

Address : UNIREG
Telephone No. : 2419677/2419361
Fax : 0821-2419363/2419301

e-mail : registrar@uni-mysore.ac.in
www.uni-mysore.ac.in

UNIVERSITY OF MYSORE



Estd. 1916

VISHWAVIDYANILAYA KARYA SOUDHA
CRAWFORD HALL, POST BOX NO. 406
MYSORE-570 005

No.AC.2(S)/401/13-14

Dated: 24-05-2014

NOTIFICATION

Sub: Introduction of M.Sc. Information Technology.

Ref: 1. Proceedings of Faculty of Science & Technology Meeting held on 14-02-2014.
2. Proceedings of the Meeting of Academic Council held on 29-03-2014.

The Board of Studies in **M.Sc. IT (PG)** at its meeting held on 29-04-2013 has resolved to reintroduce M.Sc. Information Technology course at CIST from the academic year 2014-15 and revised the syllabus under CBCS with 30:70 ratio.

The Faculty of Science and Technology and the Academic Council at their meetings held on 14-02-2014 and 29-03-2014 respectively approved the above proposals and the same is hereby notified.

The copy of M.Sc. Information Technology course is annexed herewith.

To

1. The Registrar (Evaluation), University of Mysore, Mysore.
2. The Chairperson, BOS/DOS in CIST.
3. The Dean, Faculty of Science & Technology, DOS in Zoology, MGM.
4. The Principals of the Affiliated Science Colleges.
5. The Deputy/Assistant Registrar (Evaluation), University of Mysore, Mysore.
6. Sri Narasimha Murthy, Statistician, E.B. UOM, Mysore.
7. The Supdt AC.1 & AC.2, A.B., Academic Section / P.M.E.B, UOM, Mysore.
8. The P.A. to the Vice-Chancellor/Registrar/Registrar (Evaluation) UOM, Mysore.
9. The Case Worker, AC.7, Academic Section, University of Mysore, Mysore.
10. The Section Guard File (Supdt.AC.2), A.B., A.C., UOM.
11. The Schedule File.

J. S. Sampath
REGISTRAR.
University of Mysore
MYSORE.
24/5/2014

UNIVERSITY OF MYSORE

SYLLABUS AND REGULATIONS

for

MSc IN INFORMATION TECHNOLOGY

Choice Based Credit System

Effective from the Academic year 2013-14

UNIVERSITY OF MYSORE
Regulations for the MSc IN INFORMATION TECHNOLOGY
(Semester Scheme - Choice Based Credit System)
(Effective from Academic year 2013-14)

Title of the course: Master of Science in Information Technology

Regulations: The existing regulations governing the Postgraduate Degree (Science) courses of the University of Mysore are applicable to this course.

Eligible for admission: B.Sc degree with Computer Science or Mathematics as one of the optional/ Any degree with Diploma in Computer Application/ B.C.A/ B.Tech/ B.E in any discipline with minimum of 45% marks in aggregate (40% in case of SC/ST and Cat-1). The selection of candidates for this course will be based on an entrance test.

Duration: Two years (Four Semester)

LIST OF PAPERS

Semester I

Paper	Title	Theory classes/week (Hours)			Total no. of credits	Assignment/ Record marks	Exam Marks	Total Marks
		L	T	P				
MSCIT 101 HC	Computer Organisation and Architecture	2	1	1	4	30	70	100
MSCIT 102 HC	Problem Solving and programming in C	2	0	2	4	30	70	100
MSCIT 103 HC	Data Structures and Algorithms	2	0	2	4	30	70	100
MSCIT 104 HC	Discrete Mathematics and Numerical Techniques	2	0	2	4	30	70	100
MSCIT 105 SC	Computer Graphics	1	0	1	2	30	70	100
MSCIT 106 SC	Internet Technologies	2	0	0	2	30	70	100
MSCIT 107 SC	E-Commerce	2	0	0	2	30	70	100
					22			

Semester II

Paper	Title	Theory classes/week (Hours)			Total no. of credits	Assignment/ Record marks	Exam Marks	Total Marks
		L	T	P				
MSCIT 201 HC	RDBMS and Query Languages	2	0	2	4	30	70	100
MSCIT 202 HC	Data Communication and Computer Networking	2	0	2	4	30	70	100
MSCIT 203 HC	Current Operating Systems and their Applications	2	0	2	4	30	70	100
MSCIT 204 HC	Web Technologies	2	0	2	4	30	70	100
MSCIT 205 SC	Probability and Statistics	2	0	0	2	30	70	100
MSCIT 206 SC	Multimedia Technologies	2	0	0	2	30	70	100
MSCIT 207 SC	ERP	2	0	0	2	30	70	100
OPEN ELECTIVE	Web Designing	2	0	2	4			
					26			

Semester III

Paper	Title	Theory classes/week (Hours)			Total no. of credits	Assignment/Record marks	Exam Marks	Total Marks
		L	T	P				
MSCIT301 HC	Object Oriented Programming in C++ and JAVA	2	0	2	4	30	70	100
MSCIT302 HC	Software Engineering and Testing	3	1	0	4	30	70	100
MSCIT303 HC	Mobile Computing and Application	2	0	1	3	30	70	100
MSCIT304 HC	Advanced JAVA	2	0	2	4	30	70	100
MSCIT305 HC	Data Mining and Warehousing	2	0	0	2	30	70	100
MSCIT306 SC	Software Project Management	2	0	0	2	30	70	100
MSCIT307 SC	Cyber Laws & Network Security	2	0	0	2	30	70	100
OPEN ELECTIVE	Mobile Technology	3	1	0	4			
					25			

Semester IV

Paper	Title	Theory classes/week (Hours)			Total no. of credits	Assignment/ Record marks	Exam Marks	Total Marks
		L	T	P				
MSCIT401 HC	Cloud Computing	3	1	0	4	30	70	100
	Elective paper (any one)							
MSCIT 402 SC	Programming with C Sharp (C#)	2	0	1	3	30	70	100
MSCIT 403 SC	Software Communication & Documentation	3	0	0	3	30	70	100
MSCIT 404 SC	Geographic Information Systems	3	0	0	3	30	70	100
Project HC	Project	0	2	6	8	60	140	200
OPEN ELECTIVE	Multimedia Applications	3	1	0	4			
					21			

SEMESTER-I

MSC IT 101 Hard Core Paper : COMPUTER ORGANISATION AND ARCHITECTURE

Unit I:

Fundamentals of Computer Organisation, Data and instruction formats, Data types, fixed point and floating point number representation, representation of signed numbers, alpha numeric representation. Register transfer, micro operations and control functions.

Unit II:

Arithmetic and Logic Unit: Addition/subtraction, multiplication and division with signed numbers, floating point arithmetic operations, Implementation of ALU, Input and Output Devices, Punched Tape, Interfacing Buses, Digital to Analog converters. central Processing Unit, Processor bus organisation, stack organisation, instruction formats- three address, two address, single address and zero address instruction formats, addressing modes, data transfer and manipulation, RISC and CISC machine characteristics.

Unit III:

Memory and input output units: Memory hierarchy, main memory: RAM and Rom address spaces, associative memory, virtual memory, and Cache memory. Peripheral devices, i/o interface, i/o bus verses memory bus, isolated verses memory mapped i/o, examples of i/o interface, input output processor. Micro processor evolution, Characteristics of multi processors, Inter connection structures, Cross bar switch, Time shared common, Virtual machines, Parallel processors

Unit I V:

Number Systems: Decimal, Binary, Octal, Hexadecirnal. Conversion from one to another. Basic Logic Gates - Basic Laws of Boolean Algebra, Simplification of Expressions - De Morgan's Theorems - Derivation of a Boolean Expression - Sum Products, Product of Sums"

UNIT V.

Architecture of mainframe and mini computers, wearable computers, handheld computers. I pod, Configuration and features of Laptops. The future of computer architecture. Quantum Computers.

