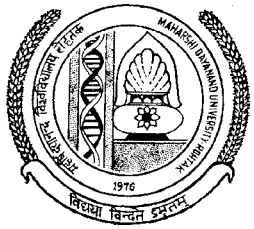
Maharshi Dayanand University
Rohtak



Syllabus and Courses of
Reading for
M. Tech (Software Engg.)
Examination

Session 2011-2012

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MASTER OF TECHNOLOGY (SOFTWARE ENGINEERING)
SCHEME OF STUDIES & EXAMINATION
SEMESTER - Ist

Course No.	Course Title	Teaching Schedule			Marks			Credits			Duration of Exam.
		L	T	P	Sessional	Exam.	Total	Sessional	Exam.	Total	
MTSE--101	Software Engineering Principles	4	-	-	50	100	150	2	4	6	3 Hrs.
MTSE-102	Software Architecture	4	-	-	50	100	150	2	4	6	3 Hrs.
MTSE-103	Operating System & Design	4	-	-	50	100	150	2	4	6	3 Hrs.
MTSE-104	Programming Languages	4	-	-	50	100	150	2	4	6	3 Hrs.
MTSE-105	Data Structures Using C	4	-	-	50	100	150	2	4	6	3 Hrs.
MTSE-106	DataStructures Lab	-	-	3	50	50	100	2	2	4	3 Hrs.
MTSE-107	Operating Systems & Design Lab	-	-	3	50	50	100	2	2	4	3 Hrs.
	Total	20	-	6	350	600	950	14	24	38	

Note :

1. The Paper setter shall set each theory paper of 100 marks covering the syallbus. However, the examiner shall evaluate the performance of the student in the theory paper finally by assigning one of the grades out of A+, A, B, C, D, E. The Examination of practical courses shall also be evaluated on the basis of these grades.
2. The Sessionals of Theory/ Practical Courses shall also be evaluated on the basis of these grades.
3. The choice of students for any elective shall not be binding on the department to offer it.
4. The Grading System is defind at the end of the Scheme of Studies & Examinations & will be supplied by the University to the Examiner(s).

MASTER OF TECHNOLOGY (SOFTWARE ENGINEERING)
SCHEME OF STUDIES & EXAMINATION
SEMESTER - 2nd

Course No.	Course Title	Teaching Schedule			Marks			Credits			Duration of Exam.
		L	T	P	Sessional	Exam.	Total	Sessional	Exam.	Total	
MTSE--201	Object Oriented	4	-	-	50	100	150	2	4	6	3 Hrs.
MTSE-202	Analysis and Design of Algorithms	4	-	-	50	100	150	2	4	6	3 Hrs.
MTSE-203	Adv.Computer Networks	4	-	-	50	100	150	2	4	6	3 Hrs.
MTSE-204	Key Topics in Software	4	-	-	50	100	150	2	4	6	3 Hrs.
MTSE-205	Advanced DBMS	4	-	-	50	100	150	2	4	6	3 Hrs.
MTSE-206	Key Topics in Software Engineering Lab.	-	-	3	50	50	100	2	2	4	3 Hrs.
MTSE-207	Advanced DBMS Lab	-	-	3	50	50	100	2	2	4	3 Hrs.
	Total	20	-	6	350	600	950	14	24	38	

Note :

1. The Paper setter shall set each theory paper of 100 marks covering the syallbus. However, the examiner shall evaluate the performance of the student in the theory paper finally by assigning one of the grades out of A+,A,B,C,D, E,. The Examination of practical courses shall also be evaluated on the basis of these grades.
2. The Sessionals of Theory/ Practical Courses shall also be evaluated on the basis of these grades.
3. The choice of students for any elective shall not be binding on the department to offer it.
4. The Grading System is defind at the end of the Scheme of Studies & Examinations & will be supplied by the University to the Examiners.

MASTER OF TECHNOLOGY (SOFTWARE ENGINEERING)
SCHEME OF STUDIES & EXAMINATION
SEMESTER -3rd

Course No.	Course Title	Teaching Schedule			Marks			Credits			Duration of Exam.
		L	T	P	Sessional	Exam.	Total	Sessional	Exam.	Total	
MTSE-301	Software Testing & Validation	4	-	-	50	100	150	2	4	6	3hrs.
MTSE-302	Software Project Management	4	-	-	50	100	150	2	4	6	3hrs.
	Elective-I	4	-	-	50	100	150	2	4	6	3hrs.
	Elective-II	4	-	-	50	100	150	2	4	6	3hrs.
MTSE-317	Software Testing & Validation			3	50	50	100	2	2	4	3hrs.
MTSE-318	Seminar	-	-	3	100	-	100	4	-	4	3hrs.
	Total	16	-	6	350	450	800	14	18	32	

Note :

1. The Paper setter shall set each theory paper of 100 marks covering the syallbus. However, the examiner shall evaluate the performance of the student in the theory paper finally by assigning one of the grades out of A+, A, B, C, D, E. The Examination of practical courses shall also be evaluated on the basis of these grades.
2. The Sessionals of Theory/ Practical Courses shall also be evaluated on the basis of these grades.
3. The choice of students for any elective shall not be binding on the department to offer it.
4. The Grading System is defind at the end of the Scheme of Studies & Examinations & will be supplied by the University to the Examiner(s).

MASTER OF TECHNOLOGY (SOFTWARE ENGINEERING)
SCHEME OF STUDIES & EXAMINATION
SEMESTER -4th

Course No.	Course Title	Teaching Schedule			Marks			Credits			Duration of Exam.
		L	T	P	Sessional	Exam.	Total	Sessional	Exam.	Total	
MTSE-401	Project Dissertation	-	-	20	300	450	750	12	18	30	3hrs.
	Total	-	-	20	300	450	750	12	18	30	

Note :

1. Sessionals of Project/ Dissertation shall be evaluated on the basis of the grades out of A+, A, B, C, D, E.
2. The Project/ Dissertation shall be evaluated through a Committee of Examiners consisting of Head of the Department, supervisor & one External Examiner. The evaluation shall be based upon the above grades.
3. The Grading System is defind at the end of the Scheme of Studies & Examinations & will be supplied by the University to the Examiner(s).

List of the Elective Subjects

Elective - I		**Elective-II**	
Code	**Subject**	**Code**	**Subject**
MTSE-303	Software Reliability	MTSE-310	Team Management & Personal Software Process
MTSE-304	Human Interface Design	MTSE-311	E-Commerce & ERP
MTSE-305	Cryptography & Network Security	MTSE-312	Electronic Data Interchange
MTSE-306	Data Warehouse & Data Mining	MTSE-313	E-Business
MTSE-307	Real Time Systems	MTSE-314	Decision Support & Business Intelligence Systems
MTSE-308	Software Reuse	MTSE-315	Client Server Based IT Solutions
MTSE-309	Software Metrics	MTSE-316	Management Information Systems

M.D. UNIVERSITY, ROHTAK (HARYANA)
SCHEME OF STUDIES & EXAMINATION FOR
MASTER OF TECHNOLOGY IN
SOFTWARE ENGINEERING

The performance of the student of M.Tech Software Engineering Course shall be graded on the basis of percentage of marks and corresponding grades as mentioned below :

A)

Marks		Grade		Marks
85	≤	A+	≤	100
75	≤	A	<	85
65	≤	B	<	75
50	≤	C	<	65
40	≤	D	<	50
00	≤	E	<	40

Letter Grades	Performance	Division
A+	Excellent	First
A	Very Good	First
B	Good	First
C	Fair	Second
D	Pass	Third
E	Repeat	Fail

Note : The candidate who have passed all the semesters examination in the first attempt obtaining at least 75% marks in aggregate shall be declared to have passed in the first division with Distinction mentioned in the degree.

