development of information systems solutions for business problems and how to implement change.

CO6: The managerial challenges and methods of managing information systems technologies, including information resource management, global IT management, and security and ethical challenges.

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S		S		M						
CO2	S	S		S		M						
CO3	S	S		S		M						
CO4	S	S		S		M						
CO5	S	S		S		M						
CO6	S	S		S		M						

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

UNIT-I OPERATION PROCEDURES 9

Function of a system administrator hardware and software configuration of the system-Auto configuration of devices,General operational guidelines running diagnostic Programs procedures for system control power down single/multi-user mode,Modify device configuration,recovery from system trouble reconfiguring the OS

UNIT-II USER SERVICES 9

Login administration-Addind/Removing users-Settinf up unser environment and user communication procedure for user services

UNIT-III IDENTIFICATION AND SECURITY 9

System security-special administration-password,userid,group id-Formatting and partitioning disks,bad block handling-Disk,management procedures.

UNIT-IV FILE SYSTEM ADMINISTRATION 9

File system Organization-Super block-Free block-Mounting and unmounting file system checking in a file system,Back up and restore procedures-Try management-Spooler administration-System accounting procedures-Day to day operations-Setting up accounting system,recovery from failure-Daily reports.

UNIT-V 9

Hardware management-Basic Networking Procedures-Performance Management-Finding problems and fittinfproblems_improvingperfprmance-Performance-tools like sar,saf-System reconfiguration procedures.

L	T	P	C
3	0	0	3

TOTAL PERIODS: 45

REFERENCE:

1. *SCO open server-Graphics environment Administration Guide,SCO Inc-1993*
2. *Super stack land Hun Management,User Guid,3 COM,1996*
3. *Acces Builder 2000,Installation giud,3COM,1996*
4. *Acces builder Remote Client user giud,1996*

MIT005 EMBEDDED SYSTEMS

Course Objectives:

1.Review basics in Embedded hardware,
2.Learn basic concepts of design of Embedded software system,
3.Learn the Software architecture and Development tools,
4.Learn the operation of PIC microcontroller and interfacing,
5.Learn the operation of Embedded Microcomputer systems.

Course Outcomes:

After successful completion of this course, the students should be able to

CO1: Use of hardware fundamentals. Gates, timing diagram, DMA, interrupts, built -Ins on the microprocessor architecture,

CO2: Explain the concept of Tasks, States, Data, Semaphores, more operating system services IR in RTOS environment, Basic design using RTOS,

CO3: Develop through basic knowledge on the behavior and the characteristics of Round-Robin

techniques, Functions, Queue, Host and Target machine and Debugging techniques,

CO4: Learn the usage of Architecture, instruction sets of PIC, Loop time subroutine, I/O port expansion,I2C for peripherals chip access, ADC and UART special features,

CO5: Acquire knowledge on the configuration of Introduction to ARM7 – 2148 – Instructions set, addressing modes, Interfacing methods, ISR, Timing generations and measurements

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		S	S	S								M
CO2		S	S	S								M
CO3		S	S	S								M
CO4		S	S	S								M
CO5		S	S	S								M

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

UNIT-I EMBEDDED COMPUTING 9

Challenges of embedded systems- embedded system design process- embedded processors- ARM processors- Architecture and thumb Instruction sets

UNIT-II EMBEDED PROGRAMMING 9

C- looping structures- Register allocation- function calls- pointer aliasing – structure arrangement- bit fields- unaligned data and endianness- inline functions and inline assembly- portability issues

UNIT-III OPTIMIZING ASSEMBLY CODE 9

Profiling and cycle counting- instruction scheduling- register allocation- conditional execution- looping constructs- bit manipulation- efficient switches- optimized primitives.

UNIT-IV PROCESSES AND OPERATING SYSTEMS 9

Multiple tasks and processes- context switching- scheduling policies- interposes communication mechanisms- exception and interrupt handling- performance issues

UNIT-V EMBEDDED SYSTEM DEVELOPMENT 9

Meeting real time constraints- multi state system and function sequences- Embedded software development tools- emulators and debuggers. Design methodologies- case studeies- complete design of example embedded systems

L	T	P	C
3	0	0	3

TOTAL PERIOD=45

REFERENCES:

1. *Andrew N Sloss, D. Symes, C. Wright, ARM systems Development Guide, Morgan Kaufmann/Elsevier, 2006*
2. *Michael J Pont, "Embedded C", Pearson Education, 2007*
3. *Wayne Wolf, Computers as components: Principles of embedded computer system design, Morgan Kaufmann/Elsevier, 2nd edition , 2003*
4. *Steve Heath, Embedded System Design, Elsevier, 2nd edition, 2003*

MIT006 BIO-INFORMATICS

Course Objectives:

- Working knowledge of biology and its applications;
- Proficiency in computer languages;
- Skills in data mining;
- Skills in data visualization;
- Experience with systems biology tools;
- Experience inusing bioinformatics resources.
- Automation—pipeline development.

Course Outcomes:

After successful completion of this course, the students should be able to

CO1: Prepare large-scale expression and sequence data for bioinformatics analyses

CO2: Write programs to manipulate files and directories

CO3: Extract useful information from text files

CO4: Learn genomics resource and how to annotate genes

CO5: Do R programming

CO6: Develop software

CO/PO Mapping

(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M	S	M	S								
CO2	M	S	M	S								
CO3	M	S	M	S								
CO4	M	S	M	S								

CO5	M	S	M	S								
CO6	M	S	M	S								

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

UNIT-I CODING 9

Common health care languages-coding techniques-coded and quasi coded data-Medical Vocabulary_industry Wide Commm\unication Standards HL7-Unified medical language systems.Quality of care paradigms,Risk management and Boimetrics

UNIT-II PATIENT RECORD MAINTENANCE 9

Electronics patient record,models of EPR,Environmentalservices,Metrics,Telemedicine,communitynetworks,Telemedicine peripherals and equipment selection,Anatomy of Video conferencing technology

UNIT-III REASONING TECHNIQUES 9

Clinical based reasoning:Evidence based medicine,Randomized clinical trilas,Clinical data repositories data mining,and guidelines extraction.Organizational learning and issues.Agentstechnology,Colon architecture model

UNIT-IV MEDICAL IMAGING 9

Tele Radiology,Digital imaging standards,DICOM,diagnosticimaging,Image guided surgery,Militarytele-Med(TRICARE),Virtual hospitals,Visual CME and Virtual reality

Training system,Documentanalysis,SQML and TEL

UNIT-V EXPERT SYSTEMS 9

Clinical expert systems, Statistical decision trees,Integration of decision Support in clinical processes, Decision analysis, knowledge network,Genome Project and molecular biology,biological Structures-Fuction and Characterization.

