

FIVE-YEAR INTEGRATED
MASTER OF SCIENCE IN (SOFTWARE ENGINEERING)
M.S.(SOFTWARE ENGINEERING) - M.S(SE)

SYLLABUS

For

2nd Year I & II -Semesters

With effect from 2007-08 admitted batch

Chairman

Board of Studies

(2005-08)

Department of Computer Science & Systems Engineering

College of Engineering

Andhra University

Visakhapatnam

MASTER OF SCIENCE IN SOFTWARE ENGINEERING - M.S.(SE)

Course Structure and Scheme of Examination

With Effect From 2007-08 Admitted Batch

2nd year I Semester (Common with M.S.(IT))

Sub. Ref. No.	Name of the Subject	Periods					Max. Marks		
		Theory	Tutorial	Lab	Exam.	Sessionals	Total	Credits	
MSSE 2.1.1	Basic Electronics (Common with MSIT 2.1.1)	3	1		70	30	100	4	
MSSE 2.1.2	Discrete Mathematical Structures (Common with MSIT 2.1.2)	3	1		70	30	100	4	
MSSE 2.1.3	Data Structures (Common with MSIT 2.1.3)	3	1		70	30	100	4	
MSSE 2.1.4	Digital Logic Design (Common with MSIT 2.1.4)	3	1		70	30	100	4	
MSSE 2.1.5	Probability, Statistics and Queuing Theory (Common with MSIT 2.1.5)	3	1		70	30	100	4	
MSSE 2.1.6	Electronics Lab (Common with MSIT 2.1.6)			3	50	50	100	2	
MSSE 2.1.7	Data Structures Lab (Common with MSIT 2.1.7)			3	50	50	100	2	
TOTAL							700	24	

MSSE 2.1.1

BASIC ELECTRONICS

(Common with MSIT 2.1.1)

Instruction: 3 Periods & 1 Tut /week Sessional Marks: 30

Univ. Exam : 3 Hours Univ-Exam-Marks:70

- I. Semiconductors :
Electronic Emission from metal carrier concentration in an intrinsic Semiconductors open circuited PN junction – diffusion.
- II. PN Junction Diode :
PN Junction Diode, VI Characteristics of PN Junction Diode, capacitance effects in PN Junction Diode, Quantitative theory of PN Junction Diode.
- III. Special Devices:
Principles, Working of zero diode, Tunnel diode, Varactor diode, Schottky diode, SCR and UJT.
- IV. Transistors:
The bipolar junction Transistor – Operation of PNP and NPN Transistors – Transistor Circuit configurations- characteristics of a CE configurations – h parameter, low frequency small signal equivalent circuit of a Transistor.
- V. Transistor Biasing and thermal stabilization:
Transistor Biasing, stabilization, Different methods of transistor biasing – Fixed bias, Collector feedback bias – self bias – Bias compensation.
- VI. Field Effect Transistors:

Junction Field Effect Transistors (JFET) – JFET characteristics, JFET Parameters, Small equivalent circuit – MOSFETS – Depletion and Enhancement MOSFETS.
- VII. Rectifying circuits:
Half wave and full wave rectifiers – Bridge rectifiers – rectifier efficiency, Ripple and regulation – Shunt capacitor filter – Zener regulation.
- VIII. Transistor Amplifiers:
CE, CB, CC amplifier configurations – Analysis using h - parameters – Multistage amplifier – RC coupled amplifier – frequency response curve and bandwidth.

TEXT BOOK: Electronic Device and Circuits by Sanjeev Gupth.

REFERENCE: Integrated Electronics by Millman & Halkias

MSSE 2.1.2 DISCRETE MATHEMATICAL STRUCTURES
(Common with MSIT 2.1.2)

Instruction: 3 Periods & 1 Tut/week

Sessional Marks: 30

Univ. Exam : 3 Hours

Univ-Exam-Marks:70

Introduction: Sets-Operations on sets-relations-functions-Proof methods and problem solving strategies-Fundamentals of Logic- Logical inferences-Methods of proof of an implication-First Order logic and Other Proof methods-Rules of inference for quantified Propositions-Mathematical Induction

Elementary Combinatorics: Basics of Counting- Combinations and Permutations-Their Enumeration with and without repetition-Binomial coefficients-Binomial and Multinomial Theorems-The Principle of Inclusion-Exclusion.

Recurrence Relations: Generating Functions of Sequences-Calculating their Coefficients-Recurrence relations-Solving recurrence relations-Method of characteristic Roots- Non-homogeneous Recurrence relations and their solutions

Relations and Digraphs: Relations and Directed Graphs-Special Properties of Binary relations- Equivalence Relations-Ordering Relations-Lattices and Enumeration-Operations on relations-Paths and Closures-Directed Graphs and Adjacency matrices- Applications of sorting, searching and topological sorting.

Graphs: Basic concepts-Isomorphism-subgraphs-Planar Graphs-Euler's formula-Multigraphs and Euler circuits-Hamiltonian graphs-Chromatic numbers-Four color theorem.

Trees: Trees and their properties-Trees as graphs-spanning trees-Directed trees-Binary trees-Their traversals-Arithmetic and Boolean expressions as trees- height balanced trees.

Text Book:

“Discrete Mathematics for computer scientists & Mathematicians” by Joe L. Mott, Abraham Kandel & T. P. Baker, Prentice Hall of India Ltd, New Delhi

Reference Books:

- 1) “Discrete mathematics and its applications” by Kenneth. H. Rosen, , Tata McGraw-Hill Publishing Company, New Delhi
- 2) “ Discrete mathematics” by Richard Johnsonbaug, Pearson Education, New Delhi

MSSE 2.1.3

DATA STRUCTURES

(Common with MSIT 2.1.3)

Instruction: 3 Periods & 1 Tut/week Sessional Marks: 30

Univ. Exam : 3 Hours Univ-Exam-Marks:70

Introduction to Data Structures: Information and Meaning – Representation of Multi-Dimensional Arrays _ Review of C Programming.

The Stack: Primitive operations – As an Abstract Data Type – Implementing the Stack operations in C.

Infix, Postfix and Prefix: Definitions, Evaluation and Conversions using C.

Recursion: Recursive Definition and Processes, Recursion in C and Recursive Implementation of Applications. Simulation of Recursion – Efficiency of Recursion.

Queues and Lists: The Queue as Abstract Data Type – Sequential Representation _Types of Queues – Operations – Implementation in C.

Linked List: Operations – Implementation of Stacks, Queues and priority Queues in C.

Circular Lists: Insertion, Deletion and Concatenation Operations _ Stacks and Queues as Circular Lists _ Doubly Linked Lists _Applications.

Trees: Binary Trees Operations and Applications.

Binary Tree Representation: Node Representation – Implicit array Representation – Choice of Representation – Binary Tree Traversal – Threaded Binary Trees and their Traversal – Trees and their Applications

Sorting: General Background: Efficiency – The big O Notation – Efficiency of Sorting. Bubble Sort and Quick Sort and their Efficiency – Selection Sorting – Binary Tree Sort – Heap Sort – Insertion Sorts – Shell Sort – Address calculation Sort – Merge and Radix Sorts.

Searching: Basic Searching Techniques: Dictionary as an Abstract Data Type – Algorithmic Notation – Sequential Searching and its Efficiency – Binary Search – Interpolation Search.

Tree Searching: Insertion into a Binary Search Tree – Deleting from a Binary Search Tree – Efficiency of Binary Search Tree operation

Graphs and Their Application: Graphs: Application of Graphs – Representation of Graphs in C – Transitive closure – Warshall's Algorithm – Shortest Path Algorithm.

Linked Representation of Graphs: Dijkstra's Algorithm – Organizing the set of Graph Nodes – Application to Scheduling and its implication.

Graph Traversal and Spanning Forests – Undirected Graph and their Traversals, Applications and Efficiency – Minimal Spanning Trees –Prim's and Kruskal's Algorithms.

Textbooks:

1. Data Structures Using C and C++ Yddish Langsam, Moshe J. Augenstein and Aaron M. Tanenbaum, Prentice Hall Of India (2nd Edition) (Chapters 1 to 8)
2. Data Structures, Algorithms and Applications with C++, Sahani Mc-Graw Hill.

Note: All Implementation are Using C Language only.

MSSE 2.1.4

DIGITAL LOGIC DESIGN

(Common with MSIT 2.1.4)

Instruction: 3 Periods & 1 Tut. /week

Sessional Marks: 30

Univ.-Exam : 3 Hours

Univ-Exam-Marks:70

1. Binary Systems, Boolean Algebra and Logic Gates.

Digital Systems. Binary Numbers. Number Base Conversions. Octal and Hexadecimal Numbers. Complements. Signed Binary Numbers. Binary Codes. Binary Storage and Registers. Binary Logic

Basic Definitions. Axiomatic Definition of Boolean Algebra. Basic Theorems and Properties of Boolean Algebra. Boolean Functions. Canonical and Standard Forms. Other Logic Operations. Digital Logic Gates. Integrated Circuits.

2. Combinational Logic Design, Gate-Level Minimization.

The Map Method. Four-Variable Map. Five-Variable Map. Product of Sums Simplification. Don't-Care Conditions. NAND and NOR Implementation. Other Two-Level Implementations. Exclusive-OR Function. Hardware Description Language (HDL).

Combinational Logic

Combinational Circuits. Analysis Procedure. Design Procedure. Binary Adder-Subtractor. Decimal Adder. Binary Multiplier. Magnitude Comparator. Decoders. Encoders. Multiplexers. HDL For Combinational Circuits.

3. Sequential Logic Design, Synchronous Sequential Logic

Sequential Circuits. Latches. Flip-Flops. Analysis of Clocked Sequential Circuits. HDL For Sequential Circuits. State Reduction and Assignment. Design Procedure.

Registers and Counters.

Registers. Shift Registers. Ripple Counters. Synchronous Counters. Other Counters. HDL for Registers and Counters.

Fundamentals of Asynchronous Sequential Logic

Introduction. Analysis Procedure. Circuits With Latches. Design Procedure. Hazards

4. Memory and Programmable Logic

Introduction. Random-Access Memory. Memory Decoding. Error Detection and Correction. Read-Only Memory. Programmable Logic Array. Programmable Array Logic. Sequential Programmable Devices.

TEXT BOOK : Digital Design, 3rd Edition, M. Morris Mano, Pearson Education, Inc., 2002

REFERENCE BOOKS:

1. Digital Logic Design Principles, Norman Balabanian and Bradley Carlson,
John Wiley & Sons(Asia) Pte. Ltd., 2002
2. Fundamentals of Digital Circuits, A. Ananda Kumar, PHI, 2002
3. Digital Circuits and Design, 2nd Edition, S Salivahanan and S Arivazhagan,
Vikas Publishing House Pvt. Ltd., 2003
4. Fundamentals of Digital Logic with VHDL Design, Stephen Brown and
Zvonko Vranesic, Tata McGraw-Hill Edition, 2002

MSSE 2.1.5 PROBABILITY, STATISTICS & QUEUING THEORY

(Common with MSIT 2.1.5)

Instruction: 3 Periods & 1 Tut/week Sessional Marks: 30

Univ. Exam : 3 Hours Univ-Exam-Marks:70

Probability: Definitions of probability, Addition theorem, Conditional probability, Multiplication theorem, Bayes theorem of probability and Geometric probability.

Random variables and their properties, Discrete Random variable, Continuous Random variable, Probability Distribution joint probability distributions their properties, Transformation variables, Mathematical expectations, probability generating functions.

Probability Distributions / Discrete distributions: Binomial, Poisson Negative binomial distributions and their properties. (Definition, mean, variance, moment generating function., Additive properties, fitting of the distribution.)

Continuous distributions: Uniform, Normal, exponential distributions and their properties.

Curve fitting using Principle of Least Squares.

Multivariate Analysis: Correlation, correlation coefficient, Rank correlation, Regression Analysis, Multiple Regression, Attributes, coefficient of Association, χ^2 – test for goodness of fit, test for independence.

Sample, populations, statistic, parameter, Sampling distribution, standard error, unbiasedness, efficiency, Maximum likelihood estimator, notion & interval estimation.

Testing of Hypothesis: Formulation of Null hypothesis, critical region, level of significance, power of the test.

Small Sample Tests: Testing equality of means, testing equality of variances, test of correlation coefficient, test for Regression Coefficient.

Large Sample tests: Tests based on normal distribution

Queuing theory: Queue description, characteristics of a queuing model, study state solutions of M/M/1: α Model, M/M/1 ; N Model.

Text Book: Probability, Statistics and Random Processes by T.Veerarajan, Tata McGraw Hill

Reference Book: Probability & Statistics with Reliability, Queuing and Computer Applications by Kishor S. Trivedi , Prentice Hall of India ,1999

MSSE 2.1.6

ELECTRONICS LAB.
(Common with MSIT 2.1.6)

Lab: 3 Periods/week

Sessional Marks: 50

Univ-Exam : 3 Hours

Univ-Exam Marks:50

1. Input and Output Characteristics of a BJT in the CE mode.
2. Half Wave and Full Wave rectifiers.
3. R C Coupled amplifier – Frequency response with and without feedback.
4. Transistor Inverter.
5. Colpitts Oscillator.
6. Op-amp as an inverting and non-inverting amplifier.
7. Astable multivibrator.
8. Self-bias binary.
9. Logic Gates using diodes and transistors.