B) Actual percentage of Marks Obtained and Corresponding grades should be mentioned on detailed marks certificate of student. To obtain 'D' grade a student must have secure at least 40% marks in eac subject of the semester Examination.

C) Student who earned and 'E' grade or less than 40% marks in any subject shall have reappear in that subject.

MTSE-101 SOFTWARE ENGINEERING PRINCIPLES

L T P		Marks	Credits
4 - -	Exam	: 100	4
	Sessional	: 50	2
	Total	: 150	6
	Duration of Exam.	: 3 hrs.	

NOTE : Eight questions of equal marks to be set taking two from each UNIT. The student is to attempt any five questions selecting at least one from each UNIT.

UNIT - I

Software Engineering : Introduction, Importance, Evaluation, Characteristics, Components. Software Application, Software Crisis problem and Causes, Layered Technology of Software Engineering.

UNIT - II

Software Development Process Models : Waterfall Model, Prototyping Model, Spiral Model, RAD Model, Problem Analysis, Requirement Verification, Requirement Validation, Problem Partitoning, Abstraction, Top Down and Bottom up Approach Cohesiveness, Coupling Modularing.

UNIT - III

Software Project Scheduling and Designing ; Software Project Management, Cost Estimation Project Scheduling, Project Staffing, Software Configuration Management. Risk Management, Quality Assurance, Project Monitoring.

UNIT - IV

Coding and Testing : Coding, Top Down and Bottom up Approach of Programming, Information Hiding, Programming Style, Internal documentation, Verification Static and Dynamic Verification, Monitoring and control of coding, Testing : Level of

testing test Cases, test Criteria and Test Oracle, Black Box testing, White Box testing, test Process Validation, Alpha and Beta testing System testing and Debugging.

Software Maintenances : Maintenances Characteristics, Maintainability, Maintenances Tasks, Maintenances Side Effects.

References :

1. Pressman S. Roger, " Software Enginering ", Tata Mac Graw Hill
2. Jalot Pankaj, " An Integrated Approach to S/ W Engg, "Narosa Publishing House.
3. Someerville Ian, "Software Engineering 5th Addition", Addition Wesley 2002.
4. Fairly Richard," Software Engineering Concepts", Tata Mc Graw Hill.
5. Software Engg. By Nasib Singh Gill, Khanna Pub.

MTSE -102 SOFTWARE ARCHITECTURE

		Marks	Credits
L T P	Exam	: 100	4
4 - -	Sessional	: 50	2
	Total	: 150	6
	Duration of Exam.	: 3 hrs.	

NOTE : Eight questions of equal marks to be set taking two from each UNIT. The student is to attempt any five questions selecting at least one from each UNIT.

UNIT - I

Software Architecture terms : Component, Relationship, View, Architectural Styles, Frameworks, Patterns, Methodologies, Processes, Functional and Non-functional Properties of Software Architectures.

UNIT - II

Enabling techniques for Software Architecture : abstraction, Encapsulation, Information Hiding Modularization Separation of concerns, Coupling and Cohesion. Sufficiency, Completeness and Primitiveness Separation of Policy and Implementation.Separation of Interface and Implementation.

UNIT - III

Architectural Styles : Pipes and Filters, Data Abstration and Object- Orientation, Event- Based, Implicit Invocation, Layered Systems, Repositories, Interpreters, Process Control, Heterogeneous Architectures.

UNIT - IV

Software Implementation - development environment facilities : code generation, reverse engineering, profiling, software libraries, testing and debugging.

Software Quality : Changeability, Efficiency, Interoperability, Reliability, testability, Reusability, Fault tolerant software.

References :

1. M. Shaw : Software Architecture Perspective on an Emerging Discipline, Prentice Hall.
2. Len Bass, Paul Clements, Rick Kazman : Software Architecture in Practice, Pearson Education Asia.

MTSE -103 OPERATING SYSTEMS & DESIGN

		Marks	Credits
L T P	Exam	: 100	4
4 - -	Sessional	: 50	2
	Total	: 150	6
	Duration of Exam.	: 3 hrs.	

NOTE : Eight questions of equal marks to be set taking two from each UNIT. The student is to attempt any five questions selecting at least one from each UNIT.

UNIT - I

Introduction : Operating systems classification, simple monitor, multiprograming, time-sharing, real time systems, interrupt based systems, operating systems services, system calls, system progams, systems generation.

UNIT - II

File System : File support access methods, allocation methods contiguous, linked and indexed allocation, directory systems single level, tree structures, a cyclic graph and general graph directories, file protection.

UNIT - III

CPU Scheduling : basic scheduling concepts, process overviews, process states, suspend/ resume operations, Multitasking and Multithreading, Scheduler & Scheduling algorithms, Multiple process scheduling.

UNIT - IV

Memory Management : Bare machine approach, resident monitor, partition, Paging and segmentation, Virtual memory, Overlays, demand paging, peformance of demand paging, Page replacement algorithm, m-thrashing.

Deadlocks : Deadlock charactrization, deadlock prevention, avoidance, detection and recovery.

References :

1. James L Peterson " Operating Systems Concept" John Wiley & Sons Inc; 6Rev Ed edition.
2. Deitel H.M.," An Introduction to Operating systems", Addison - Wesley.

3. Stallings William :"Operating Systems", PHI New Delhi - 1997.
4. Madnick and Donavon : " Operating Systems", Mc Graw - Hill International Editions, Computer Science Series, New York (1996).

MTSE -104 PROGRAMMING LANGUAGES

			Marks	Credits
L T P	Exam	:	100	4
4 - -	Sessional	:	50	2
	Total	:	150	6
	Duration of Exam.	:	3 hrs.	

NOTE : Eight questions of equal marks to be set taking two from each UNIT. The student is to attempt any five questions selecting at least one from each UNIT.

UNIT - I

Programme Development : Introduction, task of program development, problem definition, program design, coding. Debugging, testing, documentation, maintenance, extension and redesign conclusion.

Flowchart : Introduction, developing and algorithm for solution, flowchart and their purpose, flowchart symbols, basic symbols, specialized input/ output symbols, specialized input symbols, additional symbol, type of flowchart, system flowchart, modular program flowchart, constructing flowchart, example of flowchart, detail General programming consideration, error in programming.

UNIT - II

Structured programming : Introduction, design considerations, objectives and principles, program structure, structuring of control flow, modular programming, top-down approach, constrained use of go to, programming consideration, structured flowcharts.

UNIT - III

Pseudo code : Introduction, management control of system development process, the system steering committee, purpose system steering committee, structure of system steering committee, Membership, project task forces, benefit system steering committee, planning for information system, project management system, bar system, bar chart, program evaluation review techniques,summary.

UNIT - IV

System Development Process : Introduction methodology and standard, expression of a need. preliminary investigation and feasibility study, request clarification, feasibility study, system study report, request approval, handling of infeasible project, specification of requirements, system proposal, system design, programming, system testing, implementation.

References :

1. Programming Languages design and implementation by T.W Pratt., PHP.
2. Programming Languages by Allen B. Tucker TMH.
3. Programming Languages by Herbert G. Mayer, Macmillan Pub. Co.

MTSE -105 DATA STRUCTURED USING C

			Marks	Credits
L T P	Exam	:	100	4
4 - -	Sessional	:	50	2
	Total	:	150	6
	Duration of Exam.	:	3 hrs.	

NOTE : Eight questions of equal marks to be set taking two from each UNIT. The student is to attempt any five questions selecting at least one from each UNIT.