TOTAL PERIOD=45

REFERENCE

1. *R.D Leles computer in Medicine,Tala McGraw Hill,1998.*
2. *Coiera,E,Giude to Medical Informatics. The Internet and Telemedicine,Chapman and Hall medical,London,1997*
3. *Bernser,E.S,clinical decision support systems.Theory and practice,Springer_Vertigos,New York,1999.*

4. Jacob Kline,Handbook of bio medical Engineering,Academic Press Inc, san Diego,1998

MIT007 MOBILE COMMUNICATION

Course Objectives:

It deals with the fundamental cellular radio concepts such as frequency reuse and handoff. This also demonstrates the principle of trunking efficiency and how trunking and interference issues between mobile and base stations combine to affect the overall capacity of cellular systems.

It presents different ways to radio propagation models and predict the large – scale effects of radio propagation in many operating environment. This also covers small propagation effects such as fading, time delay spread and Doppler spread and describes how to measures and model the impact that signal bandwidth and motion have on the instantaneous received signal through the multi-path channel.

It provides idea about analog and digital modulation techniques used in wireless communication.

It also deals with the different types of equalization techniques and diversity concepts.. It provides an introduction to speech coding principles which have driven the development of adaptive pulse code modulation and linear predictive coding techniques.

Course Outcomes:

After successful completion of this course, the students should be able to

CO1: To impart fundamental knowledge of mathematics, applied science and concepts of Electronics & Communication engineering for modeling and solving engineering problems.

CO2: To inculcate an ability to analyze Electronics and Communications Engineering problems by applying the knowledge of mathematics and core engineering subjects.

CO3: To design Electronics & Communication systems with specifications based on societal and environmental considerations.

CO4: To make the students understand the impact of the engineering solutions in a global, economic, environmental and societal context.

CO5: To impart an ability to engage in life-long learning and to keep abreast with current developments in the field of Electronics and Communication engineering.

CO/PO Mapping

(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

L	T	P	C
3	0	0	3

COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S		S							M		
CO2	S		S							M		
CO3	S		S							M		
CO4	S		S							M		
CO5	S		S							M		

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

UNIT-I INTRODUCTION **9**

Medium access control-Telecommunication systems-Broadcast systems

UNIT-II STANDARDS **9**

Wireless LAN-IEEE 802.11-HIPERLAN-Bluetooth.

UNIT-III **9**

Characteristic-Performance issue-Routing in mobile hosts

UNIT-IV NETWORK ISSUES **9**

Mobile IP-DHCP-Mobile Transport layer-Indirect TCP\Shooting TCP-Mobile TCP-Transmission time-out freezing-Selective retransmission-Transaction oriented TCP

UNIT-V NETWORK ISSUES **9**

Wireless application protocol-Dynamic DNS-File system-Synchronization Protocol-Context-Aware application-Security-Analysis of excisting wireless
Network.

TOTAL PERIOD=45

REFERENCES:

1. Andreas.F. Molisch, "Wireless Communications", John Wiley – India, 2006.
2. Simon Haykin& Michael Moher, "Modern Wireless Communications", Pearson Education, 2007.
3. Rappaport. T.S., "Wireless communications", Pearson Education, 2003.
4. Gordon L. Stuber, "Principles of Mobile Communication", Springer International Ltd., 2001.
5. Andrea Goldsmith, Wireless Communications, Cambridge University Press, 2007.

MIT008 TELECOMMUNICATION ROUTING AND SWITCHING TECHNIQUES

Course Objectives:

The objective of this course is to introduce the student to switching and transmission as appliedwithin the telecommunications infrastructure. The material to be discussedduring this course will include the background and terminology of telecommunications , digital transmission and multiplexing, digital switching, network synchronization, controland management, fiber optic transmission systems, SONET and Packet Switching Technologies.

Course Outcomes:

After successful completion of this course, the students should be able to

CO1: Ability to analyze the characteristics of the telephone systems
CO2: Ability to define and distinguish digital and analog transmissions
CO3: Ability to evaluate the digital services over analog carrier
CO4: Ability to analyze the processes used in telecommunications
CO5: Ability to use different methods of digital line coding
CO6: Ability to make use of the parameters in designing telephone switches
CO7: Ability to analyze the performance of a digital telephone switch

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		S	S		S							
CO2		S	S		S							
CO3		S	S		S							
CO4		S	S		S							
CO5		S	S		S							
CO6		S	S		S							

L	T	P	C
3	0	0	3

CO7		S	S		S							

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

UNIT-I EVALUVATION OF PUBLIC SWITCHIED TELECOMMUNICATION NETWORK 9

Switching system functions-Stronger switching system-cross bar exchange-SPC exchange-Message switching-circuits switching-Telephone handset-Four wire concept-Hybrid Circuit-Echo suppressor and cancellers-PCM coders-modems and relays-Telecommunication standards.

UNIT-II DIGITAL SWITCHING SYSTEMS 9

Time switching-space switching-STS and TST switch-digital switching systems hardware-principles of switching system software organizational Processing software-switching in networked environment-ISDN.

UNIT-III SIGNALING AND TRAFFIC 9

Channel associated signaling-common channel signaling-SS7 protocol-Traffic-grade of service-Modeling switching system-blocking models and relay system.

UNIT-IV TRANSMISSION NETWORKS 9

Subscriber loop-DSL-ADSL-FDM and TDM-PCM multiplexed group-PDSH-SDH/SONET-cross talk-line equalizations-adaptive equalizers-single stage network-two,three,four stage networks-network synchronization

L	T	P	C
3	1	0	4

UNIT-V DATA NETWORKS 9

Data transmission inPSTN-packet switching-connection oriented and connectionless protocols-ISo-OSI architecture-TCP/IP and internet-multiple access techniques-satellite based networks-principles of ATm networks.

TOTAL PERIOD=45

REFERENCE:

1. *J.E Flood, Telecommunication switching,Traffic and Networks,Pearson Education Ltd,New Delhi,2001.*
2. *syed R Ali,Digital switching systems,McGrawHill,New York,1998.*
3. *Viswanathan T, Telecommunication switching systems and networks,PHI,1994*

MIT009 MEDICAL INFORMATICS

Course Objectives:

- Describe how the healthcare information infrastructure is used to collect, process, maintain, exchange, and disseminate data.
- Demonstrate familiarity with information systems that employ communication and computer technology to collect, maintain, access, evaluate, and interpret healthcare/public health data.
- Demonstrate understanding of the use of informatics methods and resources as strategic tools to improve healthcare delivery and public health.

- Articulate the importance of collaboration among medical, public health, communication, and informatics specialists in the process of design, implementation, and evaluation of healthcare/public health programs.
- Articulate legal and ethical principles fundamental to the use of information technology and resources in healthcare/public health settings.
- Explain issues of privacy, confidentiality, and security of medical data in the context of an electronic information infrastructure.
- Demonstrate effective written and oral skills for communicating with different audiences in the context of professional healthcare/public health activities.

Course Outcomes:

After successful completion of this course, the students should be able to

CO1: Use proper terminology related to information systems used to collect, maintain, and access medical data.