MSSE 2.1.7

DATA STRUCTURES LAB.

(Common with MSIT 2.1.7)

Lab: 3 Periods /week

Sessional Marks: 50

Univ.-Exam : 3 Hours

Univ-Exam-Marks:50

1. Write a program to implement the operations on stacks.
2. Write a program to implement the operations on circular queues
3. Write a program for sorting a list using Bubble sort and then apply binary search.
4. Write a program to create a binary search tree and for implementing the in order, preorder, post order traversal using recursion
5. Write a program for finding the Depth First Search of a graph, and Breadth First Search of a graph
6. Write a program for converting a given infix expression to postfix form
7. Write a program for evaluating a given postfix expression
8. Write a program for implementing the operations of a dequeue
9. Write a program for the representation of polynomials using circular linked list and for the addition of two such polynomials
10. Write a program for quick sort
11. Write a program for Heap sort
12. Write a program for Merge sort.
13. a) Write a program for finding the transitive closure of a digraph
b) Write a program for finding the shortest path from a given source to any vertex in a digraph using Dijkstra's algorithm

M.S.(Software Engineering)

SYLLABUS

For

2nd Year

II-Semester

With effect from 2007-08 admitted batch

Chairman

Board of Studies

(2005-08)

Department of Computer Science & Systems Engineering

College of Engineering

Andhra University

Visakhapatnam

MASTER OF SCIENCE IN SOFTWARE ENGINEERING - M.S.(SE)**Course Structure and Scheme of Examination****With Effect From 2007-08 Admitted Batch****2nd year II Semester (Common with M.S.(IT))**

Sub. Ref. No.	Name of the Subject	Periods			Max.Marks			
		Theory	Tutorial	Lab	Exam	Sessionals	Total	Credits
MSSE2.2.1	File Structures (Common with MSIT 2.2.1)	3	1		70	30	100	4
MSSE2.2.2	Operating Systems Principles (Common with MSIT 2.2.2)	3	1		70	30	100	4
MSSE2.2.3	Computer Organisation (Common with MSIT 2.2.3)	3	1		70	30	100	4
MSSE2.2.4	Object Oriented Programming (Common with MSIT 2.2.4)	3	1		70	30	100	4
MSSE2.2.5	Formal Languages & Automata Theory (Common with MSIT 2.2.5)	3	1		70	30	100	4
MSSE2.2.6	File Structures Lab (Common with MSIT 2.2.6)			3	50	50	100	2
MSSE2.2.7	Object Oriented Programming Lab(Common with MSIT 2.2.7)			3	50	50	100	2
TOTAL							700	24

MSSE 2..2.1

FILE STRUCTURES
(Common with MSIT 2.2.1)

Instruction: 3 Periods & 1 Tut /Week

Sessional Marks : 30

Univ. Exam : 3 Hours

Univ. Exam Marks:70

File Processing Operations

Physical and logical files, opening, reading & writing and closing files in C, seeking and special characters in files, physical devices and logical files, file-related header files in C

Secondary Storage

Disks – organization, tracks, sectors, blocks, capacity, non-data overhead, cost of a disk access, Magnetic Tape – types, performance, organization estimation of tape length and data transmission times, disk vs tape, CD-ROM – CD-ROM as a file structure, physical organization, strengths and weakness of cd-roms, storage hierarchy

Byte Journey and buffer Management

File manager, I/O buffer, I/O processing, buffer strategies and bottlenecks

File Structure Concepts

A stream file, field structures, reading a stream of fields, record structures and that uses a length indicator, Mixing numbers and characters – use of a hex dump, reading the variable length records from the files

Managing records in C files

Retrieving records by keys, sequential search, direct access, choosing a record structure and record length, header records, file access and file organization

Organizing files for performance

Data compression, reclaiming space – record deletion and storage compaction, deleting fixed-length records for reclaiming space dynamically, deleting variable-length records, space fragmentation, replacement strategies.

Indexing

Index, A simple index with an entry sequenced file, basic operations on an indexed, entry sequenced file, indexes that are too large to hold in memory, indexing to provide access by multiple keys, retrieval using combination of secondary keys, improving the secondary index structure – inverted lists

Indexed sequential file access and prefix B⁺ Trees

Indexed sequential access, maintaining a sequence set, adding a simple index to the sequence set, the content of the index: separators instead of keys, the simple prefix B⁺ tree, simple prefix B⁺ tree maintenance, index set block size, internal set block size, internal structure of index set blocks: a variable order B-tree, loading a simple prefix B⁺ tree

Special Note: Implementation in C only

Hashing

Collisions in hashing, a simple hashing algorithms, hashing functions and record distributions, memory requirements, collision resolution by progressive overflow, buckets, deletions

Extendable hashing

Working of extendable hashing, implementation, deletion, extendable hashing performance

Designing file structure for CD-ROM

Tree structure on CD-ROM, hashing files on CD-ROM, CD-ROM file structure

Text Book: File Structures – An Object Oriented Approach with C⁺⁺ by Michael J. Folk, Bill Zoellick and Greg Riccardi,, Pearson

MSSE 2.2.2 OPERATING SYSTEMS PRINCIPLES
(Common with MSIT 2.2.2)

Instruction: 3 Periods & 1 Week./Week Sessional Marks : 30

Univ_ Exam : 3 Hours Univ_ Exam Marks:70

Introduction: What IS OS; History of Operating Systems, Operating System Concepts, Operating Systems Structure

Processes: Introduction to Processes, Inter Processor Communication, Classical IPC Problems, Process Scheduling

Memory Management : *Memory Management without Swapping or Paging, Swapping, Virtual Memory, Page Replacement Algorithms, Modeling paging algorithms, Design issues for paging systems, Segmentation*

File Systems And Input/Output : Files, Directories, File system implementation, Security, Protection mechanism, Principles of I/O Software, Disk Management

Deadlocks: *Resources, Deadlocks, The O-----ptical Algorithm, Deadlock Detection and Recovery, Deadlock Avoidance, Deadlock Prevention, Other Issues*

Case Study : *Unix: Fundamental Concepts in Unix, MS – DOS: Fundamental Concepts in MS-DOS*

Text Book: Modern Operating Systems by Andrew S. Tanenbaum

Reference: Applied Operating Systems Concepts by Avi Silberschatz, Peter Galvin, Grey Gagne

MSSE 2.2.3

COMPUTER ORGANIZATION

(Common with MSIT 2.2.3)

Instruction: 3 Periods & 1 Tut /week

Sessional Marks: 30

Univ-Exam : 3 Hours

Univ-Exam Marks:70

Register Transfer and Micro operations : Register Transfer Language, Register Transfer, Bus and Memory Transfers, Arithmetic Micro-operations, Logic Micro-operations, Shift Micro-operations, Arithmetic Logic Shift Unit.

Basic Computer Organization and Design: Instruction Codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycle, Memory-Reference Instructions, Input-Output and Interrupt, Complete Computer Description.

Microprogrammed Control:Control Memory, Address Sequencing, Micro program Example

Central Processing Unit: Introduction, General Register Organization, Stack Organization, Instruction Formats, Addressing Modes, Data Transfer and Manipulation, Program Control.

Computer Arithmetic : Introduction, Addition and Subtraction, Decimal Arithmetic Unit.

Input-Output Organization:Peripheral Devices, Input-Output Interface, Asynchronous Data Transfer, Modes of Transfer, Priority Interrupt, Direct Memory Access.

Memory Organization:Memory Hierarchy, Main Memory, Auxiliary Memory, Associative Memory, Cache Memory, Virtual Memory.

Text Book:

Computer System Architecture, M.Morris Mano ,Third Edition, Pearson Prentice Hall , 2007

Reference Book:

Computer Systems Organization and Architecture, John D. Carpinelli ,Pearson Education Inc., 2003

MSSE 2.2.4

OBJECT ORIENTED PROGRAMMING (Common with MSIT 2..2.4)

Instruction: 3 Periods & 1 Tut /week

Sessional Marks: 30

Univ-Exam : 3 Hours

Univ-Exam Marks:70

1. Procedural Paradigms, Object Oriented Paradigm, Concept of Data Abstraction Encapsulation, Inheritance and Polymorphism
2. Introduction to U.M.L : Description of various U.M.L. Diagrams with examples.

C++

3. **Basics of Object Oriented Programming** : benefits of OOP, data types, declarations, expressions and operator precedence, functions, scope of variables
4. **Introduction to OOP** : Classes and objects, Constructors & Destructors, Operator Overloading & type conversions.
5. **Inheritance** : Derived classes, syntax of derived classes, making private members inheritable, single, multilevel, multiple, hierarchical, hybrid inheritance
6. **Polymorphism**: Pointers, virtual functions and polymorphism- pointers to objects, this pointer, pointers to derived classes, virtual and pure virtual functions.
7. **Templates, Exception handling, console I/O and File I/O**: class templates, Function templates, member function templates, exception handling, managing console I/O operations, working with files.

JAVA

8. **Introduction to JAVA**: Introduction, Classes and Objects, Arrays, strings and Vectors, Exception Handling, Managing I/O files in Java.
9. **Packages and Interface, and Multi threading**: Packages, Interfaces, creating, extending, stopping, blocking threads, thread states, thread methods, exceptions, priority in threads, synchronization, Runnable interface.

Text Books:

1. JAVA 2.0- Complete Reference : Herbert Schildt & F. Naughton.
2. Introduction to JAVA PROGRAMMING by Y.Daniel Liang (PHI)
3. Object oriented Programming using C++: E. Balagurusamy, PHI.
4. Programming with JAVA- A primer: E. Balagurusamy, PHI
5. The Unified Modeling Languages user Guide by Grady Booch Etal.(Pearson Education)

References:

6. Object Oriented Programming in C++: N. Barkakati, PHI
7. Object Oriented Programming through C++ by Robot Laphore.
8. Object Oriented Analysis and Design by Andrew Haigh – (Tata Mcgrah Hjill.)

MSSE 2.2.5 FORMAL LANGUAGES AND AUTOMATA THEORY
(Common with MSIT 2.2.5)

Instruction: 3 Periods & 1Tut/Week

Sessional Marks: 30

Univ_Exam: 3 Hours

Univ_ Exam Marks:70

1. **Finite Automata and Regular Expressions:** Basic Concepts of Finite State Systems, Deterministic and Non-Deterministic Finite Automata, Finite Automata with ϵ -moves, Regular Expressions, Minimization of Finite Automata, Mealy and Moore Machines, Two-Way Finite Automate.
2. **Regular sets & Regular Grammars:** Basic Definitions of Formal Languages and Grammars, Regular Sets and Regular Grammars, Closure Properties of Regular Sets, Pumping Lemma for Regular Sets, Decision Algorithm for Regular Sets, Myhill-Nerode Theorem, Minimization of Finite Automata.
3. **Context Free Grammars and Languages:** Context Free Grammars and Languages, Derivation Trees, Simplification of Context Free Grammars, Normal Forms, Pumping Lemma for CFL, closure properties of CFL's, Decision Algorithm for CFL.
4. **Push down Automata and Deterministic CFL:** Informal Description, Definitions, Push-Down Automata and Context free Languages, Parsing and Push-Down Automata.
5. **Universal Turing Machines and Undecidability:** Design and Techniques for Construction of Turing Machines, Undecidability of PCP. Chomsky Hierarchy, Regular Grammars, Unrestricted Grammars, Context Sensitive languages, Relationship between classes of languages.

TEXT BOOKS: Introduction to Automata Theory, Languages & Computation By
J.E.Hopcraft & Jeffery D.Ulman – Narosa Publishing Company.

REFERENCE BOOKS:

Theory of Computer Science By Mishra & Chandra Sekharan, PHI.

An Introduction To Formal Languages and Automata,3e By Peter Linz – Narosa Publishing House.

MSSE 2.2.6

FILE STRUCTURES LAB

(Common with MSIT 2.2.6)

Practical : 3 Periods /Week

Sessional Marks : 50

Univ-Exam : 3 Hours

Univ-Exam Marks:100

1. File Operations:

Opening, reading, writing, closing and creating of files in C⁺⁺

2. Study of secondary storage devices:

Tracks, sectors, block capacity of disk, tape and CDROMs

3. File Structures in C⁺⁺

Reading a stream of fields, record structures and its length indicators, Mixing of numbers and characters, Use of a hex dump, Retrieving records by keys using sequential search, direct access

4. File performance

Data compression, storage compacting, reclaiming space dynamically

5. Indexing and indexed sequential files

Index file, inverted file operations, usage of B and B⁺⁺ trees

6. Hashing files

Hashing functions, algorithms, record distribution and collision resolution by progressive over flow, Extendable hashing and hashing performance

MSSE 2.2.7

OBJECT ORIENTED PROGRAMMING LAB.