UNIT - I

Introduction Lexical Elements, Entering and Executing Program. I/O Operation and Expressions, Control Structures, Functions, Arrays and Strings.

Pointers, Structures and Unions, Recursion, Files, Preprocessors and Commandline Arguments.

UNIT - II

Introduction and Theoretical Concepts of Data Types, Elementry Data Structure, List, Stacks, Queues, Trees, Searching, Sorting.

UNIT - III

Introductory Practical Approach to List Data Structure, Manipulation of Linear Linked List, Circular and Doubly Linked List, Doubly Linked Circular List.

UNIT - IV

What is Algorithm, Algorithms for Breadth First Traversal, Depth First Traversal, 8-Puzzle Problem, Sorting Algorithms - (Insertion, Bubble, Merge, radix, Quick, Heap), Searching Algorithm - (Linear, Binary).

References :

1. Data Structures and Algorithms, Aho, Hoperoft and Ullman, Pearson 2001.
2. Data Structure and Algorithm Analysis, Allen Weiss, Pearson, 2001.
3. Fundamentals of Data Structures by Ellis Horowitz & Sartaj Sahni, Pub. 1983 AW.
4. Theory and problems of data structures by Jr Symour Lipschetz, Schaum's outline Series.
5. C and Data Structures, E.Bala guruswamy. Tata Mc Graw Hill.

MTSE -106 DSA LAB

			Marks	Credits
L T P	Exam	:	50	2
- - 3	Sessional	:	50	2
	Total	:	100	4
	Duration of Exam.	:	3 hrs.	

The experiments will be based on the topics covered in the corresponding theory subject.

MTSE -107 OPERATING SYSTEMS & DESIGN LAB

			Marks	Credits
L T P	Exam	:	50	2
- - 3	Sessional	:	50	2
	Total	:	100	4
	Duration of Exam.	:	3 hrs.	

The experiments will be based on the topics covered in the corresponding theory subject.

MTSE -201 OBJECT ORIENTED SOFTWARE ENGINEERING

			Marks	Credits
L T P	Exam	:	100	2
4 - -	Sessional	:	50	2
	Total	:	150	6
	Duration of Exam.	:	3 hrs.	

NOTE : Eight questions of equal marks to be set taking two from each UNIT. The student is to attempt any five questions selecting at least one from each UNIT.

UNIT - I

Introduction to Software Engineering : Software Engineering Development, Software Life Cycle Models, Standards for

developing life cycle models.

Object Methodology & Requirements Elicitation, Introduction to Object Oriented Methodology.Overview of requirements Elicitation, Requirements Model- Action & Use cases, Requirements Elicitation Activities, Managing Requirements Elicitation.

UNIT - II

Architecture : Model Architecture, Requirements Model, Analysis Model, Design Model. Implementation Model, Test Model.

Modelling with UML : Basic Building Blocks of UML, A Conceptual Model of UML, Basic Structural Modelling, UML Diagrams.

UNIT - III

Systems Analysis : Analysis Model, Dynamic Modelling & testing System Design : Design concepts & activities, Design models, Testing.

UNIT - IV

Testing Object Systems : Introduction, Testing Activities & Techniques, The Testing Process, Managing Testing Case Studies.

References :

1. Stephen R. Scach, " Classical & Object Oriented Software Engineering with UML and Java", Mc Graw Hill, 1999.

MTSE -202 ANALYSIS & DESIGN OF ALGORITHMS

			Marks	Credits
L T P	Exam	:	100	2
4 - -	Sessional	:	50	2
	Total	:	150	6
	Duration of Exam.	:	3 hrs.	

NOTE : Eight questions of equal marks to be set taking two from each UNIT. The student is to attempt any five

questions selecting at least one from each UNIT.

UNIT - I

ANALYSIS ALGORITHMS & PROBLEMS : Introduction to algorithms, Time, ad Space Complexity, Basic elements of data structures like link lists, stacks and queues, trees, graphs, recursion. Different types of sorting algorithms and their complexities. DYNAMIC SETS, SEARCHING GRAPHS : Introduction, Array, amortized time analysis, red black trees, hashing heaps, dynamic equivalence relations and union-find programs, priority queues with decrease key operations, traversing graphs, DFS strongly connected components, bioconnected components, minimum spanning tree algo., single source shortest paths, all pair shortest paths.

UNIT - II

GREEDY AND DYNAMIC METHODS : Introduction to greedy and dynamic methods, their algorithms and comparative study.

UNIT - III

BACKTRACKING AND BRANCH- AND-BOUND ; General backtracking and Branch and Bound Methods, 8 queen, sum of subset, graph coloring, Hamilton cycles, 0/1 knapsack problem.

UNIT - IV

NP HARD AND NP COMPLETE PROBLEMS : Basic Concepts, cooks theorem, P - Hard graph problems, NP hard Scheduling.

References :

1. Computer Algorithms : Introduction to Design and Analysis (3rd Edition) by Sara Baase and Allen Van Gelder, Pearson, 2000.
2. Fundamentals of Algorithms by Gilles Brassard and Paul Bratley
3. Design and Analysis of Algorithms (Computer Science Series) by Jeffrey D.Smith Publ.

4. Fundamental of Computer algorithms, Ellis Horowitz and Srataj Sahnim 1978, Galgotia Publ.
5. Algorithms Design (Pie) by Eva Tardos and Jon Kleinberg, Person.
6. Introduction to Algorithms, Thomas H Cormen, harles E Leiserson and Ronald Lrivest : 1990, TMH.

MTSE -203 ADVANCE COMPUTER NETWORKS

			Marks	Credits
L T P	Exam	:	100	4
4 - -	Sessional	:	50	2
	Total	:	150	6
	Duration of Exam.	:	3 hrs.	

NOTE : Eight questions of equal marks to be set taking two from each UNIT. The student is to attempt any five questions selecting at least one from each UNIT.

UNIT - I

Introduction to data Communications and Networking : Introduction : Fundamental Concept; Data communications; Protocols; Standards; Standards Organizations; Signal Propagation; Analog and Digital Signals; Bandwidth of a signal and a medium; The data transmission rate and the bandwidth.
Modes of Data Trasmission and Multiplexing : Introduction; Parallel and Serial Communication, Asynchronous, Synchronous and Isochronous Communication : simplex, Half- Duplex Communication, Multiplexing; Types of Multiplexing; FDM Versus TDM.

UNIT - II

Network Topologies, Switching and Routing Algorithms : Introduction : mesh Topology; Star Topology; Tree Topology: Ring Topology; Bus Topology; Hybrid Topology; Switching Basics; Circuit Switching; Packet Switching ; Message

Switching; Router and Router and Routing; Factors Affecting Routing Algorithms; Routing Algorithms; Approaches to Routing.

UNIT - III

Transmission Errors : Detection and Correction : Introduction; Error Classification; Type of Error; Error Detection; Error control; Flow Control; Parity check, Longitudinal redundancy check, cyclic redundancy check, recovery from errors, CSMA.

UNIT - IV

Networking Protocols and OSI Model : Introduction; Protocols in Computer Communications; OSI Model; OSI Layer Functions; Local Area Networks; Metropolitan Area Network; Wide Area Network.

References :

1. Data & Computer Communications : W. tallings., Pearson Education
2. TCP/ IP Principles, Protocols & Architecture : Douglus E. Comer., Pearson Education.
3. Mobile Communications : Jochen H. Schiller, Pearson Education.
4. Computer Network by Andrew by Andrew S. Tenanbaum, PHI, 4th Edition.
5. Data Communication and Networking by Forozoun Behrouz A. Fegansophia.