CO2: Articulate the need for standard and controlled terminology in the digitization of clinical and biomedical data.

CO3: Describe information systems in current use in medical and public health centers and how they are used in practice.

CO4: Discuss the history and development of the Electronic Health Record (EHR), the parts of the EHR, and its current and intended use in healthcare settings.

CO5: Articulate the need for, as well as issues relating to,

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M	S	M	S								
CO2	M	S	M	S								
CO3	M	S	M	S								
CO4	M	S	M	S								
CO5	M	S	M	S								

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

UNIT-I BIOMEDICAL INFORMATION TECHNOLOGY 9

Historical highlights of healthcare information systems-Biomedical information systems-problems of pitfalls –History and evolution of Electronic resources-Internet and interactive Multimedia components

UNIT-II OVERVIEW OF COMPUTER HARDWARE 9

Motherboard and its logic-Memory and I/O map,I/O-peripherals and add-on cards,RS 232-C and various IEEE bus standars.

UNIT-III HOSPITAL INFORMAITON SYSTEMS 9

Concept of HIS and its positon in the hospitals-introduction of a computerized HIS-application of HIS in project management Automation of Medical record-hospital inventory data protection aspects-costs and benefits of HIS-transfer of information within the Hospital-Modems and computer networking in Hospitals.

UNIT-IV VISUAL PROGRAMMING & MULTIMEDIA INFORMATION SYSTEMS 9

Visual Basic principle and programming-Design,production and testing of multimedia based medical information systems.

UNIT-V INTEGRATED MEDICAL INFORMATION SYSTEMS 9

L	T	P	C
3	0	0	3

Integration of intra and inter hospital information systems-Role of expert systems and fuzzy logic in medical information systems-Physiological system modeling and simulation-Concept of virtual reality,web based multimedia information systems-video conferencing

TOTAL PERIOD=45

REFERENCE

1. *S.K Chauhan,PC organization, S.K Kataria Sons,Delhi,2000.*
2. *Harold Sackman,Biomediacl information Technology,AcademicPress,New York, 1997*
3. *Mary Beth Fecko, Electronic resource Access and Issue, Bowker-Saur,London, 1997.*
4. *Tay Vaughan, Multimedia making it work, Tata McGrawHill,New York, 1999.*
5. *Mark Spenik, Visual Basic 6, Interactive Couse,TEchmedia, New Delhi, 1999*

MIT010 MULTIMEDIA COMPRESSION TECHNIQUES

Course Objectives:

- Understand error–control coding.
- Understand encoding and decoding of digital data streams.
- Be familiar with the methods for the generation of these codes and their decoding techniques.
- Be aware of compression and decompression techniques.
- Learn the concepts of multimedia communication.

Course Outcomes:

After successful completion of this course, the students should be able to

CO1: Be familiar with multimedia data types and the conversion between analogue and digital forms.
CO2: Have gained experience in the use of multimedia systems and the ability to manipulate multimedia data programmatically.
CO3: Have gained an understanding of the issues that arise when multimedia communication is attempted across the Internet.
CO4: Understand the issues that arise when designing and building multimedia systems.

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S			M				M		M		
CO2	S			M				M		M		
CO3	S			M				M		M		
CO4	S			M				M		M		

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

UNIT –I INTRODUCTION 9

Brief history of data compression applications,Overview of information theory, redundancy,Overview of human audio,visual systems aTaxonomy of compression technique overview of source coding,Sourcemodels,Scalar quantization theory,rate distribution theory,vectorquantization,structurequantizes.Evaluvation Techniques-error analysis and methodologies

UNIT-II TEXT COMPRESSION 9

Compaction techniques-Huffman coding,adaptive Huffman coding-arithmetic coding,Shannon-Fanan Coding and dictionary techniques-LZW family algorithms.Entropy-measures of performance-quality measures.

UNIT-III AUDIO COMPRESSION 9

Audio compression techniques-frequency domain and filtering-basic sub band coding-application to speech coding-G 722-application to audio coding-MPEG audio, progressive encoding for audio-silence compression,speech compression techniques-voice overs.

UNIT-IV IMAGE COMPRESSION 9

L	T	P	C
3	0	0	3

Predictive techniques-PCM,DPCMDM,Contour based compression,pyramid based compression-quad trees,EPIC,SPIHT,Transform coding, JPEG,JPEG-2000,JBIG

UNIT-V VIDEO COMPRESSION 9

Video signal representation, video compression techniques-MPEG,estimation techniques- H.261, Overview of wavelet based compression and DVI technology, motion video compression,PLVperformance,DVI real time compression.

TOTAL PERIOD=45

Reference

1. *Z.N. Li and M.S. Drew, Fundamentals of Multimedia. Prentice Hall, 2003.*
2. *K. Jeffay and H. Zhang, Readings in Multimedia Computing and Networking. Morgan Kaufmann, 2002.*

MIT011 E-COMMERCE

Course Objectives:

- Acquaint students with a fundamental understanding of the environment and strategies in the New Economy.
- Provide analytical tools to understand opportunities in unserved or underserved New Economy markets.
- Provide a fundamental understanding of the different types and key components on business models in the New Economy.
- Provide guiding principles behind the design and strategy of the customer web interface.

Course Outcomes:

After successful completion of this course, the students should be able to

CO1 : Understand the components and roles of the Electronic Commerce environment.
CO2 : Understand how businesses sellproducts and services on the Web.
CO3 : Describe the qualities of an effective Web business presence.
CO4 : Describe E-Commerce paymentsystems.
CO5 : Explain how to meet the needs of Web site visitors.
CO6 : Identify and reachcustomers on the Web.

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1			S	S	S	S			S	S		

CO2			S	S	S	S			S	S		
CO3			S	S	S	S			S	S		
CO4			S	S	S	S			S	S		
CO5			S	S	S	S			S	S		
CO6			S	S	S	S			S	S		

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

UNIT-I INTRODUCTION & NETWORK INFRASTRUCTURE 9

Introduction-Framework-ecommerce applications, network infrastrucuture: infrastructure for network E-commerce- Internet as a network infrastructure business of internet commercialization

UNIT-II NETWORK SECURITY & PAYMENT SYSTEM 9

Network security and firewalls E-commerce & www consumer oriented E-commerce electronic payment systems.

UNIT-III INTER AND INTRA ORGANIZATIONAL & MARKETING ON THE INTERNET 9

Inter and intra organizational marketing E-commerce-EDI implementation –MIME Value- Added Networks-Corporate digital library- Advertising and marketing on the internet.

UNIT-IV SOFTWARE AGENTS 9

Consumer search and resource delivery-on demand education and digital copyright software agents - the internet protocols siuts

UNIT-V MULTIMEDIA BROADBAND AND WIRELESS COMPUTING FUNDAMENTALS9

Multimedia and digital video- Broadband telecommunication –mobile and wireless computing fundamentals-structured documents.

