YESHWANTRAO CHAVAN COLLEGE OF ENGINEERING
Department of Information Technology

SCHEME OF EXAMINATION

Sr. No.	Sub Code	Subject	L	T	P	Total Contact Hours	Credits	MSE-I	MSE-I	TA	ESE	ESE Duration Hrs.
SEMESTER VII												
1	IT401	Computer Networks	3	1	0	4	4	15	15	10	60	3 Hrs
2	IT402	Computer Networks lab.	0	0	2	2	1			40	60	
3	IT403	Principles of Compiler Design	3	1	0	4	4	15	15	10	60	3 Hrs
4	IT404	Principles of Compiler Design Lab.	0	0	2	2	1			40	60	
5		Prof. Elective 4	4	0	0	4	4	15	15	10	60	3 Hrs
6		Free Elective 2	4	0	0	4	4	15	15	10	60	3 Hrs
7	IT409	Seminar/Industrial Visit	0	0	0	2	3			100		
8	IT410	Project Phase-I(Analysis & Design)	0	0	4	4	4			40	60	
		Total	14	2	8	26	25					

	IT405	PE4: Pattern Recognition	4	0	0	4	4	15	15	10	60	3 Hrs
	IT406	PE4: Distributed and Object Oriented Databases	4	0	0	4	4	15	15	10	60	3 Hrs
	IT407	PE4: Real Time Systems	4	0	0	4	4	15	15	10	60	3 Hrs

	EL412	FE 2 : Electrical Energy Audit and Safety	4	0	0		4	15	15	10	60	
	EL413	FE 2: Utilisation of Electrical Energy	4	0	0		4	15	15	10	60	
	CV418	FE 2 : Elements of Earthquake Engineering	4	0	0	4	4	15	15	10	60	
	CV419	FE 2 : Air Pollution & Solid Waste Management	4	0	0	4	4	15	15	10	60	
	ET411	FE2 : Soft Computing	4	0	0	4	4	15	15	10	60	
	ET412	FE2 : Industrial Instrumentation	4	0	0	4	4	15	15	10	60	
	ME429	FE 2 : Total Quality Management	4	0	0	4	4	15	15	10	60	
	ME430	FE 2 : Reliability Engineering	4	0	0	4	4	15	15	10	60	
	EE411	FE 2 :Fuzzy Logic & Neural Network	4	0	0	4	4	15	15	10	60	
	EE429	FE 2 :Basic of Analog and Digital Communication Systems	4	0	0	4	4	15	15	10	60	
SEMESTER VIII												
1	GE402	Project Management	3	0	0	3	3	15	15	10	60	3 Hrs
2	IT411	Data Warehousing & Mining	3	1	0	4	4	15	15	10	60	3 Hrs
3	IT412	Data Warehousing & Mining Lab	0	0	2	2	1			40	60	
4		Prof. Elective 5	4	0	0	4	4	15	15	10	60	3 Hrs
5		Prof. Elective 5 Lab	0	0	2	2	1			40	60	
6		Prof. Elective 6	4	0	0	4	4	15	15	10	60	3 Hrs
7	IT424	Project Phase-II (Implementation)	0	0	6	6	6			40	60	
8	IT425	Comprehensive Viva Voce					3			40	60	
9	IT426	Extra Curricular / Compentative Exm.	0	0	0	0	2			100		
		Total	14	1	10	25	28					

	IT413	PE5: Digital Signal Processing	4	0	0	4	4	15	15	10	60	3 Hrs
	IT414	PE5: Digital Signal Processing Lab.	0	0	2	2	1			40	60	
	IT415	PE5: Neural Networks and Fuzzy Logic	4	0	0	4	4	15	15	10	60	3 Hrs
	IT416	PE5: Neural Networks and Fuzzy Logic Lab.	0	0	2	2	1			40	60	
	IT417	PE5: TCP/IP	4	0	0	4	4	15	15	10	60	3 Hrs
	IT418	PE5: TCP/IP Lab	0	0	2	2	1			40	60	
	IT419	PE5: Software Testing	4	0	0	4	4	15	15	10	60	3 Hrs
	IT420	PE5: Software Testing Lab	0	0	2	2	1			40	60	

	IT421	PE6: Distributed Systems	4	0	0	4	4	15	15	10	60	3 Hrs
	IT422	PE6: Network Security	4	0	0	4	4	15	15	10	60	3 Hrs
	IT423	PE6: Human Computer Interaction	4	0	0	4	4	15	15	10	60	3 Hrs

Chairperson		Date of Release	MAY 2013	Applicable for	
Dean (Acad. Matt.)		Version	1.03	AY 2013-14 Onwards	

IT401	Computer Networks		L=3	T=1	P=0	Credits=4
Evaluation	MSE-I	MSE-II	TA	ESE	Total	ESE Duration
Scheme	15	15	10	60	100	3 Hrs.

OBJECTIVES: -

1. To master the terminology and concepts of the OSI reference model and the TCP-IP reference model and types of computer networks .

2. To study the concepts of protocols, network interfaces, and design/performance issues in   local area networks.

3. To understand the basic knowledge of hardware, software and types of transmission media used in computer networks.

4. To know the various data link layer protocols used in networks.

5. To become familiar with IP Addressing and routing algorithms.

6. To understand the basics of Internet, its applications and network security.

UNIT I   **[05 Hrs.]**

Introduction: The use of computer networks, LAN's, MAN's, WAN's. topologies and their characteristics, wireless networks, protocol hierarchies, design issues for layers, interfaces and services, connection oriented and connectionless services, service primitives relationship of services to protocols. The OSI reference model. TCP/IP reference model, Comparison of OSI & TCP/IP reference model, x.25 network, frame relay, Asynchronous transfer mode.

UNIT II   **[05 Hrs.]**

Physical layer: theoretical basis for data communication, Guided transmission media, wireless transmission: electromagnetic spectrum, radio transmission, infrared transmission. Communication satellites: orbits, satellites Vs. fibers. Switching techniques: circuit, packet and message, virtual circuits and datagram. Mobile telephone system: I, II and III generation.

UNIT III   **[07 Hrs.]**

Data link layer: design issues, error detection and correction codes, sliding window protocols.
Medium access layer: channel allocation problems, multiple access protocols: ALOHA, CSMA, collision free protocols, limited contention protocols, Ethernet MAC sublayer.
Data link layer switching: local internetworking, repeaters, hubs, bridges, switches, routers and gateways, virtual LAN.

UNIT IV   **[09 Hrs.]**

Network layer: design issues, Classful and classless Internet Addresses, subnet addressing, implementation of subnet with mask, supernetting, Address block and CIDR notation, examples.
Routing algorithms, congestion control algorithms, quality of service, internetworking, network layer in Internet: IP protocol, Internet control protocols, OSPF, BGP, Internet multicasting.

UNIT V   **[08 Hrs.]**

Transport layer: services, elements of transport protocol, User Datagram Protocol (UDP), Reliable Stream Transport Service (TCP), TCP connection establishment and release, flow control in TCP, TCP segment format. Performance issues: performance problems in networks, network performance measurement

UNIT VI   **[06 Hrs.]**

Application layer : DNS, remote logging, Electronic mail, file transfer, world wide web, HTTP
Network security: cryptography, introduction to symmetric and public key algorithms, digital signatures, authentication protocols, e-mail and web security.