MTSE -204 KEY TOPICS IN SOFTWARE ENGINEERING

			Marks	Credits
L T P	Exam	:	100	4
4 - -	Sessional	:	50	2
	Total	:	150	6
	Duration of Exam.	:	3 hrs.	

NOTE : Eight questions of equal marks to be set taking two from each UNIT. The student is to attempt any five questions selecting at least one from each UNIT.

UNIT - I

Formal methods ; Basic concepts, mathematical preliminaries, Applying mathematical notations for formal specification, formal specification languages, using Z to represent an example software Component based development, classifying and retrieving components, the ten commandments of formal methods, formal methods - the road ahead.

Cleanroom Software Engineering : The cleanroom approach, functional specification, cleanroom design, cleanroom testing.

UNIT - II

Component- Based Software Engineering : Engineering of component- based systems, the CBSE process, domain engineering, Component based development, classifying and retrieving components, economics of CBSE.

Client/ Server Software Engineering : The structure of client/ server sytems, software engineering for c/s systems, analysis modellng issues, design for c/s systems, testing issues.

UNIT - III

Web Engineering : The attributes of web-based applications, the Web-E process, a framework for Web- E, formulating/ analyzing web-based systems, design for web-based applications, testing web-based application, management issues.

Reengineering : Business process reengineering, software reengineering, reverse reengineering, restructuring, forward reengineering, the economics of reengineering, the economics of reengineering.

UNIT - IV

Computer- Aided Software Engineering : Introduction, building blocks for CASE, taxonomy of CASE tools, integrated CASE environments, integration architecture, CASE repository.

References :

1. Roger S. Pressman, Software Engineering a Practitioner's Approach, M Graw Hill, New York.
2. J. Bowan, Formal Specification and Documentation using Z : A Case Study Approach, International Thomson Computer Press, New York.
3. Antoni Diller, Z : An Introduction to Formal Methods (second edition), Wiley New York.
4. M. Dyer, The Cleanroom Approach to Quality Software Development, Wiley, New York.
5. Prowell et al., Cleanroom Software Engineering : Technology and Process, Addison Wesley, Masschachusetts.
6. Allen, Frost, Yourson. Component Based development for Enterprise Systems Applying the Perspective, Cambridge University Press, England.
7. Zantinge and Adriaans, Managing Client/ Server. Addison-Wesley Masschachusetts.

MTSE -205 ADVANCE DATA BASE MANAGEMENT SYSTEM

			Marks	Credits
L T P	Exam	:	100	4
4 - -	Sessional	:	50	2
	Total	:	150	6
	Duration of Exam.	:	3 hrs.	

NOTE : Eight questions of equal marks to be set taking two from each UNIT. The student is to attempt any five questions selecting at least one from each UNIT.

UNIT - I

Introduction : - Traditional Approach to Information processing. Data Base Concepts and its Approach to data Processing.

Feature of DBMS, Software, Users, Why Database? What isBDBMS. Elements of DBMS : Data Definition Langugaes (DDL). Data Manipulation Language (DML). Data Query Language (DQL). How Does A DBMS Works.

UNIT - II

Introduction to Data base Model, Relational Data Base Models, Hierarchical, DAta Base, Network Data Base, Data Base Design, Applications, Problems In DBMS Environment, Selecting Database Software, Basic of Relationsl Data Base Management.

Relational Algebra (Union, Intersection, Difference, Cartesian Product, Select, project, Join, Divide), Entity - Relationship Model, Components (Entities, Attributes, Relationship, Cardinality, Weak Entities, Recursive Entities).

UNIT - III

Normalization, The Need for the Normailization, Conversion To Ist, IInd and IIrd Normal Form, File Access Method- Sequential File, Direct Access, Role of DBMS, Why Relational Database, Structure of RDBMS, Next Generation Data Base System, Knowledge Based System, Computer Facilities, Features of Distributed Vs Centralized Data Base, Role of DBA.

UNIT - IV

Data Classification : Importance of Data, Private Organizations Versus Military Classifications : Threats and Risk : Confidentiality, Authentication, Integrity, Non-Repudiation; Cryptography : Type of Cryptography, Symmetric Key Cryptography, Asymmetric Key Cryptography: Digital Signature.

References :

1. An Introduction to Database Systems by Bipin Desai, Galgotia Pub.
2. An Introduction to Database Management Systems by C.J. date, Pearson Education, 7th edition.
3. Database System Concepts by Silberschatz Abraham Korth, TMH, 4th edition.

MTSE -206 KEY TOPICS IN SOFTWARE ENGINEERING LAB.

			Marks	Credits
L T P	Exam	:	50	2
- - 3	Sessional	:	50	2
	Total	:	100	4
	Duration of Exam.	:	3 hrs.	

The experiments will be based on the topics covered in the corresponding theory subject.

MTSE -207 ADVANCED DBMS LAB.

			Marks	Credits
L T P	Exam	:	50	2
- - 3	Sessional	:	50	2
	Total	:	100	4
	Duration of Exam.	:	3 hrs.	

The experiments will be based on the topics covered in the corresponding theory subject.

MTSE -301 SOFTWARE TESTING & VALIDATION

			Marks	Credits
L T P	Exam	:	100	4
4 - -	Sessional	:	50	2
	Total	:	150	6
	Duration of Exam.	:	3 hrs.	

NOTE : Eight questions of equal marks to be set taking two from each UNIT. The student is to attempt any five questions selecting at least one from each UNIT.

UNIT - I

Review of Software Engineering : Overview of software evolution, design models, development life cycle, unit and system testing, project management, maintenance, Concept of

Software verification, validation and testing.

V & V and their Limitations : Theoretical Foundations : Impracticality of Testing All data; Impracticality of testing All Paths; No Absolute Proof of Correctness.

UNIT - II

The Role of V & V in Software Evolution : Types of Products, Requirements; Specifications, Designs, Implementation, Charges, V & V Objectives, Correctness, Consistency, Necessity Sufficiency, Performance.

Software Reliability and Quality Assurance : Software reliability, vaildation, safety and hazards analysis; features affecting quality of software. Concepts and importance of quality assurance, Software quality assuranace strategies, FTR, structured walk through techniques.

UNIT - III

Software V & V Approaches and their Applicability ; Software Technical Reviews, Software Testing : Levels of testing, Module, Integration, System, Regression, Testing techniques and their Applicability, Functional testing and Analysis Structural testing and Analysis, Error Oriented testing and Analysis, Hybrid Approaches, Integration Strategies, Transaction Flow Analysis, Stress Analysis, Failure Analysis, Concurrency Analysis, Peformance Analysis Proof of Correctness, Simulation and Prototyping, Requirements Tracing.

UNIT - IV

Software V & V Planning, Identification and Selection techniques : requirements, Specifications, Designs, Implementations, Changes, Organizations Responsibilities, Development Organization Independent test Organization, Software Quality Assurance, Independent V &V contarctor, V & V Standards, Integrating V & V Approaches, Problem Tracking Test Activities, Assessement.

References :

1. Effective Methods for Software Testing : William Perry, John Wiley & Sons, 1995.
2. Software Testing; Mare Roper, McGraw Hill Book Co., London, 1994.
3. Testing Computer Software; Cem Kaner, Jack Falk, Nguyen Quoc, 2nd ed. Van Nostrand Reinhold, 1993.
4. Software Testing (2nd Edition) by Ron Patton
5. Software Engineering; Agricultural, K.K. & Yogesh Singh, New Age International, 2001.
6. Handbook of Software Quality Assurance; James Mc Manus I & Gordon Schulmeyer Van Nostrand Reinhold, New York, 1992.
7. Software System testing and Quality Assurance; Ronald Owston, Van Nostrand Reinhold, New York, 1984.
8. Software Verfication and Validation : Relistic Project Approach; Michael Deutch Prentice Hall, New Jersey, 1982.

