

SWAMI VIVEKANAND UNIVERSITY, SIRONJA, SAGAR (M.P.)



SYLLABUS

For

**M.Tech in Information Technology
(I - III)Semester**

**Swami Vivekanand University, Sironja Sagar
2013-2014**



Swami Vivekanand University, Sagar (M.P.)

Scheme of Examination



First Semester- Master of Technology (Information Technology)

S.No.	Subject Code	Subject Name	Periods per week			Credits	Maximum Marks (Theory)			Maximum Marks (Practical Slot)		Total Marks
			L	T	P		End Sem. Exam.	Tests (Two)	Assignments /Quiz	End Sem. Practical / Viva	Practical Record/ Assignment/ Quiz / Presentation	
1.	MTIT-101	Mathematical Foundation for I.T.	3	1	-	4	70	20	10	-	-	100
2.	MTIT-102	Internet Technology	3	1	-	4	70	20	10	-	-	100
3.	MTIT-103	Object Oriented Technology	3	1	-	4	70	20	10	-	-	100
4.	MTIT-104	Computer Graphics & Multimedia	3	1	-	4	70	20	10	-	-	100
5.	MTIT-105	Advance Database Management	3	1	-	4	70	20	10	-	-	100
6.	MTIT-106	Lab-I (MTIT 102 & MTIT 105)	-	-	6	6	-	-	-	90	60	150
7.	MTIT 107	Lab-II (MTIT 103 & MTIT 104)	-	-	6	6	-	-	-	90	60	150
		Total	15	5	12	32	350	100	50	180	120	800

L: Lecture - T: Tutorial - P: Practical

w.e.f. July-2012

Swami Vivekanand University, Sagar (M.P.)

Scheme of Examination

Second Semester- Master of Technology (Information Technology)

S.No.	Subject Code	Subject Name	Periods per week			Credits	Maximum Marks (Theory)			Maximum Marks (Practical Slot)		Total Marks
			L	T	P		End Sem. Exam.	Tests (Two)	Assignments /Quiz	End Sem. Practical /Viva	Practical Record/ Assignment/ Quiz/ Presentation	
1.	MTIT -201	Information Security System	3	1	-	4	70	20	10	-	-	100
2.	MTIT -202	Distributed Computing	3	1	-	4	70	20	10	-	-	100
3.	MTIT -203	Advance Computer Architectur	3	1	-	4	70	20	10	-	-	100
4.	MTIT -204	Soft Computing	3	1	-	4	70	20	10	-	-	100
5.	MTIT -205	Mobile Computing	3	1	-	4	70	20	10	-	-	100
6.	MTIT -206	Lab-III (MTIT 201 & MTIT 205)	-	-	6	6	-	-	-	90	60	150
7.	MTIT -207	Lab-IV (MTIT 202 & MTIT 204)	-	-	6	6	-	-	-	90	60	150
		Total	15	5	12	32	350	100	50	180	120	800

L: Lecture - T: Tutorial - P: Practical

w.e.f. July-2011

Swami Vivekanand University, Sagar (M.P.)

Scheme of Examination

Third Semester- Master of Technology (Information Technology)

S.No.	Subject Code	Subject Name	Periods per week			Credits	Maximum Marks (Theory)			Maximum Marks (Practical Slot)		Total Marks
			L	T	P		End Sem. Exam.	Tests (Two)	Assignments /Quiz	End Sem. Practical/Viva	Practical Record/ Assignment/ Quiz/ Presentation	
1.	MTIT 301	Elective I	3	1	-	4	70	20	10	-	-	100
2.	MTIT 302	Elective II	3	1	-	4	70	20	10	-	-	100
3.	MTIT 303	Seminar	-	-	4	4	-	-	-	-	100	100
4.	MTIT 304	Dissertation Part-I (Literature Review/Problem Formulation/ Synopsis)	-	-	8	8	-	-	-	120	80	200
Total			6	2	12	20	140	40	20	120	180	500

L: Lecture - T: Tutorial - P: Practical

w.e.f. July-2011

Elective -I (MTIT- 301)

- (A) Ad-hoc Networks.**
- (B) Data Mining and Warehousing.**
- (C) Web Engineering.**

Elective-II (MTIT- 302)

- (A) Software Testing & Quality assurance.**
- (B) Digital image processing.**
- (C) Grid Computing.**

Swami Vivekanand University, Sagar (M.P.)