Chairperson		Date of Release	May 2013	Applicable for AY 2013-14 Onwards
Dean (Acad. Matters)		Version	1.00	

| IT401	Computer Networks		L=3	T=1	P=0	Credits=4
Evaluation	MSE-I	MSE-II	TA	ESE	Total	ESE Duration
Scheme	15	15	10	60	100	3 Hrs.

Course Outcomes:
1. Distinguish between various types of computer networks.
2. Demonstrate basic understanding of hardware , software and types of transmission media used in computer networks.
3. Describe the concept of various protocols used in data link layer.
4. Demonstrate the knowledge of adaptive and nonadaptive routing algorithms.
5. Understand the concept of Quality of Service provided by the transport layer.
6. Apply basic knowledge cryptography techniques for network security.

Program outcome mapped: a, b, e, i, m

Text books:				
1	Computer Networks	5th Edition	Andrew Tanenbaum	Pearson Prentice Hall
2	Data Comminication & Networking	Fourth Edition (2007)	Behrouz Forouzan	TMH

Reference books:				
1	Data & Computer Communication	8th Edition	William Stallings	PHI
2	Internetworking with TCP/IP	5th Edition	Douglas Comer	Prentice Hall of India.
3	TCP/IP protocol Suite	4th Edition	Behrouz Forouzan	TMH

Chairperson		Date of Release	May 2013	Applicable for AY 2013-14 Onwards
Dean (Acad. Matters)		Version	1.00	
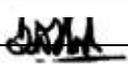
IT403	Principles of Compiler Design	L=3	T=1	P=0	Credits=4	
Evaluation Scheme	MSE-I	MSE-II	TA	ESE	Total	ESE Duration
	15	15	10	60	100	3 Hrs.

OBJECTIVES: -
1. To understand the process of Compilation. Learn different types of Parsing technique.
2. To learn design and implementation of different types of parsers. Learn intermediate code generation, code optimization and code generation.

UNIT I **[05Hrs.]**
Introduction to Compilation Process, Compilers & Translators, Phase structure of Compiler, Design of Lexical Analysis.

UNIT II **[8 Hrs.]**
Specifying Syntactic Structure of Programming Language using Context Free Grammars, The role of Parser, Top-down Parsing, and Bottom up Parsing, Predictive Parsers, and Recursive Decent Parser.

UNIT III **[7 Hrs.]**
Construction of efficient LR Parsers (SLR, CLR & LALR), Canonical Collection of set of items and construction of Parsing table, Implementation of LR Parsing table.

UNIT IV **[8 Hrs.]**
Syntax Directed Translation: Intermediate Code, Postfix notation, Parse tree and Syntax Trees, Three address codes, quadruples, triples, Translation of Arithmetic Expression, Boolean expressions, Control Statements. Array references, Procedure Calls, Declarations, Case Statements, Use of Compiler writing tools (Lex/Flex, Yacc /Biason).

UNIT V **[6 Hrs.]**
Symbol Tables: Contents, Representing scope information. Error detection and Recovery: Error handling, Lexical-phase, Syntactic phase and semantic phase.

UNIT VI **[8 Hrs.]**
Introduction to Code Optimization, The principle sources of optimization, Loop optimization, The DAG representation, Introductory Data Flow analysis, Introduction to Code Generation: Object programs, Problems in Code Generation, Register allocation and assignment, Code generation from DAG, Peephole optimization.

Note: Practical based on the above syllabus

Course Outcomes: The Students will be able to
1) Build lexical analyzers and use them in the construction of parsers; express the grammar of a programming language; build syntax analyzers and use them in the construction of parsers.
2) Understand and explain the main techniques and algorithms used in compilers.
3) Describe the runtime structures used to represent constructs in typical programming languages.
4) Use compiler construction tools, such as parser generators, to build a simple compiler.

Program outcome mapped: b, c, i, k, l

Text books:				
1	Compilers Principles, Techniques & Tools	2nd Edition	Alfred V. Aho , Ravi Sethi , Jeffrey D. Ullman	Addison Wesley
2	Compiler Design	4th edition	O.G. Kakde	Laxmi Publication

Chairperson		Date of Release	May 2013	Applicable for AY 2013-14 Onwards
Dean (Acad. Matters)		Version	1.00	

IT403	Principles of Compiler Design	L=3	T=1	P=0	Credits=4	
Evaluation Scheme	MSE-I	MSE-II	TA	ESE	Total	ESE Duration
	15	15	10	60	100	3 Hrs.

Reference books:

1	Principles of Compiler Design	2nd Edition	Alfred V. Aho ,Jeffrey D. Ullman	Addison-Wesley
2	Introduction to Compiling Techniques: First Course Using ANSI C, Lex and YAAC	2nd edition, 1996	J.P. Bennett	McGraw-Hill Companies

Chairperson		Date of Release	May 2013	Applicable for AY 2013-14 Onwards
Dean (Acad. Matters)		Version	1.00	

IT405	Pattern Recognition	L=4	T=0	P=0	Credits=4
Evaluation Scheme	MSE-I	MSE-II	TA	ESE	Total	**ESE Duration**
	15	15	10	60	100	3 Hrs.

OBJECTIVES:

The subject gives a review of the pattern classification and recognition from the mathematical point of view and at the same time, applies the methods to several areas of signal processing.

The structure of the general problem of pattern recognition (i.e., pre-processing, feature extraction and classification), can be applied to different areas, such as quality control, biomedical applications and diagnosis, communication systems, image processing, and speech recognition.

UNIT I   **[05 Hrs.]**

Machine perception, Components of Pattern recognition systems, the design cycle, learning and adaptation, Statistical Decision Theory.

UNIT II   **[08 Hrs.]**

Probability-probabilities of events, random variables, joint distribution & densities, moments of random variables, estimation of parameters from samples, minimum risk estimators.

UNIT III   **[06 Hrs.]**

Statistical Decision Making, Baye's Theorem, Decision boundaries, estimation of error rates.

UNIT IV   **[08 Hrs.]**

Non parametric decision Making-Histograms, kernel and window estimators, nearest neighbor classification techniques, adaptive decision boundaries, adaptive discriminate functions, minimum squared error, estimation functions, choosing a decision making technique.

UNIT V   **[07 Hrs.]**

Clustering-Introduction, hierarchical clustering, partition clustering.

UNIT VI   **[07 Hrs.]**

Problem of dimensionality, Principal component analysis, First order Hidden Markov models, Applications of Pattern Recognition.

Course Outcomes:

1. To understand the basic principles of pattern recognition system.
2. To understand the probabilistic distributions and to estimate the parameters of the density from the data available in the training samples.

3. To understand the parametric classification/ decision making concept and to determine the optimal boundary between two classes.
4. To comprehend the non-parametric classification/ decision making concept and to choose an appropriate decision making technique for solving the classification given problem.
5. To understand basic principles of different clustering methods and to select appropriate method for solving the given classification problem.
6. To understand the problem of feature dimensionality, Principal Component Analysis and Hidden Markov Models to design efficient and cost effective Pattern Recognition Systems.

Program outcome mapped: a, c, e

Text books:				
1	Pattern recognition & Image processing	2003	EarlGose, Richard Johnsonbaugh& Steve Jost	Pearson Education.
Reference books:				
1	Pattern Classification	2006, 2nd Edition	RichardDuda, Peter Hart and David G. Stork	Wiley

Chairperson		Date of Release	May 2013	Applicable for AY 2013-14 Onwards
Dean (Acad. Matters)		Version	1.00	
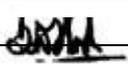
IT406	Distributed and Object Oriented Databases	L=4	T=0	P=0	Credits=4	
Evaluation	MSE-I	MSE-II	TA	ESE	Total	ESE Duration
Scheme	15	15	10	60	100	3 Hrs.