MTSE -302 SOFTWARE PROJECT MANAGEMENT

			Marks	Credits
L T P	Exam	:	100	4
4 - -	Sessional	:	50	2
	Total	:	150	6
	Duration of Exam.	:	3 hrs.	

NOTE : Eight questions of equal marks to be set taking two from each UNIT. The student is to attempt any five questions selecting at least one from each UNIT.

UNIT - I

Planning fundamentals- major issues in software project planning - planning activities - Project master schedule - software risk management - risk monitoring - risk analysis.

UNIT - II

Software cost- major issues in estimating software cost- cost estimation method- Experience based model - parameter model - COCOMO-versions of COCOMO- Software size estimating - function points - software project schedule - Raleigh model.

UNIT - III

Function organization - project organization - matrix organization - staffing quality replacement - turnover management.

UNIT - IV

Directing a software engineering project - issues - activities conflict managment - turnover management. Issues in controlling software project - controlling activities threads of control - Work break down structures - earned value tracking.

References :

1. Tom Demarco, Controlling Software Project Management, Measurement, Prentice Hall, New Jersey.
2. Tom Glib, Finzi Susannah, Principles of Software Engineering Mangement, Addison Wesley, England.
3. Bob Hughes and Mike Cotterell; Software Project Management, third edition, Tata Mc Graw Hill Publishing Compnay Ltd. New Delhi.
4. Pankaj Jalote; Sotware Project Mangement in Practice, Pearson Education Asia.
5. Software Engineering Project Management : Richard Thayer, IEEE Computer Society.

MTSE -317 SOFTWARE TESTING & VALIDATION LAB.

			Marks	Credits
L T P	Exam	:	50	2
- - 3	Sessional	:	50	2
	Total	:	100	4
	Duration of Exam.	:	3 hrs.	

The experiments will be based on the topics covered in the corresponding theory subject.

MTSE -318 SEMINAR

			Marks	Credits
L T P	Exam	:	-	-
- - 3	Sessional	:	100	4
	Total	:	100	4
	Duration of Exam.	:	3 hrs.	

Every student will be required to present a seminar talk on a topic approved by the department. The committee constituted by the Head of the Department will evaluate the presentation and will award one of the grades out of A+, A, B,C, D, E & F.

A Student who is awarded the ' F' grade will be required to repeat the seminar on the same topic.

MTSE -303 SOFTWARE RELIABILITY

			Marks	Credits
L T P	Exam	:	100	4
4 - -	Sessional	:	50	2
	Total	:	150	6
	Duration of Exam.	:	3 hrs.	

NOTE : Eight questions of equal marks to be set taking two from each UNIT. The student is to attempt any five questions selecting at least one from each UNIT.

UNIT - I

Software Reliability Ideas of Software Reliability, Computation of software reliability, Classes of software reliability Models.

UNIT - II

Time Dependent Softawre Reliability Models : Time between failure reliability Models, Fault Counting Reliability Models.

UNIT - III

Time Independent Software Reliability Models : Fault injection model of Software Reliability, Input Domain Reliability Model, Orthogonal defect classification, Software availability Models.

UNIT - IV

Software Reliability Modeling : A general procedure for reliaibility modeling.

References :

1. Hoang Pham, Software Reliability, Springer Verlag, New York.
2. Jhon D. Musa, Software Reliability Engineered testing, Mc Graw Hill, New York.
3. Doron Reled, Software Reliability Methods, Springer Verlag, New York.
4. R. Ramkumar, Reliability Engineering : Fundamentals and Aplications, Prentice hall, New Delhi.

MTSE - 304 HUMAN INTERFACE DESIGN

			Marks	Credits
L T P	Exam	:	100	4
4 - -	Sessional	:	50	2
	Total	:	150	6
	Duration of Exam.	:	3 hrs.	

NOTE : Eight questions of equal marks to be set taking two from each UNIT. The student is to attempt any five questions selecting at least one from each UNIT.

UNIT - I

Human Factors : Human factors of interactive software - interaction device

UNIT - II

Models Theories -principles and design guidelines for user interface design - object- action interface model - and techniques.

UNIT - III

Design Process : User interface design process - usability requirement and specification and procedures and Techniques.

UNIT - IV

Information Search : Information search - visualization and www.

Usability : usability of website and study of e-commerce sites.

References :

1. Jacob nelson, " usability engineering", academic prees, 1993.
2. Alam dix et al, "human computer interaction", prentice hall, 1993.
3. Alan cooper, " the essential of user interface design", IDG books, 1995.
4. Ben Scheider man," design the user interface", ADdision Wesley, 3rd Edition, 1997.

MTSE - 305 CRYPTOGRAPHY & NETWORK SECURITY

			Marks	Credits
L T P	Exam	:	100	4
4 - -	Sessional	:	50	2
	Total	:	150	6
	Duration of Exam.	:	3 hrs.	

NOTE : Eight questions of equal marks to be set taking two from each UNIT. The student is to attempt any five questions selecting at least one from each UNIT.

UNIT - I

Introduction : Classical Security techniques and Computer Network Concepts. Confidentiality and Security, Security Policy and Operations, Life Cycle, Security System Development and Operations.

Secure Networking Threats : The Attack Process, Attacker Types, Vulnerability Types, Attack Results, Attack Taxonomy, Threats to Security : Physical Security, Biometric Systems, Monitoring Controls and Data Security, Intrusion Detection System.

UNIT - II

Encryption Techniques : Conventional Techniques, Modern Techniques, DES, DES Chaining Triple DES, RSA Algorithm, Key Management, Message Authentication and Hash Algorithm, Authentication Requirements and Functions, Secure Hass Algorithm, Message Digest Algorithm, Digital Signatures, AES Algorithms.

UNIT - III

Desigining Secure Networks : Components of Hardening Strategy. Network Devices, Host Operating Systems, Appliance - Based Network Services, Rogue Device Detection, Network Secuirty Technologies, Design Considerations, Layer 2 and IP Addressing Security Considerations, ICMP Design Considerations, ICMP Design Considerations, Routing Considerations Transport Protocol Design Considerations.

Network Security Platform Options : Network Security Platform Options, Network security Devices Best Practices, Common Application Design Considerations, E-mail, DNS, HTTP/HTTPS, FTP, Instant Messaging.

UNIT - IV

IPsec and VPN Design Considerations :

VPN Bascis Types of IPsec VPNs, IPsec Modes of Operation and Security Options, Topoplogy Considerations, Design Considerations Site-to Site Deployment Examples Network

Security Management : Organizational Realities, protocol Capabilities, Tool Capabilities, Secure Management Design Options, Network Security Management, Firewalls, Trusted Systems, IT act and Cyber Laws.

References :

1. Network Security Architecture; Sean Convery, Cisco Press.
2. Cryptography and Network Security; W. stalling; Pearson Education
3. Security in Computing : C.P. Pfleeger; PHP
4. Inside Internet Security; J. Crume; Addison Wesley

MTSE - 306 DATA WAREHOUSE & DATA MINING

			Marks	Credits
L T P	Exam	:	100	4
4 - -	Sessional	:	50	2
	Total	:	150	6
	Duration of Exam.	:	3 hrs.	

NOTE : Eight questions of equal marks to be set taking two from each UNIT. The student is to attempt any five questions selecting at least one from each UNIT.

UNIT - I

Data Warehousing : Definition, usage and trends, DBMS vs data warehousing, Data marts, Metadata, Multidimensional data mode, Data cubes, Schemes for multidimensional Database : star, snowflakes and fact constellations.