(Common with MSIT 2.2.7)

Lab: 3 periods/week

Sessional Marks: 50

Univ_Exam: 3 hours.

Univ_Exam marks: 50

C++

1. Program that implements stack operations using classes and objects.
2. Program performing complex number addition using friend functions.
3. Program for complex number addition using operator overloading.
4. Program to perform string operations by overloading operators.
5. Program on hierarchical inheritance showing public,private and protected inheritances.
6. Program for computation of students result using hybrid inheritance.
7. Program implementing bubble-sort using templates.
8. Program on virtual functions.
9. Program for handling PushOnFull and PopOnEmpty Exceptions for a Stack.
10. Program for copying one file to another file using streams.
11. .Program for writing and reading a class object to a file.

JAVA

1. Program on packages.
2. Write a program to copy contents of a file into another file using File streams.
3. Program on hierarchical inheritance.
4. Program for handling ArrayIndexOutOfBoundsException and Divide-by-zero Exception.
5. Program for custom exception creation.
6. Program on multi-threading showing how CPU time is shared among all the threads.
7. Program for Producer-Consumer problem using threads.
8. Program for BannerApplet.
9. Program for implementing a Calculator.
10. Program for implementing mouse events, (drawing lines, curves using mouse etc.,)
11. Program on JDBC connectivity where database is Oracle .
12. Program to send messages across two machines using simple sockets.

MASTER OF SCIENCE IN SOFTWARE ENGINEERING - M.S.(SE)

Course Structure and Scheme of Examination

With Effect From 2007-08 Admitted Batch

3rd year I Semester (Common with M.S.(IT))

Sub. Ref. No.	Name of the Subject	Periods			Max. Marks			
		Theory	Tutorial	Lab	Exam	Sessionals	Total	Credits
MSSE 3.1.1	Operating Systems Internals(Common with MSIT3.1.1)	3	1		70	30	100	4
MSSE 3.1.2	Microprocessors (Common with MSIT3.1.2)	3	1		70	30	100	4
MSSE 3.1.3	Database Management Systems (Common with MSIT3.1.3)	3	1		70	30	100	4
MSSE 3.1.4	Computer Networks (Common with MSIT3.1.4)	3	1		70	30	100	4
MSSE 3.1.5	Theory of Programming Languages (Common with MSIT3.1.5)	3	1		70	30	100	4
MSSE 3.1.6	Operating Systems Lab (Common with MSIT3.1.6)			3	50	50	100	2
MSSE 3.1.7	Computer Organisation Lab (Common with MSIT3.1.7)			3	50	50	100	2
TOTAL							700	24

MSSE 3.1.1

OPERATING SYSTEMS INTERNALS

(Common with MSIT 3.1.2)

Instruction: 3 Periods & 1Tut./Week

Sessional Marks: 30

Univ_Exam: 3 Hours

Univ_ Exam Marks:70

Introduction: What IS OS; History of Operating Systems, Operating System Concepts, Operating Systems Structure

Processes: Introduction to Processes, Inter Processor Communication, Classical IPC Problems, Process Scheduling

Memory Management : Memory Management without Swapping or Paging, Swapping, Virtual Memory, Page Replacement Algorithms, Modeling paging algorithms, Design issues for paging systems, Segmentation

File Systems And Input/Output : Files, Directories, File system implementation, Security, Protection mechanism, Principles of I/O Software, Disk Management

Deadlocks: Resources, Deadlocks, The O-----ptical Algorithm, Deadlock Detection and Recovery, Deadlock Avoidance, Deadlock Prevention, Other Issues

Case Study : Unix: Fundamental Concepts in Unix, MS – DOS: Fundamental Concepts in MS-DOS

Text Book: Modern Operating Systems by Andrew S. Tanenbaum

Reference: Applied Operating Systems Concepts by Avi Silberschatz, Peter Galvin, Grey Gagne

MSSE 3.1.2

MICROPROCESSORS

(Common with MSIT 3.1.2)

Instruction: 3 Periods & 1Tut./Week

Sessional Marks: 30

Univ_Exam: 3 Hours

Univ_ Exam Marks:70

The 8085A μ P. Architecture and Instruction Set: Introduction to Microprocessors and Microcomputers, Internal Architecture and Functional/Signal Description of typical 8-bit μ P.- 8085, Instruction Set and Timing Diagrams of 8085 μ P.

Programming the 8085 μ P.: Assembly Language Programming Requirements, Programming Techniques: Looping, Counting, and Indexing, Counter and timing Delays, Stack and Subroutines, Code Conversion, BCD Arithmetic, 16-bit data Operations, Interrupts and Interrupt Service Routines

The 8086 μ P. Architecture and Instruction Set:

Internal Architecture and Functional/Signal Description of 8086/8088 Segmented Memory, Maximum-Mode and Minimum-Mode Operation, Addressing Modes, Instruction Set and Timing Diagrams

Programming the 8086 μ P.: Assembly Language Requirements, Data Definition, COM and EXE program Files Programming techniques: Logical Processing, Arithmetic processing, Time Delay Loops Procedures, Data tables, Modular programming, and Macros

An overview of Advanced Microprocessors: 80286,80386,80486, Pentium Processors

TEXT BOOKS:

1. Microprocessor Architecture, Programming, and Applications with the 8085 Ramesh S. Gaonkar, 4th Edition, Penram,International, 1999
2. The 80x86 Family, Design, Programming and Interfacing, John E.Uffenbeck, 3rd Edition, Pearson Education Inc., 2002
3. Advanced Microprocessors, Daniel Tabak, 2nd Ed., McGrawHill,Inc., 1995

REFERENCE BOOKS:

1. IBM PC Assembler Language and Programming, Peter Abel, 5th Edition, Pearson Education Inc., 2001
2. The 8088 and 8086 Microprocessors, Programming, Interfacing, Software, Hardware and Applications, Water A. Triebel and Avtar Singh, 4th Edition, Pearson Education Inc., 2003
3. Microprocessors and Interfacing, Programming and Hardware, 2nd Edition, Douglass V. Hall, TMH Edition, 1999

MSSE 3.1.3

DATABASE MANAGEMENT SYSTEMS

(Common with MSIT 3.1.3)

Instruction: 3 Periods & 1Tut./Week

Sessional Marks: 30

Univ_Exam: 3 Hours

Univ_ Exam Marks:70

Introduction to DBMS: Overview, File system vs DBMS, Advantages of DBMS, Storage data, queries, Transaction Management, DBMS structure

E-R model: Entities, Attributes and Entity sets, Relation ship and Relation ship sets, Features of ER model, Conceptual database design with ER model

Relational model: Integrity constraints over relations and enforcement, Querying relation data, Logical database design, views, destroying/altering tables and views

Relational Languages: algebra and calculus

SQL: Basic SQL, Query, union, intersect, except, Nested Queries, Aggregated Operation, Null values, Embedded SQL, cursors, ODBC and JDBC, Triggers and Active database, designing active databases

Schema refinement and normal forms : Schema refinement, fds, reasoning normal forms, normalization up to 3rd & BC normal forms, lossless join & dependency preserving decomposition

Transaction management: Transaction concept, transactions and schedules, concurrent execution of transactions, lock – based concurrency control, crash recovery

Concurrency control : Lock management, specialized locking techniques, concurrency control without locking

Crash Recovery: Aries, recovering from a system crash, media recovery

Text Book: Database Management Systems by Raghu Ramakrishnan and Johannes Gehrke, McGraw-Hill

MSSE 3.1.4

COMPUTER NETWORKS

(Common with MSIT 3.1.3)

Instruction: 3 Periods & 1Tut./Week

Sessional Marks: 30

Univ_Exam: 3 Hours

Univ_ Exam Marks:70

1. Introduction: Data communications, Networks, The Internet, Protocol & Standards
2. Network Models: Layered tasks, Internet model, OSI model
3. Physical layer:
 - 3.1 Signals: Analog and digital signals, data rate limits, Transmission impairment, Signal measurements like throughput, propagation speed and time, wave length
 - 3.2 Digital Transmission: Line coding, block coding, sampling, transmission mode
 - 3.3 Analog Transmission: Modulation digital data, telephone modem, Modulation analog signals
 - 3.4 Multiplexing: FDM, WDM, TDM
 - 3.5 Transmission Media: Guided media, unguided media
 - 3.6 Circuit Switching & Telephone Network: Circuit switching, telephone network
4. Data Link Layer:
 - 4.1 Error detection and Correction: Type of errors, detection and correction of errors
 - 4.2 Data Link Control & Protocol: Flow & error control, Stop-And-Wait ARQ, Go-Back-N ARQ, Select Repeat ARQ, HDLC
 - 4.3 Point-To-Point Access: Point-to-point protocol, PPP stack
 - 4.4 Local Area Network: Traditional Ethernet, fast and gigabit Ethernets
 - 4.5 Connecting LANs, Backbone Networks and Virtual LANs: Connecting devices, Backbone networks, Virtual LANs
5. Network Layer:
 - 5.1 Internetworks, Addressing, Routing
 - 5.2 Network Layer Protocols: ARP, IP, ICMP, IPV6
 - 5.3 Unicast routing, Unicast routing protocols, Multi routing, Multicast routing protocols

6. Transport Layer:

6.1 Process-To-Process delivery, user data gram, Transmission control protocol

7. Application Layer:

7.1 Client-Server Model: Client-Server model, Socket interface

7.2 A brief introduction to DNS, SMTP, FTP

Text Book:

Data Communications and Networking, Behrouz A. Forouzan, 3rd Edition, Tata Mcgraw- Hill Publishing Co

Reference Book:

Understanding Data Communications and Networks, William A Shay, 2nd Edition, Vikas Publishing House

MSSE 3.1.5 THEORY OF PROGRAMMING LANGUAGES

(Common with MSIT 3.1.2)

Instruction: 3 Periods & 1Tut./Week

Sessional Marks: 30

Univ_Exam: 3 Hours

Univ_ Exam Marks:70

1. The Role of Programming Languages:- Toward Higher- level Languages, Problems of Scale, Programming Paradigms, Language Implementation Bridging the Gap
2. Language Description: - Syntactic Structure: Expression Notations, Abstract Syntax Trees, Lexical Syntax, Context -Free Grammars, Grammars for Expressions, Variants of Grammars

I IMPERATIVE PROGRAMMING:

3. Statements: Structured Program ming:- The Need for Structured Programming, Syntax-Directed Control Flow, Design Considerations: Syntax, Handling Special Cases in Loops, Programming with invariants, Proof Rules for Partial Correctness, Control flow in C.
4. Types: Data Representation:- The Role of Types, Basic Types, Arrays Sequences of Elements, Records: Named Fields, Unions and variant Records, Sets, Pointers: Efficiency and Dynamic Allocation, Two String Tables, Types and Error Checking.
5. Procedure Activations:- Introduction to Procedures, Parameter-passing Methods, Scope Rules for Names, Nested Scopes in the Source Text, Activation Records, Lexical Scope: Procedures as in C, Lexical Scope: Nested Procedures and Pascal.

II OBJECT ORIENTED PROGRAMMING:

6. Groupings of Data and Operations:- Constructs fro Program Structuring, Information Hiding, Program Design with Modules, Modules and Defined Types, Class Declarations in C++, Dynamic Allocation I C++, Templates: Parameterized Types, Implementation of Objects in C++.
7. Object-Oriented Programming:- What is an Object?, Object- Oriented Thinking, Inheritance, Object-Oriented Programming in C++, An extended C++ example, Derived Classes and information Hiding, Objects in Smalltalk, Smalltalk Objects have self.

III FUNCTIONAL PROGRAMMING:

8. Elements of Functional Programming:- A little Language of expressions, Types : Values and Operations, Function declarations, Approaches to Expression Evaluation, Lexical Scope, Type Checking.

9. Functional Programming in a Typed Languages:- Exploring a List, Function Declaration by Cases, Functions as First-Class Values, ML: Implicit Types, Data Types, Exception Handling in ML, Little ML in Standard ML
10. Functional Programming with Lists:- Scheme, a Dialect of Lisp, The Structure of Lists, List Manipulation, A Motivating Example: Differentiation, Simplification of Expressions, Storage Allocation for Lists.

IV OTHER PARADIGMS:

11. Logic Programming:- Computing with Relations, Introduction to Prolog, Data Structures in Prolog, Programming Techniques, Control in Prolog, Cuts.
12. An Introduction to Concurrent Programming:- Parallelism in Hardware, Streams: Implicit Synchronization, Concurrency as interleaving, Liveness Properties, Safe Access to Shared Data, Concurrency in Ada, Synchronized Access to Shared variables.