OBJECTIVES: -

1. Explain the features of distributed databases and object oriented databases.
2. Describe the characteristics of variety of distributed database environments
3. Outline the steps involved in processing a query in a distributed and object oriented database and several approaches used to optimize query processing.
4. provide a grounding in object-oriented database design and distributed database design
5. Compare and contrast the relational database with object-oriented and distributed database.

UNIT I [08 Hrs.]

Distributed database concepts: Distributed database management systems-Review of databases and computer networks, Advantages and disadvantages of DDBMSs, Homogeneous and heterogeneous DDBMSs, references architecture,Component Architecture.Distributed relational database design:Data allocation, fragmentation, Transparencies in DDBMS:Distribution transparency for read only applications and update applications, levels of distribution transparency, Distributed database access primitives and integrity constraints.

UNIT II [07 Hrs.]

Distributed database design: A frame work for distributed database design, the design of database fragmentation, the allocation of fragments, translation global queries to fragment queries, equivalence transformation for queries, transforming   global queries into fragment queries, distributed grouping and aggregate function evaluation, parametric queries.

UNIT III [07 Hrs.]

Distributed Query Optimization: Query optimization, distributed query transformation, distributed joins, computation of join costs and access costs.

UNIT IV [08 Hrs.]

Transaction and concurrency control: Concurrency control: concept of two phase commit protocol, Resolving distributed transaction, concept of replication, snapshot on replication and multimaster replication, conflict resolution in multimaster replication concurrency control and database recovery in distributed database.

UNIT V [08 Hrs.]

Object Oriented DBMS: concepts and architectures : Characteristics of an object-oriented data model, object schemas, class-subclass relationship, Similarities & differences between OODM and other data models , ADTs ,object identity, nested collections, Features of an object-oriented databases management system, OODBMS architecture, performances issues in OODBMS,Object definition language and object query language.
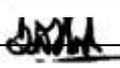
UNIT VI [07 Hrs.]

Object Relational DBMS : Introduction to Object Relational Database system , Comparison of RDBMS, ODBMS, ORDBMS. Object oriented extensions in oracle: user defined data types ,manipulating object tables, object views.

Course outcomes

After the end of the course students should be able to :

1. Compare and contrast the relational database with object-oriented and distributed database.
2. Describe the characteristics of variety of distributed database environments
3. Outline the steps involved in processing a query in a distributed database and several approaches used to optimize query processing.
4. Introduce object databases, databases that handle complex data types.
5. differentiate between object oriented databases and object-relational databases

Program outcome mapped: e, k, m

Chairperson		Date of Release	May 2013	Applicable for AY 2013-14 Onwards
Dean (Acad. Matters)		Version	1.00	

IT406	Distributed and Object Oriented Databases		L=4	T=0	P=0	Credits=4
Evaluation Scheme	MSE-I	MSE-II	TA	ESE	Total	ESE Duration
	15	15	10	60	100	3 Hrs.

Text books:

1	Distributed data bases principle and systems	1984	Ceri&Pelagatti	McGraw Hill Pub
2	Object Oriented Databases System –Approaches & Architectures	2nd revised edition	C.S.R. Prabhu	PHI Pub.
3	Database systems A practical approach to design, implementation and management	5th Edition	Thomas Connolly, Carolyn Begg	Pearson education
4	Fundamental of Databases System	5th Edition (2006)	Elmasri& S.B. Navathe	Pearson pub.

Reference books:

1	Databases System – Design Implementation & Management		Peter rob & Carlos Coronel	Course Tech.
2	Databases Management Systems		Raghu Rmakrishnan& Johannes Gehrke	McGraw Pub.

Chairperson		Date of Release	May 2013	Applicable for AY 2013-14 Onwards
Dean (Acad. Matters)		Version	1.00	
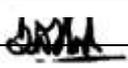
IT407	Real Time Systems	L=4	T=0	P=0	Credits=4
Evaluation	MSE-I	MSE-II	TA	ESE	Total	ESE Duration
Scheme	15	15	10	60	100	3 Hrs.

OBJECTIVES: -
1. To learn the concepts of Real Time Systems.
2. To study the different design issues of Real Time Systems.
3. To study the techniques for scheduling, resource access control and validation.
4. Provide experience in the implementation of typical algorithms used in real time systems.

UNIT I [06 Hrs.]
Introduction to real time systems: Digital control, high-level controls, signals processing, real time applications. **Hard and soft real time system** : Jobs & processors, release times, deadlines, timing, constraint, Hard & Soft timing constraint, Hard real time systems , soft real time systems. Modeling of real time systems.

UNIT II [06 Hrs.]
Approach to real time scheduling : Clock-driven approach, weighted round-robin approach, priority-driven approach, dynamic versus static systems, effective release times and deadlines, optimality of EDF & LST algorithms, non optimality of the EDF & LST, challenges in validating timing constraints in priority-driven systems, off line versus on-line scheduling.

UNIT III [07 Hrs.]
Clock driven scheduling : notation & assumptions, static timer-driven scheduler, general structure of cyclic schedules, cyclic executives, improving the average response time of a periodic jobs, scheduling sporadic jobs, practical consideration and generalizations, algorithms for constructing static schedules, pros-cons of clock-driven scheduling.

UNIT IV [08 Hrs.]
Priority-driven scheduling: Static assumptions, fixed-priority versus dynamics priority algorithms, maximum schedulable utilization, optimality of the RM & DM algorithms, a schedulability test for fixed priority tasks with short response times & with arbitrary response times, sufficient schedulability conditions for the RM & DM algorithms.

UNIT V [08 Hrs.]
Scheduling aperiodic & sporadic jobs in priority-driven systems: assumptions & approaches, deferrable servers, sporadic servers, constant utilization, total bandwidth and weighted fair-queuing servers, slack stealing in dead-line driven systems, slack stealing in fixed-priority systems, scheduling of sporadic jobs.

UNIT VI [07 Hrs.]
Resources and resource access control : assumption on resources and their usage, effects of resource contention & resource access control, non preemptive critical sections, basic priority-inheritance protocol, basic priority-ceiling protocol, stack-based priority –ceiling protocol, use of priority-ceiling protocol in dynamic-priority systems, preemption-ceiling protocol, controlling accesses to multiple-unit resources, controlling concurrent accesses to data object.

Chairperson		Date of Release	May 2013	Applicable for AY 2013-14 Onwards
Dean (Acad. Matters)		Version	1.00	
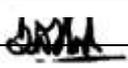
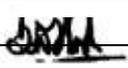| IT407	Real Time Systems		L=4	T=0	P=0	Credits=4
Evaluation	MSE-I	MSE-II	TA	ESE	Total	ESE Duration
Scheme	15	15	10	60	100	3 Hrs.

Course outcomes

After the end of the course students should be able to :

1. Understand the basics and importance of real-time systems
2. Generate a high-level analysis document based on requirements specifications
3. Generate a high-level design document based on analysis documentation
4. Generate a test plan based on requirements specification
5. Generate a validation plan based on all documentation
6. Understand basic multi-task scheduling algorithms for periodic, aperiodic, and sporadic tasks as well as understand the impact of the latter two on scheduling
7. Understand capabilities of at least one commercial off-the-shelf R-T kernel
8. Participate in a team design project, utilizing varying skill sets of members.