Scheme of Examination

Fourth Semester- M.E./M.Tech. (Information Technology)

S.No.	Subject Code	Subject Name	Periods per week			Credits	Maximum Marks (Theory)			Maximum Marks (Practical Slot)		Total Marks
			L	T	P		End Sem. Exam.	Tests (Two)	Assignments /Quiz	End Sem. Practical /Viva	Practical Record/ Assignment/ Quiz/ Presentation	
1.	MTIT-401	Dissertation Part- II	-	-	20	20	-	-	-	300	200	500
		Total	-	-	20	20	-	-	-	300	200	500

L: Lecture - T: Tutorial - P: Practical

w.e.f. July-2011



MTIT - 101 MATHEMATICAL FOUNDATIONS OF INFORMATION TECH

Course Content

Course Code	Course Title	Credits-4C		
		L	T	P
MTIT - 101	Mathematical Foundations of Information Tech	3	1	-

Unit 1

Uncertainty, Information and Entropy Information Measures Characteristics on information measure, Shannon's concept of information, Shannon's measure of information, Model for source coding theorem communication system: Source coding and line/channel coding, channel mutual information capacity (Bandwidth).

Unit 2

Channel coding, Theorem for discrete memory less channel, Information Capacity theorem: Error detecting & error correcting codes, types of codes: Block codes, Tree codes, Hamming and Lee Metrics, Description of linear block codes by matrices, Description of linear tree codes by matrices, Parity check codes, and Parity check polynomials.

Unit 3

Introduction to Fuzzy Sets – Basic Definition and Terminology – Set-theoretic operations – Member Function Formulation and parameterization – Fuzzy Rules and Fuzzy Reasoning - Extension principle and Fuzzy Relations – Fuzzy If-Then Rules – Fuzzy Reasoning.

Unit 4

Discrete Fourier transform, Fast Fourier transform, Wavelet Transform, Numerical Solutions of Boundary Value Problems.

Unit 5

Finite probability - Probability distributions - Conditional Probability - Independence - Bayes' theorem - Mathematical expectation.

Reference Books :

1. Judith L. Gersting, Mathematical Structures for Computer Science, Freeman Co.
2. J.P. Tremblay and R. Manohar, "Discrete Mathematical Structures with Applications to Computer Science", TMH
3. Kenneth H. Rosen, "Discrete Mathematics and its Applications", Fifth Edition, TMH
4. R.P. Grimaldi, "Discrete and Combinatorial Mathematics", Pearson Edition, New Delhi
5. M.K Venkataraman, Sridharan, Chandrasekaran, Discrete Mathematics, National Pub
6. Scheinerman, Mathematics: A discrete Introduction, Cengage Learn (Thomson)



MTIT - 102 INTERNET TECHNOLOGY

Course Content

Course Code	Course Title	Credits-4C		
		L	T	P
MTIT - 102	Internet Technology	3	1	-

Unit 1

Protocols and architecture, Protocols, Characteristics, Functions, Need for multiple protocols, Conceptual layers of multiple protocol software, Protocol layering principles, Multiplexing and De-multiplexing.

Unit 2

Internet Protocol, Virtual network, Internet architecture and philosophy, Purpose of the internet protocol, Internet diagram, Routing in an internet, table driven IP internet, IP routing algorithm, Internet control message protocols (ICMP), Internet protocol version 6, Features, Format, Source routing, Options, address space assignment, User data gram protocol, Format of UDP messages, UDP encapsulation and protocol layering. Transmission control protocol, Need for stream delivery, Properties of reliable delivery service, Ports, Connections and pins, Window size and flow control - TCP segment format, Acknowledgement, Timeouts, Robustness, Establishing and clearing TCP connects.

Unit 3

Route discovery protocols, Core, peers, Gateway to gating algorithm (GGP), Routing, Autonomous system concepts, Exterior gateway protocol, Routing information protocol (RIP), The Hello protocol, Open shortest path first protocol (OSPF).Application layer protocols, TELNET protocols, File transfer protocols (FTP), Simple mail transfer protocol (SMTP), X-Window system protocol, Remote procedure call, Network file system, proof to point protocol.

Unit 4

General structure of a network management product, Information extraction and collection instruments, Monitoring principles, Instruments supporting physical network management, Line monitors, Data scopes, network monitors, Instruments supporting logical network management, Accounting packages, Application monitoring, Communication monitors, Security monitors, LAN monitors.