Text Book:

1. Programming Languages – Concepts & Constructs , Ravi Sethi, Pearson Education.

References:

1. Programming Languages – Design & Implementation ,Terrance W. Pratt, Marvin V. Zelkowitz, Pearson Education.
2. Concepts of Programming Languages – Robert L. Sebesta, Pearson Education

MSSE 3.1.6

OPERATING SYSTEMS LAB

(Common with MSIT 2.2.6)

Practical : 3 Periods /Week

Sessional Marks : 50

Univ-Exam : 3 Hours

Univ-Exam Marks: 50

1. Study of laboratory environment:
Hardware specifications, software specifications
2. Simple Unix-C programs:
Programs using system calls, library function calls to display and write strings on standard output device and files.
3. Programs using fork system calls.
2. Programs for error reporting using `errno`, `perror()` function.
3. Programs using pipes.
4. Shell programming.
5. Programs to simulate process scheduling like FCFS, Shortest Job First and Round Robin.
6. Programs to simulate page replacement algorithms like FIFO, Optimal and LRU.
7. Programs to simulate free space management.
8. Programs to simulate virtual memory.
10. Programs to simulate deadlock detection.

References:

1. Unix Systems Programming : Communication, Concurrency and Threads, Kay Robbins, 2-Edition, Pearson Education
2. Unix concepts and applications, Sumitabha Das, TMH Publications.
3. Unix programming, Stevens, Pearson Education.
4. Shell programming, Yashwanth Kanetkar.
5. Operating System Concepts, Silberschatz, and Peter Galvin.

MSSE 3.1.7 COMPUTER ORGANIZATION LAB

(Common with MSIT 2.2.6)

Practical : 3 Periods /Week

Sessional Marks : 50

Univ-Exam : 3 Hours

Univ-Exam Marks:100

Digital Logic Design Experiments :

1. TTL Characteristics and TTL IC Gates
2. Multiplexers & Decoders
3. Flip-Flops
4. Counters
5. Shift Registers
6. Binary Adders & Sub tractors
7. A L U

Assembly Language Programming:

1. 8085 Assembly Language Programming according to theory course microprocessors-I using the following trainers :
 - Keyboard Monitor of 8085 μ P Trainer.
 - Serial Monitor of 8085 μ P Trainer with Terminal
 - 8085 Line Assembler of 8085 μ P Trainer with PC as Terminal
 - 8085 Cross Assembler using In-Circuit Emulator (ICE) with 8085 μ P Trainer and PC as Terminal
2. 8086 Assembly Language Programming according to theory course Microprocessor-I using the following :
 - PC Assembler using TASM or MASM, TD or SYMDEB or CVD(Code View debugger)
 - Graded Problems are to be used according to the syllabus of MICROPROCESSORS-I

M.S.(SOFTWARE ENGINEERING)

COURSE STRUCTURE AND SCHEME OF EXAMINATION

For

3rd Year

II-Semester

With effect from 2007-08 admitted batch

Chairman

Board of Studies

(2005-08)

Department of Computer Science & Systems Engineering

College of Engineering

Andhra University

Visakhapatnam

MASTER OF SCIENCE IN SOFTWARE ENGINEERING - M.S.(SE)

Course Structure and Scheme of Examination

With Effect from 2007-08 Admitted Batch

3rd year II Semester (Common with M.S.(IT))

Sub. Ref. No	Name of the Subject	Periods			Max.Marks			
		Theory	Tutorial	Lab	Exam	Sessionals	Total	Credits
MSSE 3.2.1	Unified Modeling Language (Common with MSIT3.2.1)	3	1		70	30	100	4
MSSE 3.2.2	Computer Graphics and Visualisation (Common with MSIT3.2.2)	3	1		70	30	100	4
MSSE 3.2.3	Systems Programming (Common with MSIT3.2.3)	3	1		70	30	100	4
MSSE 3.2.4	Internet and Intranet Engineering(Common with MSIT3.2.4)	3	1		70	30	100	4
MSSE 3.2.5	Elective II 1. Device Interfacing 2. Distributed Operating Systems (Common with MSIT3.2.5)	3	1		70	30	100	4
MSSE 3.2.6	Database Management Systems Lab (Common with MSIT3.2.6)			3	50	50	100	2
MSSE 3.2.7	Computer Networks Lab (Common with MSIT3.2.7)			3	50	50	100	2
TOTAL					700			24

SCHEME OF VALUATION IS SAME AS UG COURSES OF ANDHRA UNIVERSITY COLLEGE OF ENGINEERING

MSSE 3.2.1 UNIFIED MODELING LANGUAGE

(Common with MSIT 3.1.1)

Instruction: 3 Periods & 1Tut./Week

Sessional Marks: 30

Univ_Exam: 3 Hours

Univ_ Exam Marks:70

Why We Model, The Importance of Modeling, Principles of Modeling, Object-Oriented Modeling, Introducing the UML, an Overview of the UML, a Conceptual Model of the UML, Architecture Software Development Life Cycle, Key Abstractions, Mechanisms, Artifacts.

Basic Structural Modeling, Classes, Terms and Concepts, Common Modeling Techniques, Relationships, Terms and Concepts, Common Modeling Techniques, Common Mechanisms, Common Modeling Techniques.

Diagrams, Terms and Concepts, Common Modeling Techniques, Class Diagrams, Terms and Concepts, Common Modeling Techniques.

Advanced Structural Modeling, Advanced Classes, Terms and Concepts, Common Modeling Techniques, Advanced Relationships, Terms and Concepts, Common Modeling Techniques,

Interfaces, Types, and Roles, Terms and Concepts, Common Modeling Techniques.

Packages, Terms and Concepts, Common Modeling Techniques, Instances, Terms and Concepts Common Modeling Techniques, Object Diagrams, Terms and Concepts, Common Modeling Techniques. Components, Terms and Concepts, Common Modeling Techniques.

Basic Behavioral Modeling, Interactions, Terms and Concepts, Common Modeling Techniques,

Use Cases, Terms and Concepts, Common Modeling Techniques, Use Case Diagrams, Terms and Concepts, Common Modeling Techniques, Interaction Diagrams, Terms and Concepts, Common Modeling Techniques, Activity Diagrams Terms and Concepts, Common Modeling Techniques.

Advanced Behavioral Modeling, Events and Signals, Terms and Concepts, Common Modeling Techniques, State Machines, Terms and Concepts, Common Modeling Techniques, Processes and Threads, Terms and Concepts, Common Modeling Techniques, Time and Space, Terms and Concepts, Common Modeling Techniques.

State Diagrams, Terms and Concepts, Common Modeling Techniques, Architectural Modeling Artifacts, Terms and Concepts, Common Modeling Techniques, Deployment, Terms and Concepts, Common Modeling Techniques, Collaborations, Terms and Concepts, Common Modeling Techniques.

Patterns and Frameworks, Terms and Concepts, Common Modeling Techniques, Artifact Diagrams, Terms and Concepts, Common Modeling Techniques, Deployment Diagrams, Terms and Concepts, Common Modeling Techniques, Systems and Models, Terms and Concepts, Common Modeling Techniques.

Text Book: The Unified Modeling Language User guide, 2nd Edition

Authors: Grady Booch, James Rumbaugh and Ivar Jacobson

Publisher: Pearson Education

MSSE 3.2.2 COMPUTER GRAPHICS AND VISUALIZATION

(Common with MSIT 3.1.1)

Instruction: 3 Periods & 1Tut./Week

Sessional Marks: 30

Univ_Exam: 3 Hours

Univ_ Exam Marks:70

Introduction: Usage of Graphics and their applications, Presentation Graphics- Computer Aided Design- Computer Art- Entertainment- Education and Training- Visualization- Image Processing- Graphical User Interfaces

Over view of Graphics systems: Video Display Devices- Raster Scan systems-random scan systems-Graphics monitors and workstations-Input devices-hard copy devices- Graphics software

Output primitives: Points and Lines-Line Drawing Algorithms- Loading the Frame buffer- Line function- Circle- Generating Algorithms- Ellipse Generating Algorithms- Other Curves- Parallel Curve Algorithms-Curve Functions-Pixel Addressing- Filled Area Primitives-Filled Area Functions- Cell Array- Character Generation

Attributes of Output Primitives: Line and Curve Attributes-Color and Gray scale levels- Area Fill Attributes- Character Attributes-Bundled Attributes- Inquiry Functions-Antialiasing

Two Dimensional Geometric Transformations: Basic Transformations- Matrix Representations-Homogeneous Coordinates-Composite Transformations-Other Transformations-Transformations between Coordinate Systems- Affine Transformations- Transformation Functions- Raster methods for Transformations

Two Dimensional Viewing: The viewing Pipeline-Viewing Coordinate Reference Frame-Window-to-Viewport Coordinate Transformation-Two Dimensional Viewing Functions-Clipping Operations-Point Clipping-Line Clipping-Polygon Clipping-Curve Clipping- Text and Exterior Clipping

Structure And Hierarchical Modeling: Concepts of Structures and Basic models-Editing - Hierarchical Modeling with Structures-GUI and Interactive Input Methods-Windows and Icons- Virtual Reality Environments

Three Dimensional Concepts and Object representations: 3D display methods-3D Graphics-Polygon Surfaces- Curved Lines and Surfaces- Quadratic Surfaces-Super Quadrics-Blobby Objects-Spline Representations- Cubic Spline methods-Bézier Curves and Surfaces- B Spline Curves and Surfaces

Three Dimensional Geometric and Modeling Transformations: Translation-Rotation-scaling-Other Transformations-Composite Transformations-3D Transformation Functions-Modeling and Coordinate Transformations

Three Dimensional Viewing: Viewing Pipeline- Viewing Coordinates- Projections-View Volumes- General Projection Transformations-Clipping-Hardware Implementations- Three Dimensional Viewing

Chapters 1 to 12 except 10-9 to 10-22 of the Text book

Text Book: Computer Graphics C Version by Donald Hearn & M. Pauline Baker
Pearson Education, New Delhi, 2004

Reference Books:

- 1) Procedural Elements for Computer Graphics by David F. Rogers, Tata McGraw Hill Book Company, New Delhi, 2003
- 2) Computer Graphics: Principles & Practice in C by J. D. Foley, S. K. Van Dam, F. H. John, Pearson Education, 2004
- 3) Computer Graphics using Open GL by Francis S. Hill Jr Pearson Education, 2004.

MSSE 3.2.3 SYSTEMS PROGRAMMING
(Common with MSIT 3.1.1)

Instruction: 3 Periods & 1Tut./Week

Sessional Marks: 30

Univ_Exam: 3 Hours

Univ_ Exam Marks:70

Introduction to Systems Programming, Introduction to Assembly Language Programming -
Introduction to

Instruction Formats, Data formats - Role of Base Register, Index Register.

Introduction to Assembler, databases used in assembler design, Design of Assembler -
Single Pass & Double Pass.

Introduction to Macros, various types of Macros, Design of Macro Processor - Single Pass &
Double Pass. Introduction to Loaders, functions of a loader, types of Loaders, databases used
in Loaders, Design of Loaders - Absolute & DLL.

Introduction to Software Tools, Text editors, Interpreters, Program Generators, Debug Monitors.

TextBook: Systems Programming by Donovan

Tata Mc Graw Hill

Reference: System Programming by Dhamdhere, Tata Mc Graw Hill, IInd Revised Edition

MSSE 3.2.4 INTERNET AND INTRANET ENGINEERING

(Common with MSIT 3.1.1)

Instruction: 3 Periods & 1Tut./Week

Sessional Marks: 30

Univ_Exam: 3 Hours

Univ_ Exam Marks:70

1. INTRODUCTION:
 - The Internet/Intranet landscape,
 - The Internet: A Short Retrospective;
 - The TCP/IP Standardization Approach to Internet and Intranets,
 - Network Topologies for Intranets
 - Internet Protocol Model Overview
 - Internet Addresses: Foundations for Internet and Intranets
 - Internet Protocol: Basis for Internet and Intranets
 - Internet Access
 - Internet Applications
2. ROUTER TECHNOLOGY
3. INTERNET AND INTRANET WEB SERVER TECHNOLOGY, ACCESS AND PROTOCOLS
4. HTML TECHNOLOGY, APPLICATIONS, AND EXAMPLES:
 - Introduction, The Nuts and Bolts of HTML
 - Practical Considerations for internet/Intranet pages.
5. ON-LINE SERVICES
6. BROADBAND COMMUNICATIONS FOR THE INTERNET AND INTRANETS

Text Book: Daniel Minoli, Internet and Intranet Engineering, Technologies, Protocols, and Applications, McGraw-Hill, 1997

References: S.Keshav, An Engineering Approach to Computer Networking, ATM Networks, the Internet, and the telephone Network, Pearson Education, 2003

Douglas E Comer, Computer Networks and internet, 2/e, Pearson Education, 2005

MSSE 3.2.5 ELECTIVE: DEVICE INTERFACING
(Common with MSIT 3.1.1)

Instruction: 3 Periods & 1Tut./Week

Sessional Marks: 30

Univ_Exam: 3 Hours

Univ_ Exam Marks:70

Interfacing Semiconductor Memories:

Semiconductor Memories: Classification, Internal Organisation & Functional Description. Interfacing SRAMs, and EPROMs to 8085/8086

Interfacing I/O Devices:

Interfacing Characteristics of I/O Devices, I/O Device addressing methods, I/O Device Programming

Methods.