UNIT - II

Data Warehouse Process & Architecture : OL-TP vs OLAP, ROLAP vs MOLAP, types of OLAP, servers, 3-Tier data warehouse architecture, distributed and virtual data warehouses,

data warehouse manager.

Data Warehousing implementation, computation of data cubes, modelling; OLAP data, OLAP query manager, data warehouse back end tools complex aggregation at multiple granularities tuning and testing of data warehouse.

UNIT - III

Data Mining Definition & Task : Knoiwledge Discovery Database versus data mining data mining techniques, tools and applications.

Data mining Query language elements data specifications, specifying knowledge, hierarchy specification, pattern presentation & visualization specification data mining languages and standardzation of data mining.

UNIT - IV

Data Mining Techniques : Association rules, Clustering techniques, Decision Tree Knowledge discovery : through Statistical Analysis, Neural Networks & Genetic Algorithm, Rough sets and Fuzzy techniques.

References :

1. Data Warehosuing in the Real World : Sam Anshory & Dennis Murry, Pearson
2. Data Mining - Concepts & techniues : Jiawei Han & Micheline Kamber ; Morgan Kaufmann
3. Building the Data Warehouse; W.H.iIImall. John Wiley & Sons
4. Managing the data Warehouses; Jolln Wiley & Son:
5. Data warehosuing System : Mallach; Mc Graw Hill.
6. Data Mining techniques : Arun Pujar : University Press, Hyderabad
7. Data Mining ; Pieter Adrians &Doll Zanlinge

MTSE - 307 REAL TIME SYSTEMS

			Marks	Credits
L T P	Exam	:	100	4
4 - -	Sessional	:	50	2
	Total	:	150	6
	Duration of Exam.	:	3 hrs.	

NOTE : Eight questions of equal marks to be set taking two from each UNIT. The student is to attempt any five questions selecting at least one from each UNIT.

UNIT - I

Embedded/Real Time System : Definitions and issues- object - oriented methods and unified modeling languge, Basic concept of real time system - safety critical systems - object oriented system for embedded systems.

UNIT - II

Requirement of Analysis of Real Time Systems ; Use cases - heuristics for good requirement analysis diagram - structural object analysis; UML State chart - state chart heuristics.

UNIT - III

Architectural Design : tasking model, component model, deployment model, safety/ reliability model-Mechanistic design - detailed design - performance analysis of real time system real time scheduling theory.

UNIT - IV

Dynamic Modelling : UML and design patterns - real time design patterns - debugging and testing - real time frame works - design automation tool.

References

1. Doing Hard Time : developing Real Time System with UML, objects, Frameworks and Patterns - Bruce Powel Douglass, A.W, 1999.
2. Designing Concurrent, Distributed, and real Time Applications with UML - H. Gomaa, AW, 2000.

MTSE - 308 SOFTWARE REUSE

			Marks	Credits
L T P	Exam	:	100	4
4 - -	Sessional	:	50	2
	Total	:	150	6
	Duration of Exam.	:	3 hrs.	

NOTE : Eight questions of equal marks to be set taking two from each UNIT. The student is to attempt any five questions selecting at least one from each UNIT.

UNIT - I

Introduction Software Reuse and Software Engineering, Concepts and Terms, Software Reuse products, Software Reuse processes, Software reuse paradigms.

State of the Art and the Practice : Software Reuse Management, Software Reuse Techniques, Aspects of Software Reuse, Organizational Aspects, Technical Aspects and Economic Aspects.

UNIT - II

Programming Paradigms and Reusability : Usability Attributes, Representation and Modelling Paradigms, Abstraction and Compostion in development paradigm.

UNIT - III

Object - Oriented Domain Engineering : Abstraction and parameterization techniques, Composition techniques in Object Orientation.

UNIT - IV

Application Engineering : Component Storage and Retrieval, Reusable Asset Integration.Software Reuse technologies : Component Based Software Engineering, COTS based development, Software Reuse Metrics, Tools for Reusability.

References

1. Reuse Based Software Engineering techniques, Organization and Measurement by Hafedh Mili Sherif Yacoub and Edward Addy, John Wiley & Sons Inc.
2. The Three Rs. of Software Automation : Re-engineering, Repository, Reusability by Carma McClure, Prentice Hall New Jersey.
3. McClure, Carma, L. Software reuse techniques : adding reuse to the system development process / : Prentice Hall.
4. Poulin, Jeffrey S. Measuring software reuse : principles, practices and economic models/ Jeffrey S. Poulin Reading, Mass : Addison- Wesley.

MTSE - 309 SOFTWARE METRICS

			Marks	Credits
L T P	Exam	:	100	4
4 - -	Sessional	:	50	2
	Total	:	150	6
	Duration of Exam.	:	3 hrs.	

NOTE : Eight questions of equal marks to be set taking two from each UNIT. The student is to attempt any five questions selecting at least one from each UNIT.

UNIT - I

Basics of measurement : Measurement in everyday life, measurement in software engineering, scope of software metrics, representational theory of measurement, measurement and models, measurement scales, meaningfulness in measurement, goal- based framework for software measurement, classifying software measures, deternining

what to measure, software measurement validation empirical investigation, types of investigation, planning and conducting investigations.

UNIT - II

Software-metrics data collection and analysis : What is good data, how to define the data, how to collect the data, how to store and extract data, analyzing software- measurement data, frequency distributions, various statistical techiques.

Measuring internal product attributes : Measuring size, aspects of software size, length, functionality and complexity, measuring structure, types of structural measures, control-flow structure, modularity and information flow attributes, data structures.

UNIT - III

Measuring external product attributes : Modeling software quality measuring aspects of software quality, software reliability, basics of software reliability, software reliability problem, parametric reliability growth models, predictive accuracy, recalibration of software reliability growth predictions, importance of operational environment, wider aspects of software reliability.

Metrics for object- oriented systems : The intent of object-oriented metrics, distinguishing characteristics of object oriented metrics, various object- oriented metric suites - LK suite, CK suite and MOOD metrics.

UNIT - IV

Metrics for component- based systems : The intent of component based metrics, distinguishing characteristics of component-based metrics, various component- based metrics.

Resource measurement : Measuring productivity, teams tools and methods.

References

1. Norman E. Fenton and Shari Lawrence Pfleeger; Software Metrics - A Rigorous and Practical Approach, Thomson Asia Pte. Singapore.
2. Stephen H. Kan; Metrics and Models in Software Quality Engineering, Addison Wesley, New York.
3. K.H. Moller and D.J. Paulish; Software Metrics - A Practitioner's Guide to Improved Product Development, Chapman and Hall, London.
4. Mark Lorenz and Jeff Kidd; Object- Oriented Software Metrics, Prentice Hall, New York.

MTSE - 310 TEAM MANAGEMENT AND PERSONAL SOFTWARE PROCESS

			Marks	Credits
L T P	Exam	:	100	4
4 - -	Sessional	:	50	2
	Total	:	150	6
	Duration of Exam.	:	3 hrs.	

NOTE : Eight questions of equal marks to be set taking two from each UNIT. The student is to attempt any five questions selecting at least one from each UNIT.

UNIT - I

Introduction : Software Engineering, Time Management, Tracking Time- Period & Product, Planning, Product Size, managing Your Time, Managing Commitments, Managing Schedules

UNIT - II

Planning : The Project Plan, The Software Development Process, defects, Finding Defects, The Code Review, Checklist, Design Defects, Product Quality.

UNIT - III

TSP Strategy : Team Software Process Overview, The Logic of Team Software Process, Launching A Team Project, The Development Strategy, The Development Plan, Defining The Requirements.