Program outcome mapped: b, c, d, f, d, h

Text books:				
1	*Real Time Systems*		Jame W.S.Liu	Pearson education
Reference books:				
1	*Real Time Systems*		C.M. Krishna & Kang G. Shin	McGraw Pub.

Chairperson		Date of Release	May 2013	Applicable for AY 2013-14 Onwards
Dean (Acad. Matters)		Version	1.00	

IT408	Applications of Computer Networks	L=4	T=0	P=0		Credits=4
Evaluation	MSE-I	MSE-II	TA	ESE	Total	ESE Duration
Scheme	15	15	10	60	100	3 Hrs.

OBJECTIVES: -

1. To understand the concepts in Computer Networking.
2. To understand the OSI and TCP/IP reference model.
3. To understand various networking devices and its functions.
4. To understand basic networking protocols
5. To understand the basics of Internet and its applications and security threats

UNIT I [07Hrs.]

Introduction: Overview of a Network: Terminal, Growth of Computer Networking, Computer Networking devices: Hubs, switches, routers, repeaters, modems, NIC, Types of Networks: Local Area Network(LAN),Wide Area Network(WAN) and MAN, Network Architecture: Peer-to-peer Architecture, Client/Server Architecture.

UNIT II [07 Hrs.]

LAN Topologies: Star Topology, Ring Topology, Bus Topology, Different Transmission Media: Copper Wires, Glass Fibers, Radio, Satellites. The OSI reference model. TCP/IP reference model, Comparison of OSI & TCP/IP reference model.

UNIT III [06 Hrs.]

Types of services: connection-oriented, connectionless, Switching techniques: Circuit switching, Packet switching and message switching. Virtual and Datagram circuit, Error detection and correction techniques.

UNIT IV [07 Hrs.]

Introduction to Network Addressing: Physical, Logical and Port addresses, IP protocol, Classful & classless IP addresses, examples, subnetting & supernetting.

UNIT V [08 Hrs.]

Internet and World Wide Web: Working of web browser architecture, URL and its types Internet Protocols: Transmission Control Protocol , User Datagram Protocol, File Transfer Protocol, Hypertext Transfer Protocol, Telnet, email, MIME, SMTP.

UNIT VI [07 Hrs.]

Network Security: attacks, security services, a model for internet work security, encryption model, steganography, System security: Intruders, viruses and worms – intruders, viruses and related threats, Fire walls: design principles, trusted system, Introduction to electronics-commerce and Security overview of electronic-commerce.

1. Distinguish between various types of computer networks.
2. Demonstrate basic understanding of hardware , software and types of transmission media used in computer networks .
3. Understand classful and classless IP Addressing.
4. Understand the concept of protocols used in different layers.
5. Understand basic knowledge of cryptographic techniques and its applications.

Program outcome mapped: a, b, e, i, m

Chairperson		Date of Release	May 2013	Applicable for AY 2013-14 Onwards
Dean (Acad. Matters)		Version	1.00	

IT408	Applications of Computer Networks	L=4	T=0	P=0		Credits=4
Evaluation Scheme	MSE-I	MSE-II	TA	ESE	Total	ESE Duration
	15	15	10	60	100	3 Hrs.

Text books:

1	Computer Networks	5th edition	Andrew Tanenbaum	Prentice Hall
2	TCP/IP Protocol Suite	3rd edition	Behrouz.A.Forouzan	Tata McGraw Hill Pub
3	Cryptography & Network Security	2nd edition	Behrouz.A.Forouzan	Tata McGraw Hill Pub
2	Computer Networks and Internets with Internet applications	4th edition (2003)	Douglas E.Comer	Prentice Hall
3	Fundamentals of Information Technology	2nd edition (2009)	Alexis Leon	Vikas publishing house
4	Web Technologies TCP/IP Architecture,and Java Programming	Second Edition	Achyut S. Godbole and Atul Kahate	Tata McGraw Hill Pub

Reference books:

1	Computer Networks & E-commerce	2000	Parag Diwan	Pentagon Pub

Chairperson		Date of Release	May 2013	Applicable for AY 2013-14 Onwards
Dean (Acad. Matters)		Version	1.00	
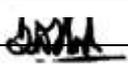
GE402	Project management			L= 3	T=0	P=0	Credits=3
Evaluation Scheme	MSE-I	MSE-II	TA	ESE		Total	ESE Duration
	15	15	10	60		100	3 Hrs

Objective

This subject helps student to understand the Functions of management, Marketing Management, project Management, project risk management, Inventory management and Finance Management in the organization.

UNIT-1: Principles of management

Concepts of management, development of scientific management, Taylor Principles Fayol, functions of management such as planning, decision making, organizing, communication, controlling, span of control.

[8Hours]

UNIT-2: Project management

Types of projects, various phases of project, Project Proposal, Components of planning, Objectives of planning, Factors affecting planning, Organizational setup, Network techniques Introduction and Use of CPM &PERT for planning. Estimation of critical path and project duration. Resource planning, Resource Allocation, Resource leveling, Optimization of project cost, Cost slope concept.

[7Hours]

UNIT-3 Project Risk Management

Risk Management Planning, Common Sources of Risk in Projects, Risk Identification, Qualitative Risk Analysis, Quantitative Risk Analysis, Risk Response Planning, Risk Monitoring and Control, Case studies on IT Project Management.

[7Hours]

UNIT IV Marketing Management:-

Definition & scope, selling & modem concepts of marketing, market research, rural marketing, Customer Behaviors, marketing strategies, product launching, product life cycle, sales promotion, pricing, channels of distribution, Advertising, market segmentation, marketing mix, positioning, targeting

[8 Hours]

UNIT V Inventory Management :-

 Principles of Inventory Management , Importance & objectives of Effective Inventory Management , Types of Inventory Control Systems, Inventory Control Procedures, Concept of ABC Analysis Benefits of ABC Analysis.

[7 Hours]

UNIT VI Financial Management:-

Definition & Functions of Finance department Sources of finance ,financing organizations, types of capital, elements of costs & allocations of indirect expenses, cost control, break even analysis, budgets & budgetary control, equipment replacement policy, make or buy analysis, balance sheet, ratio analysis, profit & loss statement.

[8Hours]

Chairperson		Date of Release	May 2013	Applicable for AY 2013-14 Onwards
Dean (Acad. Matters)		Version	1.00	
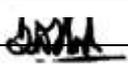
GE402	Project management			L= 3	T=0	P=0	Credits=3
Evaluation Scheme	MSE-I	MSE-II	TA	ESE		Total	ESE Duration
	15	15	10	60		100	3 Hrs

Outcome

1. As a studying functions of management it helps us to know administration of organization.

2. It is more concerned with decision making to make the best under a given situations & to be ethically and socially responsive to the needs of society .

3. It helps to formulating strategies to exploit rewarding opportunities thereby maximizing its return on investment.

4. Students are expected to understand & demonstrate the effect of time value of money, depreciation & foreign currency, inventory and material required for trade.