Interfacing Peripheral ICs to Intel 8085/8086:

Parallel I/O Interface - 8255, Serial I/O Interface – 8251, Timer Interface - 8253, Keyboard/Display Interface - 8279, Interrupt Controller Interface - 8259

Interfacing Data Converters to 8085/8086:

D/A Conversion Methods, A/D Conversion methods, Interfacing DAC, Interfacing ADC.

Introduction to Micro controllers:

Intel 8051 Architecture and Programming

Introduction to Hardware and Software of PCs :

Hardware Organization, DOS Internals, ROM BIOS and BIOS Function Calls, DOS Function Calls, Introduction to Pentium Processors

TEXT BOOKS:

1. Microprocessor Architecture, Programming, and Applications with the 8085 Ramesh S. Gaonkar, 4th Edition, Penram International, 1999
2. The 80x86 Family, Design, Programming and Interfacing, John E. Uffenbeck, 3rd Edition, Pearson Education Inc., 2002
3. Kenneth J. Ayala, 8051 Microcontroller architecture, programming and applications, 2nd Edition, Penram International Publications, 1999

REFERENCE BOOKS:

1. BARRY B. BREY, The Intel Microprocessors 8086/8088, 80186/80188, 80286, 80386 and 80486, Pentium, Pentium Pro Processor, Pentium II, Pentium III, Pentium 4, Architecture, Programming and Interfacing, 6th Edition, Pearson Education Inc., 2003
2. Walter A. Tribel and Avtar Singh, The 8088 and 8086 Microprocessors, Programming, interfacing, Software, Hardware, and Applications, 4th Edition, Pearson Education Inc., 2003
3. Microprocessors and Interfacing, Programming and Hardware, 2nd Edition, Douglass V. Hall, TMH Edition, 1999
4. Sanjay K Bose, Hardware and Software of Personal Computers, New Age International (P) Ltd., 1991
5. Myke Predko, Programming and Customizing the 8051 Microcontroller, TMH, 1999

MSSE 3.2.5 ELECTIVE: DISTRIBUTED OPERATING SYSTEMS

(Common with MSIT 3.1.1)

Instruction: 3 Periods & 1Tut./Week

Sessional Marks: 30

Univ_Exam: 3 Hours

Univ_ Exam Marks:70

Introduction to Distributed Systems, What is a Distributed System?, Hard ware concepts, Software concepts, Design issues.

Communication in Distributed Systems, Lay red Protocols, ATM networks, The Client – sever model, Remote Procedure call, Group communication.

Synchronization in Distributed System, Clock Synchronization, Mutual Exclusion, Election algorithms, Atomic transactions, Deadlocks in Distributed Systems.

Process and processors in Distributed System threads, System Models, Processors allocation, Scheduling in Distributed System, Fault tolerance, Real time Distributed System.

Distributed File Systems, Distributed File System Design, Distributed File System implementation, Trends in Distributed File System.

Distributed Shared Memory, Introduction, What is Shared memory?, Consistency models, Page based Distributed Shared memory, Shared – variable Distributed Shared memory, Object based Distributed Shared Memory.

TEXT BOOK:

Distributed Operating Systems, Andrew S. Tanenbanm

Reference Book:

Advanced Concepts in Operating Systems, Makes Singhal and Niranjana G.Shivaratna.

MSSE 3.2.6 DATA BASE MANAGEMENT SYSTEMS LAB
(Common with MSIT 2.2.6)

Practical : 3 Periods /Week

Sessional Marks : 50

Univ-Exam : 3 Hours

Univ-Exam Marks:100

Study features of a commercial RDBMS package such as ORACLE/DB2, MS Access, MYSQL & Structured

Query Language (SQL) used with the RDBMS.(Select two of RDBMSs)

Laboratory exercises should include defining schemas for applications, creation of a database, writing SQL queries, to retrieve information from the database, use of host languages, interface with the embedded SQL, use of forms & report writing packages available with the chosen RDBMS product.

Some sample applications, which may be programmed, are given below: Accounting package for a shop,

Database manager for a Magazine agency or a newspaper agency, Ticket booking for performances,

Preparing greeting cards & birthday cards,

Personal accounts - Insurance, loans, mortgage payments, etc., Doctor's diary & billing system,

Personal bank account,
Class marks management,
Hostel accounting,

Video Tape library,
History of cricket scores,

Cable TV transmission program manager, Personal library.

MSSE 3.2.7

COMPUTER NETWORKS LAB

(Common with MSIT 2.2.6)

Practical : 3 Periods /Week

Sessional Marks : 50

Univ-Exam : 3 Hours

Univ-Exam Marks:100

1. Identifying well known ports on a Remote System : By trying to listen to the various well known ports by opening client connections. If the exception does not occur then the remote port is active else the remote port is inactive.
2. Writing a Chat application:
 - i). One-One: By opening socket connection and displaying what is written by one party to the other.
 - ii). Many-Many (Broad cast): Each client opens a socket connection to the chat server and writes to the socket. Whatever is written by one party can be seen by all other parties.
3. Data retrieval from a Remote database: At the remote database a server listens for client connections. This server accepts SQL queries from the client, executes it on the database and sends the response to the client.
4. Mail Client:
 - i). POP Client : Gives the server name , user name and password retrieve the mails and allow manipulation of mail box using POP commands.
 - ii). SMTP Client : Gives the server name, send e-mail to the recipient using SMTP commands-(Core Java 2 pg:163.)
5. Simulation of Telnet: Provide a user interface to contact well-known ports, so that client-server interaction can be seen by the user.
6. Simple file transfer between two systems (without protocols): By opening socket connection to our server on one system and sending a file from one system to another.
7. TFTP- Client: To develop a TFTP client for file transfer. (Unix Network programming-Stevens.)
8. HTTP-Server: Develop a HTTP server to implement the following commands. GET, POST, HEAD, DELETE. The server must handle multiple clients.

Reference Books : 1. Java Network Programming, Harold Orielly

2. An Introduction to Computer Networking, Kenneth C. Mansfield Jr and James L. Antonakos Pearson Education Asia

5-YEAR INTEGRATED B.Tech/M.Tech Programme (C.S.I.T)

WITH EFFECT FROM 2009-10 ADMITTED BATCH

**SYLLABI
(TENTATIVE)**

**Chairman
Board of Studies**

**Department of Computer Science & Systems Engineering
College of Engineering
Andhra University
Visakhapatnam-3**

5-YEAR INTEGRATED IN M.TECH/ B.TECH IN SOFTWARE ENGINEERING

Course Structure and Scheme of Examination With Effect from 2009-10 Admitted Batch

4th year I Semester

Sub. No.	Ref.	Name of the Subject	Periods			Max. Marks			
			Theory	Tutorial	Lab	Exam	Sessionals	Total	Credits
MSSE 4.1.1		Computer Networks	3	1		70	30	100	4
MSSE 4.1.2		Web Technologies	3	1		70	30	100	4
MSSE 4.1.3		Software Engg. Fundamentals	3	1		70	30	100	4
MSSE 4.1.4		Data Warehousing & Mining	3	1		70	30	100	4
MSSE 4.1.5		Software Project Management	3	1		70	30	100	4
MSSE 4.1.6		Elective-I	3	1		70	30	100	4
MSSE 4.1.7		Computer Networks Lab			3	50	50	100	2
MSSE 4.1.8		Web Technologies Lab			3	50	50	100	2
TOTAL								800	28

Elective-I

[1] Human Computer Interaction [2] Digital Forensics [3] Image Processing [4] Artificial Intelligence [5] Concurrent Data Structures

MSSE 4.1.1**Computer Networks****Credits: 4**

Instruction: 3 Periods & 1 Tut/week
 Univ. Exam : 3 Hours

Sessional Marks: 30
 Univ-Exam-Marks:70

Switched Networks, Circuit-Switching Networks, Circuit Switching Concepts, Soft switch Architecture, Packet Switching Principles, X.25, Frame Relay

Asynchronous Transfer Mode: Protocol Architecture, ATM Logical Connections, ATM Cells, ATM Service Categories, Routing in Switched Networks

Congestion Control in Switched Data Networks: Effects of Congestion, Congestion Control, Traffic management, Congestion Control in Packet Switched networks
 Principles of Cellular Networks

Local Area Network Overview: Background, Topologies and transmission media, LAN Protocol

Architecture, Bridges, Layer 2 and Layer 3 Switches

High Speed LANs: The Emergence of High Speed LANs, Ethernet

Wireless LANs: Overview, Wireless LAN Technology, IEEE802.11 Architecture and Services.

Internet Protocols: Basic protocol Functions, Principles of Internetworking, Connectionless Internetworking, Internet Protocol

Internet Operation: Multicasting, Routing Protocols: Autonomous Systems & Approaches to Routing
Transport protocols: Connection oriented Transport Protocol Mechanisms: Reliable Sequencing Network Service, TCP: TCP Services, TCP Header Format, TCP Mechanisms, UDP

Distributed Applications: Electronic Mail: SMTP, HTTP Overview, Network Management Systems, SNMPv1

Text Book: Data and Computer Communications, William Stallings 7th Edition, Pearson Education, 2004

Reference Books:

1. Data Communications and Networking, Behrouz A. Forouzan, 3rd Edition, TMH, 2004
2. Computer Networking: A Top-Down Approach Featuring the Internet, James F. Kurose and Keith W. Ross, 2nd Edition, Pearson Education, 2002
3. Computer Networks, Andrew S. Tanenbaum, 4th Edition, Pearson Education, 2003
4. An Engineering Approach to Computer Networking, S. Keshav, Pearson Education, 1997
5. Computer Networks and Internets with Internet Applications, Douglas E. Comer, 4th Edition, Pearson Education, 2003

MSSE 4.1.2**Web Technologies****Credits: 4**

Instruction: 3 Periods & 1 Tut/week
 Univ. Exam : 3 Hours

Sessional Marks: 30
 Univ-Exam-Marks:70

HTML Common tags- List, Tables, images, forms, Frames; Cascading Style sheets;
Java Script: - Introduction to Java Scripts, Objects in Java Script, Dynamic HTML with Java Script

XML: Document type definition, XML Schemas, Document Object model, Presenting XML, Using XML Processors: DOM and SAX

Java Beans: Introduction to Java Beans, Advantages of Java Beans, JDK, Introspection, Using Bound properties, Bean Info Interface, Constrained properties Persistence, Customizes, Java Beans API, Introduction to EJB's

Web Servers and Servlets: Tomcat web server, **Introduction** to Servlets: Lifecycle of a Servlet, The Servlet API, The javax.servelet Package, Reading Servlet parameters, Reading Initialization parameters. The javax.servelet HTTP package, Handling Http Request & Responses, Using Cookies-Session Tracking, Security Issues

JSP Application Development: Generating Dynamic Content, Using Scripting Elements Implicit JSP Objects, Conditional Processing – Displaying Values Using an Expression to Set an Attribute, Declaring Variables and Methods Error Handling and Debugging Sharing Data Between JSP pages, Requests, and Users Passing Control and Data between Pages – Sharing Session and Application Data – Memory Usage Considerations

Database Access: Database Programming using JDBC, Studying Javax.sql.* package, Accessing a Database from Servlets & JSP Page, Application – Specific Database Actions, Deploying JAVA Beans in a JSP Page, Introduction to struts framework.

TEXT BOOKS:

1. Internet and World Wide Web – How to program by Dietel and Nieto PHI/Pearson Education Asia.
2. Advanced Java™ 2 Platform How to Program, Deitel/Deitel/Santry
3. Java Server Pages –Hans Bergsten, SPD O'Reilly

REFERENCE BOOKS:

1. HTML Black Book: The Programmer's Complete HTML Reference Book-by Steven Holzner
2. Core Servlets and Java Server Pages Volume2: Core Technologies by Marty Hall and Larry Brown, Pearson Education

MSSE 4.1.3**Software Engineering Fundamentals****Credits: 4**

Instruction: 3 Periods & 1 Tut/week
 Univ. Exam : 3 Hours

Sessional Marks: 30
 Univ-Exam-Marks:70

1. Software Engineering:
 Software related problems, software engineering, concepts, development activities
2. Modeling:
 Concepts, Modeling with UML
3. Project Organization & Communication:
 Project Organization & communication concepts and their activities
4. Requirements:
 Requirements elicitation & its activities and managing requirements elicitation
5. Analysis:
 Analysis overview, concepts, activities and managing analysis
6. System Design:
 Design overview, concepts, and activities, addressing design goals and managing system design
7. Object Design:
 Object reuse, its activities & managing reuse, Interface specification concepts & its activities and Managing object design
8. Testing;
 Testing concepts, activities and managing testing
9. Software Configuration Management:
 Configuration Management overview, concepts, activities and managing configuration management

Text Book:

Object-Oriented Software Engineering: Using UML, Patterns and Java, Bernd Bruegge and Allen H. Dutoit, 2nd Edition, Pearson Education Asia

Reference Books:

1. Object-Oriented Software Engineering: Practical software development using UML and Java
 Timothy C. Lethbridge and Robert Laganier , McGraw-Hill Higher education
2. An Introduction to Object Oriented Systems Analysis and Design with UML and the Unified Process, Stephen R Schach, Tata McGraw-Hill

MSSE 4.1.4 DATA WAREHOUSING AND MINING Credits: 4

Instruction: 3 Periods & 1 Tut/week
Univ. Exam : 3 Hours

Sessional Marks: 30
Univ-Exam-Marks:70

Introduction to Data Warehouse.