Configuration management, Configuration management functions, Inventory managements, Network topology services, Order processing and provisioning, Charge management directory services.

Unit 5

Fault management, Processes and procedure, Fault management functions, Performance management, Security management, accuracy management, Network capacity planning.

Reference Books:

1. Uyles Black, TCP/IP and related protocols, McGraw Hill.
2. Udupa, Network Management System Essentials, McGraw Hill.
3. DE. Comer, Internetworking with TCP/IP Vol. I, Principles, Protocol, Arch., PHI



4. Kernel Terplan, Communication Network management, PHI
5. TCP/IP Protocol Suite, Forouzan, TMH



MTIT - 103 OBJECT ORIENTED TECHNOLOGY

Course Content

Course Code	Course Title	Credits-4C		
		L	T	P
MTIT - 103	Object Oriented Technology	3	1	-

Unit 1

Review of programming practices and code-reuse; Object model and object-oriented concepts.

Unit 2

Object-oriented programming languages and implementation; Object-oriented analyses and design using UML structural, behavioral and architectural modeling.

Unit3

Unified development process, Software reuse design patterns, components and framework; Distributed object computing, interoperability and middleware standards COM/DCOM and CORBA.

Unit4

Object-oriented database system data model, object definition and query language, object-relational system

Reference Books:

1. Object Oriented Modelling and Design, Booch Rambaugh, PHI
2. Analysis & Design, Atul Kahate, TMH
3. Satzinger, Object Oriented Analysis and Design, Cengage Learn (Thomson)
4. Johnson, An Introduction to JAVA programming and OOAD, Cengage.



MTIT - 104 COMPUTER GRAPHICS & MULTIMEDIA

Course Content

Course Code	Course Title	Credits-4C		
		L	T	P
MTIT - 104	Computer Graphics & Multimedia	3	1	-

Unit 1

Basics of Computer Graphics, Graphics display devices, Input devices; Raster Graphics: line and circle drawing algorithms Windowing and clipping: Cohen and Sutherland line clipping. Cyrus beck clipping method.

Unit 2

Computations on polygons: point inclusion problem, polygon filling, polygon intersection, clipping. 2D and 3D Geometrical Transformations: scaling, translation, rotation, reflection.

Unit 3

Viewing Transformations, parallel and perspective projection, curves and Surfaces: cubic splines, Bezier curves B-splines, Hidden line/surface removal methods; Rendering & Visualization, Illuminations model. Shading: Gouraud, Phong. Introduction to Raytracing.

Unit 4

Multimedia Components, Multimedia system designs an introduction compression & decompression data & file format standard. Multimedia input/output technologies. Storage technologies, Multimedia authoring & user interface. Hyper media massaging. Distributed multimedia system

Reference Books:

1. Rogers D.F. Procedural Elements of Computer Graphics, McGraw Hill.
2. Hearn and Baker. Computer Graphics, Prentice-Hall of India, New Delhi
3. Foley, VanDam, Fundamentals of Interactive Computer Graphics, Addison-Wesley
4. Multimedia System Design- Prabhat K. andleigh and Kiran Thakrar, PHI
5. Shuman, Multimedia in action, Cengage (Thomson)



MTIT - 105 ADVANCE DBMS

Course Content

Course Code	Course Title	Credits-4C		
		L	T	P
MTIT - 105	Advance DBMS	3	1	-

Unit 1

DBMS Concepts Introduction, Data models, Entities and attributes, Relationships, E-R diagram. Relational Data models: Domains, Tuples, Attributes, Keys, Relational database, Schemas, Integrity constraints. Relational algebra and relational calculus, Normalization, Normal forms.

Unit 2

Query Processing and Optimization. Distributed databases: Fragmentation, Replication, Location & Fragment transparency, Distributed Query Processing and Optimization.

Unit 3

Object oriented and object relational databases: Specialization, Generalization, Aggregation,

Unit 4

Association. Introduction to Image and Multimedia databases and data structures. Data structure- R tree, K d tree, Quad trees, Content based retrieval: Color Histograms.