TOTAL PERIOD=45

TEXT BOOKS;

1. *Bharat Bhasker. (2013) Electronic Commerce: Framework, Technologies and Applications, McGraw Hill*
2. *Angwin, J. 2014. Dragnet Nation: A Quest for Privacy, Security, and Freedom in a World of Relentless Surveillance. Times Books.*
3. *Liebana-Cabanillas, 2014. Electronic Payment Systems for Competitive Advantage in E-Commerce. Business Science Reference*
4. *Schmidt E, and Cohen, J 2014. The New Digital Age: Transforming Nations, Businesses, and Our Lives. Vintage*
5. *Stone, B. 2013. The Everything Store: Jeff Bezos and the Age of Amazon. Random House*
6. *Swilley, E, 2014. Mobile Commerce: How It Contrasts, Challenges and Enhances Electronic Commerce*

L	T	P	C
3	0	0	3

MIT012 GRID COMPUTING

Course Objectives:

- To understand the genecise of grid computing
- To know the application of grid computing
- To understanding the technology and tool kits to facilitated the grid computing

Course Outcomes:

After successful completion of this course, the students should be able to

At the completion of this unit students will:

CO1:be able to evaluate enabling technologies such as high-speed links and storage area networks for building computer grids;
CO2:be able to utilise grid computing and clustering middleware, such as Parallel Virtual Machine (PVM), Message Passing Interface (MPI), HPC Portals, and Peer-to-Peer networks for implementing virtual super computing resources;
CO3:be able to design a grid computing application in one of the key application areas e.g. Computer Animation, E-Research;
CO4:be able to install a grid computing environment;
CO5:develop communications skills and accept the code of professional conduct and practice through short presentations and group work.

CO/PO Mapping

(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		S		S	S			M				
CO2		S		S	S			M				

CO3		S		S	S			M				
CO4		S		S	S			M				
CO5		S		S	S			M				

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

UNIT-I INTRODUCTION TO GRID COMPUTING 7

Introduction- the grid- Past, Present, and Future- Application of grid computing organizations and their roles

UNIT-II GRID COMPUTING ARCHITECTURE 8

Grid computing anatomy- Next generation grid computing initiatives- merging the Grid services architecture with Web services architecture

UNIT-III GRID COMPUTING TECHNOLOGIES 11

OGSA- sample use case that drives the OGSA platform components- OGSA and WSRF- OGSA Basic services- security standards for grid computing

UNIT-IV GRID COMPUTING TOOL KIT 10

Globus Toolkit- Versions- Architecture- GT Programming model- A sample grid services implementation

UNIT-V HIGH LEVEL GRID SERVICES 9

High level grid services- OGSA.NET middleware solution mobile OGSI.NET for grid computing on mobile devices

TOTAL PERIOD=45

TEXT BOOKS:

1. Joshy Joseph & Craig Fellenstein, Grid Computing, Pearson/PHI PTR-2003

REFERENCES:

1. *Fran Bernam, Geoffrey Fox, Anthony J G Hey, Grid Computing: Making the Global infrastructure a reality, John Wiley and sons , 2003*
2. *Ahman Abbas, Grid Computing : A Practical Guide to Technology and Applications, Charles River media, 2003*

MIT013 IMAGE PROCESSING

Course Objectives:

At the end of the course, the student will be able to:

1. Analyze general terminology of digital image processing.
2. Develop Fourier transform for image processing in frequency domain.
3. Evaluate the methodologies for image segmentation, restoration, topology, etc.
4. Implement image process and analysis algorithms.
5. Apply image processing algorithms in practical application.

Course Outcomes:

After successful completion of this course, the students should be able to

Upon completion of this course, students should demonstrate the ability

CO1: To acquire the fundamental concepts of a digital image processing system

CO2: To identify and exploit analogies between the mathematical tools used for 1D and 2D signal analysis and processing

CO3: To analyze 2D signals in the frequency domain through the Fourier transform

CO/PO Mapping

(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S									
CO2	S	S	S									
CO3	S	S	S									

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

L	T	P	C
3	0	0	3

UNIT-I **9**

The ditized image and its properties- basic concepts- image digitization- digital image properties- data structures for image analysis. Levels of image data representation traditional image data structures- hierarchial data structures- pixel brightnes transformations- Geometrical transformations.

UNIT-II **9**

Local processing- image smoothing- edge detectors- zero crossings- scale in image processing- canny edge detection parametric edge models – edge in multi spectral images –other local preprocessing operators- adaptive neigh bourhood preprocessing – image restoration- degrations- inverse filtration- wiener filtration.

UNIT-III **9**

Mathematical morphology- basic concepts- four morphological principles- binary dilations and erosion – Gray scale dilation and erosion skeltons and object marking- image data properties -Discrete image transform in image data compression-Huffman coding- truncated Huffman coding-B2 binary codes- arithematiccodings-bit plane coding- contrast area coding – Run length encoding- transform coding- JPEG and MPEG coding schemes

UNIT-IV **9**

Shape representation and description- region identification- contour base shape representation and description chain codes- simle geometric border representation fourier transforms of boundaries- boundary description using segment sequence –Bspline representation- region based shape representation and description- simple scalar region representation- Moments-Convex hull-Graph representation based on region skelton – Region decomposition region neighbourhood graphs- image understanding –Active contour models- snakes-point distribution models- semantic image segmentation and understanding- semantic region growing- Genetic image representation

UNIT-V **9**

Segmentation- thresholding-Threshold detection methods- optimal thresholding- multispectral thresholding- thresholding in hierarchial data structures- edge based segmentation- edge image thresholding- edge relaxation- border tracking- border detection as graph searching- Border detection as dynamic programming – Hough transform-Border detection using border location information. Region construction from borders region based segmentation region merging – region splitting- splitting and merging- watershed segmentation- Region growing postGrowing

TOTAL PERIOD=45

TEXT BOOKS

1. *Image processing, Analysis and Machine Vision, Milan Sonka, Vaclav Hlavac and Rodger Boyle,Vikas Publishing house, edition 2001*

REFERENCES

1. *Gonzelez R.C and Woods R.E, Digital image processing Addison- Wesley,2000*
2. *Anil K Jain, Fundamentals of digital image processing, PHI 1997*
3. *William K. Pratt, Digital image processing ,Willey inter science, 2000*

MIT014 SOFTWARE PROJECT MANAGEMENT

Course Objectives:

- Deliver successful software projects that support organization's strategic goals
- Match organizational needs to the most effective software development model
- Plan and manage projects at each stage of the software development life cycle (SDLC)
- Create project plans that address real-world management challenges
- Develop the skills for tracking and controlling software deliverables

Course Outcomes:

After successful completion of this course, the students should be able to

CO1: After completing the course Software Project Management a student is expected to be able to

CO2: participate in a software development project as a project manager,

CO3: take responsibility of a project team and project organisation,

CO4: apply theoretical knowledge on project management and software development into practice,

CO5: be well aware on ethical issues related to software project management and can apply this ethical knowledge in practical situations,

CO6:understands how different management and development practices affect software and process quality.