Data Warehouse Architecture: System Processes, Process Architecture, Hardware Architecture.

Data Warehouse Design: Data Warehouse Schema, Partitioning strategy , Aggregations, Data Marting, Meta data, System & Process managers.

Introduction to Data Mining and related topics.

Data Mining Techniques:- Statistics, Similarity Measures, Decision Trees, Neural Networks, Genetic Algorithms.

Algorithms for Classification:- Statistical-based, Distance-based, Decision Tree- based, NN – based and Rule based.

Algorithms for Clustering:- Hierarchical Algorithms, Partitional Algorithms, Clustering large Databases, Clustering with categorical Attributes.

Associate Rules:- Basic Algorithms, Parallel and Distributed algorithms, Comparative study, Incremental Rules, Advanced Association Rule Technique, Metrics for Quality of a Rule. Web

Mining:- Web Content mining, Structure Mining, Usage Mining

Text Books:

1. Data Warehousing in the real world by Sam Anahory & Murray, Pearson Education publishers.
2. Data Mining – Introductory & Advanced topics by Margaret H. Dunham,. Pearson Education publishers.

Reference Books:

Data Mining – Concepts and Techniques by Han and Kamber,2001, Morgan Kaufmann Publishers

2. Oracle 8i – Data Warehousing by Cohen, Abbey, Taub, Tata McGraw Hill
3. Business Intelligence and Data Warehousing, by IBM, PHI

MSSE 4.1.5**Software Project Management****Credits: 4**

Instruction: 3 Periods & 1 Tut/week

Sessional Marks: 30

Univ. Exam : 3 Hours

Univ-Exam-Marks:70

1.Project Planning

The Project Planning Infrastructure- Process Planning -Effort Estimation and Scheduling

Quality Planning -Risk Management - Measurement and Tracking Planning -

The Project Management Plan - Configuration Management

2.Project Execution and Closure

Reviews-Project Monitoring and Control - Project Closure

TEXT BOOK: Software Project Management in practice, Pankaj Jalote, Pearson Education, 2005.

MSSE 4.1.6 Elective-I Human Computer Interaction Credits: 4

Instruction: 3 Periods & 1 Tut/week
Univ. Exam : 3 Hours

Sessional Marks: 30
Univ-Exam-Marks:70

Importance of user Interface- definition, importance of good design. Benefits of good design. A brief history of screen design.

The graphical user interface –definition of graphics, the concept of direct manipulation , graphical system, Characteristics, web user—interface popularity, characteristics—principles of user interface.

Design Process-Human Interaction With Computers, Importance of Human Characteristics Human Consideration, Human Interaction Speeds, Understanding Business Junctions.

Screen Designing — Design goals—screen planning and purpose, organizing screen elements, ordering of screen data and content—screen navigation and flow—visually pleasing composition –amount of information –information retrieval on web –statistical graphics—technological consideration in interface design.

Windows— New and Navigation schemes selection of window, selection of device based and screen based controls.

Components— text and messages, Icons and increases — Multimedia, colors, uses problems, choosing colors.

Software tools -- Specification methods, interface — Building Tools.

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

Text Books:

The essential guide to user interface design, Wilbert O Galitz, Wiley Dream Tech
Designing the user interface. 3rd Edition ben Shneidermann, Pearson Education Asia

Reference Books:

Human-Computer Interaction. Alan Dix, Janet Finckay, Gre Goryd, Abowd, Rusell Bealg, Pearson Education

Interaction Design Prece, Rogers, Sharps. Wiley Dream Tech

User Interface Design, Soren Lausen, Pearson Education.

MSSE 4.1.6 Elective-I Artificial Intelligence**Credits: 4**

Instruction: 3 Periods & 1 Tut/week
 Univ. Exam : 3 Hours

Sessional Marks: 30
 Univ-Exam-Marks:70

Introduction to Artificial Intelligence, Artificial Intelligence Technique, Representation of a problem as State space search, production systems, Problem characteristics, Production System characteristics

Heuristic Search Technologies: Generate & Test Hill Climbing, Best First search, Problem reduction, Constraint satisfaction, Means Endo Analysis

Predicate Logic: Proof with Backward Chaining, Resolution, question answering.

Representing Knowledge Using Rules: Procedural Vs Declarative knowledge, Logic Programming, Forward Vs Backward Reasoning, Matching, Control Knowledge

Symbolic Reasoning with uncertainty: Non-monotonic Reasoning, Dependency – Directed Backtracking TMS. Statistical Reasoning with Bayes Theorem, certainty Factors & Rule Based System, DS- Theory.

Weak & Strong Slot Filler Structures: Semantic nets, Frames, Conceptual dependencies, Scripts

Planning: Block world, Components of a Planning System, Goal State Planning, Non Linear Planning, Hierarchical Planning.

Natural Language Processing: Syntactic Analysis, Semantic Analysis, Discuses and Pragmatic Processing.

Expert Systems: Representing and Using Domain Knowledge, Expert Systems Shells,Explanation

Text Books:

1. Artificial Intelligence, Rich E & Knight K – Tata Mcgrahill (1991)
2. Introduction to Artificial Intelligence & Expert Systems, Paterson. PHI

MSSE 4.1.6 Elective-I

Digital forensics

Credits: 4

Instruction: 3 Periods & 1 Tut/week

Univ. Exam : 3 Hours

Sessional Marks: 30

Univ-Exam-Marks:70

Introduction: cyber crime-forensics-Terminology legal systems, Phase of cyber Forensics.

Evidence collection: Legal view of Digital evidence, Methods of evidence collection, Forensic Science and Evidence.

Event Re-Construction: Based on Evidence, Algorithms for event reconstruction and evaluation.

Analysis: Analysis of evidence, Methods of analyzing evidence, comparisons and conclusions.

Preservative and presentation: Preservation of digital evidences various methods of presentation with legal systems.

Usage of tools: SNORT, LEDA

MSSE 4.1.6 Elective-I Image Processing Credits: 4

Instruction: 3 Periods & 1 Tut/week
 Univ. Exam : 3 Hours

Sessional Marks: 30
 Univ-Exam-Marks:70

Image Processing :

Introduction to Image processing System-2D signals and Systems-Image transforms-Image Enhancement and Image segmentation:Image enhancement in spatial,Histogram manipulation, Median filters, High pass filters, sharpening filters,image enhancement in the frequency domain, homomorphic filters.-Object recognition, Pattern Recognition:

Introduction: Machine Perception, Pattern Recognition Systems, The Design Cycle, Learning and Adaptation,

Bayesian Decision Theory-Continuous Features, Classifiers, Discriminant Functions, and Decision Surfaces, The Normal Density

Maximum-Likelihood and Bayesian Parameter Estimation: Introduction, Maximum-Likelihood Estimation, Bayesian Estimation, Bayesian Parameter Estimation: Gaussian Case, Bayesian Parameter Estimation: General Theory

Nonparametric Techniques: Introduction, Density Estimation, Parzen Windows, k_n –Nearest-Neighbor Estimation, The Nearest-Neighbor Rule, Metrics and Nearest-Neighbor Classification

Multilayer Neural Networks: Introduction, Feed forward Operation and Classification, Backpropagation Algorithm, Back Propagation as Feature Mapping, Back propagation, Bayes Theory and Probability

Stochastic Methods: Stochastic Search, Boltzmann Learning

Unsupervised Learning and Clustering: Introduction, Mixture Densities and Identifiability, Maximum-Likelihood Estimates, Application to Normal Mixtures, Unsupervised Bayesian Learning, Data Description and Clustering, Criterion Functions for Clustering

Textbooks:

Image processing: Digital Image processing (Chapters 1,2, 4,5,7 &8) by S.jayaraman, S.Esakkirajan, T.VeeraKumar , McGrawHill & Pattern Classification by Richard O.Duda, Peter E.Hart, David G.Stork

Reference Books:

Digital Image Processing by R.C.Gonzalez & Red Woods
 Pattern recognition by Robert J. Schalkoff,

MSSE 4.1.6 Elective-I**Concurrent Data Structures****Credits: 4**

Instruction: 3 Periods & 1 Tut/week

Univ. Exam : 3 Hours

Sessional Marks: 30

Univ-Exam-Marks:70

Designing Concurrent Data Structures

Performance Blocking Techniques Non blocking Techniques Complexity Measures
Correctness

Verification Techniques Tools of the Trade

Shared Counters and Fetch-and- δ Structures

Stacks and Queues

Pools

Linked Lists

Hash Tables

Search Trees

Priority Queues

MSSE 4.1.7 Elective-I**Computer Networks Lab****Credits: 4**

Instruction: 3 Periods & 1 Tut/week

Sessional Marks: 50

Univ. Exam : 3 Hours

Univ-Exam-Marks:50

1. Identifying well known ports on a Remote System :

By trying to listen to the various well known ports by opening client connections. If the exception does not occur then the remote port is active else the remote port is inactive.

2. Writing a Chat application :

i). One-One: By opening socket connection and displaying what is written by one party to the other.

ii). Many-Many (Broad cast): Each client opens a socket connection to the chat server and writes to the socket. Whatever is written by one party can be seen by all other parties.

3.Data retrieval from a Remote database:

At the remote database a server listens for client connections. This server accepts SQL queries from the client, executes it on the database and sends the response to the client.

4.Mail Client:

i). POP Client : Gives the server name , user name and password retrieve the mails and allow manipulation of mail box using POP commands.

ii). SMTP Client : Gives the server name, send e-mail to the recipient using SMTP commands-

5.Simulation of Telnet:

Provide a user interface to contact well-known ports, so that client-server interaction can be seen by the user.

6.Simple file transfer between two systems (without protocols):

By opening socket connection to our server on one system and sending a file from one system to another.

7.TFTP- Client:

To develop a TFTP client for file transfer. (Unix Network programming- Stevens.)

8.HTTP-Server:

Develop a HTTP server to implement the following commands. GET, POST, HEAD, DELETE.

The server must handle multiple clients.

Reference Books :

1. Java Network Programming, Harold Orielly

2. An Introduction to Computer Networking, Kenneth C. Mansfield Jr and James L. Antonakos
Pearson Education Asia

MSSE 4.1.8 Elective-I Web Technologies Lab Credits: 4

Instruction: 3 Periods & 1 Tut/week

Sessional Marks: 50

Univ. Exam : 3 Hours

Univ-Exam-Marks:50

Each student should develop two projects out of this list using JSP,JDBC,J2EE

1. Design Airlines Ticket Reservation System
2. Design ONLINE Banking system.
3. Design Library Information system
4. Design Gram Panchayat Information system for House tax, water tax, wealth tax, Library tax collection, phone bill, Electricity bill collection
5. Design student information system portal which maintain attendance, marks etc.
6. Design online examination system.

5-YEAR INTEGRATED IN M.TECH/ B.TECH IN SOFTWARE ENGINEERING

**Course Structure and Scheme of Examination
With Effect from 2009-10 Admitted Batch**

4th year II Semester

Sub. Ref. No.	Name of the Subject	Periods			Max. Marks			
		Theory	Tutorial	Lab	Exam	Sessionals	Total	Credits
MSSE 4.2.1	Service Oriented Architecture	3	1		70	30	100	4
MSSE 4.2.2	Software Architecture & Design	3	1		70	30	100	4
MSSE 4.2.3	Network Security & Cryptography	3	1		70	30	100	4
MSSE 4.2.4	Software Requirements Engineering	3	1		70	30	100	4
MSSE 4.2.5	Project-I	3	1		70	30	100	4
MSSE 4.2.6	Elective-II	3	1		70	30	100	4
MSSE 4.2.7	Data Warehousing & Mining Lab			3	50	50	100	2
MSSE 4.2.8	Requirements Engg. Lab			3	50	50	100	2
TOTAL							800	28

Elective-II

[1] Software Modeling [2] Graph Theory And Combinations [3] Software Reusability Techniques [4] Software Reliability [5] Software Quality Management

MSSE 4.2.1 SERVICE ORIENTED ARCHITECTURE Credits: 4

Instruction: 3 Periods & 1 Tut/week
Univ. Exam : 3 Hours

Sessional Marks: 30
Univ-Exam-Marks:70

INTRODUCTION TO SOA, EVOLUTION OF SOA: Fundamental SOA; Common Characteristics of contemporary SOA; Benefits of SOA; A SOA timeline (from XML to Web Services to SOA); The continuing evolution of SOA (Standards organizations and Contributing vendors); The roots of SOA (comparing SOA to Past architectures).