Unit 5

Web databases: Accessing databases through web

Reference Books:

1. R. Elmasri, S. Navathe, Fundamentals of Database System, Benjamin Cummings
2. C.J. Date, An Introduction to Data base Systems, Volume I, Addison Wesley
3. H. F. Korth and A. Silberschatz. Database Concept, TMH
4. Object Oriented databases :Narang, Prentice-Hall of India, New Delhi
5. Rob, Database Systems, Cengage, (Thomson)
6. Pratt, Concepts of DBMS, Cengage.

MTIT - 201 Information Security System

Unit 1

Introduction: Basic objectives of cryptography, secret-key and public-key cryptography, one-way and trapdoor one-way functions, cryptanalysis, attack models, classical cryptography. Block ciphers: Modes of operation, DES and its variants, RCS, IDEA, SAFER, FEAL, BlowFish, AES, linear and differential cryptanalysis. Stream ciphers: Stream ciphers based on linear feedback shift registers, SEAL, unconditional security.

Unit 2

Message digest: Properties of hash functions, MD2, MD5 and SHA-1, keyed hash functions, attacks on hash functions. Public-key parameters: Modular arithmetic, gcd, primality testing, Chinese remainder theorem, modular square roots, finite fields.

Unit 3

Intractable problems: Integer factorization problem, RSA problem, modular square root problem, discrete logarithm problem, Diffie-Hellman problem, known algorithms for solving the intractable problems.

Unit 4

Public-key encryption: RSA, Rabin and ElGamal schemes, side channel attacks. Key exchange: Diffie-Hellman and MQV algorithms. Digital signatures: RSA, DSA and NR signature schemes, blind and undeniable signatures. Entity authentication: Passwords, challenge-response algorithms, zero-knowledge protocols. Standards: IEEE, RSA and ISO standards

Unit 5

Network issues: Certification, public-key infrastructure (PKI), secured socket layer (SSL), Kerberos. Advanced topics: Elliptic and hyper-elliptic curve cryptography, number field sieve, lattices and their applications in cryptography, hidden monomial cryptosystems, cryptographically secure random number generators.

Reference Books:

1. William Stallings, Cryptography and Network Security, PHI
2. Atul Kahate, "Cryptography and Network Security", TMH
3. Calabrese, Info security intelligence-cryptography principles appl., Cengage Learning
4. Krawetz, Intro to network security, Cengage Learning.

MTIT - 202 Distributed Computing

Unit 1 INTRODUCTION

Characterization of Distributed Systems - Examples - Resource Sharing and the Web - Challenges - System Models - Architectural and Fundamental Models - Networking and Internetworking - Types of Networks - Network Principles - Internet Protocols - Case Studies.

Unit 2 PROCESSES AND DISTRIBUTED OBJECTS

Interprocess Communication - The API for the Internet Protocols - External Data Representation and Marshalling - Client-Server Communication - Group Communication - Case Study - Distributed Objects and Remote Invocation - Communication Between Distributed Objects - Remote Procedure Call - Events and Notifications - Java RMI - Case Study.

Unit 3. OPERATING SYSTEM ISSUES – I

The OS Layer - Protection - Processes and Threads - Communication and Invocation - OS Architecture - Security - Overview - Cryptographic Algorithms - Digital Signatures - Cryptography Pragmatics - Case Studies - Distributed File Systems - File Service Architecture - Sun Network File System - The Andrew File System

Unit 4. OPERATING SYSTEM ISSUES – II

Name Services -Domain Name System - Directory and Discovery Services - Global Name Service - X.500 Directory Service - Clocks, Events and Process States - Synchronizing Physical Clocks - Logical Time And Logical Clocks - Global States - Distributed Debugging - Distributed Mutual Exclusion - Elections - Multicast Communication Related Problems.

Unit 5. DISTRIBUTED TRANSACTION PROCESSING

Transactions - Nested Transactions - Locks - Optimistic Concurrency Control - Timestamp Ordering - Comparison - Flat and Nested Distributed Transactions - Atomic Commit Protocols - Concurrency Control in Distributed Transactions - Distributed Deadlocks - Transaction Recovery - Overview of Replication And Distributed Multimedia Systems

Reference Books:

1. G Coulouris, J Dollimore, T Kindberg, Distributed Sys Concept- Design, Pearson
2. Sape Mullender, Distributed Systems, Addison Wesley,
3. A Fleishman, Distributed Systems- Software Design and Implementation, S Verlag
4. M.L.Liu, Distributed Computing Principles and Applications, Pearson Education
5. AS Tanenbaum, Maartenvan, ,Distibuted System Principles Paradigms, Pearson
6. M Singhal, Niranjana, Shivaratri, Advanced Concept in Operating System, TMH
7. Flynn, Underatanding Operating System, Cengage (Thomson)

MTIT - 203 Advance Computer Architecture

UNIT 1

Flynn's and Handler's Classification of parallel computing structures. Pipelined and Vector Processors.