5. students are expected to understand the planning of project and managing risk factor which is involved in that.

mapped Program Outcomes: d,f,g,h,j

TEXT BOOKS:

I) Principles of Management: Koontz & O Denial

2) Industrial Organization & Engineering Economics: T. R. Banga & S. c. Sharma

3) Financial Management – Kuchal

REFERENCES:

1) Principles of marketing management; Philip Kotler & William Stauton

2) Customer Behavior : Leon G. Schiffman, & Leslie Lazar Kanuk

Chairperson		Date of Release	May 2013	Applicable for AY 2013-14 Onwards
Dean (Acad. Matters)		Version	1.00	
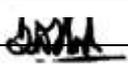
IT411	Data Warehousing & Mining	L=3	T=1	P=0		Credits=4
Evaluation Scheme	MSE-I	MSE-II	TA	ESE	Total	ESE Duration
	15	15	10	60	100	3 Hrs.

OBJECTIVES: -
1. To understand the process of data mining and the key steps involved well enough to Lead/manage a real-life data mining project.
2. Know the basics of data warehousing and how it facilitates data mining.
3. To understand fundamental issues in statistical data analysis that cut across all Procedures, such as generalization to other data, basic tradeoffs, and validity of models.

UNIT I
Introduction to Data Warehousing: Definition, Usage & trends, characteristics of Data Warehouses, Data Marts, Metadata, Multidimensional data model, Data cubes.

[06 Hrs.]

UNIT II
Data Warehouse process & architecture: OLAP vs. OLTP,3 Tier data warehouse architecture.
OLAP models, ROLAP vs. MOLAP.

[06 Hrs.]

UNIT III
Dimensional modeling: Principles & advance topics in dimensional modeling, data Extraction Transportation Loading, ETL design & techniques of implementation

[07 Hrs.]

UNIT IV
Introduction to data mining: Data mining primitives, Data mining definitions & task, Knowledge Discovery vs. Data mining, DBMS vs. Data Mining, Data mining techniques, tools & applications.

[07 Hrs.]

UNIT V
Data Mining Techniques: Association rules, clustering, classification, decision trees.

[07 Hrs.]

UNIT VI
Introduction to Business Intelligence:
BI Definitions & Concepts, BI Framework, Data Warehousing concepts and its role in BI, BI Infrastructure Components – BI Process, BI Technology, BI Roles & Responsibilities, Business Applications of BI, BI best practices
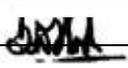
[07 Hrs]

Course outcomes
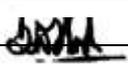At the end of the course student should be able to:
1. Identify different application areas of data mining , data warehousing and business intelligence.
2. Compare OLTP and OLAP and data warehouse environment.
3. Design a data warehouse model
4. Define and apply different data mining techniques to solve different business problems and decide which works best for which business problem.

Program outcomes mapped: e, j, k

Chairperson		Date of Release	May 2013	Applicable for AY 2013-14 Onwards
Dean (Acad. Matters)		Version	1.00	

IT411	Data Warehousing & Mining	L=3	T=1	P=0		Credits=4
Evaluation Scheme	MSE-I	MSE-II	TA	ESE	Total	ESE Duration
	15	15	10	60	100	3 Hrs.

Text books:

1.	Data Warehousing Fundamantals	Reprint 2009	PaulrajPonniah	Wiley India edition,
2	Data Mining Techniques	2nd edition	Arun .K.Pujari	University press
3	Data Warehousing: concepts, products and applications	3rd edition	C.S.R.Prabhu	PHI Publication
4	Business Intelligence	2nd edition	David Loshin	Morgan Kaufmann

Reference books:

1	Data Mining Techniques	1st edition, (2000)	Han Kamber	Morgan Kaufmann
2	Data Warehousing, Data Mining, & OLAP,	Eighth reprint2006	Alex Berson and Stephen J. Smith,	Tata McGrawHill,

Chairperson		Date of Release	May 2013	Applicable for AY 2013-14 Onwards
Dean (Acad. Matters)		Version	1.00	

IT413	Digital Signal Processing		L=4	T=0	P=0	Credits=4
Evaluation	MSE-I	MSE-II	TA	ESE	Total	ESE Duration
Scheme	15	15	10	60	100	3 Hrs.

OBJECTIVES:-

1. To Classify signals and systems and to describe sampling theory and various operations on discrete time signals such as convolution, correlation etc.
2. To interpret discrete time signals and systems in frequency domain and to summarize properties of Fourier transform.
3. Understanding the Z-transform and its application to identify system properties, solving difference equations and determining the frequency response of a system to predict the stability of the system through pole-zero analysis.
4. To analyze the frequency response of LTI system and block diagram representation and signal flow graph representation of IIR and FIR systems. Implementing digital filters in verities of forms: Direct form-I and II, parallel, cascade and lattice.
5. To design Digital FIR filters by designing prototypical analog filters and then applying analog to digital conversion techniques such as the bilinear transformation. Design digital FIR filters using the window method.
6. To analyze signals using discrete Fourier transform (DFT), Understand circular convolution, its relationship to linear convolution and how linear convolution can be achieved via the discrete Fourier transform. To develop the Decimation in time and frequency FFT algorithms for efficient computation of the DFT.

UNIT I [08 Hrs.]

Basics of Signals & Systems, Discrete time signals and systems, linearity, time variance, causality, stability properties of LTI casual system, response of LTI system to various input, convolutions.

UNIT II [08 Hrs.]

Frequency Domain description of signals & systems, Fourier Transform of Discrete time signal, Properties of DFT, DFT's of typical discrete time signals.

UNIT III [07 Hrs.]

The Z-Transform properties, ROC's relation with Fourier Transform, System function, Inverse Z-Transform, solution of difference equation using unilateral Z-transform.

UNIT IV [05 Hrs.]

Structure Realization of Filters: FIR, IIR Filters, Direct Form-I, Direct Form-II, Cascade Parallel Implementation.
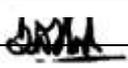
UNIT V [07 Hrs.]

Introduction to FFT algorithms: Decimation in time- FFT algorithms, decimation in frequency FFT algorithms, DCT.

UNIT VI [07 Hrs.]

Digital filter design techniques: Design of FIR Filters based on Windows, Design of IIR digital filters from analog filters

Chairperson		Date of Release	May 2013	Applicable for AY 2013-14 Onwards
Dean (Acad. Matters)		Version	1.00	

IT413	Digital Signal Processing		L=4	T=0	P=0	Credits=4
Evaluation	MSE-I	MSE-II	TA	ESE	Total	ESE Duration
Scheme	15	15	10	60	100	3 Hrs.

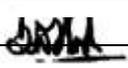**Note: -** PRACTICALS based on above syllabus using MATLAB & TMS C320 C50

Outcomes:
- Understand digital to analog (D/A) and analog to digital (A/D) conversion and to operate on a signal and model these operations mathematically.
- Apply DSP techniques to real-world signal acquisition, spectral analysis and signal filtering.
- Analyze and characterize the signals and system through Z-transform.
- Understand system characterization and able to classify and design it.
- Design digital IIR filters by designing prototypical analog filters and then applying analog to digital conversion techniques such as the bilinear transformation.
- Understand Discrete Fourier Transform and improved algorithms for fast DFT calculation.