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1				M							S	
CO2				M							S	
CO3				M							S	
CO4				M							S	
CO5				M							S	
CO6				M							S	

L	T	P	C
3	0	0	3

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignment 3. Seminar 4. Quiz	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

5. Online Test 6. End Semester Exam	

UNIT-I **9**

Introduction to software project management- software project versus other types of project-problems-management control- stake holders- requirement specification- information and control in organization .Introduction to stepwise project planning- select –Identity scope and objective- identity project infrastructure- analyses project characteristics = product and activities-estimate effort for each activity-identify activity risk- allocate resource- review/publicize plan- exam plan and lower level of planning-Project evaluation- introduction strategic assessments technical assessments- cost benefits analysis- cash flow forecasting- cost benefit evaluation technique- risk evaluation

UNIT-II **9**

Selection of an appropriate project approach- choosing technologies- technical plan and content list-choice of process models- structured models- rapid application development- waterfall model-V-process model- spiral model- software prototyping- ways of categorizing prototypes-tools-Incremental delivery-selecting process model Software effort essensiation introduction- Where problems with over and under estimantes- basis for software estimating- software effort estimation techniques- expert judgement-Albrechi function point analysis- function points marks 2- object points procedural code oriented approach-COCOMO

Activity planning- objectives- project schedule- project and activities- sequencing and scheduling activities- network planning models- formulating a network model- using dummy activities-Representing lagged activities- adding time dimension- forward pass- backward pass- identifying the critical path- activity float- shortening project duration- identifying critical activities- precedence networks

UNIT-III **9**

Risk management- nature of risk management- Identification- analysis- reducing evaluation Z values =Resource allocation- nature of resource- requirements- scheduling critical paths- counting the cost-Resource schedule- cost schedule- scheduling sequence-Monitoring and control crating the frame work-collecting the data- visualizing the progress cost monitoring- earned value- prioritizing monitoring-change control

UNIT-IV **9**

Managing contracts- types of contracts- stages contract placements- terms of the contract management acceptance- managing people and organizing teams- organizational behavior background- selecting the right person for the job- instruction in the best methods-motivation decision making- leadership-organizational structures. Software quality- importance- defining-ISO9126- practical measures- product versus process quality management- external standards- techniques to help enhance software quality.

UNIT-V **9**

Small projects- some problems- content of a project plan PRINCE 2- An overview- BS6079 1996 an overview- euro method- an overview’’

TOTAL PERIOD=45

TEXT BOOKS

1. *Bob Hugles and Mikecotterel- Software management 2nd edition-McGraw Hill*
2. *Walker Royce- Software project management- Addison Wesley*

MIT015 SOFTWAREMETRICES

Course Objectives:

The course aims to provide:

1.knowledge of how software metrics can be used for controlling, managing and predicting the software development processes

2.a framework for software metrics activities

3.an understanding of the value of a scientific approach to software mesaurement

4.an awareness of problems related to applying software measurement

5.experiences in setting up metrics and models.

Course Outcomes:

After successful completion of this course, the students should be able to

On completion of the course the student will be able to

CO1:present and discuss the fundamentals of software measurement

CO2:professionally present, argue, discuss how software measures can be used during the software processes and be able to professionally apply them

CO3:discuss the state-of-the-art in software measurement process models and CMMI's measurement requirements

CO4:professionally present, argue, discuss the issues related to applying software measurement and how to set up measures and models

L	T	P	C
3	0	0	3

CO/PO Mapping

(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)											
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12
CO 1		S	M					M				
CO 2		S	M					M				
CO 3		S	M					M				
CO 4		S	M					M				

Course Assessment methods:

Direct	Indirect

L	T	P	C

1. Internal Tests 2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

UNIT- IMEASUREMENTS THEORY **9**

Fundamentals of Measurement- Measurements in software engineering- scope of software matrices- measurements theory- goal based framework- software measurement validation

UNIT-II DATA COLLECTION AND ANALYSIS **9**

Empirical Investigation- planning experiments- software metrics data collection- analysis methods- statistical methods

UNIT-III PRODUCTS METRICES **9**

Measurements of internet product attributes- size and structure- external product attributes- measurements of quality

UNIT-IV QUALITY METRICES **9**

Software quality metrices- product quality- Process quality- Metrices for software Maintenance- case studies of metrics program- Motorola- Hp and IBM

UNIT-V MANAGEMENT MATRICS **9**

Quality management models- Rayeigh Model- Problem tracking report (PTR) model- Reliability Growth model- Model Evaluation- Orthogonal classification

TOTAL PERIOD=45

REFERENCES:

1. *Norman E- Fentar, Share Lawrence Pflier, Software Metrics, International Thomson Computer Press, 1997*
2. *Stephen H Kin, Metric and Model in Software Quality Engineering, Addison Wesley, 1993*

MIT 016 **SOFT COMPUTING**

3	0	0	3

Course Objectives:

1. Soft computing refers to principle components like fuzzy logic, neural networks and genetic algorithm, which have their roots in Artificial Intelligence.
2. Healthy integration of all these techniques has resulted in extending the capabilities of the technologies to more effective and efficient problem solving methodologies

Course Outcomes:

After successful completion of this course, the students should be able to

Upon completion of the course, you should be able to:

CO1: Identify and describe soft computing techniques and their roles in building intelligent machines
CO2: Recognize the feasibility of applying a soft computing methodology for a particular problem
CO3: Apply fuzzy logic and reasoning to handle uncertainty and solve engineering problems
CO4: Apply genetic algorithms to combinatorial optimization problems
CO5: Apply neural networks to pattern classification and regression problems
CO6: Effectively use existing software tools to solve real problems using a soft computing approach

CO/PO Mapping
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	M									
CO2	S	S	M									
CO3	S	S	M									
CO4	S	S	M									
CO5	S	S	M									
CO6	S	S	M									

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

UNIT-1 INTRODUCTION TO SOFT COMPUTING ANF NEURAL NETWORKS 9

Evaluation of Computing- Soft computing constituents- From conventional AI to Computational intelligence- machine learning basics

UNIT-2 GENETIC ALGORITHMS 9

Introduction to Genetic Algorithms(GA)-Applications of GA Machine learning- Machine learning approach to knowledge acquisition

L	T	P	C
3	0	0	3

UNIT-3 NEURAL NETWORKS 9

Machine learning using Neural Networks- Adaptive Networks- Feed Forward networks- supervised learning neural networks- radial basis function networks- Reinforcement learning- Unsupervised learning neural networks- adaptive Resonance architecture- advance in neural networks