UNIT - IV

Product Implementation : Desigining with Teams - Product Implementation - Integration & System Testing -The Postmortem Team Management : the Team Leader Role - Development Manager Role - The Planning Manager Role - The Quality - The Process Manager Role- The Support Manager Role.

References

1. Watt S. Humphrey, " Introduction to personal software process ", Addition Wesley, 1st Addition 1996.
2. Watt S. Humphrey, "A Disciplinefore software engineering" Addison Wesley First Edition 1994.
3. Watt S. Humphrey, " Managing technical people Innovation team mark and the software process" Addison Wesley First Eddition 1996.
4. Mark C. Paulk, et al" The capability Maturity Model : Guidelines for improving the software process" Addison Wesley First Edition 1995.

MTSE - 311 E-Commerce & ERP

			Marks	Credits
L T P	Exam	:	100	4
4 - -	Sessional	:	50	2
	Total	:	150	6
	Duration of Exam.	:	3 hrs.	

NOTE : Eight questions of equal marks to be set taking two from each UNIT. The student is to attempt any five questions selecting at least one from each UNIT.

UNIT - I

Introduction : Introduction Electronic Commerce, scope and its Industry Framework. The Value and Supply chains System, Porters value chain model, Inter organizational value chains. Introduction to business strategy, strategic implications of IT technology. Business environment and capability, strategy formulation and implementation planning

Types of E-Commerce : types of E-Commerce, elements of e-commerce : e-visibility, e-shop, electronic payment systems, delivering the goods, after- sales service, e-commerce security. Inter-organizational transactions, the credit transaction, trade cycle, electronic markets and its future. Definition and benefits of EDI, Use of EDI in B2B & B2C, E-commerce in desktop facility management.

UNIT - II

Firewalls and Transaction security : Introduction to firewalls and network security(Types, policies and Management), Encryption and Transaction Security, The comparison of encryption methods, Security in WWW (Netscape's secure socket layer) Security threats to E-Commerce, Data Encryption & Digital Signatures.

ERP-An Enterprise Perspective : Production, Finance, Personnel discipline and their relationship, Transaction environment, MIS Integration for discipline Information/ Workflow, Network Structure, Client Server Integrator System, Virtual Enterprise.

UNIT - III

ERP: Resource Management Perspective : Functional and Process of Resource Management. Basic Modules of ERP System : HRD, Personnel Management, Training and Development, Skill Inventory, Material Planning and Control, Inventory, Forecasting, Manufacturing Production Planning, Scheduling and Control, Sales and Distribution, Finance Resource Mangement in global scenario.

UNIT - IV

ERP - Information System Perspective : Introduction to OLAP (Online Analysis and Processing), TP, *OAS,* KBS, MRP, BPR, SCM, REP, CRM, Information Communication Technology.

References

1. Frontiers of Electronics Commerce; Ravi Kalakota Andrew Whinston; Addision Wesley.
2. E- Commerce; David Whitley; TMH, 2003.
3. Enterprise Resource Planning- Concepts and Practice; V.K. garg & N.K. V. Krishna, 1998. PHI.
4. E-Commerce : The Cutting Edge of Business; Kamlesh Bajaj & Debjani Nag. TMH, 2000.
5. Creating a Wining E- Business; Napier, Judd, Rivers and Wagner, Thomson Learning, Vikas Publishing House, 2001.
6. E-Commerce Application Using Oracle 8i and Java; Thakkar PHI, 2001.
7. E-Commerce Strategies; Trepper, PHI, 2001
8. E-Commerce; Greenstein and Feinman : TMH.

MTSE - 312 ELECTRONICS DATA INTERCHANGE

L T P			Marks	Credits
4 - -	Exam	:	100	4
	Sessional	:	50	2
	Total	:	150	6
	Duration of Exam.	:	3 hrs.	

NOTE : Eight questions of equal marks to be set taking two from each UNIT. The student is to attempt any five questions selecting at least one from each UNIT.

UNIT - I

Introduction What is EDI ? Why use EDI? Advantages of EDI over a paper-based Documents Transfer System : In a Paper-Based System ; In an EDI system :

How EDI Works ? EDI Standards, Variable-Length EDI Standards. Motivation, Cost Benefit Analysis of EDI, EDI Strategy for Competitive Advantage, Digital's Approach to EDI Implementation, Beyond EDI : Electronic Trading Networks, EDI Components, File Types, Internal Format File, External Format File, Transmission File.

UNIT - II

EDI Services, Application Service, Translation Service, Communication Services' EDI Administarion, Planning the Network, External Parties, Mapping to Data Base, STANDARD Configuration, MESSAGE Configuration.

UNIT - III

Document Tracking, EDI Standards Details, Transmission Components, Data Elements, Data Elements Structure, Segments, Service Segments, Segments Structure, Message, Syntax Rules, Interchange Structure.

UNIT - IV

Segment Construction and Transmission Rules, Compresssion, Repetition, Nesting, Representation of Numeric Data Elements Values, Decimal Marks, Other Separators, Signs, Character Sets, Control Characters, Segment Specifications, Composite Data Elements Specifications, Data Elements Specifications, Examples of EFF AND IFF, Example of an External Format File, Example of an Internal Format File.

Reference

1. Electronic Data Interchange by Paul Kimberley Mc Graw Hill.
2. Electronic Data Interchange by Valerie A. Leyland Prentice Hall.

MTSE - 313 E-Business

L T P			Marks	Credits
4 - -	Exam	:	100	4
	Sessional	:	50	2
	Total	:	150	6
	Duration of Exam.	:	3 hrs.	

NOTE Eight questions of equal marks to be set taking two from each UNIT. The student is to attempt any five questions selecting at least one from each UNIT.

UNIT - I

Overview of e-Business : Linking today's Business with tomorrow's technology, e-Business means structural transformation, business design for e-Business, challenge traditional definitions of value, value in terms of customer experience, e-Business communities, major business trends.

Constructing e-Business Design : Self-diagnosis as a first step of e-Business design, Reversing the value chain as a second step of e- Business design, Choosing a narrow focus as a third step of e-Business design- service excellence, operational excellence, continuous innovation excellence; Case studies.

UNIT - II

Constructing e- Business Architecture : Issues of application integration, Cross- functional integrated applications, Integrating applications clusters into an e-Business architecture, Aligning the e-Business design with application integration.

Customer Relation Management (CRM) : Why CRM ? Defining CRM New CRM architecture, Supporting reqirements of the next-generation CRM infrastructure, Challenges in CRM implementation, Next -generation CRM trends, Manager's roadmap for building a CRM infrastructure.

UNIT - III

Selling- Chain Management : Driving forces for Selling- Chain Management, Managing the order acquistion process, Case study of CISCO's Selling Chain Management, Elements of Selling Chain infrastructure.

Enterprise Resource Planning (ERP) : What is ERP ? Why ERP Enterproise architecture planning, ERP usage in the real World, ERP implementation, Future of ERP applications. Supply Chain Management (SCM) Defining SCM, Basics of Internet - Enabled SCM, e- Supply chain fusion, Manager's roadmap for SCM. e-Procurement : Purchasing versus procurement, Operating resource procurement, Case study of open resource procurement at Microsoft, e-Procurement chain managemnt, Next generation integrated procurement applications, Elements

of Buy- Side e-Procurement solutions, Elements of Sell- Side e-Procuremnt solutions, Manager's roadmap for e-Procurement.