Program outcomes mapped: a, b, c, e, h, i, j, k

Text books:				
1	Digital Signal Processing	2003	Alen V. Oppenheim, W. Schaffer	PHI
2	Digital Signal Processing	4th Edition (2007)	John G. Proakis, Dimitris G. Manolakis	Pearson Prentice Hall

Reference books:				
1	Theory & Application of Signal Processing'	1975	Rabiner & Gold	Prentice-Hall
2	Digital Filter Design & Analysis	1993	Andreas Antoniou	McGraw-Hill

Chairperson		Date of Release	May 2013	Applicable for AY 2013-14 Onwards
Dean (Acad. Matters)		Version	1.00	

IT415	Neural Networks & Fuzzy Logic		L=4	T=0	P=0	Credits=4
Evaluation Scheme	MSE-I	MSE-II	TA	ESE	Total	ESE Duration
	15	15	10	60	100	3 Hrs

OBJECTIVES: -

1. To focus on the foundations of neural network theory and the application of neural network models in engineering, cognitive science, and artificial intelligence;
2. To introduce the neural networks as means for computational learning and to present the basic network architectures and learning algorithms for classification and regression;
3. To demonstrate neural network applications on real-world tasks;
4. To emphasize the need for fuzzy logic as a means to model linguistic knowledge in human experts;
5. To understand fuzzy inference and reasoning so as to build systems based on fuzzy control

UNIT I   **[08 Hrs.]**
Fundamentals concepts and models of artificial neural systems: Biological neurons and their artificial models, models of artificial neural networks, learning and adaption, neural network learning rules, feed forward and feedback networks, single-layer perceptron classifiers, Discriminant functions, linear machine and minimum distance classification, training and classification using the perceptron, single layer perceptron networks for linearly separable classification.

UNIT II   **[08 Hrs.]**
Multilayer feed forward networks: linearly non-separable pattern classification, delta learning rule. Feed forward recall and error back-propagation training, learning factors, classifying and expert layered networks.

UNIT III   **[07 Hrs.]**
Hopfield model-Mathematical analysis, Hopfield learning algorithm, discrete time, Hopfield net and competitive learning model. Self Organizing Feature Maps, Applications of artificial neural networks

UNIT IV   **[08 Hrs.]**
From classical (CRISP) sets to fuzzy sets, characteristics and significance of the paradigm shift, fuzzy sets versus crisp sets, representation of fuzzy sets, properties of fuzzy sets. Operations on fuzzy sets: types of operations, fuzzy complements, fuzzy intersection s-norms, fuzzy unions: t-Conorms.

UNIT V   **[06 Hrs.]**
Fuzzy Arithmetic: fuzzy numbers, Linguistics variables, Fuzzy relations, extension principles for fuzzy sets, arithmetic operations on fuzzy numbers.

UNIT VI   **[08 Hrs.]**
Defuzzification methods, design of fuzzy controllers, Fuzzy inference).
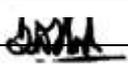
Course Outcomes:
1. To focus on the mathematical foundations of neural network theory and to understand the working of Neural Networks as pattern classifier.
2. To comprehend the neural networks as means for computational learning and to analyze the basic network architectures and algorithms for supervised learning.
3. To comprehend the neural networks as means for computational learning and to analyze the basic network architectures and algorithms for unsupervised learning.
4. To understand the basics of fuzzy sets, its operations and the need for fuzzy logic.
5. To understand fuzzy numbers, their operations and fuzzy inference techniques to model the human intelligence**.**
6. To build systems based on fuzzy control and to understand the basics of hybrid Neuro Fuzzy systems

Program outcomes mapped:a,b,c,e,k,l

Chairperson		Date of Release	May 2013	Applicable for AY 2013-14 Onwards
Dean (Acad. Matters)		Version	1.00	

IT415	Neural Networks & Fuzzy Logic		L=4	T=0	P=0	Credits=4
Evaluation Scheme	MSE-I	MSE-II	TA	ESE	Total	ESE Duration
	15	**15**	**10**	**60**	**100**	**3 Hrs**

Text books:

1	Introduction to Artificial Neural Systems'	Second Edition (1994)	J. M. Zurada	Jaico Publishing House
2	Fuzzy sets and Fuzzy logic, Theory and Applications	Facsimile edition,1997	George J. Klir and Bo Yuan	Prentice Hall

Reference books:

1	Fuzzy Logic With Engineering Applications'	2004	T. J. Ross	McGraw Hill
2	An introduction to Fuzzy Control	2nd Edition,1993	D. Driankov	Narosa Pub. House
3	Artificial Neural Networks	1999	Yegnanarayan	PHI,1999
4	Neuro-fuzzy and Soft Computing	1996	Jang.Sun and E. Mizutani	Prentice Hall

Chairperson		Date of Release	May 2013	Applicable for AY 2013-14 Onwards
Dean (Acad. Matters)		Version	1.00	

IT417	TCP/IP		L=4	T=0	P=0	Credits=4
Evaluation	MSE-I	MSE-II	TA	ESE	Total	ESE Duration
Scheme	15	15	10	60	100	3 Hrs.

OBJECTIVES: -
1. To understand internals of TCP/IP protocol.
2. To understand how TCP/IP is actually implemented.
3. To understand interaction among the protocols in a protocols stack.

UNIT I   **[07 Hrs.]**

Internetworking- Concepts, architecture and Protocol, Comparison of OSI model and TCP/IP model.

Internet Protocol (IPv.4)- IP addresses, Classful and Classless IP addresses, IP datagrams, IP datagram Forwarding. ARP, RARP.

Internet Protocol (IPv.6)-Characteristics of features, datagram frame format, base address format, addressing.

UNIT II   **[08 Hrs.]**

IP, ICMP and IGMP : Datagram, fragmentation, options, checksum, IP package, ICMP, messages, formats, error reporting, query, checksum, ICMP package, IGMP, messages, operation, encapsulation, IGMP package

UNIT III   **[08 Hrs.]**

UDP: UDP datagram, checksum, operation, uses, UDP package. TCP: TCP, Services, flow, congestion and error control, TCP package and operation.

UNIT IV   **[08 Hrs.]**

Unicast And Multicast Routing Protocols: unicast routing protocols, RIP, OSPF, BGP, multicast routing, trees, protocols, MOSPF, CBT, PIM .

UNIT V   **[07 Hrs.]**

Application Layer, Sockets: Client server model, concurrency, processes, sockets, byte ordering, socket system calls, TCP and UDP client-server programs, BOOTP -DHCP, Services: Domain Name System , name space, resolution, types of records, concept, mode of operation, , FTP, TFTP and electronic Mail: SMTP, MIME, IMAP, POP.

UNIT VI   **[07 Hrs.]**

Network management: SNMP, Middleware: RPC, RMI. Internet Security: IPSec, PGP, Firewalls, SSL.

Course outcomes

Students will learn

IP Addressing

Data Link and Network Layer TCP/IP Protocols

Internet Control Message Protocol (ICMP)

Transport Layer TCP/IP Protocols

Basic TCP/IP Services

Domain Name System (DNS)

The Dynamic Host Configuration Protocol (DHCP

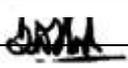Securing TCP/IP Environments

latest Security techniques and Trends

Program outcomes mapped: a, e, m

Chairperson		Date of Release	May 2013	Applicable for AY 2013-14 Onwards
Dean (Acad. Matters)		Version	1.00	

IT417	TCP/IP		L=4	T=0	P=0	Credits=4
Evaluation	MSE-I	MSE-II	TA	ESE	Total	ESE Duration
Scheme	15	15	10	60	100	3 Hrs.