REFERNECE BOOKS:

1. "Digital Computer Fundamentals" - Thoruas C. Bartee, Tata McGraw Hill, 1996.
2. Computer System Architecture, Mano MJ\1, 1993. Prentice-Hall of India.Tlnd edition,
1. Computer Architecture and Organization, Hayes J.P. ,lvfcGn:mr Hill, 1983.
2. Computer Organization;. Hamachar, V.C.Vrancsic,. Z.G.Zakv. S.G. .Mcfiraw Hill, 1978.
3. Computer System Architecture: 3rd Edition, Mano Morris.M, Prentice Hall of India Private Limited, 2003, New Delhi
4. Computer Organization, Hamacher V. Carl, McGraw-l-fill, 2001, New Delhi
5. Computer Organization and Architecture - Designing For Performance, Stallings William, Prentice-Hall of India Private Limited, 2000, Delhi

8. Computer Architecture and Logic Design, Barte Thomas. C., Moxiraw-Hilj, Inc., 2000, New York :
9. Modern Computer Architecture, Rafiqzammam Mohamed & Chandra Rajan, Galgotia Publications Pvt.Ltd, 1999, New Delhi
10. Computer Systems -Design and Architecture, Heuring Vincent P & Jordan Harry E, Pearson Education Asia, 2004, New Delhi

MSC IT 102 Hard Core Paper : Problem Solving and Programming in C.

Unit-I:

Origin and introduction to C, Programming languages, Structure of a C program, Compiling a C program, Compiler & interpreters, Simple C program, Character set in C, Keywords in C, Hierarchy of operators, Basic data types. Variables in C, Type of declaration, Output function.

Unit II:

CONTROL STATEMENTS: Conditional Expressions, if statement, if-else statement, switches Statement, Loop Statements (for loop, while loop, do-while loop), and Breaking Control statement (break statement, continue statement, go to statement).

Unit III:

ARRAYS and POINTERS: Array Notation, Array Declaration, Array Initialization, Processing with Array, Arrays and Functions, Multidimensional Arrays, Character Array. POINTERS: Pointer Declaration. Pointer Arithmetic, Pointers and Functions.

Unit IV:

DATA FILE OPERATIONS: Opening & closing of files (Opening a file, Closing a File), Stream State Member functions, reading/ writing a character from a file, Binary file operations, Classes & file operations.

Reference Books:

1. Programming with C -Second Edition, Gottfried Byron, Tata McGraw- Hill Publishing Company Limited, 2001, New Delhi .
2. Programming in C , Ravichandran, D, New Age International (P) Limited, Publishers, 2001, New Delhi.
3. C. Programming Language, Kernighan Brian W & Ritchie Dennis M, Prentice - Hall of India Private Limited, 2004, New Delhi .
4. Programming in C, Gottfried Bryon, McGraw- Hill Publishing Company Limited, 2004, New Delhi.

MSC IT 103 Hard Core Paper : Data Structures and Algorithms

UNIT I:

Data Structures- Introduction, Information and its storage representations _ primitive data structures - Logic information. DATA TYPES, OPERATORS AND STATEMENTS ., Identifiers and Keywords constants (String constants Numeric constants Character

constants), c++ Operators (Arithmetic operators, Assignment operators, Comparison and logical operators, Bitwise logical operator, Special operators), Type Conversion.

UNIT II:

String manipulation, Definition and concepts, string manipulation and pattern matching, primitive functions, String manipulation in pascal grammars storage representation of strings string manipulation application.

UNIT III:

Linear data structures - Concept and terminology - Storage structure for Arrays - Structures and Array of Structures - Stacks - definition operation _ Applications of stacks - Recursion - Polish expressions - Polish notation - Queues. Pointers and Linked allocation. Non Linear Data Structures - Trees - Threaded storage representation_-= Definition and concepts - Binary Trees and conversion of general trees to Binary trees, application of Trees.

Unit IV:

Fundamentals of Algorithms scope analysis notations and profiling of algorithms , concepts of recursion and heaps , The divide and conquer methods. The greedy method, dynamic programming and basic traversal techniques, game trees, back tracking, branch and bound methods. Application of algorithms in scientific and engineering computations: Applications of algorithms in socioeconomic computations.

Reference Books:

1. Advanced Programming In C And Data Structures, Sharp Series, Eastern Book Promoters, 2000, Belgaum
2. C & Data structures, A Niranian, Sapna Book House, 2004, Bangalore
3. Data Structures, Algorithms And Application In C++, Salmi Sartaj, Mcgraw-Hill, 1998 Boston
4. Data Structures, Algorithms and Application In C++, Sahni Sartaj, Mcgraw-Hill, 2000, Boston
5. Fundamentals of Computer Algorithms, Horowitz Ellis, Sahni Sartaj ." Rajasekara-, Sanguthevar, Galgotia Publications Pvt. Ltd, 2004, New Delhi
6. Algorithms In C, Sedgewick Robert, Pearson Education Asia, 2004, New Delhi
7. Introduction to Algorithms, Cormen Thomas H, Leiserson Charles E, Prentice _ Hall of India Private Limited, 2004, New Delhi
8. Data Structures 1\ .s. '10 Algorithms Analysis In C, Weiss Mark Allen, Pearson Education Asia, 2003, New Delhi
9. Data Structures With C, Kotur. F.B., Shiva Book Centre, 2002, Bangalore
10. Data Structuring Using C And C++, Langsam Yedidyah, Augenstein 1\I108he.J. & Tenenbaum AronJvI., Prentice-Hall of India Private Limited, 2001, New Delhi
11. Data Structures, Lipschutz Seymour, Schaum'; Outline Series, 0, New York
12. Data Structures - Principles And Fundamentals, Keogh & Davidson Ken, Dreamtech Press, 2004, New Delhi

UNIT 1:

Discrete Structures. Set Theory- Set Notations - Basic set operations - venn diagram - laws of set theory - principles of inclusion and exclusion - partition - minsets, Logic _ Proposition - logical operators - truth tables - normal forms - laws of logic - proofs in propositional calculus - mathematical induction.

UNIT II:

Functions & relations- Injective, surjective, bijective functions - composition, identity, inverse - properties of relations - closure operations on relations - solution of recurrence relations - non-homogeneous Finite order linear recurrence relations. Group Theory .

UNIT III:

Graph Theory- Graphs and diagraphs - definitions - representation of graphs in a digital computer - application of graphs: shortest path problem. Trees-Basic definitions & types.

UNIT IV:

Formal languages-Four classes of grammars (Parse, Structure, context sensitive , context free, regular) context free languages, generation trees - ambiguity. Finite Automata.

UNIT V:

Push Down Automata PDA)- Definitions_ '-acceptance of a work by a finite state and empty store construction of a PDA to accept languages by empty store given a PDA to accept languages by finite state Definition of a deterministic PDA Turning mechanics.

Reference books:

1. Deo IT Alan and Levasseur Kellileth, Applied Discrete Structures for Computer Science, Galgotia Publications Pvt. Ltd., New Delhi, 1988
2. John E. Hopcroft and - Jeffrey D. Ullman, Formal languages and their relations to automata, Addison Wesley Publishing Company, 1968.
3. A. Kaufmann and I. M. Gupta, Introduction to Fuzzy Arithmetic Theory and Application, Van Nostrand Reinhold, New York, 1991.
4. G. I. Klir and T. A. Folger, Fuzzy Sets, Uncertainty, and Information, Prentice Hall, Englewood Cliffs, NJ, 1988.
5. G. J. Klir and Bo Yuan, Fuzzy Sets and Fuzzy Logic: Theory and Applications, Prentice Hall, Upper Saddle River, NJ, 1995.
6. G. J. Klir, Ute H. S1, Clair, and Bo Yuan, Fuzzy Set Theory, Prentice Hall, Upper Saddle River, NJ, 1997.
7. T. J. Ross, Fuzzy Logic with Engineering Applications, McGraw-Hill, Hightstown, NJ, 1995.
8. M. S. Stachowicz and I. E. Kochansk'a, Graphic interpretation of fuzzy sets and fuzzy relations, Mathematics at the Service of Man, Edited by A. Ballester, D. Cardus, and E. Trillas, based on materials of Second World Conf., Universidad Politecnica Las Palmas, Spain, 1982.
9. H. J. Zimmennann, Fuzzy Set Theory and Its Applications, 3ed ed., Kluwer

Academic Publishers, Boston, IvfA, 1996.

