SCHEME OF EXAMINATION

&

SYLLABI

for

Master of Technology
(Information Technology)
Regular

GURU GOBIND SINGH
INDRAPRASTHA
UNIVERSITY

Guru Gobind Singh Indraprastha University
Dwarka, Delhi – 110075 [INDIA]
www.ipu.ac.in

Scheme of Examination for M.Tech.(IT)-Regular Programme has been approved by BOS of USICT on dated 28.05.2012 and AC subcommittee on dated 18/07/12. This scheme is effective from academic session 2012-13.

SCHEME OF EXAMINATION
M.Tech. - Information Technology

FIRST SEMESTER EXAMINATION

Code No.	Paper	L	T/P	Credits
Theory Papers				
MECS-601	Advanced Data Structures	4	-	4
MECS-603	Advanced Software Engineering	4	-	4
MECS -605	Advances in Data & Computer Communications	4	-	4
Electives (Choose any TWO)				
MEVS-601	DSD using Verilog	4	-	4
MECS -607	Advanced Computer Architecture	4	-	4
MECS -609	Enterprise Computing using JAVA	4	-	4
MECS- 611	Computational Techniques using MATLAB	4	-	4
MEEC-613	Mathematical Statistics	4	-	4
MECS- 613	Advanced Operating Systems	4	-	4
MEIT-617	Introduction to Computer Security	4	-	4
MEIT-619	Cellular & Mobile Communication	4	-	4
Practicals / Viva Voce				
MEIT-651	Advanced Data Structures Lab	-	2	1
MEIT-653	Advanced Software Engineering Lab	-	2	1
MEIT-659	Advances in Data & Computer Communications Lab	-	2	1
MEIT-657*	Term Paper I			2
	Total	**20**	**6**	**25**

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SECOND SEMESTER EXAMINATION

Code No.	Paper	L	T/P	Credits
Theory Papers				
MEIT-602	Advanced Mobile Computing	4	-	4
MEIT-604	Advanced Software Project Management	4	-	4
MEIT-606	Computer Graphics & Animation	4	-	4
Electives (Choose any TWO)				
MEVL-602	ESD using ARM microcontroller	4	-	4
MECS- 602	Object Oriented Analysis & Design	4	-	4
MEEC -604	Advanced Signal Processing	4	-	4
MECS- 604	Advanced Database Management System			
MEEC-606	Advanced VLSI Design	4	-	4
MECS-606	Advance Algorithm Analysis & Design			
MECS-608	Software Requirements & Estimation	4	-	4
MECS-610	Network Programming	4	-	4
MECS-612	Soft Computing	4	-	4
MESP-612	Digital Image Processing	4	-	4
MECS-614	Modelling & Simulation	4	-	4
MECS-616	Software Metrics	4	-	4
MECS- 620	Distributed Computing & Animation	4	-	4
Practicals/Viva Voce				
MEIT-660	Advanced Mobile Computing		2	1
MEIT-662	Advanced Software Project Management	-	2	1
MEIT-664	Computer Graphics & Animation	-	2	1
MEIT-658*	Term Paper II			2
Total		**20**	**6**	**25**

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(Regular Programme)

THIRD SEMESTER EXAMINATION

Code No.	Paper	L	T/P	Credits
Theory Papers				
MECS-701	Advanced Data Warehousing & Data Mining	4	-	4
MEIT-703	Information Theory & Coding	4	-	4
Electives (Choose any One)				
MECS-703	Advanced Software Testing	4	-	4
MEIT-705	Reliability Engineering	4	-	4
MECS -705	Cloud Computing	4	-	4
MECS-707	E- Commerce & Applications	4	-	4
MEEC -707	Artificial Neural Networks	4	-	4
MECS-709	Information Storage & Management	4	-	4
MECS-711	Software Quality Management	4	-	4
MECS-713	Advanced Digital Signal Processing	4	-	4
MEIT-715	Advanced Multimedia	4	-	4
MECS-717	Cyber Crime Investigations and Cyber Forensics	4	-	4
MECS-719	Distributed Databases	4	-	4
MECS-721	Network Management	4	-	4
MECS-723	Real Time Software Systems	4	-	4
Practicals/Viva Voce				
MEIT-751	Advanced Data Warehousing & Data Mining Lab		2	1
MEIT-759	Information Theory & Coding Lab	-	2	1
MEIT-755*	Term Paper III			2
MEIT-757	Minor Project		-	4
Total		**20**	**6**	**28**

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FOURTH SEMESTER EXAMINATION

Code No.	Paper	L	T/ P	Credits
MEIT-752	Dissertation	-	-	24
MEIT-754*	Seminar & Progress Report	-	-	4
MEIT-756*	Term Paper IV			2
Total		-	-	**30**

***Non University Exam System**

NOTE:

1. The total number of credits of the Programme M. Tech. = 108.
2. Each student shall be required to appear for examination in all courses, But for the award of the degree a student shall be required to earn the minimum of 100 credits out of 108. However only Elective Courses and Term papers may be dropped towards counting for total credits of 100 to award M. Tech. Degree.