PRINCIPLES OF SERVICE – ORIENTATION: Services-orientation and the enterprise; Anatomy of a service-oriented architecture; Common Principles of Service-orientation; Service orientation and Object-orientation; Service layer abstraction; Business service layer; Orchestration service layer;

WEB SERVICES AND SOA: The Web services framework; Services (as Web Services); Service Registry; Service descriptions (with WSDL); Messaging (with SOAP), Transactions, Coordination, Business Activity, Orchestration, Choreography; Addressing, Reliable Messaging, Policies, Metadata, Security, Notification and Events; Semantic Web Services; RESTful Services;

BUSINESS PROCESS DESIGN: Business Process Management basics; WS-BPEL language basics; WS-Coordination overview; Service oriented business process design; WS-addressing language basics; WS-Reliable Messaging language basics; Service Component Architecture basics;

ENTERPRISE PLATFORMS AND SOA: SOA platform basics; Enterprise Service Bus basics (including basic and complex patterns); SOA support in J2EE; SOA support in .NET; SOA Reference Architecture;

Text Books:

Service-Oriented Architecture Concepts and Technology and Design-Thomas Erl, Pearson Education, 2005

Understanding SOA with Web Services – Eric Newcomer, Greg Lomow, Pearson Education, 2005

Developing Enterprise Web Services – An Architect’s Guide – Sandeep Chatterjee, James Webber

Pearson Education, ISBN 81-297-0491-9

References:

SUGGESTED READING: IT Architecture and Middleware, Strategies for Building Large Integrated Systems, Chris Britton, ISBN 0-201-70907-4

MSSE 4.2.2**Software Architecture And Design****Credits: 4**

Instruction: 3 Periods & 1 Tut/week
Univ. Exam : 3 Hours

Sessional Marks: 30
Univ-Exam-Marks:70

Introduction to Software Architecture

Software Architecture Design Space

Models for Software Architecture

Object-Oriented Paradigm

Data Flow Architectures

Data- Centered Software Architecture

Hierarchical Architecture

Text Book:

Software Architecture And Design Illuminated by KAI QIAN , XIANG FU, LIXIN TAO,
CHONG-WEI XU, JORGE L.DIAZ- HERRERA

MSSE 4.2.3**Network Security And Cryptography****Credits: 4**

Instruction: 3 Periods & 1 Tut/week
 Univ. Exam : 3 Hours

Sessional Marks: 30
 Univ-Exam-Marks:70

Introduction :

Confidentiality -- Data Integrity -- Authentication -- Non-Repudiation. -- Overview of Issues involved.

Classical Encryption Techniques:

Monoalphabetic, Substitution Methods, Polyalphabetic Substitution Methods -- Permutation Methods -- Cryptanalysis of these Methods.

Modern Encryption Techniques:

Simplified DES -- DES -- Triple DES -- Block Cipher , Design Principles -- Block Cipher Modes of Operation. IDEA -- Security Issues Involved with these methods.

Confidentiality Using Conventional Encryption :

Placement of Encryption -- Traffic Confidentiality -- Key Distribution -- Random Number , Generation.

Introduction to Number Theory:

(Basics Pertaining to Security Related Algorithms). Public Key Cryptography : Principles -- RSA Algorithm.

Message Authentication and Hash Functions -- Hash and MAC Algorithms. Digital Signatures and Authentication Protocols -- Authentication Applications Basic Overview of :

Electronic Mail Security -- IP Security -- WEB Security

System Security :

Intruders, Viruses and Worms -- Firewalls

Text Book:

Cryptography and Network Security, William Stallings. (Second Edition)
 Pearson Education Asia .

Reference:

1. Network Security: The Complete Reference by Roberta Bragg, Mark Phodes-Ousley, Keith Strassberg Tata Mcgraw-Hill
2. Handbook of Applied Cryptography

MSSE 4.2.4**Software Requirements Engineering****Credits: 4**

Instruction: 3 Periods & 1 Tut/week

Univ. Exam : 3 Hours

Sessional Marks: 30

Univ-Exam-Marks:70

Introductions, Issues, and Terminology

System and Software System Engineering

Software Requirements Analysis and Specifications

Software Requirements Methodologies and Tools

Requirements and Quality Management

Software System Engineering Process Models

Text Book:

Software Requirements Engineering by Richard H. Thayer and Mildred C. Thayer

MSSE 4.2.5**Project-1 (Internal)****Credits: 4**

Instruction: 3 Periods & 1 Tut/week

Univ. Exam : 3 Hours

Sessional Marks: 30

Univ-Exam-Marks:70

The project is an internal project with the problem defined by the guide. It is evaluated internally.

MSSE 4.2.6 Elective-II**Software Modeling****Credits: 4**

Instruction: 3 Periods & 1 Tut/week

Univ. Exam : 3 Hours

Sessional Marks: 30

Univ-Exam-Marks:70

Introduction

Software Modeling

Modeling- Software Modeling - Related Working a Software Modeling Perspective

Fragment Language

Introduction to the Fragment Language - The Conceptualization Relation- Abstraction

Mechanisms-Using the FL

Conclusion

Text Book:

Software Modeling by Eyðun Eli Jacobsen , The Maersk Mc-Kinney Moller Institute for
Production Technology, University of Southern Denmark/Odense University

MSSE 4.2.6 Elective-II**Software Reliability****Credits: 4**

Instruction: 3 Periods & 1 Tut/week
Univ. Exam : 3 Hours

Sessional Marks: 30
Univ-Exam-Marks:70

Introduction

Reliability Engineering Measures

NHPP Software Reliability Models

Software Cost models

Fault Tolerant Software

Software Reliability Model With Environmental Models

Text Book:

Software reliability By Hoang Pham

MSSE 4.2.6 Elective-II

Software Quality Management

Credits: 4

Instruction: 3 Periods & 1 Tut/week

Univ. Exam : 3 Hours

Sessional Marks: 30

Univ-Exam-Marks:70

Introduction

The Elements of Complete Software Quality System

Standards

Reviews

Testing

Defect Analysis

Configuration Management

Associated Quality Concerns

Software Safety

Risk Management

Software Documentation

Quality System Implementation

Text Book:

Practical Guide Software Quality, John W. Horch

MSSE 4.2.6 Elective-II Software Reusability Techniques Credits: 4

Instruction: 3 Periods & 1 Tut/week
Univ. Exam : 3 Hours

Sessional Marks: 30
Univ-Exam-Marks:70

Introduction: Organizing Reuse - Introduction - Motivation for Reuse - Reuse driven organizations - Managing a reuse project - the characteristics of reuse of project - Roles in reuse projects - Adopting a project to reuse - Reuse tools.

Reuse Metrics: Managing a repository - The REBOOT component model - Classification - Configuration management of the repository - Managing the repository - Computer supported cooperative working - Process metrics for reuse - Product metrics - Cost estimation - Forming a reuse Strategy - Assessing reuse maturity.

Reusable Components: Practicing reuse - Generic reuse development processes - Develop for reuse - Develop with reuse – Testing reusable components - Object oriented components - Techniques and life cycles - Object oriented development for reuse - Detailed design for reuse - Implementation for reuse - Verification, test and validation.

Reuse Phases: Development with reuse - with reuse specific activities - Common reuse processes - Phases of development with reuse - Impact of reuse on development cycle.

clean room software engineering: Re-engineering for reuse - Methodology - Retrieving objects in non-object oriented code-Measurements – Tools support for re-engineering - Overview of clean room software engineering - Phases in clean room method - Box structures algorithms - Adapting the box structures

Text Books:

1. Even-Andre Karisson, " Software Reuse - A Holistic Approach ", John Wiley and Sons, 1996.
2. Karma McClure, " Software Reuse Techniques - Additional reuse to the systems development process ", Prentice Hall, 1997.

MSSE 4.2.6 Elective-II**Graph Theory & Combinatorics****Credits: 4**

Instruction: 3 Periods & 1 Tut/week
 Univ. Exam : 3 Hours

Sessional Marks: 30
 Univ-Exam-Marks:70

PART I: COMBINATORICS

1. Foundation: Basics- Sets- Relations- Proof methods- Problem-solving strategies- Mathematical Induction.
2. Combinatorics: Basics of counting-Combinations and Permutations- Enumeration of Combinations & Permutations without repetitions and without repetitions- with constrained repetitions-Binomial Coefficients-Binomial and Multinomial theorems- Principle of Inclusion- Exclusion.
3. Recurrence Relations: Generating Functions of Sequences- Calculating Coefficients of Generating Functions- Recurrence Relations- Solving Recurrence Relations using Substitution and Generating Functions-Method of Characteristic Roots-Solutions of homogeneous and inhomogeneous recurrence relations.

PART II: GRAPH THEORY

4. Fundamental Concepts: what is a Graph-Paths-Cycles-Trails-Vertex Degrees and Counting-Directed Graphs-Trees and Distance-Spanning Trees-Enumeration-Optimization and Trees.
5. Matchings And Connectivity : Matchings and Covers-Algorithms and applications of matching-Matchings in General graphs-Cuts and Connectivity-k-connected graphs-Network flow problems.
6. Coloring And Planar Graphs: Vertex coloring and upper bounds-Structure of k-chromatic Graphs-Enumerative Aspects-Embeddings and Euler's formula-Characterization of Planar graphs-Parameters of Planarity-Edges and Cycles-Line Graphs and edge-coloring- Hamiltonian Cycles-Planarity-coloring and cycles.

TEXT BOOKS:

J.L. Mott, Abraham Kandel & Theodore P. Baker, "Discrete mathematics for Computer Scientists & Mathematics", Prentice-Hall of India Ltd. New Delhi. (Chapters 1,2,3)
 Douglas B. West, "Introduction to Graph Theory", Pearson Education Asia, New Delhi. (Chapters 1,2,3,4,5,6,7)

REFERENCE BOOKS:

1. Michel Townsend, "Discrete Mathematics: Applied Combinatorics and graph theory", The Benjamin/Cummings Publishing Company", California.
2. Kenneth H Rosen. "Discrete Mathematics and Its Applications, Tata McGrahHill Publishing Company, New Delhi.
3. Robin J. Wilson, "Introduction to Graph Theory" Pearson Education Asia, New Delhi.

MSSE 4.2.7**Data Warehousing & Mining Lab****Credits: 4**

Instruction: 3 Periods & 1 Tut/week

Sessional Marks: 50

Univ. Exam : 3 Hours

Univ-Exam-Marks:50

Lab Experiments using software like Clementine and Informatica

MSSE 4.2.8**Requirements Engineering Lab****Credits: 4**

Instruction: 3 Periods & 1 Tut/week

Univ. Exam : 3 Hours

Sessional Marks: 50

Univ-Exam-Marks:50

Implementation of the Software Requirements Methodologies using some tools-Usage of Quality Management tools and Software System Engineering Process Models

**5-YEAR INTEGRATED IN M.TECH/ B.TECH IN SOFTWARE ENGINEERING
(SOFTWARE ENGINEERING)**

**Course Structure and Scheme of Examination
With Effect from 2009-10 Admitted Batch**

5th year I Semester

Sub. Ref. No.	Name of the Subject	Periods			Max. Marks			
		Theory	Tutorial	Lab	Exam	Sessionals	Total	Credits
MSSE 5.1.1	Distributed Operating Systems	3	1		70	30	100	4
MSSE 5.1.2	Software Testing	3	1		70	30	100	4
MSSE 5.1.3	Software Estimation	3	1		70	30	100	4
MSSE 5.1.4	Elective - III	3	1		70	30	100	4
MSSE 5.1.5	Elective- IV	3	1		70	30	100	4
MSSE 5.1.6	Seminar	3	1		70	50	100	4
MSSE 5.1.7	Software Development Lab			3	50	50	100	2
MSSE 5.1.8	Case Tools Lab			3	50	50	100	2
TOTAL							800	28

Elective-III

[1] Software Security Engg. [2] Software Measurement & Metrics [3] Software Configuration Management [4] Software Maintenance [5] Design Patterns

Elective-IV

[1] Embedded Systems [2] Machine Learning [3] High Performance Computing [4] Multi-Core Architectures [5] Soft Computing

MSSE 5.1.1**Distributed Operating Systems****Credits: 4**

Instruction: 3 Periods & 1 Tut/week

Sessional Marks: 30

Univ. Exam : 3 Hours

Univ-Exam-Marks:70

Introduction to Distributed Systems, What is a Distributed System?, Hard ware concepts, Software concepts, Design issues.

Communication in Distributed Systems, Lay red Protocols, ATM networks, The Client – sever model, Remote Procedure call, Group communication.

Synchronization in Distributed System, Clock Synchronization, Mutual Exclusion, Election algorithms, Atomic transactions, Deadlocks in Distributed Systems.

Process and processors in Distributed System threads, System Models, Processors allocation, Scheduling in Distributed System, Fault tolerance, Real time Distributed System.

Distributed File Systems, Distributed File System Design, Distributed File System implementation, Trends in Distributed File System.

Distributed Shared Memory, Introduction, What is Shared memory?, Consistency models, Page based Distributed Shared memory, Shared – variable Distributed Shared memory, Object based Distributed Shared Memory.