MSC IT 105 SOFTCORE: Computer Graphics

Unit-I

Introduction Computer Graphics and Primitive Algorithms: Introduction to Image, and Objects, Image Representation, Basic Graphics Pipeline, Bitmap and Vector- Based Graphics, Applications of Computer Graphics, Display Devices, Cathode Ray, Tubes, Raster-Scan Display, Random-Scan Display, Flat Panel Display, Input Technology, Coordinate System Overview,

UNIT-II

Scan-Conversion of graphics primitives: Scan-Conversion of a Lines (Digital Differential Analyzer Algorithm, Bresenham's Line-Drawing Algorithm, Scan- Conversion of Circle and Ellipse (Bresenham's Method of Circle Drawing, Midpoint Circle Algorithm), Drawing Ellipses and Other Conics.

Unit-II

Two Dimensional Transformation: Introduction to transformations, Transformation, Matrix, Types of Transformations in Two-Dimensional Graphics: Identity, Transformation, Scaling, Reflection, Shear Transformations, Rotation, Translation, Rotation about an Arbitrary Point, Combined Transformation, Homogeneous Coordinates, 2D Transformations using Homogeneous Coordinates

UNIT-III

Three-dimensional transformations, Objects in Homogeneous Coordinates, Three Dimensional Transformations: Scaling, Translation, Rotation, Shear Transformations, Reflection, World Coordinates and Viewing Coordinates, Projection, Parallel Projection, Perspective Projection.

UNIT-IV

Viewing and Solid Area Scan-Conversion: Introduction to viewing and clipping, Viewing Transformation in Two Dimensions, Introduction to Clipping, Two Dimensional Clipping, Point Clipping, Line Clipping, Introduction to a Polygon, Clipping, Viewing and Clipping in Three Dimensions, Three-Dimensional Viewing, Transformations, Text Clipping, Line Algorithm, Priority Algorithm, Scan Conversion of Character, Aliasing, Anti- Aliasing, Halftoning, Thresholding and Dithering.

Books:

1. Computer Graphics, R. K. Maurya, John Wiley.
2. Mathematical elements of Computer Graphics, David F. Rogers, J. Alan Adams, Tata McGraw-Hill.
3. Procedural elements of Computer Graphics, David F. Rogers, Tata McGraw-Hill.

Reference:

1. Computer Graphics, Donald Hearn and M. Pauline Baker, Prentice Hall of India.
2. Computer Graphics, Steven Harrington, McGraw-Hill.
3. Computer Graphics Principles and Practice, J.D. Foley, A. Van Dam, S.K. Feiner and

R.L. Phillips, Addison Wesley.

4. Principles of Interactive Computer Graphics, Willaim M. Newman, Robert F. Sproull, Tata McGraw-Hill.

5. Introduction to Computer Graphics, J.D. Foley, A. Van Dam, S.K. Feiner, J.F. Hughes and R.L. Phillips, Addison Wesley.

MSC IT 106 Soft Core : Internet Technology

Unit-I

Introduction: OSI Model, TCP/IP Protocol Suite, Network Layer, IPV 4 and IPV6 Addresses and Protocol. Address Resolution Protocol (ARP),Internet Control Message Protocol Version 4 (ICMPv4),Mobile IP, Unicast Routing Protocols (RIP, OSPF and BGP)

Unit-II

Transport Layer, User Datagram Protocol (UDP), Transmission Control Protocol (TCP), Stream Control Transmission Protocol (SCTP)

Unit-III

Host Configuration: DHCP, Domain Name System (DNS), Remote Login: TELNET and SSH, File Transfer: FTP and TFTP

Unit-IV

World Wide Web and HTTP, Electronic Mail: SMTP, POP, IMAP and MIME, Network Management: SNMP, Multimedia. Client Server Programming: Concurrent Connection Oriented (TCP) and Connectionless programming(UDP), Iterative connectionless(TCP) and connection oriented servers(UDP).

Reference Books:

1. TCP/IP Protocol Suite, Behrouz A. Forouzan, 4th Edition , TMH.
2. Internetworking with TCP/IP, Volume III, Second Edition, Douglas E. Comer, D.L. Stevens, PHI.
3. Internetworking with TCP/IP, Volume I, Fifth Edition, Douglas E. Comer, PHI
4. Internetworking with TCP/IP, Volume II, Third Edition, Douglas E. Comer, D.L. Stevens,PHI
5. TCP/IP Illustrated, Eastern Economy Edition,N.P. Gopalan, B.Siva Selvan, PHI

MSC IT 107 Soft Core: E-Commerce

UNIT 1

Introduction of E-commerce, Advantages and Limitation of E-commerce, The Role of Strategy in E-commerce, Value Chains in E-commerce, Integrating E-commerce. Launching a Business on the Internet.

UNIT 2

Designing web sites, The Life Cycle of Site Building-From Page to Stage, Building a Web

Site, Web-Based Business-to-Business, E-Commerce, B2B Models, B2B Tools.

UNIT 3

Payment system, From Barter to Money, Requirements for Internet-Based Payments, Electronic Payment Media, Credit cards, Debit cards, Smart cards, Digital Signature.

UNIT 4

Security in cyberspace, designing for security, How Much Risk Can You Afford, The Virus: Computer enemy Number one, security Protection and Recovery. Marketing on the Internet, Online Shopping, Internet Marketing Techniques, The E-Cycle of Internet Marketing, Marketing your presence, attracting customers to your site.

REFERENCE:

1. Electronic commerce- Elias M.Awad
2. Frontiers of Electronic commerce-Kalakota Whinston.
3. E-Commerce- Mamta Bhusry
4. Electronic Commerce-Gary P.Schneider
5. Ravi Kalakota and Andrew B. Whinston, Frontiers of Electronic Commerce, Addison Wesley.

SEMESTER II

MSC IT 201 Hard core: RDBMS and Query Languages

Unit-I:

An Overview of DBMS and DB Systems Architecture : Introduction to Database Management systems; Data Models; Database System Architecture; Relational Database Management systems; Candidate Key" and Primary Key in a Relation. Attribute domains and their Implementation. The Normalization Process : Introduction; first Normal Form; Data Anomalies in INF Relations; Partial Dependencies. The Entity Relationship Model; Entities and Attributes. Relationships,

Unit-II:

Interactive SQL : SQL commands ; Data Definition Language Commands; Data Manipulation Language Commands; The Data types a cell can hold; insertion of data into the tables. Modifying the structure of the table. Type of Data Constraint.Viewing The Data: Computations on Table Data; Arithmetic Operators; Logical Operators; Comparison Operators; Range Searching; Pattern Searching; ORACLE FUNCTIONS.

Unit-III:

Sub queries and Joins : Joins; Equi Joins; Non Equi Joins; Self Joins; Outer Joins; Sub Queries; Correlated Queries; Using Set Operators- Union, Intersect; Minus ; Views and Indexes : Definition and Advantages Views; Creating and Altering Views; Using Views; Indexed Views; Partitioned views; Definition and Advantages of Indexes.

Unit-IV:

Introduction to PL/SQL.: Advantage of PL/SQL; The Generic PL/SQL Block; The Declaration Section; The Begin Section; The End Section; The Character set; Literals; PL/SQL Data types. Logical Comparison; Conditional Control in PL/SQL; Iterative

Control; Advanced PL/SQL : Types of Cursors; Implicit Cursor; Explicit Cursor; Explicit Cursor attributes; Cursor For Loop; Parameterized Cursor; Error Handling in PL/SQL. Exceptions

Unit-V:

Database Objects : Sequences, Creating Sequences; Referencing Sequences; Altering a Sequence; Dropping a Sequence, Stored Procedures and Functions. Packages triggers.