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INSTRUCTIONS TO PAPER SETTERS: Maximum Marks : 60

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

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MECS-601 Advanced Data Structure	L	T/P	C
	4	0	4

Unit -1

Elementary Data Structure: Arrays , Sparse Matrices , strings , stack, queues ,Evaluation of Expressions , Linked list , Polynomials : Representation and Operations binary Trees and operations , Binary search tress : Operation and Characteristics

Unit - 2

Heaps and tournament trees , Binomial Heaps and Fibonacci Heaps , Amortized analysis of Data structures, Balanced Search Trees, AVL trees, augmented data structure, Red Black Trees and properties

Unit - 3

Graph representation and implementation, searching of a graph, application of BFS and DFS
Data structure for Sets, Disjoint Set and Union – find problem and implementation, Basic Hash function and collision resolution Hash Tables (Universal Hashing, Perfect Hashing) implementation and Applications

Unit– 4

External sorting, Multiway search trees , B and B + Trees implementation, Digital Search Trees , Multiway Tries , Suffix Trees and applications

Text:

[T1] T. H. Cormen, C. E. Leiserson, R.L. Rivest, C. Stein, ***"Introduction to Algorithms"***, 2nd Edition, PHI.
[T2] Horowitz, Ellis, Sahni, Sartaj & Anderson-Freed, ***"Fundamentals of Data Structures in C (Second Edition)*** ", Universities Press

References:

[R1] Mark Allen Weiss (Second Edition) "Data Structures and Algorithm Analysis in C", Pearson
[R2] Robert L. Kruse Bruce P. Leung"Data Structures and Program Design in C(Second Edition)" , Pearson
[R3] M. Goodrich, R. Tamassia, and D. Mount "Data Structures and Algorithms in C++" , Wiley 2004

// Syllabus Design: Sh. Rinkaj Goyal & Prof. Navin Rajpal

16/07/2012 18/7

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MECS -605 Advances in Data & Computer communications

L	T/P	C
4	0	4

Unit-I

Network Architecture and Standardization: OSI,TCP/IP Models, Network Characteristics: Types of characteristics, Performance, Reliability, Security, Methods of ensuring QoS: Application & QoS, Queue Mechanisms, Queue Analysis, Queue management algorithms, Feedback, Resource reservation, Traffic engineering.

LAN Overview, Ethernet, High-Speed Ethernet, Gigabit Ethernet, Switched LAN Basics, Wireless LANs (IEEE 802.11)

Unit-II

Virtual Circuit WAN: X.25, Frame Relay, ATM, IP WANs: Pure IP WANs, IP over ATM, MPLS, Remote Access Methods.

Addressing in TCP/IP Networks, IPv6 & ICMPv6, ARP, RARP, Unicast Routing protocols, Multicast routing protocols, Advance features of IP routers.

Unit-III

User Datagram Protocol (UDP), Transmission Control Protocol (TCP) and Stream Controlled Transmission Protocol (SCTP)

DNS, Telnet, FTP &TFTP, Electronic-mail: SMTP, POP, IMAP, SNMP, WWW: HTTP

Unit-IV

Cryptography, Network Security, Secure Transport Services: IPSec, VPN, MPLS VPN, SSL/TLS, PGP, Firewalls.

Textbooks:

1. Behrouz A. Forouzan, "TCP/IP Protocol Suit", TMH, 3rd Ed, 2006
2. Stallings W., "Data and Computer Communications", 7th Ed., PHI, 2007
3. N. Olifer,"Computer Networks", 2nd Ed., Wiley,2006

References:

1. Black U, "Computer Networks-Protocols, Standards and Interfaces", PHI, 1996
2. Wayne Tomasi, "Introduction to Data communications and Networking", Pearson Ed. 2007
3. Tananbaum A. S., "Computer Networks", 3rd Ed., PHI, 1999
4. Laurra Chappell (Ed), "Introduction to Cisco Router Configuration", Techmedia

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Paper Code: MEVT- 601	L	T	C
Paper: Digital System Design with Verilog	4	-	4

Unit-I

ASIC Design Flow, Architecture and configuration of FPGA, Principles Hardware Description Languages, Y-Chart, Review of Synchronous and Asynchronous Design, Register- transfer level systems, Execution Graph, Organization of System, Implementation of RTL Systems, Analysis of RTL Systems, Design of RTL Systems.