UNIT 2

Data and control hazards and method to resolve them. SIMD multiprocessor structures.

UNIT 3

Interconnection networks. Parallel Algorithms for array processors, Search algorithms, MIMD multiprocessor systems,

UNIT 4

Scheduling and load balancing in multiprocessor systems, Multiprocessing control algorithms.

Reference Books:

1. Advance Computer Architecture, parthsarthy, Cengage (Thomson)
2. Computer Architecture and Organisation- John Hays, Mc.Graw-Hill.
3. Computer Architecture and Parallel Processing- Hwang And Briggs, TMH.

MTIT - 204 Soft Computing

UNIT 1

INTRODUCTION: production systems, Study and comparison of breadth first search and depth first search. Techniques, other Search Techniques like hill Climbing, Best first search. A* algorithm, AO* algorithms. Knowledge Representation, Problems in representing knowledge, knowledge representation using propositional and predicate logic, Resolution, Refutation, theorem proving, monotonic and nonmonotonic reasoning.

UNIT 2

ARTIFICIAL NEURAL NETWORKS : Basic concepts - Importance of tolerance of imprecision and uncertainty. Biological and artificial neuron, Single layer perception - Multilayer Perception - Supervised and Unsupervised learning - Back propagation networks - Kohnen's self organizing networks - Hopfield network.

UNIT 3

FUZZY SYSTEMS : Introduction, History of the Development of Fuzzy Logic, Fuzzy sets and Fuzzy reasoning - Fuzzy matrices - Fuzzy functions - Decomposition - Fuzzy automata and languages - Fuzzy control methods - Fuzzy decision making.

UNIT 4

NEURO - FUZZY MODELING : Adaptive networks based Fuzzy interface systems - Classification and Regression Trees - Data clustering algorithms - Rule based structure identification - Neuro-Fuzzy controls - Simulated annealing - Evolutionary computation.

UNIT 5

GENETIC ALGORITHMS: Survival of the Fittest - Fitness Computations - Cross over - Mutation - Reproduction - Rank method - Rank space method.

Reference Books :

1. Rajsekaran & Pai - Neural Networks, fuzzylogic & Genetic algorithms, PHI
2. Rich E and Knight K, Artificial Intelligence, TMH, New Delhi.
3. Hagan, Dernuth & Beale, Neural network design, Thomson learning, VP.
4. Philip D. Wasserman, Neural Computing, Van Nostrand Reinhold Pub.
5. Kecman: Learning & soft Computing, Pearson Edu.

MTIT - 205 Mobile Computing

UNIT 1

Introduction to cellular mobile systems: Basic cellular system, performance, criteria, Uniqueness of mobile Radio environment, operation of cellular systems, marketing Image of Hexagonal shaped cells, Planning of cellular system, Analog cellular systems, digital cellular systems, cell splitting.

UNIT 2

Cell coverage for signal & Traffic: Introduction, obtaining the mobile point to point model, Propagation over water or flat open areas, Foliage loss, Propagation in near in distance, long distance Propagation obtain path less from a point to point Prediction model, call-site antenna Heights & Signal coverage calls, mobile to mobile Propagation.

UNIT 3

Co channel Interference reduction: Co channel interference , exploring co channel interference area, in a system, Real time co channel interference measurement at mobile radio Transceivers, Decision of an omni directional antenna system, Design of a directional antenna system,. Lowering the antenna height, reduction of co channel interference by mean of a notch in the tilted antenna Pattern, Power control.

UNIT 4

Frequency management & channel Assignment: Frequency management, Frequency-spectrum utilization, set up channels definition of channel assignment, fixed channel assignment, non fixed channel assignment algorithms How to operate north additional spectrum, Traffic & channel assignment, Perception of call blocking from the subscribers.