Text books:

1	TCP/IP protocol suite	4th edition	Behrouz Forouzan	Tata McGrawhill

Reference books:

1	Internetworking with TCP / IP, Vol – 1	4th edition (2000)	Douglas Comer	PHI
2	Computer networks	4th edition	Andrew S.Tanenbuam	PHI
3	TCP/IP illustrated Volume 2	2003	W.Richard Stevens	Pearson Education

Chairperson		Date of Release	May 2013	Applicable for AY 2013-14 Onwards
Dean (Acad. Matters)		Version	1.00	

IT419	Software Testing		L=4	T=0	P=0	Credits=4
Evaluation Scheme	MSE-I	MSE-II	TA	ESE	Total	ESE Duration
	15	15	10	60	100	3 Hrs.

COURSE LEARNING OBJECTIVES :-

1. To study classification of Software measures and software measurement validations.

2. Understand key testing challenges that demand thoughtful tradeoffs by test designers and managers.

3. To study Software Testing and its quality.

4. Develop skills with several test techniques.

5. To learn different software quality metrics & tools.

6. To study how to do software maintenance.

7. Improve the critical thinking and rapid learning skills that underlie good testing

UNIT I [08 Hrs.]

Principles of Measurement:

Representation Theory of Measurement, Measurement and models, Measurement Scales, Measurement in small, Measurement in Large systems. Classification of Software Measures, Determining what to measure, Applying Framework, Software Measurement Validation, Measurement tools, Four principles of Investigation, Planning Formal Experiments, What is a good data, How to define/collect data, How to Store and Extract data.

UNIT II [06 Hrs.]

Internal Product attributes Measurement

Size: Aspects of software size, length, reuse, functionality, complexity

Structure: Types of structural measures, control-flow structures, and Modularity and information flow attributes, Object-oriented metrics, Data structure, Difficulties with general complexity measures, Halstead's Software Science.

UNIT III [10 Hrs.]

Software Measurement Programs and Principles of Testing:

What is a metric plan?, Goal-Question-Metric model Defects: Origins of Defects, Defect Classes, Defect repository and Test Design, Developer/Tester support for Defect Repository ,Test Case Design I [White-Box]: Test Adequacy criteria, Structural Testing, Code Complexity testing, Mutation Testing ,Test Case Design II [Black-Box]: Test case Design Criteria, Requirement based testing, Boundary Value analysis, Equivalence Partitioning, State-based or Graph-based Testing, Compatibility Testing, User Documentation Testing, Domain Testing

UNIT IV [06Hrs.]

Software testing:

Test plan, Management, Execution and Reporting, GUI testing, Validation testing, Integration testing, System and Acceptance testing, Scenario testing, Regression testing, Specification-based testing, Performance Testing, Ad hoc Testing, Usability and Accessibility Testing, Software Test Automation.

UNIT V [06 Hrs.]
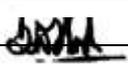
Software Quality metrics and tools:

Quality concepts, Software Quality Assurance, Six Sigma principles, Malcolm Baldridge Assessment, ISO 9000, Edward Deming's principles, Total Quality Management, Product Quality Metrics, In process Quality Metrics, Software maintenance, Ishikawa's 7 basic tools, Checklists, Pareto diagrams, Histogram, Run Charts, Scatter diagrams, Control chart, Cause Effect diagram. Defect Removal Effectiveness & Process Maturity Level, Quality Assurance for modern development methodologies: RAD, Agile and extreme, Automated testing types.

UNIT VI [06 Hrs.]

Software Maintenance:

Problem Reporting: Customer side Preliminary activities, Defects reported by Internal Customers, Logistics and Tooling, Challenges and Best Practices. Problem Resolution: Overview of Problem Resolution, Categorizing and Identifying problem, Making the Fix and Testing it, Challenges and Best Practices. Fix Distribution: Overview of Fix Distribution, Choosing method of Fix Distribution, Composing Fixes, Preparing and Testing Shipment unit.

Chairperson		Date of Release	May 2013	Applicable for AY 2013-14 Onwards
Dean (Acad. Matters)		Version	1.00	

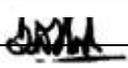| IT419	Software Testing		L=4	T=0	P=0	Credits=4
Evaluation Scheme	MSE-I	MSE-II	TA	ESE	Total	ESE Duration
	15	15	10	60	100	3 Hrs.

COURSE LEARNING OUTCOMES :- After completion of this course, students would be able to :

1. Use various test processes and continuous quality improvement
2. Differentiate between types of errors and fault models
3. Generate methods of test generation from requirements
4. Test adequacy assessment using: control flow, data flow, and program mutations
5. Use various test tools
6. Apply software testing techniques in commercial environments

Program outcomes mapped: b, c, k, l

Text books:				
1	Software Metrics: A Rigorous and Practical Approach	ISBN 981-240-385-X	Fenton, Fleeger	Thomson
2.	Metrics & Models in Software Quality Engineering	ISBN 81-297-0175-8	Stephen H. Kan	Pearson Education

Reference books:				
1	Software Maintenance	ISBN 0-07-048345-0	Ramesh, Bhattiprolu	Tata McGraw Hill
2	Software Testing : Principles and Practices	ISBN 81-7758-121-X	Desikan, Ramesh	Pearson Education
3	Practical Software Testing	ISBN 81-8128-089-X	Burnstein	Springer International Edn.
4	The Art of Software Testing		Glenford J. Myers	John Wiley & Sons, Inc

Chairperson		Date of Release	May 2013	Applicable for AY 2013-14 Onwards
Dean (Acad. Matters)		Version	1.00	

IT421	Distributed Systems	L=4	T=0	P=0	Credits=4
Evaluation	MSE-I	MSE-II	TA	ESE	Total	ESE Duration
Scheme	15	15	10	60	100	3 Hrs.

OBJECTIVES: -
1. To study the different design issues of Distributed Operating Systems
2. Create an awareness of the major technical challenges in distributed systems design and implementation;
3. Expose students to current technology and distributed infrastructure software;
4. Expose students to past and current research issues in the field of distributed systems;
5. Provide experience in the implementation of typical algorithms used in distributed systems.

UNIT I [08 Hrs.]
Introduction: Introduction to distributed Systems, examples of distributed systems, goals, hardware and software concepts, design issues. System models: Introduction, Architectural Model, Fundamental Model, Client Server Model.

UNIT II [08 Hrs.]
Communication: Interprocess Communication: Message oriented Communication, Stream Oriented Communication Layered Protocols: Lower Level, Transport Level and Higher-Level Protocols Distributed Objects: RPC & LRPC, Remote Method Invocation, Events and Notifications.

UNIT III [07 Hrs.]
Distributed File Systems: SUN NFS, AFS, Synchronization : Time and Global States: Clock Synchronization, Logical clocks, global state, Event ordering Distributed Deadlock Algorithms for Avoidance, Prevention, Detection Co-ordination: Election Algorithms, mutual exclusion, Distributed Transaction

UNIT IV [07 Hrs.]
Distributed Mutual Exclusions: Classification, requirement, Leader election, Ring based leader election, bully algorithm, token based & non token based algorithms.

UNIT V [07 Hrs.]
Distributed Deadlock Detection
Resource vs Communication deadlocks, graph theoretic model, deadlock prevention, avoidance, detection, Issues in deadlock detection, Centralized deadlock detection algorithms, distributed deadlock detection algorithms

UNIT VI [08 Hrs.]
Fault Tolerance : Process Resilience, Reliable client server communication, Reliable group communication, Distributed Commit and Recovery

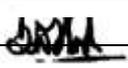Course Outcomes : After completing this course, students will be able to
1. Analyze and design distributed algorithms for reliable distributed systems.
2. Know how to specify the properties of distributed algorithms, so called liveness and safety properties.
3. Explain the different models of distributed systems, including failure and timing models
4. Master basic algorithms for failure detection, leader elections, broadcast and multicast, basic shared memory in distributed systems, agreement protocols, and group communication
5. Practice in design and implementation of selected distributed algorithms in middleware designed for group communication.