TEXT BOOK:

Distributed Operating Systems, Andrew S. Tanenbanm

Reference Book:

Advanced Concepts in Operating Systems, Makes Singhal and Niranjana G.Shivaratna.

MSSE 5.1.2**Software Testing****Credits: 4**

Instruction: 3 Periods & 1 Tut/week
 Univ. Exam : 3 Hours

Sessional Marks: 30
 Univ-Exam-Marks:70

Testing Concepts, Issues and Planning: Purpose, Activities, Processes and Context Questions about Testing, Functional vs Structural Testing: Coverage –based vs Usage –based Testing: When to Stop Testing? – Test Planning and Preparation: Goals, Strategies, and techniques, Testing models and test cases. Test suite preparation and management, Preparation of Test procedure, Test Execution, Result Checking, and Measurement, Analysis and Follow-up, Activates, People, and Management, Test Automation

Coverage based and Boundary Testing Techniques: Checklist-Based Testing and its Limitations, Testing for partition Coverage, Partition: Concepts and definitions, Testing decisions and predicates for partition coverage, Usage-Based Statistical Testing, a case study, Input Domain Partitioning and Testing, Input domain testing for partition and boundary problems, simple Domain Analysis and the Extreme point Combination Strategy, Other Boundary Test Strategies and Applications .

Control Flow, Data Dependency, and Integration Testing: Basic Control Flow Testing, Model construction path selection & sensitization, Loop Testing, CFT Usage, and Other Issues, Different types of loops and corresponding CFGs, Loop testing: Difficulties and a heuristic strategy, CFT Usage and other Issues, Data Dependency and Data flow Testing: Basic concepts: Operations on data and data dependencies, DFT and DDG elements and characteristics DFT: Coverage and Applications, Achieving slice and other coverage .

Testing Techniques: Adaptation, Specialization and Integration: Testing Sub-Phases and Applicable Testing Techniques, Specialized Test Tasks and Techniques, Test Integration case Study: Hierarchical Web Testing .

Quality assurance beyond testing: Defect Prevention and Process Improvement: Basic concepts and Generic Approaches, Root cause Analysis for Defect Prevention Other Techniques for Defect Prevention, Analysis and modeling for defect prevention, Technologies, standards, and methodologies for defect prevention, Software tools to block defect injection, Focusing on Software Processes – Process selection , definition and conformance, Process maturity.

Software Inspection and Formal verification: Basic concepts and Generic Process, Fagan inspection, Other Inspections and Related Activities, Code reading, other formal reviews and static analyses, Defect Detection Techniques, Tool / Process Support, and Effectiveness Basic Concepts: Formal Verification and Formal Specification, Formal Verification: Axiomatic Approach

Text Books:

1. Jeff Tian, “Software Quality Engineering: Testing, Quality Assurance, and Quantifiable Improvement”, - John Wiley and Sons Inc., and IEEE Computer Society Press, February 2005
2. Edwar.Dkit. “Software testing in the Real World”, Pearson Education 2003.
3. William E Perry. “Effective Methods for Software Testing”, Second Edition, John Wiley and Sons, 2003
4. Stephan H. Kan, “Metrics and Models in Software Quality Engineering”, Second Edition, Pearson Education, 2003
5. “Rapid Testing” by Robert Culbertson, Chris Brown and Gary Cobb; Prentice-Hall, 2002. ISBN

MSSE 5.1.3**Software Estimation****Credits: 4**

Instruction: 3 Periods & 1 Tut/week
Univ. Exam : 3 Hours

Sessional Marks: 30
Univ-Exam-Marks:70

Introduction

Software Estimation

Paradoxes of Software Estimation

Software Estimation for scratch

Software Estimation by Project Type

Approaches to Software Estimation

Software Size Estimation

Software Units

Software Estimation- Complexity or Density

Software Development Effort Estimation

Productivity for Software Estimators

Schedule Estimation for Software Development Projects

Software Development Cost Estimation

Test Size and Effort Estimation

Pitfalls and Best Practices in Software Estimation

Criteria for Selecting a Software Estimation Tool

Text Book:

Software Estimation Best Practices, Tools & Techniques , Murali Chemuturi

MSSE 5.1.4 Elective-III Software Security Engineering Credits: 4

Instruction: 3 Periods & 1 Tut/week
Univ. Exam : 3 Hours

Sessional Marks: 30
Univ-Exam-Marks:70

Why is Security a Software Issue?

What Makes Software Secure?

Requirements Engineering for Secure Software

Secure Software Architecture and Design

Considerations for Secure Coding and Testing

Security and Complexity: System Assembly

Governance, and managing for More Secure Software

Text Book:

Software security engineering: a guide for project managers Julia H. Allen, Sean Barnum, Robert J. Ellison

MSSE 5.1.4 Elective-III Software Measurement And Metrics Credits: 4

Instruction: 3 Periods & 1 Tut/week
Univ. Exam : 3 Hours

Sessional Marks: 30
Univ-Exam-Marks:70

Overview of software metrics

The basics of measurement

Goal-based framework for software measurement

Empirical investigation

Measuring internal product attributes: size

Measuring cost and effort

Measuring external product attributes: quality

Measuring software reliability

Software test metrics

Object-oriented metrics

Agile metrics

Cost of Quality/Ownership, ROI metrics, Organizational metrics

SWE Lifecycle Model Considerations

Textbook:

Software Metrics: A Rigorous and Practical Approach, (2nd ed.) (638p.), N.E. Fenton and S.L. Pfleeger, PWS Publishing, 1998. ISBN 0-534-95425-1. (not required)

MSSE 5.1.4 Elective-III Software Configuration Management Credits: 4

Instruction: 3 Periods & 1 Tut/week

Sessional Marks: 30

Univ. Exam : 3 Hours

Univ-Exam-Marks:70

Putting a System Together- The Software Environment-Patterns-Mainline-Active Development
Line-Private Workspace-Repository-Private System Build-Integration Build-Third party
Codeline-Task Level Commit-Codeline Policy-Smoke Test-Unit Test-Regression Test-Private
Version-Release Line-Release-Prep Code Line-Task Branch-Referenced Patterns

Text Book:

Software configuration management patterns ,stephen p.berczuk with brad appleton
foreword by kyle brown

5.1.4 Elective-III**Software Maintenance****Credits: 4**

Instruction: 3 Periods & 1 Tut/week

Univ. Exam : 3 Hours

Sessional Marks: 30

Univ-Exam-Marks:70

Introduction to the Basic Concepts

The Maintenance Framework

Fundamentals of Software Change

Limitations and Economic Implications to Software Change

The Maintenance Process

Program Understanding

Reverse Engineering

Reuse and Reusability

Testing

Management and Organizational Issues

Configuration Management

Maintenance Measures

Building And Sustaining Maintainability

Maintenance Tools

TextBook:

SOFTWARE MAINTENANCE - Concepts and practice, Second Edition, Penny Grubb,
Armstrong A Takang

MSSE 5.1.4 Elective-III Design Patterns**Credits: 4**

Instruction: 3 Periods & 1 Tut/week
Univ. Exam : 3 Hours

Sessional Marks: 30
Univ-Exam-Marks:70

Why Pattern ?-

Creational Patterns

Behavioral Patterns

Structural Patterns

Text Book:

Design Patterns by Christopher G. Lasater

MSSE 5.1.5 Elective- IV Machine Learning**Credits: 4**

Instruction: 3 Periods & 1 Tut/week
Univ. Exam : 3 Hours

Sessional Marks: 30
Univ-Exam-Marks:70

Learning Problems, Least mean squares algorithm, Designing a learning system, Concept learning task, Find-S algorithm, Version Spaces and Candidate Elimination algorithm, Inductive bias, Decision tree learning, ID3 algorithm, Issues in decision tree learning, Artificial Neural networks- Gradient Descent learning rule, Multilayer feed forward networks, Back-propagation Algorithm, Bayesian Learning-Bayes Theorem, Maximum Likelihood hypotheses, Baye's optimal classifier, Naïve Baye,s Classifier, Bayesian belief networks, EM algorithm, Computational Learning Theory: probably approximately correct (PAC) learning. Computational complexity of training. Instance-Based Learning: k-Nearest-neighbor algorithm, Radial basis functions. Case-based learning. Genetic Algorithms, Genetic Programming, Learning sets of rules-Sequential covering algorithms, Learning first-order rules, Inverting resolution, Analytical Learning, Combining inductive and analytical learning, KBANN algorithm, EBNN algorithm, Using prior knowledge to augment search, Reinforcement Learning

Text Book: Tom M. Mitchell, : "Machine Learning", McGraw Hill International Edition, 1997.

MSSE 5.1.5 Elective- IV Embedded Systems**Credits: 4**

Instruction: 3 Periods & 1 Tut/week

Sessional Marks: 30

Univ. Exam : 3 Hours

Univ-Exam-Marks:70

Examples of Embedded systems and typical hardware-Hardware Fundamentals for Software Engineer and Advanced Hardware Fundamentals-Interrupts and Survey of software architectures. Introduction to RTOS and More Operating System Services Basic Design using RTOS-Embedded Software development tools and Debugging Techniques

Text Books:

1. An Embedded Software Primer, David A. Simon, Pearson Education, Inc., 1999
2. Embedded Real Time Systems programming, Sriram V Iyer and Pankaj Gupta, TMH, 2004

Reference Books:

1. Embedded Systems Design – A Unified Hardware/Software Introduction, Frank Vahid/ Tony Givargis, John Wiley & Sons, Inc., 2002
2. Embedded Systems, Architecture, Programming and Design, Raj Kamal, TMH, 2003

MSSE 5.1.5 Elective- IV High Performance Computing**Credits: 4**

Instruction: 3 Periods & 1 Tut/week

Sessional Marks: 30

Univ. Exam : 3 Hours

Univ-Exam-Marks:70

Classification of parallel computing structures, instruction level parallelism - static and dynamic pipelining, improving branch performance, superscalar and VLIW processors; High performance memory system; Shared memory multiprocessors and cache coherence; Multiprocessor interconnection networks; Performance modeling; issues in programming multiprocessors; Data parallel architectures.

MSSE 5.1.5 Elective- IV Multi- Core Architectures**Credits: 4**

Instruction: 3 Periods & 1 Tut/week
Univ. Exam : 3 Hours

Sessional Marks: 30
Univ-Exam-Marks:70

Multi-core Architecture Segment

Fundamentals of SuperScalar Processor Design, Introduction to Multicore Architecture – Chip Multiprocessing, homogeneous Vs heterogeneous design - SMP – Multicore Vs Multithreading.

Shared memory architectures– synchronization – Memory organization – Cache Memory – Cache Coherency Protocols - Design of Levels of Caches.

PowerPC architecture – RISC design, PowerPC ISA, PowerPC Memory Management Power 5 Multicore architecture design, Power 6 Architecture.

Cell Broad band engine architecture, PPE (Power Processor Element), SPE (Synergistic processing element), Cell Software Development Kit, Programming for Multicore architecture (introduction).

Text Book :

1. Hennessey & Pateterson, “Computer Architecture A Quantitative Approach”, Harcourt Asia, Morgan Kaufmann, 1999 Joseph JaJa.
2. *Introduction to Parallel Algorithms*, Addison-Wesley, 1992.

MSSE 5.1.5 Elective- IV Soft Computing**Credits: 4**

Instruction: 3 Periods & 1 Tut/week
Univ. Exam : 3 Hours

Sessional Marks: 30
Univ-Exam-Marks:70

Introduction to Intelligent Systems And Soft computing

Fundamentals of Fuzzy Logic Systems

Fuzzy Logic Control

Fundamentals of artificial neural networks

Major Classes of neural networks

Dynamic neural networks and their application to control and chaos prediction

Neuro-Fuzzy Systems

Evolutionary and Soft computing

Text Books : Soft Computing and Intelligent Systems Design by Fakhreddine O.Karray & Clarence De Silva, Pearson education. (Chapters 1 – 8)

MSSE 5.1.7**Software Development Lab****Credits: 4**

Instruction: 3 Periods

Univ. Exam : 3 Hours

Sessional Marks: 50

Univ-Exam-Marks:50

The student will be given few problems and he/she will be made to design and develop the software for the problem. The problem will be a practical application.

MSSE 5.1.4**Case Tools Lab****Credits: 4**

Instruction: 3 Periods

Univ. Exam : 3 Hours

Sessional Marks: 50

Univ-Exam-Marks:50

The students will be given exercises from the known case tools.

**5-YEAR INTEGRATED B.Tech/M.Tech PROGRAMME
(SOFTWARE ENGINEERING)**

COURSE STRUCTURE AND SCHEME OF EXAMINATION

W.E.F 2009-10 ADMITTED BATCH

5th YEAR 2nd Semester - PROJECT WORK

CODE	NAME OF THE SUBJECT	Credits	PERIODS/WE EK		EVALUATION MAXIMUM MARKS		
			Theory	Lab.	Internal	External	Total
MSSE	Project Work		-	-	-	100	100