UNIT 5

Handoffs & Dropped calls: Value of Implementing Handoffs, initiation of a hand off, Delaying a handoff, Forced Handoffs, Queuing of Handoffs, power difference handoff , Mobile assisted handoff & soft Handoff, call site Handoff only, intersystem Handoff, introduction to dropped call rate, Formula of Dropped call rate, Finding the values of g & u .

UNIT 6

Special topics: Wireless and Mobile Computation – SS7, GSM, CDMA, Mobile IP, Wireless Mobile ATM, Multicast Routing Protocols, Location Management, Mobile Agents, Mobility Management.

Reference Books:

1. J. Schiller, Mobile Communication, Pearson Press.
2. Wireless Network, Kaveh Pahalwan
3. Adhoc Networking by Charles E. Perkins, Addison Wisely
4. Mobile cellular Telecommunications by William C.Y. Lee TMH

MTIT – 301(A) Ad-hoc Networks

UNIT 1

Ad Hoc Networking : An introduction, Model of operation, symmetric Links, Layer-2 Ad Hoc solutions, Proactive versus reactive protocols, multicast, commercial Applications of Ad Hoc networking, conferencing, Home Networking, Emergency services, personal Area Networks and Bluetooth, Embedded Computing Applications, Sensor Dust, Automotive/PC Interaction. Factors Affecting Ad Hoc Networks, Scalability, Wireless Data Rates, DARPA packet Radio network, Survivable Radio Networks.

UNIT 2

Ad Hoc Wireless Media Access Protocols: Issues in Designing a MAC protocol for Ad Hoc Wireless networks. Design Goals of a MAC Protocol for Ad Hoc Wireless Networks. Classifications of MAC Protocols. Contention - Based Protocols, Contention - Based Protocols with reservation Mechanisms. Contention - Based MAC Protocols with Scheduling Mechanisms. MAC protocols that use Directional Antennas. Other MAC Protocols.

UNIT 3

Overview of Ad Hoc Routing Protocols: Table-Driven Approaches, Destination Sequenced Distance Vector (DSDV), Wireless Routing Protocol (WRP), Cluster Switch Gateway Routing (CSGR) , Source-Initiated On -Demand Approaches . Ad Hoc On-Demand Distance Vector Routing (AODV) , Dynamic Source Routing (DSR) , Temporally Ordered Routing Algorithm (TORA), Signal Stability Routing (SSR) , Location-Aided Routing (LAR) , Power - Aware Routing (PAR), Zone Routing Protocol (ZRP), Source Tree Adaptive Routing (STAR) , Relative Distance Microdiversity Routing (RDMAR) , Multicast Routing in Mobile Ad Hoc Networks, Existing Ad Hoc Multicast Routing Protocols, ABAM : Associativity-Based Ad Hoc Multicast.

UNIT 4

Transport Layer for Ad Hoc Wireless Network : Introduction , Issues in Designing a Transport Layer Protocol for Ad Hoc Wireless Networks, Design Goals of a Transport Layer Protocol for Ad Hoc Wireless Networks, Classification of Transport Layer Solutions, TCP Over Ad Hoc Wireless Networks, Other Transport Layer Protocols for Ad Hoc Wireless Networks.

UNIT 5.

Quality of service in Ad-hoc wireless networks: Issues and challenges in providing QoS in Ad Hoc Wireless Networks, Classification of QoS Solutions, MAC Layer Solutions, MAC Layer Solutions, Network Layer Solutions, QoS Frameworks for Ad Hoc Wireless Networks.

UNIT 6.

Energy Conservation : Power Life Issues: Power Management, Advances in Device Power Management, Advances in Protocol Power Management, Power Conservation by mobile Applications, Periodic Beaconsing On Battery Life, Standalone Beaconsing, HF Beaconsing with Neighboring Nodes, Comparison of HF Beaconsing with and without Neighbors, LF Beaconsing with Neighboring Nodes, Comparison of LF Beaconsing with and without Neighbors, Deductions, Conclusions, Smart Batteries and Battery Characteristics, Effects of Beaconsing on Battery Life.

UNIT 7.

Sensor Network: Sensor Network Architecture, Network Protocols, Data Storage and Manipulation, Localization and Management, Data Dissemination, Data Gathering, MAC protocols for Sensor Networks, Location Discovery, Quality of a Sensor Network, Evolving Standards.

UNIT 8.