Unit-II

Introduction to Verilog, Language Constructs , Modeling style, Assignment Structures, Delays and Continuous Assignments, Assignment to Vectors, Operators, Design of Adder, Subtractor, Decoders, Encoders, Multiplexer, code Converter.Behavioral Modeling: Operator and Assignments, Functional Bifurcation, Initial & Always Construct, Assignments with Delays, wait construct, multiple always blocks, Program flow control and looping, Parallel blocks, force-release construct, design of sequential circuits using verilog.

Unit-III

Data Subsystems, Storage Modules, Functional Modules, Data paths, Control Subsystems, Micro programmed Controller, Structure of a micro programmed controller, Micro instruction Format, Micro instruction sequencing, Micro instruction Timing, Basic component of a micro system, memory subsystem.

Unit-IV

Functions, Tasks, user defined primitives, State Machine: Moore and mealy state model, Verilog code for Moore-type FSM, Specification of Mealy FSM using Verilog, Mealy-type and Moore-type FSM for Serial Adder, Floating Point Arithmetic-Representation of Floating Point Number, Floating Point Multiplication.

Text Books:
[T1] Fundamental of digital Logic with Verilog design by S. Brown & Z. Vransesic, TMH.
[T2] Design through Verilog HDL by T.R. Padmanabhan& B. Bala Tripura Sundari, Wiley Pub. 2007
[T3] M. Ercegovac, T. Lang and L.J. Moreno, "Introduction to Digital Systems", Wiley,2000

Reference Books:
[R1] Digital Design by Frank Vahid, Wiley, 20063.
[R2] Introduction to Digital Systems by M. Ercegovac, T. Lang and L.J. Moreno, Wiley,2000.

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MECS -607 Advance Computer Architecture

L	T/P	C
4	0	4

Unit-I

Parallel computer models:
The state of computing, Classification of parallel computers, Multiprocessors and multicomputers, Multivector and SIMD computers.

Program and network properties:
Conditions of parallelism, Data and resource Dependences, Hardware and software parallelism, Program partitioning and scheduling, Grain Size and latency, Program flow mechanisms, Control flow versus data flow, Data flow Architecture, Demand driven mechanisms, Comparisons of flow mechanisms

Unit-II

System Interconnect Architectures:
Network properties and routing, Static interconnection Networks, Dynamic interconnection Networks, Multiprocessor system Interconnects, Hierarchical bus systems, Crossbar switch and multiport memory, Multistage and combining network.

Advanced processors:
Advanced processor technology, Instruction-set Architectures, CISC Scalar Processors, RISC Scalar Processors, Superscalar Processors, VLIW Architectures, Vector and Symbolic processors

Unit-III

Pipelining:
Linear pipeline processor, nonlinear pipeline processor, Collision free scheduling, Instruction pipeline Design, Mechanisms for instruction pipelining, Dynamic instruction scheduling, Branch Handling techniques, branch prediction, Arithmetic Pipeline Design, Computer arithmetic principles, Static Arithmetic pipeline, Multifunctional arithmetic pipelines

Unit-IV

Multiprocessors and Multicomputers:
Multiprocessors System Interconnects, Hierarchal Bus system, Multistage and combining networks, Three generations of multicomputer, Message Passing Mechanism Deadlock and virtual channels,

Multivector and SIMD computers:
Vector Processing principals: Vector Instruction Types, Vector Access memory Schemes, Multivector Multiprocessors, Performance directed Design rules.