Reference Books:

1. SQL Server 7.0 : Administrators, Companion, John Franckowiak, Prentice Hall of India Private Limited, New Delhi
2. Database System Concept, Silberschatz Abraham, Korth Henry.F & Sudarshan.S., The McGraw- Hill Companies. Inc, 1996, New York
3. Fundamentals of Database Systems, Elmasri Ramez & Navathe Shankant.R, Addison-Wesley, 2000, Indian Branch
4. Oracle PL/ SQL Programming, Feuerstein Steven With Pribyl Bill, Shroff Publishers & Distributors Pvt. Ltd, 1999, Calcutta
5. The Complete Reference My SQL, Vaswani Vikram, and Tata McGraw-Hill Publishing. Company Limited, 2004, New Delhi
6. Database Management Systems, Majumkar Arun K &Bhattacharyya Pritirnoy, Tata McGraw-Hill Publishing Company Limited, 2003, New Delhi
7. Introduction to Data Base Management, Prakash Naveen, Tata McGraw- Hill Publishing Company Limited, 2001, New Delhi

MSC IT 202: DATA COMMUNICATION AND COMPUTER NETWORKING

Unit-I:

DATA COMMUNICATIONS : Introduction to networking, OSI Model for Networking, Internet, ATM Network Components (Cables, Hubs, Bridges, Switches, Routers), Network Topologies, Shared Medium, Peer to Peer, Hybrid Technology. Multiplexing, Signaling, Encoding & Decoding, Error Detection & Recovery, Flow Control, Sliding Window, Congestion Management,

Unit-II:

NETWORK TECHNOLOGIES: Local Area Network Technologies, Ethernet Technologies, Ethernet Versions, Token Ring . Technologies, Wide Area Network Technologies, Wireless Networks ,Radio Frequencies, Microwave Frequencies, Infrared Waves.

Unit-III:

MULTIPLE ACCESS: Design Issues, Distributed & Centralized Design, Circuit Mode & Packet Mode Design, Implementation Issues, Performance Considerations, Base Technology. Distributed Access , decentralized polling, CS1v1A, CSMA/CA, CSMA/CD, Busy Tone Multiple Access & Multiple Access Collision Avoidance.

Unit –IV :

SWITCHING: Circuit Switching (Time division switching Space division switching, Time space switching , time space time switching) packet switching, port Mappers Blocking , ATM

Switching , Bridges and swithes. Hierarchial naming, Adressing, Telephone networks, internet IPv4, IPv6, subnetting , Private Networks, Asynchronous transfer mode, Name resolution , Adress resolution protocol , Routing Information, Routing Protocols, Hierarchical Routing.

Unit-V:

SERVICES & APLICATIONS : File transfer protocol, TFTP, Domain Name System, DHCP, SNMP, Electronic Mail, 'VWW, HTML, HTTP, RPC & Middleware. SECUIRITY: Threats, Encryption/Decryption, Firewalls, IP Security, Web Security, E-mail

Reference Books:

1. Data And Computer communications Stallings William, Prentice-Han of India Private Limited, 1997, New Delhi
2. Computer Networks And Communication, Jain. YK. & Baj~j Naveena, Cybertech Publications, 2001, New Delhi
3. Local Area Network, Bridges Stephen.Pjvl., Galgotia Publications Pvt. Ltd, 1996, New Delhi
4. Networking Programme For 1\18 Windows, Jones Anthony & Ohlund Jim. Wp Publishers & Distributors (P) Ltd, 2000, Bangalore
5. Designing TCP; }P Ll1ternefworks, Bennet Geoff, Galgotia Publications Pvt.Ltd, 1998, New Delhi
6. Computer Networking With Internet Protocols A .. nd Technology, Stallings William-, Pean,on Education Asia, 2004, New Delhi
7. Data And Computer Conunications, Stallings William, Prentice Hall of India Private Limited, 2003, New Delhi.
8. Data Communicat.ions And Distributed Newtorks, Black Uyless D, Prentice Hall of India Private.Limited, 2000, New Delhi
9. Data Communications & Networking, Forouzan Behrouz A, Tata Mcgraw-Hill Publishing Company Limited, 2004, New Delhi
10. Data Communications And Networks, Godbole Achyut S, Tat .Mcgraw-Hill Publishing Company Limited, 2004, New Delhi
11. Computer Networks, Tanenbaum A ndrew S, Prentice Hall of India Private Limited, 2004, New Delhi
12. 12 Managjng & Maintaining Exchange Server 5.5, Microsoft Corporation, Prentice Hall Of India Private Limited, 0, New Delhi
14. Managjng and maintaining Exchange Server 5.5, Microsoft Corporation, Prentice Hall

MSC IT 2013 HARD CORE: CURRENT OPERATING SYSTEMS A.ND THEIR APPLICATIONS

UNIT-I

Introduction to Operating Systems: OS and Computer System, System performance, Classes of OS, Batch processing, time-sharing, multiprocessing, real time, distributed and modern operating systems, Desktop Systems, Handheld Systems, Clustered Systems, Assemblers, Compilers and Interpreters, Linkers.

UNIT-II

Operating-System Structures: Operating-System Services, User Operating-System Interface, System Calls, Types of System Calls, System Programs, Operating-System Design and Implementation, Operating-System Structure, Virtual Machines, Operating-System Generation, System Boot.

UNIT-III

Processes and Process Synchronization: Process Concept, Process Scheduling, Scheduling Criteria, Scheduling Algorithms, Operations on Processes, Interprocess Communication, Multithreading Models, Threading Issues, Thread Scheduling, Communication in Client–Server Systems, The Critical-Section Problem, Peterson’s Solution, Semaphores.

UNIT-IV

Memory Management: Memory management without swapping or paging; Swapping, Virtual Memory, Page replacement algorithms, Modeling paging, algorithms, Design issues for paging systems, segmentation

Books:

1. Modern Operating Systems, Andrew Tanenbaum,
2. Operating Systems, 2nd Edition, K. A.Sumitra Devi and N.P Banashree, SPD
3. *Operating System Concepts*, 8th Edition, Abraham Silberschatz, Peter B.Galvin, Greg Gagne, Wiley publication
4. Operating Systems- A concept based approach , 2nd Edition, D.M. Dhamdhare, McGrawHill
5. Operating Systems, 3rd Edition , Godbole and Kahate, McGrawHill publications.

MSC IT 204 Hard Core Paper : Web Technologies

Unit-I:

INTRODUCTION TO HTML: Information Files Creation; Web Server; Web Client/Browser. Hyper Text Markup Language (HTML) (HTML Tags, Paired Tags); Commonly used HTML Commands & tags, Lists : Types of Lists (Unordered List (Bullets), Ordered Lists (Numbering), Definition Lists). Adding Graphics to HTML Documents .Using the Border attribute; the Width and Height Attribute; Using the Align Attribute; Using the ALI' Attribute.

Unit-II:

Tables: Introduction (Header, Data rows, The Caption Tag); Using the Width and Border Attribute; Using the Cell padding Attribute; Using the Cellspacing Attribute; Using the BGCOLOR Attribute; Using the COLSPAN and ROWSPAN Attributes. Linking Documents :Links (External Document References, Internal Document References); Images as Hyperlinks (Image Maps), Frames: Introduction to Frames (The <FRAMESET> tag, The <FRAME> tag, Targeting Named Frames. CSS.

Unit-III:

Advanced applications of Web programming. Scripting and new languages, INTRODUCTION TO JAVASCRIPT : JavaScript in Web Pages (Netscape and JavaScript, Database Connectivity, Client side JavaScript, Capturing User Input); The Advantages of JavaScript.

Unit-IV:

Browser Objects (The Web Page HTML, Object Hierarchy, Access to Elements of a Web Page, How a Web Page Element is Manipulated); Handling (WEB PAGE) Events Using Javascript (Named JavaScript Event handlers). Cookies: What are Cookies; Setting a Cookie.