UNIT - IV

Knowledge- Tone Applications : Why knowledge applications and what is it ? Emerging classes of knowledge- tone applications, knowledge- tone usage in the real World, Elements of knowledge tone architectural framework, Data warehousing Online analytical processing (OLAP),Roadmap to knowledge-tone framework.

Developing the e-Business Design : Challenges of e-Business strategy creation, Roadmap to moving your company into e-Business.

Translating e- Business Strategy into Action : The overall process - Translating strategy into action, e- Business blueprint creation, Basic steps of e-Business blueprint planning. Key elements of a business case, e-Business project planning checklist. Why e- Business initiatives fail ?

Reference

1. Ravi Kalakota and Marcia Robinson; e-Business - Roadmap for Success; Pearson Education Asia Pte Ltd, Tecmedia, New Delhi.
2. H. Albert Napier, Philip J. Judd, Ollie Rivers, Stuart W. Wagner; Creating a Winng E- Business; Vikas Publishing House Pvt. Ltd. New Delhi.

MTSE - 314 DECISION SUPPORT & BUSINESS INTELLIGENCE SYSTEM

			Marks	Credits
L T P	Exam	:	100	4
4 - -	Sessional	:	50	2
	Total	:	150	6
	Duration of Exam.	:	3 hrs.	

NOTE : Eight questions of equal marks to be set taking two from each UNIT. The student is to attempt any five questions selecting at least one from each UNIT.

UNIT - I

Decision Support Systems and Business Intelligence, Computerized Decision Support - Decision Making Systems, Modelling and Support Decision Support Concepts, Methodologies, and Technologies, Modelling and Analysis

UNIT - II

Business Intelligence, Special Introductory Section : The Essentials of Business Intellience, Data Warehousing Business Analytics and Data Visualization, Data Text and Web Mining, Neural Networks for Data Mining

UNIT - III

Business Performance Management, Collaborative Computing - Supported technologies and Group Support Systems, Knowledge Management, Intellgent Systems - Artificial Intelligence and Expert Systems.

UNIT - IV

Advanced Intelligence Sytems, Intelligence Systems over the Internet Implementing Decision Support Systems development

and Acquisition Integration, Impacts and the Future of Management Support Systems.

Reference

1. Decision Support and Business Intelligence Systems (8th Edition) by Efraim Turban, Jay E Aronson, Ting- Peng Liang and Ramesh Sharda, PHI, 2006.

MTSE - 315 CLIENT SERVER BASED IT SOLUTIONS

			Marks	Credits
L T P	Exam	:	100	4
4 - -	Sessional	:	50	2
	Total	:	150	6
	Duration of Exam.	:	3 hrs.	

NOTE : Eight questions of equal marks to be set taking two from each UNIT. The student is to attempt any five questions selecting at least one from each UNIT.

UNIT - I

Client Server Computing : Concept of Client- Server Technology, Client- Server Technology and Heterogenous Computing , Costs and Benefits of Clients server Computing, Implementation and Scalability.

UNIT - II

Client Server Model and Software Design : Client Server Model : Motivation, Terminology and Concepts Applications, Concurrency in Network, Concurrency in Clients, Concurrency in Servers, Context Switching and Protocol Software Design, Advantages of concurrency.

UNIT - III

Architecture and Design of Client Server Model : Multitasking with Process and Threads, Scheduling, Synchronization, Memory, Communications.

UNIT - IV

Algorithms in Client/ Server Software Design : TCP Client algorithms. Socket Interface Programming a UDP Client. The Conceptual Server algorithms, Basic Types of servers and their comparisons, Interactive Server algorithms,Concurrent Server algorithms, Problem of server Deadlock.

Portable Client/ Server Applications : Architecting Portable Application Code, Architecting Platform- Independent Source-Code, Operating System/ Communications/ File System Independent Modules, Client Server applications Architecting using Frameworks.

Reference

1. Douglas E. Comer, David L. : Stevens, Internetworking with TCP/ IP: Client- Server Programming and Apploications : Vol III, Prentice Hall of India, New Delhi.
2. Jaffrey D. Schqnk ; Client Server Applications and architecture, BPB Novell Press, New Delhi.
3. Douglas J,.Reilly ; Client/ Server Developers Guide, Addision Wesley Developer's Press Masschachusetts.

MTSE - 316 MANAGEMENT INFORMATION SYSTEM

L	T	P		Marks	Credits
4	-	-	Exam :	100	4
			Sessional :	50	2
			Total :	150	6
			Duration of Exam. :	3 hrs.	

NOTE : Eight questions of equal marks to be set taking two from each UNIT. The student is to attempt any five questions selecting at least one from each UNIT.

UNIT - I

Introduction to Information Systems : Management Information Systems (MIS) Information system versus, Information technology, Computer literacy versus information literacy, Data versus information, Data information. Characteristics of information. The process of converting data into information.

UNIT - II

Characteristics of an MIS : The Primary function : providing information The MIS throughout the Organization, first view, Second view, Third view, the system of user and Machines, information and function of management, information and role of Management, level of management organizational structures, the pyramid structure, the task based structure.

UNIT - III

Contribution of information systems to individual, Group and Organization- wide decision making,Potential risk of information systems Need of MIS, Why organization needs information systems, Meeting Global challenges capturing opportunities in market place, Supporting corporate strategy, linking deparments whose functions are Different, enhancing worker productivity, increasing the quality of goods and services.

UNIT - IV

Why Study MIS, why managers are ofter frustrated with their MIS, Pitfalls in designing an MIS, designing effective MIS, data banks/ bases Determinate of value of information, Frame work for information system, System components.

A business as a system, ethics and information system : A Framework Uses of infomation, User of information within the organization, Users of information outside the organization, managing the MIS department, Organization of the MIS department, Placement of the MIS department, centralization versus Decentralization.

Reference

1. Management Information System by Sadagopn, PHI
2. Management Information System by Gordon B. Davis, Olson Margrethe H., TMH 2nd Edition.
3. Management Information System by Jawadekar W.S., TMH 2nd Edition.
4. Analysis and Design of management systems by V. Rajaraman PHI.

MTSE - 401 PROJECT/ DISSERTATION

			Marks	Credits
L T P	Exam	:	300	12
- - 20	Sessional	:	450	18
	Total	:	750	30
	Duration of Exam.	:	3 hrs.	

Every student will carry out the Project/ Dissertation under the supervision of a Supervisor(s) The Project/ Dissertation topic shall be approved by a Committee constituted by the Head of the concerned department.

The award of sessional grades out will be done by an internal Committee constituted by the Head of the Department. This assessment shall be based on presentation (s), report etc. before this committe. In case a student scores' F'- grade in the sessional, failing which he/ she will not be allowed to submit the dissertation.

At the end of the semester, every student will be required to submit five hard copies of his/ her Master's Dissertation in the department. Out of these, one copy will be kept for department record & one copy shall be for the supervisor. A copy of the dissertation will be sent to the external examiner by mail by the concerned department, after his/ her appointment and intimation from the university. Dissertation will be evaluated a committee of examiners consisting of the Head of Department, dissertation supervisor(s) and one external examiner. There shall be no requiremnt of a separate evaluation report on the Master Dissertation from the external examiner.

The external examiner shall be appointed by the University from a panel of examiners submitted by the respective Head of Department to the Chairman, Board of Studies. In case the external examiner so appointed by the University does not turn up, the Director/ Principal of the concerned college, on the recommendation of the concerned Head of the Department shall be authorized, on behalf of the University, to appoint an external examiner from some other institution.

The student will defend his/ her dissertation through presentation before this committee and the committee will award one of the grades out. A Student scoring 'F' grade in the exam shall have to resubmit his/ her Dissertation after making all corrections/ improvements and his disserattion shall be evaluated as above.