UNIT-4 FUZZY LOGIC 9

Fuzzy sets- Operations on fuzzy sets- Fuzzy relations- membership functions- Fuzzy rules and Fuzzy reasoning- Fuzzy interface systems- Fuzzy expert systems- Fuzzy decision making

UNIT-5 NEURO-FUZZY MODELING 9

Adaptive Neuro-Fuzzy Interface systems- coactive Neuro-Fuzzy Modeling- Classification and regression trees- Data Clustering algorithms- Rulebase Structure identification- Neuro-fuzzy Control- case studies

TOTAL PERIOD=45

TEXT BOOKS:

1. *Jyh-Shing Roger Jang, Chuen-Tsai Sun, EijiMizutani, Neuro-Fuzzy and Soft Computing, Prentice-Hall of India, 2003*
2. *George J Klir and Bo Yuan, Fuzzy Sets and Fuzzy Logic-Theory and Applications, Prentice Hall, 1995*
3. *James A Freeman and David M Skupura, Neural Network Algorithms, Applications and programming techniques, Pearson Education Press, 2003*

REFERENCES:

1. *Michel Melanie, An introduction to genetic Algorithmn, Prentice Hall, 1998*
2. *David E Goldberg, Genetic Algorithmns in search, optimization and machine learning, Addision Wesley, 1997*
3. *S, N Sivanandam, S. Sumathi and S N Deepa, Introduction To Fuzzy Logic using MATLAB, Springer, 2007*
4. *S, N Sivanandam, and S N Deepa , Introduction To Genetic Algorithmns, Springer, 2007*
5. *Jacek M Zurada, Introduction to artificial Neural Systems, PWS Publishers, 1992*

MIT 017 ENTERPRISE RESOURSE PLANNING

Course Objectives:

This subject provides students with

1.the basic concepts of ERP systems for manufacturing or service companies, and the differences among MRP, MRP II, and ERP systems;

2.thinking in ERP systems: the principles of ERP systems, their major components, and the relationships among these components;

3.in-depth knowledge of major ERP components, including material requirements planning, master production scheduling, and capacity requirements planning;

knowledge of typical ERP systems, and the advantages and limitations of implementing such systems.

Course Outcomes:

After successful completion of this course, the students should be able to

Upon completion of the subject, students will be able to

Co1: Examine systematically the planning mechanisms in an enterprise, and identify all components in AnERP system and the relationships among the components;

Co2: Understand production planning in an ERP system, and systematicallydevelop plans for an enterprise;

Co3: Use methods to determine the correct purchasing quantity and right time to buy an item, and apply these methods to material management;

Co4: Understand the difficulties of a manufacturing execution system, select a suitable performance measure for different objectives, and apply priority rules to shop floor control.

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1			M	S				M	S	S		
CO2			M	S				M	S	S		
CO3			M	S				M	S	S		
CO4			M	S				M	S	S		

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

UNIT-1 INTRODUCTION 9

Integrated management Information-Seamless Integration-Resourse management-Integrated data model-ERP and business Engineering

UNIT-II BUSINESS MODELLING 9

Building the business model-ERP implementation-an overview-customization-Precautions-ERP implementation technology

UNIT-III ERP DOMAIN 9

MPG/PRO-IFS/Avalon-Industrial and financial systems-Baan IV,SAP-Market dynamics and competitive strategy

UNIT-IV COMMERCIAL ERP 9

Introduction SAP R/3-Descriptions of SAP R/3 multi-client server solution-Open technology-User interface-Application integration

UNIT-V ARCHITECTURE 9

SAP r/3-Basic architecture concepts-The system control interface-services-presentation interface-Database interface

TOTAL PERIOD=45

REFERENCE

1. *Vinod Kumar grag& N.K VenkitaKrishnan,EnterpriseResourse Planning-Concepts and practice PH1,1998*

2. *Jose Antonio Fernandez,the SAP R/3 handbook,THM,1998]*

MIT018 ONTOLOGY AND SEMANTIC WEB

Course Objectives:

- To understand the fundamentals of ontologies.To know about the Semantic Web and the different languages used in the context ofsemantic web.
- To learn the methodologies used for ontology learning for semantic web.
- To know about ontology management and tools used for Ontology annotation.
- To comprehend the role of semantics in web services and to discuss some of thesecurity issues.

L	T	P	C
3	0	0	3

Course Outcomes:

After successful completion of this course, the students should be able to

CO1: On successful completion of the module students should be able to:

CO2:understand the rationale behind Semantic Web.
CO3:model ontologies using Resource Description Framework (RDF).
CO4:design RDF Schemas for ontologies.
CO5:model and design ontologies using Web Ontology Language (OWL).
CO6:query ontologies using SPARQL.

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1						S	M					
CO2						S	M					
CO3						S	M					
CO4						S	M					

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

UNIT I INTRODUCTION 8

Components – Types – Ontological Commitments – Ontological Categories – Philosophical Background -Sample - Knowledge Representation Ontologies – Top Level Ontologies – Linguistic Ontologies – Domain Ontologies – Semantic Web – Need – Foundation – Layers – Architecture.

UNIT II LANGUAGES FOR SEMANTIC WEB AND ONTOLOGIES 12

Web Documents in XML – RDF - Schema – Web Resource Description using RDF- RDF Properties – Topic Maps and RDF – Overview – Syntax Structure – Semantics – Pragmatics - Traditional Ontology Languages – LOOM- OKBC – OCML - Flogic Ontology Markup Languages – SHOE – OIL - DAML + OIL- OWL

UNIT III ONTOLOGY LEARNING FOR SEMANTIC WEB 12

Taxonomy for Ontology Learning – Layered Approach – Phases of Ontology Learning – Importing and Processing Ontologies and Documents – Ontology Learning Algorithms - Evaluation

UNIT IV ONTOLOGY MANAGEMENT AND TOOLS 8

Overview – need for management – development process – target ontology – ontology mapping – skills management system – ontological class – constraints – issues. – Development of Tools and Tool Suites –

Ontology Merge Tools – Ontology based Annotation Tools.

UNIT V APPLICATIONS 5

Web Services – Semantic Web Services - Case Study for specific domain – Security issues – current trends.