Reference Books:

1. Hands On HTML, Robertson Greg, Bpb Publications, .1999, New Delhi.
2. Mastering HTML 4 Premium Edition, Ray Deborah.S, & Ray Eric.J. Bpb Publications, 1999, New Delhi
3. The Complete Reference Web Design, Powell Thomas.A., Tata McGraw-Hill Publishing Company Limited, 2000, New Delhi
4. Professional Web Design - Theory and Technique On The Cutting Edge, Holzschlag Molly,E., Galgotia Publications Pvt. Ltd, 1997, New Delhi
5. Designing Interactive Websites, Mohler James.L, & Duff Jon.M, Thomson Learning, 1999, Africa
6. Web Designing & Dreamweaver, Jauine Warner, Idg Books India (P) Ltd., 0, New Delli
7. Hands On HTML, Robertson Greg, Bpb Publications, 1999, New Delhi
8. The Xml Hand Book, Goldfarb Charles.F, & Prescod Paul, Addison Wesley Longma (Singapore) Pte. Ltd, 2001, New Delhi
9. Apache Tomcat Bible, Eaves Jon, Jones Rupert &. Godfrey Warner, Wiley Publishing Inc, 2003, New Delhi

MSC IT 205 Soft Core Paper : Probability and Statistics

UNIT I:

Sample Spaces - events - probability axioms - conditional probability - independent events - Baye's formula. Random Variables: Distribution functions - marginal distributions - conditional distribution - stochastic independence. Expectation.

UNIT II:

Probability distributions - Binomial, Poisson-, geometric, uniform, exponential, normal, gamma, beta, Correlation - Regression - multiple and partial correlation and regression (only problems). Probability density function and properties of 1, t~ chi-square distributions.

UNIT-III:

Test for means, variances and attributes using the above distributions. Large sample tests - test" for means, variances and proportions. Analysis of variance: One-Way and two-way classifications completely randomized blocks, randomized block design and Latin square design (only problems).

UNIT-IV:

Cluster, PCA, Factor analysis, Discriminante analysis, statistics for decision making- algorithms Statistical Modelling.

Reference Books:

1. P.Kandasamy and others Engineering Mathematics Vol II , S.Chand and Co., New Delhi, 1987.
2. N.K.Venkataraman, Numerical methods in science and Engineering, The National Publishing Co., Chennai, 1986.
3. C.F.Gerald, Applied Numerical Analysis, Addison Wesley 1970.
4. S. S. Sastry, Introductory methods of numerical analysis, Prentice Hall of India, 1975

MSC IT 206 Soft Core: Multimedia Technologies

Unit-I: Uses of multimedia Introduction to Multimedia elements, introduction to making multimedia, the stages of project the requirements to make good multimedia, multimedia Multimedia system architecture. hardware Macintosh and windows platforms, hardware peripherals, memory and storage devices, media software- tools for making instant multimedia . Production standards. Multimedia applications, evolving systems of multimedia-HDTV, UDTV Digital signal processing.

Unit-II: Multimedia file formats, standards, communication protocols, conversions. Data compression and decompression. Types and methods of compression and decompression. Multimedia I/O Technologies. Traditional modern devices. Display and encoding technologies.

Unit-III: Multimedia elements – text, sound, Images Animation and video Digitalization of

audio and video Different algorithms to text audio video and images. Making of Web multimedia applications- media communication, media entertainment, media games.

Unit-IV: Digital communication and new media interactive television, Digital broadcasting, Digital radio, multimedia conferencing, assembling and delivering a project in DVD and CD-ROM

Reference books:

1. Steve Heath "multi media and communication systems", Focal press, UK.
2. Tay V Vaughan "Multimedia: making it work", TMH.
3. K.Andleigh and K. Thakkar, "Multimedia system design", PHI, PTR.
4. Keyes, "Multimedia hand book", TMH.
5. Ralf Steinmetz and Klara naharstedt, "Multimedia: computing, communications and applications, Pearson .
6. Steve Rimmer, "Advanced multimedia programming", MHI.

MSC IT 207 Soft Core: Enterprise Resource Planning

UNIT I

Introduction – Related Technologies – Business Intelligence – E-Commerce and EBusiness – Business Process Reengineering – Data Warehousing – Data Mining –OLAP – Product life Cycle management – SCM – CRM

UNIT II

ERP IMPLEMENTATION : Implementation Challenges – Strategies – Life Cycle – Pre-implementation Tasks, Requirements Definition – Methodologies – Package selection – Project Teams, Process Definitions – Vendors and Consultants – Data Migration – Project management, Post Implementation Activities.

UNIT III

ERP IN ACTION & BUSINESS MODULES: Operation and Maintenance – Performance – Maximizing the ERP System – Business, Modules – Finance – Manufacturing – Human Resources – Plant maintenance , Materials Management – Quality management – Marketing – Sales, Distribution and service.

UNIT IV

ERP MARKET: Marketplace – Dynamics – SAP AG – Oracle – PeopleSoft – JD Edwards – QAD Inc , SSA Global – Lawson Software – Epicor – Intutive. Enterprise Application Integration – ERP and E-Business – ERP II – Total quality management – Future Directions Trends in ERP.

REFERENCES:

1. Alexis Leon, "ERP DEMYSTIFIED", Tata McGraw Hill, Second Edition, 2008.
2. Mary Sumner, "Enterprise Resource Planning", Pearson Education, 2007.

3. Jim Mazzullo, "SAP R/3 for Everyone", Pearson, 2007.
4. Jose Antonio Fernandez, "The SAP R/3 Handbook", Tata McGraw Hill, 1998.
5. Biao Fu, "SAP BW: A Step-by-Step Guide", First Edition, Pearson Education, 2003.

Open elective: Web Designing

UNIT-1

HTML fundamental tags: HTML document structure, Using paragraph tags, Aligning paragraphs, block-level and inline tags, Controlling line breaks and spaces, Formatting text with phrase element tags, Formatting text with font markup elements,

UNIT-2

Adding document structure with headings, Formatting quotations and quote marks, Preserving pre-formatted text, Selecting a typeface, Selecting a type size, Using ordered and unordered lists, Using inline images, Flowing text around an image, Breaking lines around an image,

UNIT-3

Working with hyperlinks, Using relative URLs, Specifying a base URL, Linking within a page using fragments, Creating image links, table tags, Formatting tables with CSS, Aligning images with tables, frame tags, Hiding frame borders, inserting Graphics, Image Mapping,

UNIT-4

Cascading Style Sheets (CSS) – types of Cascading Style Sheets. Use of different CSS in web page creation.

REFERENCE

1. HTML PROGRAMMERS REFERENCE, by THOMAS A POWELL / DAN WHITWORTH
2. HTML 4 FOR DUMMIES, by ED TITTEL / MARY BURMEISTER
3. HTML & JAVA SCRIPT PROGRAMMING CONCEPTS, by SHANE TURNER E / KARL BARKSDALE
4. HTML INTRODUCTION TO WEB PAGE DESIGN & DEVELOPMENT SCHAUM OUTLINE SERIES, by DAVID MERCER
5. HTML & XML AN INTRODUCTION, by NIIT
6. HTML & JavaScript for Visual Learners, Chris Charuhas, ISBN : 81-7008-359-1, Edition : 2008
7. Magic with HTML, DHTML & JavaScript, Dr. Ravinder Singh Amit Gupta, ISBN : 978-81-318-0765-1, Edition : First, 2009
8. HTML, XHTML, CSS and XML by Example A Practical Guide, Teodoru Gugoiu, ISBN : 81-7008-804-6, Edition : 2007.
9. Internet and its Applications with HTML & VB-Script, Prof. Shashi Banzal, ISBN : 978-81-908565-6-0, Edition : First, 2009.
10. Multimedia Applications and Web Designing, Dinesh Maldasani, ISBN : 978-81-318-0440-7, Edition : First, 2008

III Semester

MSC IT 301 Hard Core: Object Oriented Programming in C ++ & JAVA

Unit-I:

FUNDAMENTALS OF OBJECT-ORIENTED PROGRAMMING: - Introduction; Object-Oriented Paradigm; Basic Concepts of Object-Oriented Programming (Objects and Classes, Data abstraction and encapsulation, Inheritance, Polymorphism, Dynamic binding, Message communication); Benefits of OOP; Applications of OOP.

Unit-II:

Writing a Programme in C++ : Declaration of variables, Statement Simple Programs, Features of I/O stream. Keyboard and screen, Manipulator Functions, Predefined manipulators, Input and Output (I/O) Stream Flags.