Security issues in Ad Hoc Network: Security in Ad Hoc Wireless Network, Network Security Requirements, Issues and Challenges in Security Provisioning, Network Security Attacks, Key Management, and Secure Routing in Ad Hoc Wireless Networks.

Books Suggested

1. Ad Hoc Mobile Wireless Networks : Protocols and Systems, C. K. Toh, Springer.
2. Ad Hoc Network, C E Perkins, Pearson Education.
3. Ad Hoc Wireless Networks : Architectures and protocols, C, Siva Ram Murthy and B.S. Manoj, Pearson Education.

MTIT – 301(B) Data Mining and Warehousing

UNIT 1

Introduction : Data Mining: Definitions, KDD v/s Data Mining, DBMS v/s Data Mining, DM techniques, Mining problems, Issues and Challenges in DM, DM Application areas.

UNIT 2

Association Rules & Clustering Techniques: Introduction, Various association algorithms like A Priori, Partition, Pincer search etc., Generalized association rules. Clustering paradigms; Partitioning algorithms like K- Method, CLARA, CLARANS; Hierarchical clustering, DBSCAN, BIRCH, CURE; categorical clustering algorithms, STIRR, ROCK, CACTUS.

UNIT 3

Other DM techniques & Web Mining: Application of Neural Network, AI, Fuzzy logic and Genetic algorithm, Decision tree in DM. Web Mining, Web content mining, Web structure Mining, Web Usage Mining.

UNIT 4

Temporal and spatial DM: Temporal association rules, Sequence Mining, GSP, SPADE, SPIRIT, and WUM algorithms, Episode Discovery, Event prediction, Time series analysis.

UNIT 5

Spatial Mining, Spatial Mining tasks, Spatial clustering, Spatial Trends.
Data Mining of Image and Video: A case study. Image and Video representation techniques, feature extraction, motion analysis, content based image and video retrieval, clustering and association paradigm, knowledge discovery.

UNIT 6

The vicious cycle of Data mining, data mining methodology, measuring the effectiveness of data mining data mining techniques. Market baskets analysis, memory based reasoning, automatic cluster detection, link analysis, artificial neural networks, generic algorithms, data mining and corporate data warehouse, OLAP

Reference Books :

1. Data Mining Techniques ; Arun K.Pujari ; University Press.
2. Data Mining; Adriaans & Zantinge; Pearson education.
3. Mastering Data Mining; Berry Linoff; Wiley.
4. Data Mining; Dunham; Pearson education.
5. Text Mining Applications, Konchandy, Cengage

MTIT – 301(C) Web Engineering

UNIT 1

Introduction: layering, DNS - encapsulation, de-multiplexing, client /server model, port numbers, standardization process, the Internet. Link layer: introduction, Ethernet and IEEE 802 encapsulation, trailer encapsulation, SLIP, PPP- Loop back interface, MTU. Internet protocol: introduction, IP header, IP routing, subnet addressing, subnet Mask special case of IP addresses, a subnet example.

UNIT 2

Address Resolution Protocol: Introduction, an example, ARP cache, ARP packet format, ARP examples, Proxy ARP, ARP command. RARP: Introduction, RARP packet format, RARP examples, RARP server design. ICMP: Introduction, ICMP message types, ICMP address mask request and reply-ICMP timestamp request and reply-4.4 BSD processing of ICMP Messages.

UNIT 3

Ping Program: Introduction, ping program, IP record route option, IP time stamp option. Trace route program: Introduction, trace route program operation, LAN output, and WAN output- IP source routing option. IP routing: Introduction, routing principles, ICMP host, and ICMP redirect errors. Dynamic Routing protocols: introduction, dynamic routing, RIP-OSPF, BGP, CIDR.

UNIT 4

UDP: introduction, UDP header, UDP checksum, IP Fragmentation, UDP Server design. DNS Introduction- basics, message format, simple example, pointer quires, resource records, caching, UDP. TFTP: introduction, protocol, security. BOOTP: introduction, packet format, server design, through router.

UNIT 5

TCP: Introduction, services, headers, connection establishment and termination, timeout of connection establishment- maximum segment size- half, close, state transition diagram, reset segments, simultaneous open and close- options, server design.

UNIT 6

SNMP Introduction, protocol, structure of management information, object identifiers, management information base, instance identification. Telnet: rlogin protocols, examples, telnet protocol and examples. FTP, protocol, examples, SMTP protocols, examples, NFS, TCP/IP Applications.