TOTAL PERIOD = 45

REFERENCES

1. *Asuncion Gomez-Perez, Oscar Corcho, Mariano Fernandez-Lopez "Ontological Engineering: with examples from the areas of Knowledge Management, e-Commerce and the Semantic Web" Springer, 2004*
2. *Grigoris Antoniou, Frank van Harmelen, "A Semantic Web Primer (Cooperative Information Systems)", The MIT Press, 2004*
3. *Alexander Maedche, "Ontology Learning for the Semantic Web", Springer; 1 edition, 2002*
4. *John Davies, Dieter Fensel, Frank Van Harmelen, "Towards the Semantic Web: Ontology – Driven Knowledge Management", John Wiley & Sons Ltd., 2003.*
5. *John Davies (Editor), Rudi Studer (Co-Editor), Paul Warren (Co-Editor) "Semantic Web Technologies: Trends and Research in Ontology-based Systems"Wiley Publications, Jul 2006*

MIT019 ONLINE AND REAL TIME SYSTEMS

Course Objectives:

- Real-time scheduling and schedulability analysis
- Formal specification and verification of timing constraints and properties
- Design methods for real-time systems
- Development and implementation of new techniques to advance the state-of-the-art real-time systems research

L	T	P	C
3	0	0	3

Course Outcomes:

After successful completion of this course, the students should be able to

CO1: An ability to understand advanced concepts in theory of computer science;
CO2: An ability to understand advanced concepts in applications of computer science;
CO3: An ability to apply knowledge of advanced computer science to formulate the analyze problems in computing and solve them;
CO4: An ability to learn emerging concepts in theory and applications of computer science;
CO5: An ability to design and conduct experiments as well as to analyze and interpret data; and
CO6: An ability to function in teams and to communicate effectively.

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak	
COs	Programme Outcomes(POs)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1			M	S		W			M			
CO2			M	S		W			M			
CO3			M	S		W			M			
CO4			M	S		W			M			
CO5			M	S		W			M			
CO6			M	S		W			M			

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

UNIT I INTRODUCTION 9

Terms and concepts – characteristics of some typical systems – Process Control -, Business Systems, Transaction Systems, Data Acquisition System Types of systems – simplex, Master slave, Duplexed, Shared file, Multiprocessor systems

UNIT II HARDWARE DETAILS 9

Hardware requirements – processor subsystem, Interrupts, Communication Network, Terminal sub-system, disk storage Factors in selection – System costs and specifications – Hardware configurations

UNIT III DESIGN METHEDOLOGIES 9

Design Guidelines – Operational models – Interrupt Processing. Major cycle models – Applications to messageswitching systems. Average throughout rate capability calculation using memory disk – Effect of buffer variations, variablerecord length and multi programming. Design calculations – Mathematical modeling, simulation, statistics generation using sampling and event stream approaches

UNIT IV PERFORMANCE ANALYSIS 9

Design of Data communication and terminals – Error characteristics, Error Control, Achievable throughput,Terminal calculations. Cost performance criteria and trade offs Applications – stock brokerage system, Message switching system, medical online data base system

UNIT V APPLICATION SYSTEMS 9

Application programs – concepts, objectives, modular programming, overlap of CPU and I/O, minimize disk access File organization concepts – directories buffering, simultaneous access, file security, file recoverOperating systems – functions, priority control program

REFERENCE BOOKS:

1. *Alan Burns and Andy Wellings, "Real Time Systems and Programming Languages", 3rd Edition, Addision Wesley, 2001.*

2. *C.M. Krishna ,"Real Time systems", Tata McGraw Hills publications*
3 *Jane W.S. Liu,"Real Time Systems", Pearson Education*
4. *Douglass,"Real Time UML", Pearson Education*
5. *Peckol,"Embedded System", WILEY publications*
6. *Stuart bennet, "Real Time Computer control, An Introduction " Pearson Publications*
7. *C. Sivraman Murthy and G.Maniraman, "Resource Management in real time systems andNetwork" MIT ISBN – 51-203-2682-2*

MIT020 VIRTUALIZATION TECHNIQUES

Course Objectives:

- Introduce Virtualization and Cloud Computing concepts and technologies
- Provide information on networked storage for virtualization infrastructure needs
- Provide hands-on laboratory exercises on storage and virtualization

L	T	P	C
3	0	0	4

Course Outcomes:

After successful completion of this course, the students should be able to

CO1: Outline the fundamental concepts and techniques of layer 2 switching including Virtual LANs (VLANS).
CO2: Configure, verify, and troubleshoot VLANs.
CO3: Configure and deploy Advanced IP services such as NAT, PAT and DHCP.
CO4: Implement and configure network, access, resource monitoring and data protection tasks in a virtualised environment.
CO5: Discuss the benefits and requirements for achieving scalability and high availability in data centre virtualisation solutions.
CO6: Design, create and manage virtualised environments.

CO/PO Mapping

(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		S				M						
CO2		S				M						
CO3		S				M						
CO4		S				M						
CO5		S				M						
CO6		S				M						

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

UNIT I OVERVIEW OF VIRTUALIZATION 9

Basics of Virtualization – Types of Virtualization Techniques – Merits and demerits of Virtualization – Full Vs Para-virtualization – Virtual Machine Monitor/Hypervisor - Virtual Machine Basics – Taxonomy of Virtual machines – Process Vs System Virtual Machines – Emulation: Interpretation and Binary Translation - HLL Virtual Machines

UNIT II SERVER AND NETWORK VIRTUALIZATION 9

Server Virtualization: Virtual Hardware Overview - Server Consolidation – Partitioning Techniques - Uses of Virtual server Consolidation – Server Virtualization Platforms, Network Virtualization: Design of Scalable Enterprise Networks – Layer2 Virtualization – VLAN - VFI - Layer 3 Virtualization – VRF - Virtual Firewall Contexts - Network Device Virtualization - Data- Path Virtualization - Routing Protocols

UNIT III STORAGE, DESKTOP AND APPLICATION VIRTUALIZATION 9

Storage Virtualization: Hardware Devices – SAN backup and recovery techniques – RAID –
Classical Storage Model – SNIA Shared Storage Model – Virtual Storage: File System Level and
Block Level, Desktop Virtualization: Concepts - Desktop Management Issues - Potential Desktop Virtualization Scenarios - Desktop Virtualization Infrastructures,

UNIT IV APPLYING VIRTUALIZATION 9

Practical Virtualization Solutions: Comparison of Virtualization Technologies: Guest OS/ Host OS – Hypervisor – Emulation – Kernel Level – Shared Kernel, Enterprise Solutions: VMWare Server – VMWare ESXi – Citrix Xen Server – Microsoft Virtual PC – Microsoft Hyper-V – Virtual Box, Server Virtualization: Configuring Servers with Virtualization – Adjusting and Tuning Virtual servers – VM Backup – VM Migration, Desktop Virtualization: Terminal services – Hosted Desktop – Web-based Solutions – Localized Virtual Desktops, Network and Storage Virtualization: Virtual Private Networks – Virtual LAN – SAN and VSAN – NAS

UNIT V CLOUD COMPUTING 9

Cloud Computing Basics - Cloud Computing Definition – Evolution of Clod Computing - General Cloud Environments – Cloud Services – Service Providers – Google – Amazon – Microsoft – IBM – EMC – NetApp - Salesforce – Tools for building private cloud - Open Issues in Cloud Computing – Cloud security challenges, Cloud Programming: Hadoop - MapReduce – HDFS – Hadoop I/O – Developing a MapReduce Application

TOTALPERIODS : 45

REFERENCES:

1. *Danielle Ruest, Nelson Ruest - Virtualization: A Beginner's Guide, TMH, 2009*
2. *James E. Smith, Ravi Nair, - Virtual Machines: Versatile Platforms for Systems and Processes, Elsevier/Morgan Kaufmann, 2005.*
3. *David Marshall, Wade A. Reynolds, - Advanced Server Virtualization: VMware and Microsoft Platform in the Virtual Data Center, Auerbach Publications, 2006.*
4. *Kumar Reddy, Victor Moreno, - Network virtualization, Cisco Press, July, 2006.*
5. *Chris Wolf, Erick M. Halter, - Virtualization: From the Desktop to the Enterprise, APress 2005.*

MIT021 FINANCIAL PROJECT MANAGEMENT

Course Objectives:

L	T	P	C
3	0	0	3

- Present financial management as an analytical process.
- Understand ratio analysis and the importance of EVA and FCF's.
- Introduce risk and rates of return in decision-making.
- Understand the time value of money.
- Learn to calculate the cost of funds to an organization.
- Introduce and understand the capital budgeting process.
- Learn to forecast the amount of funds a firm requires to operate.

Course Outcomes:

After successful completion of this course, the students should be able to

CO1: Ethical & Professional Judgment

CO2: Information Literacy and Computer Skills

CO3: Creative and Critical Thinking

CO4: Field Specific Knowledge and Experience

CO5: Creation of Value

CO6: Statistical Data Analysis

CO/PO Mapping

(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1			M								S	
CO2			M								S	
CO3			M								S	
CO4			M								S	
CO5			M								S	
CO6			M								S	

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

L	T	P	C

UNIT I **9**

Values- Cost and capital Investment Foundations- Fundamentals of Value Driven Software Engineering- Identifying and Assessing Customer Valued Features

UNIT II **9**

Understanding Software Architecture Economics, Specifying Value Maximizing Chronology, Incorporating Concurrent Development Strategies ,

UNIT III **9**

Managing & Accounting For Intangibles, Enhancing the Unified Process, Fundamentals Of Value Driven Software Engineering, Identifying &Assessing Customer Valued Features, Understanding Software Architecture Economics,

UNIT IV **9**

Specifying Value Maximizing Chronology, Incorporating Concurrent Development Strategies, Managing & Accounting For Intangibles, Enhancing the Unified Process.

UNIT V **9**

CA 1 Case Study Assignment Presentation, Crafting The Business Case(Dave), CA2 M.Tech Project Assignment Presentation, Value, Cost &Capital Investment Foundations,

TOTAL PERIODS : 45

Reference Books :

1. *Software Engineering as a Business*
2. *Value Based software Engineering*
3. *Value Based Software Engineering: Reinventing "Earned Value Monitoring & Control"*
4. *Business Driven Product Planning Using Feature Vector and Increments*
5. *Making Architecture Design Decisions: An Economic Approach.*

MIT022 **IT SERVICE MANAGEMENT**

3	0	0	3

Course Objectives:

- To understand the meaning of project management
- To understand the difference between operations and projects
- To understand the importance of project management as it effects strategy and business success
- To be aware of past performance on projects
- To be familiar with project management history
- To be familiar with the planning and execution phases of a project

Course Outcomes:

After successful completion of this course, the students should be able to

CO1:A deep preparation in the disciplines necessary for developing solid managerial strategies
CO2: Quantitative methods and techniques for assessing competition and market dynamics, for developing effective strategies (in terms of cost and value) and measuring their outcomes
CO3:capability to identify critical aspects and solve problems in international operations
CO4:A critical approach to the most recent service management issues and tools
CO5: Ability to work in team and to assess practical business cases
CO6: Capability to make successful oral presentations
CO7: Competencies for writing reports and other relevant documents for implementing or supporting managerial decisions.

CO/PO Mapping

(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak

COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1						M			S		S	
CO2						M			S		S	
CO3						M			S		S	
CO4						M			S		S	
CO5						M			S		S	
CO6						M			S		S	
CO7						M			S		S	

Course Assessment methods:

Direct	Indirect
1. Internal Tests 2. Assignment 3. Seminar 4. Quiz 5. Online Test 6. End Semester Exam	1.Course & Survey 2. Faculty Survey 3. Industry 4. Alumni

UNIT 1 INFORMATION SYSTEMS **9**

Information systems components - Organisations and management -The information system as a sociotechnical system -The strategic use of Information Technology -management information systems - Informational needs of organisations -Capabilities of information systems from an organisational perspective -Information requirements for management -Levels of planning and control with MIS - MIS support for business functions -Management reporting systems and transaction processing systems

UNIT II SYSTEMS AND MANAGEMENT CONCEPTS 9

Systems approach, organisational design, MIS in organisational control -Management theory and management functions -Concepts of planning -Role of information systems in the planning -Using MIS to enhance management control: performance reports, break-even analysis, calculation of financial ratios-managerial decision making -Decision-making -Components of Decision Support Systems -Types of DSS-Building a DSS -Executive Information Systems -Organisational aspects of DSS and EIS

UNIT III CULTURAL DIMENSION OF INFORMATION SYSTEMS DEVELOPMENT 9

Factors of organisational complexity in relation to information systems development -Human aspects of information systems - Contribution of system development approaches (such as Soft Systems Methodology -Measures of performance to cover performance factors and service level agreements - Departmental and project budgets, including specific reference to training costs

UNIT IV PRINCIPLES OF PROFESSIONALISM 9

Professional concepts in relation to professional practices- Business ethics. acquisition of software, hardware, media and consumables -Specification of hardware and software configurations and systems - Implications of throughput, resilience and reliability -Alternatives, costs and solutions -Selection criteria, acquisitions, purchase, hire or lease, facilities management -installation and site planning, security and external threats -Planning, scheduling and co-ordinating contractors, suppliers and services -Progress control and monitoring -Installation, test planning, acceptance criteria and trials-Implications of throughput, resilience and reliability -Workload -External threats and strategies to limit their effect
Security

UNIT V APPLICATIONS AND SYSTEM REQUIREMENTS 9

Distributed, intelligent systems, electronic mail -Communication Networks -Intelligent office - Characteristics of telecommunication systems -Software production -Control of data - Operating system facilities

TOTALPERIODS: 45

References:

1. *McNurlin& Sprague, Information Systems Management in Practice, Prentice Hall (7thEd), 2005, ISBN: 0131968777*
2. *Fidler C. &Rogerson S., Strategic Management Support Systems, Financial Times Management, 1996, ISBN: 0273614185*
3. *Bott M. F., Professional Issues in Information Technology, The British Computer Society, 2005, ISBN: 1902505654 and 9781902505657*
4. *Holt, J and Newton, J., A Manager's Guide to IT Law, BCS, 2004, ISBN: 1902505557 and 9781902505558*

5. *BS ISO/IEC 17799 Information Technology, Security Techniques: Code of Practice for Information Security Management, British Standards Institute, ISBN: 0580462625*