Unit-III:

JAVA EVOLUTION:- Java History; Java Features (Compiled and interpreted, Platform-independent and portable, Object-oriented, Robust and secure, Distributed, Simple, small and familiar, Multithreaded and interactive, High performance, Dynamic and extensible); How Java Differs from C and C++ (Java and C, Java and C++); Java and World Wide Web.

Unit-IV:

operators and expressions, decision making –branching, with if statement; Simple If Statement; decision making and looping: - Introduction; The While Statement; The Do Statement; the for Statement

Books:

1. Problem Solving with C++ , Walter Savitch, Sixth Edition, Pearson Education.
2. J.R.Hubbard, Schaum's outlines "Programming with C++", Second Edition, Tata McGrawHill
3. Y.P.Kanetkar, "Let us C++" , seventh edition, BPB publication

Reference Books:

1. Object Oriented programming with C++ , E Balagurusamy , Third Edition , Tata McGraw Hill.
2. Pure C++ programming , Amir Afzal, Pearson Education.
3. Computer Science – A structured Approach using C++ by B. Forouzan, R. F. Gilberg, Cengage Publication.

MSC IT 302 Hard Core: SOFTWARE ENGINEERING AND TESTING

Unit-I:

Introduction: The Software Problem (Software is Expensive, Late, Costly and Unreliable, Problem of Change and Rework); Software Engineering Problem (The Problem of Scale, Cost, Schedule and Quality, The Problem of Consistency); The Software Engineering Approach (Phased Development Process, Project Management and Metrics).

Unit-II:

Software Processes : Software Process (processes, Projects, and Products, Component Software Processes); Characteristics of a Software Process (Predictability, Support Testability and Maintainability, Early Defect Removal and Defect Prevention, Process Improvement); Software Development Process.

Unit-III:

Project Management Process (phases of Management Process, Metrics, Measurement and Models); Software Configuration Management Process (Configuration Identification, Change Control, Status Accounting and Auditing); Process Management Process (Building Estimation Models, Process Improvement and Maturity).

Unit-IV:

Software Requirements Analysis and Specification : Software Requirements (Need for SRS, Requirement Process); Problem Analysis (Analysis Issues, Informal Approach, Structured Analysis, Object-Oriented Modeling. Other Modeling Approaches. Prototyping.

Unit-V:

Testing: Testing Fundamentals. Functional Testing (Equivalence Class Partitioning, Boundary Value Analysis, Cause-Effect Graphing, Special Cases); Structural Testing (Control Flow - Based Criteria, Data Flow - Based Testing.

Reference books:

1. Effective Methods For Software Testing - Second Edition, Perry William.E., John Wiley & Sons Inc., 2003, New York
2. Software Testing, Rajani Renu & Oak Pradeep, Tala IvicGraw-Hill Publishing Company Limited, 2004, New Delhi
3. Software Testing Tools, Prasad K V K K Dr., Dreamtech Press, 2004, New Delhi
3. Introducing Software Testing, Tamres Louise, Pearson Education Asia, 2004, New Delhi
- 5.. Software Engineering, Sharp Series, Eastern Book Promoters, 2000, Belganm
4. Software Engineering, Sommerville Ian, Pearson Education Asia, 2004, New Delhi
5. Software Project Management - Inclination, Mike Cotterell, Bob Hughes, "Thomas Computer Press, 1995.

MSC IT 303 Hard Core: Mobile Computing and Application**UNIT – I**

Mobile computing: Components of wireless environment- Challenges in Mobile environment- Mobile devices - Middleware and gateways - Wireless Internet - Smart clients - Three-tier Architecture- Design considerations for mobile computing— Mobility and Location based services – Active transactions - Device Technology – Device Connectivity – Voice technology – Personal digital assistant.

UNIT - II

Mobile computing through Internet- Mobile-enabled Applications - Developing Mobile GUIs – VUIs and Mobile Applications – Multichannel and Multi modal user interfaces – Synchronization and replication of Mobile Data - SMS architecture - Java card – GPRS – Mobile Computing through Telephony - Synchronization protocol - Context-aware applications.

UNIT - III

Mobile Communication: Wireless Transmission – Medium Access Control – Telecommunication Systems – Satellite Systems – Broadcast system – Wireless LAN – Mobile IP – Mobile TCP.

UNIT - IV

ADHOC Wireless Network: Ad Hoc Wireless Network –MAC protocol – Routing protocols - Transport Layer Protocol - QOS – Energy Management.

UNIT - V

Wireless Sensor Network: Architecture and Design – Medium Access Control – Routing – Transport Layer – Energy model.

TEXT BOOKS:

1. William Stallings, "Wireless Communications & Networks", Pearson Education, 2005.
2. C.Siva Ram Murthy, B.S. Manoj, "Ad Hoc Wireless Networks – Architectures and Protocols", 2nd Edition, Pearson Education.
3. Ashok K Talukder, Roopa R Yavagal, "Mobile Computing", Tata McGraw Hill, 2005.
4. Jochen Burkhardt Dr.Horst Henn, Klaus Rintdoff,Thomas Schack, "Pervasive Computing", Pearson, 2009.
5. Fei Hu , Xiaojun Cao, " Wireless Sensor Networks Principles and Practice " CRC Press, 2010.

MSC IT 304 Hard Core: Advanced JAVA

Unit-I

Swing: Event Handling, JFrame, Lists , Tables, Trees, Text Components, Progress Indicators, Component Organizers **Introduction to servlets:** Need for dynamic content, java servlet technology, why servlets? **Servlet API and Lifecycle:** servlet API, servletConfig interface, ServletRequest and ServletResponse Interfaces, GenericServlet Class. ServletInputStream And ServletOutputStream Classes,RequestDispatcher Interface,HttpServlet Class, HttpServletRequest and HttpServletResponse Interfaces, HttpSession Interface, Servlet Lifecycle. **Working with servlets:** organization of a web application, creating a web application(using netbeans) , creating a servlet, compiling and building the web application

Unit-II

JDBC: Design of JDBC, JDBC configuration, Executing SQL statement, Query Execution, Scrollable and updatable result sets, row sets, metadata, Transaction. **JSP:** Introduction,

disadvantages, JSP v/s Servlets, Lifecycle of JSP, Comments, JSP documents, JSP elements, Action elements, implicit objects, scope, characterquoting conventions, unified expression language.

Unit-III

Java server Faces :Need of MVC , what is JSF?, components of JSF, JSF as an application, JSFlifecycle, JSF configuration, JSF web applications (login form, JSF pages) **EJB:** Enterprise bean architecture, Benefits of enterprise bean, types of beans, Accessing beans , packaging beans, creating web applications, creating enterprise bean, creating web client, creating JSP file, building and running web application.

Unit-IV

HIBERNATE: Introduction, Writing the application, application development approach, creating database and tables in MySQL, creating a web application, Adding the required library files, creating a java bean class, creating hibernate configuration and mapping file, adding a mapping resource, creating JSPs. **STRUTS:** Introduction, Struts framework core components, installing and setting up struts, getting started with struts. **WEB Services:** SOAP, Building a web services using JAX-WS, Building web service. **JAVAMAIL:** Mail Protocols, Components of the Javamail API, JAVAMAIL API, Starting with API. **JNDI:** NAMING Service, Directory service, JNDI, Resources and JNDI,

Books:

Java EE 6 for Beginners, Sharanam Shah, Vaishali Shah, SPD (Unit II to VI)
Core Java Vol. II – Advanced Features, Cay S. Horstmans, Gary Coronell, Eight Edition, Pearson (Unit I and III)
Java Complete Reference, Herbert Schildt, Seventh Edition, TMH. (Unit I)
References:
Java EE Project using EJB 3, JPA and struts 2 for beginners, Shah, SPD
Java Programming A practical Approach, C Xavier, McGraw Hill
Java Server Faces A practical Approach for beginners, B M Harwani, Eastern Economy Edition (PHI).
Advanced Java Technology, Savaliya, Dreamtech.