Reference Books :

1. W. Richard Stevens, TCP/IP Illustrated Volume-I "The Protocols ", Addison W 2
2. Jaiswal .S, TCP\IP Principles, Architecture, Protocols And Implementation, First Edition, Galgotia Publications Pvt Ltd.

MTIT – 302(A) Software Testing & Quality Assurance

UNIT 1

Introduction to software testing, concepts, issues and techniques, test activities, management and automation, Coverage and usage testing based on checklist, input domain partitioning and boundary testing, object oriented testing: testing OOA and OOD models, object oriented testing strategies, test case design for OO software, testing methods applicable at the class level, interclass test case design, Web application testing, debugging, security & reliability.

UNIT 2

Programming style and program quality: simple style rules, comment statements, program quality, quantifying program quality, Software quality and quality Assurance: Principle of Software Quality Assurance (SQA), Applying SQA to software project, proven factors for SQA success, SQA during software requirements, SQA during software design phase, SQA during software code and test, Advance quality engineering topics.

UNIT 3

Human factors in software engineering: Human factors history, HCL requirements and design process, HCL testing.

Reference Books:

1. Ali Behforooz and Frederick J. Hudson, Software Engineering Fundamentals, Oxford University Press
2. JeffTain, Software Quality Engineering: Testing, Quality Assurance and Quantifiable improvement, Willy Pub.
3. Aditya Mathur, Foundation of Software Testing 1/e, Pearson Education
4. Paul C. Jorgensen, Software Testing, A Craftsman's Approach, Second Edition, CRC Press

MTIT – 302(B) Digital Image Processing

Image capture and digitization, Image Representation, data structures for picture representation Image Transformation, Fast Fourier Transform, Walsh Transform, Hadmark Transform, Hotelling Transform, Hough Transform. Boundary detection, Image Enhancement, Spatial Domain, Frequency Domain, Histogram, Low Pass Filtering, High Pass Filtering, Thresh olding, Global Thrsholding. Texture analysis, texture classification feature extraction, rule-based picture segmentation. Introduction to Color Images, Representation, Segmentation.

Reference Books :

1. "Digital Image Processing"- R.C.Gonzalez and P.Wintex,Addison weslay.
2. "Fundamentals of Digital Image Processing"- A.K.Jain, Prentice Hall,India.
3. Image Processing analysiss and Machine Vision, Cengage

MTIT – 302(C) Grid Computing

UNIT – I

The Grid - The Evolution of the Grid - Grids and Grid Technologies, Overview of Grid systems, Grid activities, Grid Business Areas, Applications, Programming models -A Look at a Grid Enabled Server and Parallelization Techniques – Grid applications

UNIT – II

The concept of virtual organizations – Grid architecture – Grid architecture and relationship to other Distributed Technologies – computational and data Grids, semantic grids.

UNIT – III

Grid Management systems, Grid security, Grid-Enabling software and Grid enabling network services, Data Grid - Virtualization Services for Data Grids, Peer-to-Peer Grids - Peer-to-Peer Grid Databases for Web Service Discovery, Merging the Grid service Architecture with Web service Architecture, Relationship between Web services & Grid services

UNIT – IV

Open Grid Services Infrastructure (OGSI):Introduction-Grid services- High-level introduction to OGSI- Technical details- Introduction to service data components- Grid service: Naming & change management recommendations, Open Grid Service Architecture (OGSA):OGSA Basic Services: Common Management model (CMM)-service domains- policy architecture- security architecture- Mastering & Accounting- common distributed Logging

UNIT – V

Grid Middleware, Resource management and scheduling, setting up Grid, deployment of Grid software and tools, and application execution, Compilers, Languages and Libraries for the Grid, Grid Application Description Languages, Application Partitioning, Grid Portals

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1. Joshy Joseph, Craig Fallenstein, "Grid Computing", Pearson Education, New Delhi, 2004.
2. Fran Bernm, Geoffrey Fox, Anthony Hey J.G., "Grid Computing: Making the Global Infrastructure a Reality", Wiley, USA, 2003.
3. Ian Foster, Carl Kesselman, "The Grid2: Blueprint for a New Computing Infrastructure", Morgan Kaufman, New Delhi, 2004
4. Ahmar Abbas, "Grid Computing: Practical Guide to Technology and Applications", Delmar ThomsonLearning, USA, 2004.