TEXT BOOKS:

1. Kai Hwang, "Advanced computer architecture"; TMH. 2000
2. D. A. Patterson and J. L. Hennessey, "Computer organization and design", Morgan Kaufmann, 2nd Ed. 2002

REFERENCES:

1. J.P.Hayes, "computer Architecture and organization"; MGH. 1998
2. V.Rajaranam & C.S.R.Murthy, "Parallel computer"; PHI. 2002
3. Kai Hwang and Zu, "Scalable Parallel Computers Architecture", MGH. 2001
4. Stalling W, "Computer Organisation & Architecture", PHI. 2000
5. M.J Flynn, "Computer Architecture, Pipelined and Parallel Processor Design"; Narosa Publishing. 1998
6. D.A.Patterson, J.L.Hennessy, "Computer Architecture :A quantitative approach"; Morgan Kauffmann feb,2002.
7. Hwan and Briggs, " Computer Architecture and Parallel Processing"; MGH. 1999

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MECS– 609	Enterprise Computing in JAVA	L	T/P	C
		4	0	4

UNIT-I

Introduction to J2EE :- n-Tier Client Server Computing and Model View Controller Architecture. Markup Languages : HTML and XML. JDBC : Drivers and Interfaces . Servlets : Servlet LifeCycle, Generic Servlet , Http Servlet , Java Server Pages : Tags , Directives , Expressions and Scriptlets , Introduction to Enterprise Java Beans, Session EJBs, Entity EJBs, JMS and message driven.

UNIT-II

Struts, Struts architecture, Struts classes - ActionForward, ActionForm, ActionServlet, Action classes , Understanding struts-config.xml , Struts Tiles , Combining Struts and Tiles, Tiles file structure , Understanding Tiles Definitions and Attributes.

UNIT-III

Hibernate: Comparison between JDBC and HIBERNATE , Principles of Object Relational Mapping, Hibernate configuration, HQL making objects persistent, Hibernate semantics, Session management, flushing, concurrency and Hibernate, Optimistic and Pessimistic Locking, Object mapping Mapping simple properties, Single and multi valued associations, Bi-directional associations, Indexed collections, Querying, Session management, Transaction integration and demarcation.

UNIT-IV

Spring: Introduction of Spring Framework: Spring Architecture, Spring Framework definition, Inversion of Control (IoC), Spring Aspect Oriented Programming Concepts : Join Point and Point Cuts.
Web Services: Interoperability in Web Services, Service-Oriented Architectures SOAP, SOAP message structure, handling errors WSDL, UDDI.

Text Books:

1. Jim Farley, William Crawford, O'Reilly and Associates, "Java Enterprise in a Nutshell", 2005
2. Brett McLaughlin, O'Reilly, "Java and XML, 2nd Edition", 2001
3. Holzner , Structs : Essential skills , TMH

Reference Books:

4. Elliott Rusty Harold and W. Scott Means, O'Reilly, "XML in a Nutshell", 2001
5. James Cooper, "Java Design Pattern: A Tutorial", Addison Wesley
6. Govind Sesadri, "Enterprise java Computing: Application and Architectures", Cambridge University Publications, 1999
7. Ivan Bayross , sharanam shah Java Server Programming , shroff Publishers

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MECS-611	Computational Techniques using MATLAB	L	T/P	C
		4	0	4

Unit-I

1. MATLAB Usage and Computational Errors: Introduction to MATLAB, Types of Computer Errors, IEEE 64-bit Floating-Point Number Representation, Vectors in MATLAB, Efficient programming techniques
2. System of Linear Equations: Solution for a System of Linear Equations, Solving a System of Linear Equations, Inverse Matrix, Decomposition (Factorization), Iterative Methods to Solve Equations

Unit-II

1. Interpolation and Curve Fitting: Interpolation by Lagrange, Newton, and Chebyshev Polynomial, Hermite Interpolating Polynomial, Cubic Spline interpolation, Straight Line, Polynomial Curve, and Exponential Curve Fit, Fourier transform
2. Nonlinear Equations: Bisection Method, Regula Falsi Method, Newton Raphson Method, Secant Method, Newton Method for a System of Nonlinear Equations

Unit-III

1. Numerical Differentiation/Integration: Difference Approximation for First Derivative, Approximation Error of First Derivative, Numerical Integration and Quadrature, Trapezoidal Method and Simpson Method, Romberg Integration,Adaptive and Gauss Quadrature.
2. Ordinary Differential Equations: Euler's Method, Runge–Kutta Method, Predictor–Corrector Method, Vector Differential Equations, Boundary Value Problem (BVP)

Unit-IV

1. Optimization: Unconstrained Optimization, Constrained Optimization, MATLAB Built-In Routines for Optimization
2. Matrices and Eigenvalues: Eigenvalues and Eigenvectors, Power Method, Jacobi Method
3. Partial Differential Equations: Elliptic , Hyperbolic, and Parabolic PDE, Finite Element Method (FEM) for solving PDE,