Program outcome mapped: b, e ,j, k , m

Chairperson		Date of Release	May 2013	Applicable for AY 2013-14 Onwards
Dean (Acad. Matters)		Version	1.00	

IT421	Distributed Systems	L=4	T=0	P=0	Credits=4
Evaluation	MSE-I	MSE-II	TA	ESE	Total	ESE Duration
Scheme	15	15	10	60	100	3 Hrs.

Text books:				
1	Advanced Concepts in Operating Systems		Mukesh Singhal and Niranjan Shivaratri	TMH
2	Distributed Systems Principles and Paradigms'	1st Edition,2002 2002.	Andrew S. Tanenbaum & Maarten van Steen	PHI
Reference books:				
1	Distributed Operating Systems Concepts and Design	2nd Edition, 2000.	George Coulouris, Jean Dollimore & Tim Kindberg	Pearson (LPE)

Chairperson		Date of Release	May 2013	Applicable for AY 2013-14 Onwards
Dean (Acad. Matters)		Version	1.00	

IT422	Network Security		L=4	T=0	P=0	Credits=4
Evaluation	MSE-I	MSE-II	TA	ESE	Total	ESE Duration
Scheme	15	15	10	60	100	3 Hrs.

OBJECTIVES: -

1. To know the methods of conventional encryption.

2. Understanding the concepts of public key encryption and number theory

3. Understanding the network security tools and applications

5. Understanding various vulnerabilities posing security threats to computer networks and information systems

6. Understanding solutions proposed to ensure network and information security

7. Understand the pros and cons of cryptographic techniques, their feasibility and security, social implications of network security

UNIT I [07 Hrs.]

Introduction- attacks services, mechanisms, security attacks, security services, model for internet work security, conventional encryption- classical techniques- encryption model, steganography, classical encryption techniques, modern techniques-simplified DES, differential and linear cryptanalysis, block cipher design principles, Block Cipher modes of operation.

UNIT II [08 Hrs.]

Conventional encryption-algorithm RC5, Blowfish, DES, triple DES etc. characteristics of advanced symmetric block cipher, confidentiality using conventional encryption- placement of encryption function, traffic confidentiality, key distribution, random number generation.

UNIT III [08 Hrs.]

Public key encryption- principle of public –key cryptosystems, the RSA algorithm, key management, Diffie-Hellman key exchange ,Ellipse Curve Cryptography, Introduction to number theory prime and relatively prime numbers, modular arithmetic, Formats and Euler's theorems ,testing for primarily, discrete Logarithms.

UNIT IV [08 Hrs.]

Message authentication and hash functions- authentication requirements, functions, codes, hash functions, security of hash functions and MACs, SHA-1, HMAC, digital signatures, authentication protocols, digital signature standard.

UNIT V [07 Hrs.]

Authentication applications-Kerberos, Directory authentication service, E-mail security-pretty good privacy, S/MIME, IP security-overview, architecture, authentication header, encapsulating security pay load, combining security associations, key management.
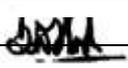
UNIT VI [07 Hrs.]

Web security-requirements, secure sockets layer, secure electronic transaction, network management security-SNMP, System security-intruders, viruses and related threats, firewall-design principles, trusted systems.
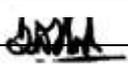
OUTCOMES: -

1. After completing this course, students will be able to explain common attacks against network assets, the associated threats and vulnerabilities, and what network security personnel do to secure assets.

2. They would be able to protect information in an organization by using encryption and number theory for providing authentication and access control.

3. They would be able to identify types of security policies to manage operational security, and then use these policies to ensure compliance by users in an organization.

4. They would be able to conduct research in network security

Program outcomes mapped: a, c, f, h,

Chairperson		Date of Release	May 2013	Applicable for AY 2013-14 Onwards
Dean (Acad. Matters)		Version	1.00	

IT422	Network Security		L=4	T=0	P=0	Credits=4	
Evaluation	MSE-I	MSE-II	TA	ESE	Total	ESE Duration	
Scheme	15	15	10	60	100	3 Hrs.	

Text books:

1	Cryptography and network security principles and practices	3rd edition,2002	William Stallings	Pearson Education Asia
2.	Network Security	2008	BehrouzForouzan	Tata Mgraw Hill
3	Networks Security Essentials, applications and standards	3rd edition (2007)	William Stalling	Pearson Education

Reference books:

1	Cryptography in C and C++	2001	Michael Welschenbach	Apress

Chairperson		Date of Release	May 2013	Applicable for AY 2013-14 Onwards
Dean (Acad. Matters)		Version	1.00	

IT423	Human Computer Interaction	L=4	T=0	P=0	Credits=4
Evaluation Scheme	MSE-I	MSE-II	TA	ESE	Total	ESE Duration
	15	15	10	60	100	3 Hrs.

OBJECTIVES :
1. To study interface design tools.
2. To design user interfaces.
3. To study interactive devices.
4. To make use of the human components functions.
5. To make use of the Computer components functions. .
6. To study the Interaction between the human and computer components.
7. To study the Interaction design basics

UNIT I [07 Hrs.]

Introduction: Importance of user Interface – definition, importance of good design.
Benefits of good design, a brief history of Screen design,
The graphical user interface – popularity of graphics, the concept of direct manipulation,
graphical system, Characteristics, Web user – Interface popularity, Principles of user interface.

UNIT II [07 Hrs.]

Design process – Human interaction with computers, importance of human
characteristics, human consideration, Human interaction speeds, and understanding business functions.

UNIT III [08 Hrs.]

Screen Designing:- Design goals – Screen planning and purpose, organizing screen elements, ordering
of screen data and content – screen navigation and flow – Visually pleasing composition – amount of
information–focus and emphasis – presentation
information simply and meaningfully – information retrieval on web – statistical graphics
– Technological consideration in interface design.

UNIT IV [06 Hrs.]

Windows – New and Navigation schemes selection of window, selection of devices
based and screen based controls.
Components – text and messages, Icons and increases – Multimedia, colors, uses
problems, choosing colors.

UNIT V [06 Hrs.]

Software tools – Specification methods, interface – Building Tools.
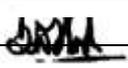
UNIT VI [06 Hrs.]

Interaction Devices – Keyboard and function keys – pointing devices – speech
recognition digitization and generation – image and video displays – drivers.

OUTCOMES: -
1. Explain the human components functions regarding interaction with computer
2. Explain Computer components functions regarding interaction with human
3. Demonstrate Understanding of Interaction between the human and computer components.
4. Implement Interaction design basics
Program outcomes mapped: a, c, f, h, k, m

Text books:				
1	Human Computer Interaction	Third Edition Edition	Alan Dix, Janet Fincay, Gre Goryd, Abowd, Russell Bealg	Pearson Education
2	Interaction Design		Rogers, Sharps	Wiley Dreamtech
3	User Interface Design		Soren Lauesen	Pearson Education

Chairperson		Date of Release	May 2013	Applicable for AY 2013-14 Onwards
Dean (Acad. Matters)		Version	1.00	