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, capacitate 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 Keneth. 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 0 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: Dijikstra'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 ad 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 binominal distributions and their properties. (Definition, mean, variance, moment generating function., Additive properties, fitting of the distribution.)

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

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. **Intoduction 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 Robat 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 e-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 properlties 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

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

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

Programming the 8085 µP.:
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 µP. 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 µP.:
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 BOOK:
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, interest, 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:- Exp loring a List, Function Declaration by Cases, Functions as First-Class Values, ML: Implicit Types, Data Types, Exception Handling in M, Little quit in Standard ML
10. Functional Programming with Lists:- Scheme, a Dialect of Lisp, The Structure of Lists, List M anipulation, 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 t echniques, 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: 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 & Subtractors
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 8085µP Trainer.
   Serial Monitor of 8085µP Trainer with Terminal
   8085 Line Assembler of 8085µP Trainer with PC as Terminal
   8085 Cross Assembler using In-Circuit Emulator (ICE) with 8085µP 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 Feiner, A Van Dam F. H John, Pearson Education, 2004
3) Computer Graphics using Open GL by Franscis 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 Niranjan 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 RDMSs)

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