MSC IT 305 Soft Core : DATA WAREHOUSING AND DATAMINING

UNIT-1

The Compelling Need for data warehousing: Escalating Need for strategic information, Failures of pas decision-support systems, operational versus decision-support systems, data warehousing-the only viable solution, data warehouse defined Data warehouse – The building Blocks: Defining Features, data warehouses and data marts, overview of the components, and metadata in the data warehouse. Defining the business requirements: Dimensional analysis,

information packages – a new concept, requirements gathering methods, requirements definition: scope and content.

UNIT-II

Principles of dimensional modelling: Objectives, From Requirements to data design, the STAR schema, STAR Scheme Keys, Advantages of the STAR Scheme, Dimensional Modelling: Updates to the Dimension tables, miscellaneous, the snowflake scheme, aggregate fact tables, and families of STARS.

UNIT-III

OLAP in the Data Warehouse: Demand for Online analytical processing, need for multidimensional analysis, fast access and powerful calculations, limitations of other analysis methods, OLAP is the answer, OLAP: definitions and rules, OLAP characteristics, major features and functions, general features, dimensional analysis, what are hyper cubes? Drill-down and roll-up, slice-and-dice or rotation, OLAP models, overview of variations, the MOLAP model, the ROLAP model, ROLAP versus MOLAP, OLAP implementation considerations.

UNIT-IV

Data Mining Basic: What is Data Mining, Data Mining Defined, The knowledge discovery process, OLAP versus data mining, data mining and the data warehouse, Major Data Mining Techniques, Cluster detection, decision trees, memory-based reasoning, link analysis, neural networks, genetic algorithms, moving info data mining Applications, Benefits of data mining, applications in retail industry, applications in telecommunications industry, applications in banking and finance

Reference Books:

1. Paul Raj Ponia, “Fundamentals of Data Warehousing”, John Wiley & Sons, 2003
2. Sam Anatomy, “Data Warehousing in the real world: A practical guide for building decision support systems”, John Wiley, 2004
3. W.H. Inmon, “Building the operator data store”, 2nd Ed., John Wiley, 1999
4. Kamber and Han, “Data Mining Concepts and Techniques”, Hartcourt India P. Ltd.,
5. A Guide to Data Warehousing – Hocht
6. Data Warehousing in Real World – anahory
7. Data Mining – Addsiaans (Addison Wesley)

MSC IT 306 Soft Core: Software Project Management.

Unit-I

Conventional Software Management : The waterfall model, conventional software Management performance. Evolution of Software Economics : Software Economics,

pragmatic software cost estimation. Improving Software Economics : Reducing Software product size, improving software processes, improving team effectiveness, improving automation, Achieving required quality, peer inspections.

Unit-II

The old way and the new : The principles of conventional software Engineering, principles of modern software management, transitioning to an iterative process. Life cycle phases : Engineering and production stages, inception, Elaboration, construction, transition phases. Artifacts of the process : The artifact sets, Management artifacts, Engineering artifacts, programmatic artifacts. Model based software architectures : A Management perspective and technical perspective.

Unit-III

Work Flows of the process : Software process workflows, Iteration workflows, Checkpoints of the process : Major mile stones, Minor Milestones, Periodic status assessments.

Iterative Process Planning : Work breakdown structures, planning guidelines, cost and schedule estimating, Iteration planning process, Pragmatic planning.

Unit-IV

Project Organizations and Responsibilities: Line-of-Business Organizations, Project Organizations, evolution of Organizations. Process Automation: Automation Building blocks, The Project Environment.

Unit-V

Project Control and Process instrumentation: The seven core Metrics, Management indicators, quality indicators, life cycle expectations, pragmatic Software Metrics, Metrics automation. Tailoring the Process: Process discriminants. Future Software Project Management: Modern Project Profiles, Next generation Software economics, modern process transitions.

Books:

1. Software Project Management, Walker Royce: Pearson Education, 2005.
2. Information Technology Project management (4th Edition) – Kathy Schwalbe (Centgage Learning – Indian Edition)

Reference Books:

1. Project Management Core Textbook – Mantel Jr., Meredith, Shafer, Sutton with Gopalan (Wiley India Edition)
2. Information Technology project Management, : a concise study, (3rd ed.) by S A Kelkar (PHI)
3. Project Management- A systems Approach to planning, scheduling and controlling - Harold Kerzner (John Wiley & Sons, Inc)
4. *A Guide to the Project Management Body of Knowledge (3rd Edition)*- Newtown Square, PA, Project Management Institute, 2005.

Reference Books:

1. Iviike Cotterell, Bob Hughes, "Software Project Management" - Inclination :Rhomus Computer Press, 1995.
2. Darrel Ince. H.Sharp and M.Woodman. "Introduction to Software Project Management and Quality Assurance", Tata McGraw Hill, 1995.

MSC IT 307 Soft Core: Cyber Laws & Network Security**Unit-I**

Cyber Law: Basic Concepts of Technology and Law : Scope of Cyber Laws, Cyber Jurisprudence. Law of Digital Contracts : The Essence of Digital Contracts, The System of Digital Signatures, The Role and Function of Certifying Authorities, Information Technology Act 2000 : Information Technology Act-2000-1 (Sec 1 to 13), Information Technology Act-2000-2 (Sec 14 to 42 and Certifying authority Rules), Information Technology Act-2000-3 (Sec 43 to 45 and Sec 65 to 78), Information Technology Act-2000-4(Sec 46 to Sec 64 and CRAT Rules), Information Technology Act-2000-5 (Sec 79 to 90), Information Technology Act- 2000-6 (Sec 91-94) Amendments in 2008.

UNIT - II

Conventional Encryption : Classical Technique – Modern technique – Algorithms; Public Key Cryptography : Public Key Cryptography – Introduction to Number Theory – Message Authentication and Hash Function – HASH and MAC Algorithm – Digital Signature and Authentication protocol.

UNIT – III

Network Security Practice: Authentication Application – Electronic Mail Security – IP Security Program Security and System Security: Secure programs – Nonmalicious program errors – viruses and Worms – Memory and address protection – control access to general objects – File protection mechanism – user authentication – Trusted operating system design and assurance – Intrusion Detection system.

UNIT – IV

System Security and Web Security: Intruders,– Firewall - Managing Access – Password management - Web Security requirements – SSL and TLS – SET; Client Side Security : Using SSL – Active Content – Web Privacy. Database Security: The Database as a Networked Server – Securing database-to-database communication – Reliability and Integrity of database – sensitive data – inference – multilevel databases

UNIT - V

Wireless Network Security: Mobile Security – Encryption Schemes in WLANs – Basic approach to WLAN security and Policy Development – WLAN intrusion process – WLAN security solutions. Digital Watermarking and Steganography: Models of Watermarking – Basic Message Coding – Watermark Security – Content Authentication – Steganography.

TEXT BOOKS:

1. Information Security and cyber laws, Saurabh Sharma, student series, Vikas publication.

2. Charles P. Pfleeger, Shari Lawrence Pfleeger, "Security in Computing", Prentice Hall of India, 2007.
3. William Stallings, "Cryptography and Network Security", 5th Edition, Pearson.
4. John W. Rittinghouse, James F. Ransome, "Wireless Operational Security", Elsevier, 2004.
5. Ron Ben Natan, "Implementing Database Security and Auditing", Elsevier, 2005.
6. Lincoln D. Stein, "Web Security", Addison Wesley, 1999.
7. Ingemar J. Cox, Matthew L. Miller, Jeffrey A. Bloom, Jessica Fridrich, Ton Kalker, "Digital Watermarking and Steganography", 2nd Edition, Elsevier.
8. Dr. R.K. Tiwari, P.K. Sastri, K.V. Ravikumar, "Computer Crime and Computer Forensics", 1st Edition, Selective Publishers, 2002.

Fourth Semester

MSC IT 401 Hard Core: Cloud Computing

UNIT - I

Cloud Computing – Overview – Applications-Intranets and the Cloud – Companies in the Cloud Today- Cloud Computing Services- On Demand Computing – Discovering Cloud Services-Development Services and Tools.

UNIT - II

Cloud hardware and infrastructure-clients-security-network-services-platforms-cloud storage- Cloud software architecture issues- Classification of Cloud Implementations.