Text Books

1. "Applied Numerical methods using MATLAB", By W. Y. Yang, Wiley Publications, 2005
2. "Applied Numerical Methods with MATLAB," Steven C. Chapra, McGraw-Hill, 2005

Reference Books

1. "Numerical Methods using MATLAB", John H. Mathews, Prentice Hall
2. "Introduction to MATLAB® for Engineers", W.J Palm, McGraw-Hill

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MEEC-613	Mathematical Statistics & Data Analysis	L	T	C
		3	1	4

Unit - I

Introduction
The basic goal of statistics: draw conclusions based on data. Various aspects of statistics ranging from formulating the question, designing experiments to address the question, collecting the data, and analyzing the data, Random sample drawn from a parameterized family of distributions, Review of Probability: Sample spaces and events, Kolmogorov's axioms, principles of combinatorics including permutations and combinations, conditional probability and independence, Bayes' theorem, random variables, probability mass functions for discrete random variables, probability density functions for continuous random variables, cumulative distribution functions, expected value, mean and variance of a distribution, selected discrete and continuous distributions.

Unit – II

Collecting Data: Types of statistical studies, observational studies, basic sampling designs, Summarizing and Exploring Data, Sampling Distributions of Statistics: Sampling Distribution of the Sample Mean, Sampling Distribution of the Sample Variance, Student's t-distribution, Snedecor-Fisher's F-distribution

Unit – III

Basic Concepts of Inference: Point Estimation, Maximum Likelihood Estimation, Confidence Interval Estimation, Hypothesis Testing, Likelihood Ratio Tests; Inferences for Single Samples: Inferences on Mean (Large Samples), Inferences on Mean (Small Samples), Inferences on Variance (if time permits)

Unit - IV

Simple linear regression and correlation: The least squares method, The model for simple linear regression, Fitting a line, goodness of fit, Statistical inference with the simple linear regression model, prediction and confidence intervals, Regression diagnostics. Multiple linear regression, The model for multiple linear regression, Goodness of fit, multiple correlation coefficient, Arrays, matrices, and linear algebra for multiple linear regression, Statistical inference for multiple regression, ANOVA tables , Introduction to Bayesian Inference, Principles of Bayesian statistics. The Bernoulli process, The Poisson process. The normal process.

Textbook:

1. Statistics and Data Analysis by Ajit C. Tamhane and Dorothy D. Dunlop, Prentice-Hall, 2000. ISBN 0-13-744426-5.

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MECS-613 Advanced Operating System

L	T/P	C
4	0	4

UNIT – I

Introduction, What is an Operating System, Simple Batch Systems, Multiprogrammed Batches systems, Time-Sharing Systems, Personal-computer systems, Parallel systems, Distributed Systems, Real-Time Systems
Memory Management: Background, Logical versus Physical Address space, swapping, Contiguous allocation, Paging, Segmentation, Segmentation with Paging
Virtual Memory: Demand Paging, Page Replacement, Page-replacement Algorithms, Performance of Demand Paging, Allocation of Frames, Thrashing

UNIT – II

Processes: Process Concept, Process Scheduling, Operation on Processes, Cooperating Processes, Interprocess Communication
CPU Scheduling: Basic Concepts, Scheduling Criteria, Scheduling Algorithms, Multiple-Processor Scheduling, Real-Time Scheduling, Algorithm Evaluation
Process Synchronization: Background, The Critical-Section Problem, Synchronization Hardware, Semaphores, Classical Problems of Synchronization, Critical Regions, Monitors.

UNIT – III

Deadlocks: System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock, Combined Approach to Deadlock Handling.
Device Management: Techniques for Device Management, Dedicated Devices, Shared Devices, Virtual Devices; Device Characteristics-Hardware Consideration, Input or Output Devices, Storage Devices, Channels and Control Units, Independent Device Operation, Buffering, Multiple Paths, Block Multiplexing, Device Allocation Consideration,
Secondary-Storage Structure: Disk Structure, Disk Scheduling, Disk Management, Swap-Space Management, Disk Reliability, Stable-Storage Implementation

UNIT – IV

Information Management: Introduction, A Simple File System, General Model of a File System, Symbolic File System, Basic File System, Access Control Verification, Logical File System, Physical File System File-System Interface: File Concept, Access Methods, Directory Structure, Protection, Consistency Semantics File-System Implementation: File-System Structure, Allocation Methods, Free-Space Management, Directory Implementation

TEXT BOOKS:

1. Madnick E., Donovan J., "Operating Systems", Tata McGraw Hill, 2001
2. Silbersachatz and Galvin, "Operating System Concepts", Pearson, 5th Ed., 2001
3. Willium Stallings, " Operating systems: Internals aaaaaand design Prinicipals., Pearson education, Sixth edition

REFERENCES:

1. Tannenbaum, "Operating Systems", PHI, 4th Edition, 2000

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Paper code: MEIT-617 **L T P**
Paper: Introduction to Computer Security **3 1 0**

UNIT-I

Overview of computer security: threats, vulnerabilities, controls, risk, confidentiality, integrity, availability, security policies, security mechanisms, prevention, detection, deterrence, Malicious code, viruses, Trojan horses, worms

UNIT-II

Basic Cryptography: Stream and block ciphers, Encryption, Classical cryptosystems, symmetric cryptography, asymmetric cryptography, Digital Signature, Digital certificates, Message digests and authentication codes

UNIT-III

Database Security: Security and privacy requirements, reliability, integrity, and privacy, inference data mining, k-anonymity.
Security in conventional operating systems: Memory, time, file, object protection requirements and techniques, Protection in contemporary operating systems

UNIT-IV

Network security: eavesdropping, spoofing, modification, denial of service attacks, network security techniques: firewalls, virtual private networks, Intrusion detection, techniques to provide privacy in Internet applications and protecting digital content from unintended use.
Management of security: Security policies, Risk analysis, Physical threats and controls
Legal aspects of security, Privacy and ethics

Text Books/ References:

1. William Stallings, "Cryptography and Network Security: Principles and Practice" (5th Edition), Pearson,2011
2. Atul kahate, "Cryptography and Network Security" , Tata McGraw Hill,2004
3. Tulloch, M, "Microsoft Encyclopedia of Networking" , Prentice Hall of India, 2001
4. Matt Bishop, "Introduction to Computer Security", Addison-Wesley, 2005
5. Michael T. Goodrich and Roberto Tamassia ,"Introduction to Computer Security", Addison Wesley, 2010

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MEIT-619	**Cellular and Mobile Communication**	L	T/P	C
		4	**0**	**4**

Unit-I

Basic cellular system, performance criteria, uniqueness of mobile radio environment, operation of cellular systems,
planning a cellular system, analog & digital cellular systems, Elements of Cellular Radio Systems Design: General
description of the problem, concept of frequency reuse channels, co-channel interference reduction factor, desired
C/I from a normal case in an omni directional antenna system, cell splitting, consideration of the components of cellular systems, Introduction to co-channel interference, co-channel measurement design of antenna system, antenna parameter and their effects.

Unit-II

General introduction, obtaining the mobile point to point mode, Radio propagation characteristics: models for path
loss, shadowing and multipath fading, propagation over water or flat open area,foliage loss, propagation near in distance, long distance propagation, point to point prediction modelcharacteristics,cell site, antenna heights and signal coverage cells, mobile to mobile propagation,Characteristics of antennas, antenna at cell site, mobile antennas,Frequency management, fixed channel assignment, non-fixed channel assignment, traffic & channel assignment, Why hand off, types of handoff and their characteristics, handoff analysis, dropped call rates & their evaluation.

Unit-III

Modulation methods in cellular wireless systems, OFDM, Block Coding, convolution coding and Turbo coding, FDMA/TDMA, CDMA. FDM/TDM Cellular systems, Cellular CDMA, soft capacity, Earlang capacity comparison
of FDM/TDM systems and Cellular CDMA.

Unit-IV

GSM Architecture, Mobility management, Network signaling ,Frequency allocation and control, Base System andMaster System, GSM, DCS 1800, Various value added services, Mobile IP,Wireless LAN, Routing protocols forMANETs:DSDV, DSR,AODV,Role of TCP in MANTs

TEXT BOOKS:
[T1]. William, C. Y. Lee, "Mobile Cellular Telecommunications", 2nd Edition, McGraw Hill, 1990.
[T2]. Theodore S Rappaport, "Wireless Communication Principles and Practice", 2nd Edition, Pearson Education,2002.

REFERENCE BOOKS:
[R1]. "Mobile Communication Hand Books", 2nd Edition, IEEE Press.
[R2]. Mischa Schwartz, "Mobile Wireless Communications", Cambridge University Press, UK, 2005.
[R3]. Lawrence Harte, "3G Wireless Demystified", McGraw Hill Publications, 2001.
[R4]. Kaveh Pahlavan and Prashant Krishnamurthy", Principles of Wireless Networks", PHI, 2001.

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