UNIT - III

Operating System for the Cloud - Application Patterns and Architecture – Case Studies-Cloud Computing services available under various platforms.

1. Anthony T. Velte, Toby J. Velte, Robert Elsenpeter, "Cloud Computing –A Practical Approach", Tata McGraw Hill Education Pvt. Ltd, 2010.
2. Michael Miller, "Cloud Computing: Web based Applications that change the way you work and Collaborate online", Que Publishing, August 2008.
3. Haley Beard, "Cloud Computing Best Practices for Managing and Measuring Processes for on demand computing, Applications and Data Centers in the Cloud with SLAs", Emereo Pvt. Ltd, July 2008.
4. Prof (Dr.) Andreas Polze, "A Comparative Analysis of Cloud Computing Environments".
5. Cloud Economics.

Elective papers (Select any one Paper)

MSC IT 402 Soft Core: Programming with C #

UNIT-I

Introduction to C # : Evaluation of C#, characteristics of C#, application of C#, difference between C++ and C#, difference between Java and C#. Introduction to C# environment : The .NET strategy, the origins of the .NET technology, the .NET framework, the common language runtime, framework base classes, user and programs interface, visual studio .NET, .NET languages, benefits of the .NET approach, C# and .NET.

UNIT-II

Overview of C#: Programming structure of C#, editing, compiling and executing C# programs, namespace, comments, using aliases for namespace classes, using command line argument, maths function. Literals, variables and data types : literals, variables, data types, value types, reference type, declaration of variables, initialization of variables, default values, constant variables, scope of variables, boxing and unboxing.

UNIT III

Operators and expression : arithmetic operators, relational operators, logical operators, assignment operators, increment and decrement operators, conditional operators, Bitwise operators, special operators, arithmetic expressions, evaluation of expression, precedence of arithmetic operators, type conversions, operator precedence and associativity, mathematical functions.

UNIT IV

Decision making and branching: if statement, if...else statement, nesting of if...else statement, the else if ladder, switch statement, the ?: operator. Decision making and looping: while statement, do statement, for statement, for each statement, jumps in loops. Methods in C# : declaring methods, the main method, invoking methods, nesting of methods, methods parameters, pass by value, pass by reference, the output parameters, variable arguments list, method overloading.

MSC IT 403 Soft Core: Software Communication & Documentation

UNIT-1

The Seven Cs of Effective Communication, Completeness, Conciseness, Consideration, Concreteness, Clarity, Courtesy, Correctness **Communication: Its interpretation**, Basics, Nonverbal Communication, Barriers to Communication

UNIT-II

Business Communication at Work Place: Letter Components and Layout, Planning a letter, Process of Letter, writing, E-mail Communication, Memo and Memo reports, Employment Communication, Notice agenda and Minutes of meeting, Brochures

UNIT-III

Report Writing, Effective writing, types of business reports, structure of reports, gathering information, organization of the material, writing abstracts, and summaries, writing definitions, visual aids, user instruction manual.

UNIT-IV

Required Skills: Reading skills, listening skills, note-making, précis writing, audiovisual aids, oral communication, **Mechanics of Writing**, Transitions, Spelling rules, hyphenation, transcribing numbers, Abbreviating technical and non-technical terms, Proof reading.

Books:

1. Professional Communication by Aruna Koneru, McGrawHill
2. Effective Business Communication by Herta A Murphy, Herbert W Hildebrandt, Jane P Thomas, McGrawHill

References:

1. Business Communication, Lesikar and Petit, McGrawHill
2. Communication Skills Handbook, Summers, Wiley, India
3. Business Communication (Revised Edition), Rai and Rai, Himalaya Publishing House
4. Business Correspondence and Report Writing by R. C. Sharma and Krishna Mohan, TMH.

MSC IT 404 Soft Core: Geographic Information Systems

Unit I

Spatial Data Concepts: Introduction to GIS, Geographically referenced data, Geographic, projected and planer coordinate system, Map projections, Plane coordinate systems, Vector data model, Raster data model

Unit II

Data Input and Geometric transformation: Existing GIS data, Metadata, Conversion of existing data, Creating new data, Geometric transformation, RMS error and its interpretation, Resampling of pixel values.

Unit III

Attribute data input and data display : Attribute data in GIS, Relational model, Data entry, Manipulation of fields and attribute data, cartographic symbolization, types of maps, typography, map design, map production **Data exploration:** Exploration, attribute data query, spatial data query, raster data query, geographic visualization

Unit IV

Vector data analysis: Introduction, buffering, map overlay, Distance measurement and map manipulation. **Raster data analysis:** Data analysis environment, local operations, neighbourhood operations, zonal operations, Distance measure operations **Spatial Interpolation:** Elements, Global methods, local methods, Kriging, Comparisons of different methods

Text Book

1. Introduction to Geographic Information Systems by Kang-Tsung Chang Published by Tata Mcgraw Hill

Reference Books and websites

1. Concepts and Techniques in Geographic Information Systems by Chor Pang Lo and Albert K. W. Yeung
2. <http://www.ncgia.ucsb.edu/giscc/>

Project

The project should be undertaken preferably individually or by the group of maximum 3 students who will jointly work and implement the project. The candidate/group will select a project with the approval of the Guide (staff member) and submit the name of the project with a synopsis of the proposed work of not more than 02 to 08 pages within one month of the starting of the semester. The candidate/ group is expected to complete detailed system design, analysis, data flow design, procurement of hardware and/or software, implementation of a few modules of the proposed work during the semester IV as a part of the term work submission in the form of a joint report.

Candidate/group will submit the completed project work to the department at the end of semester IV as mentioned below.

1. The workable project.
2. The project report in the bound journal complete in all respect with the following : -
 - i) Problem specifications.
 - ii) System definition – requirement analysis.
 - iii) System design – dataflow diagrams, database design
 - iv) System implementation – algorithm, code documentation
 - v) Test results and test report.
 - vi) In case of object oriented approach – appropriate process be followed.

The project report should contain a full and coherent account of your work. Although there will be an opportunity to present the work verbally, and demonstrate the software, the major part of the assessment will be based on the written material in the project report. One can expect help and feedback from the project guide, but ultimately it's the candidates own responsibility. The suggestive structure of a project report should be guided by your guide in selecting the most appropriate format for your project. The term work assessment will be done jointly by teachers appointed by Head of the Institution.

The oral examination will be conducted by an internal and external examiner as appointed by the University.

Note:

1. Project work should be continually evaluated based on the contributions of the candidate/group members, originality of the work, innovations brought in, research and developmental efforts, depth and applicability, etc.
2. Two mid-term evaluations should be done, which includes presentations and demos of the work done.

Open elective--Multimedia Applications

Unit-I

Introduction: What is multimedia? Defining the scope of multimedia. Applications of multimedia, hardware and software requirements, **Digital representation:** Introduction, Analog representation, waves, digital representation, need for digital representation, A to D conversion, D to A conversion, relation between sampling rate and bit depth, Quantization error, Fourier representation, pulse modulation. Importance and drawback of digital representation.

Unit-II

Text and Image: Introduction, Types of text, Font, insertion, compression, File formats. Types of images, colour models, Basic steps for image processing, principle and working of scanner and digital camera, Gamma and gamma correction.

Unit-III

Audio and Video technology: Fundamental characteristics of sound, psycho-acoustics, Raster scanning principles, sensors for TV cameras, color fundamentals, additive and subtractive color mixing, Liquid crystal display (LCD), Plasma Display Panel (PDP), file formats

Unit-IV

Compression and coding: What is compression? Need for compression, Types of compression- basic compression techniques-run length, Huffman's coding, JPEG, zip coding. Overview of Image and Video compression techniques.

Books:

1. Principles of Multimedia by Ranjan Parekh. Tata McGraw-Hill

Reference:

1. Multimedia Systems Design by Prabhat K. Andleigh and Kiran Thakrar-PHI publication
2. Multimedia systems by John F. Koegal Buford-Pearson Education.
3. Fundamentals of multimedia by Ze-Nian Li and MS Drew. PHI EEE edition.

Term Work:
