ANNA UNIVERSITY, CHENNAI

AFFILIATED INSTITUTIONS

R - 2009

M.C.A. (MASTER OF COMPUTER APPLICATIONS)

I SEMESTER (FULL TIME) CURRICULUM AND SYLLABI

SEMESTER I

SL. NO	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1	MC9211	Computer Organization	3	0	0	3
2	MC9212	Problem Solving and Programming	3	0	0	3
3	MC9213	Database Management Systems	3	0	0	3
4	MC9214	Data Structures	3	1	0	4
5	MC9215	Accounting and Financial Management	3	1	0	4
PRACTICAL						
6	MC9217	Programming and Data Structures Lab	0	0	3	2
7	MC9218	DBMS Lab	0	0	3	2
		TOTAL	**15**	**2**	**6**	**21**

MC9211 COMPUTER ORGANIZATION L T P C
3 0 0 3

UNIT I DIGITAL FUNDAMENTALS 8

Number Systems and Conversions – Boolean Algebra and Simplification – Minimization of Boolean Functions – Karnaugh Map, Logic Gates – NAND – NOR Implementation.

UNIT II COMBINATIONAL AND SEQUENTIAL CIRCUITS 10

Design of Combinational Circuits – Adder / Subtracter – Encoder – Decoder – MUX / DEMUX – Comparators, Flip Flops – Triggering – Master – Slave Flip Flop – State Diagram and Minimization – Counters – Registers.

UNIT III BASIC STRUCTURE OF COMPUTERS 9

Functional units – Basic operational concepts – Bus structures – Performance and Metrics – Instruction and instruction sequencing – Hardware – Software Interface – Addressing modes – Instructions – Sets – RISC and CISC – ALU design – Fixed point and Floating point operation.

UNIT IV PROCESSOR DESIGN 9

Processor basics – CPU Organization – Data path design – Control design – Basic concepts – Hard wired control – Micro programmed control – Pipeline control – Hazards – Super scalar operation.

UNIT V MEMORY AND I/O SYSTEM 9

Memory technology – Memory systems – Virtual memory – Caches – Design methods – Associative memories – Input/Output system – Programmed I/O – DMA and Interrupts – I/O Devices and Interfaces.

TOTAL : 45 PERIODS

TEXT BOOKS:

1. Morris Mano, “Digital Design”, Prentice Hall of India, 1997.
2. Carl Hamacher, Zvonko Vranesic and Safwat Zaky, Firth Edition, “Computer Organization”, Tata McGraw Hill, 2002.

REFERENCES:

1. Charles H. Roth, Jr., “Fundamentals of Logic Design”, Jaico Publishing House, Mumbai, Fourth Edition, 1992.
2. William Stallings, “Computer Organization and Architecture – Designing for Performance”, Sixth Edition, Pearson Education, 2003.
3. David A. Patterson and John L. Hennessy, “Computer Organization and Design: The Hardware/Software interface”, Second Edition, Morgan Kaufmann, 2002.
4. John P. Hayes, “Computer Architecture and Organization”, Thrid Edition, Tata McGraw Hill, 1998.

MC9212 PROBLEM SOLVING AND PROGRAMMING L T P C
3 0 0 3

UNIT I INTRODUCTION TO PROGRAMMING 9

Introduction to computing – building blocks for simple programs – problem to program – Decision structures – loop structures – problem analysis – programming style – documentation and testing.

UNIT II PROGRAMMING PARADIGMS 9

Procedural – functional – recursive – rule-based – structured programming.

UNIT III PROBLEM SOLVING TECHNIQUES 9

Programming life cycle phases – problem solving – implementation – maintenance – pseudo code representation – flow charts - algorithms – algorithmic efficiency – complexity of algorithms.

UNIT IV C PROGRAMMING FUNDAMENTALS 9

Structured program development – Data types – operators – expressions – control flow – arrays and pointers – functions – Input – output statements – storage classes.

UNIT V ADVANCED FEATURES 9

Strings - Recursion – structures – unions – bit manipulations – enumerations – file processing – fundamental data structures.

TOTAL : 45 PERIODS

REFERENCES:

1. Kernigan Brian W., and Dennis M. Ritchie, “The C Programming Language”, Seconde Edition, Prentice Hall, 1988.
2. Deitel and Deitel, “C How to program”, Prentice Hall, 1994.
3. Cormen, Leiserson, Rivest, Stein “Introduction to algorithms”, McGraw Hill publishers, 2002.

MC9213 DATABASE MANAGEMENT SYSTEMS L T P C
3 0 0 3

UNIT I INTRODUCTION 9

Historical perspective - Files versus database systems - Architecture - E-R model - Security and Integrity - Data models.

UNIT II RELATIONAL MODEL 9

The relation - Keys - Constraints - Relational algebra and Calculus - Queries - Programming and triggers

UNIT III DATA STORAGE 9

Disks and Files - file organizations - Indexing - Tree structured indexing - Hash Based indexing

UNIT IV QUERY EVALUATION AND DATABASE DESIGN 9

External sorting - Query evaluation - Query optimization - Schema refinement and normalization - Physical database design and tuning - Security

UNIT V TRANSACTION MANAGEMENT 9

Transaction concepts - Concurrency control - Crash recovery - Decision support - Case studies

TOTAL : 45 PERIODS

REFERENCES:

1. Raghu RamaKrishnan and Johannes Gehrke, “Database Management Systems”, McGraw Hill International Editions, 2000.
2. C. J. Date, “An Introduction to Database Systems”, Seventh Edition, Addison Wesley, 1997.
3. Abraham Silberschatz, Henry. F. Korth and S. Sudharshan, “Database system Concepts”, Third Edition, Tata McGraw Hill, 1997.

MC9214 DATA STRUCTURES L T P C
3 1 0 4

UNIT I DATA STRUCTURES 9

Introduction – Arrays – Structures – Stack: Definition and examples, Representing Stacks - Queues and lists: Queue and its Representation, lists – Applications of Stack, Queue and Linked Lists.

UNIT II TREES 9

Binary Trees – Operations on binary trees - Binary Tree Representations – node representation, internal and external nodes, implicit array representation – Binary tree Traversals - Huffman Algorithm – Representing Lists as Binary Trees

UNIT III SORTING AND SEARCHING 9

General Background – Exchange sorts – Selection and Tree Sorting – Insertion Sorts – Merge and Radix Sorts – Basic Search Techniques – Tree Searching – General Search Trees – Hashing.

UNIT IV GRAPHS AND THEIR APPLICATIONS 9

Graphs – An application of graphs – Representation – transitive closure - Warshall’s algorithm – Shortest path algorithm - a flow Problem – Dijkstra’s algorithm – An application of scheduling - Linked representation of Graphs – Graph Traversals

UNIT V STORAGE MANAGEMENT 9

General Lists: Operations, linked list representation, using lists, Freeing list nodes - Automatic list Management: Reference count method, Garbage Collection, Algorithms, Collection and compaction

L : 45 T : 15 TOTAL : 60 PERIODS

TEXTBOOK:

1. Tanaenbaum A.S.,Langram Y. Augestein M.J " Data Structures using C" Pearson Education , 2004

REFERNCES:

1. Robert Kruse & Clovis L. Tondo " Data Structures and Program Design in C",Prentice Hall , 2nd edition.,1991.
2. Weiss "Data Structures and Algorithm Analysis in C " ,Addison Wesley , Second Edition, 1997.

MC9215 ACCOUNTING AND FINANCIAL MANAGEMENT L T P C
3 1 0 4

UNIT I FINANCIAL ACCOUNTING 9

Meaning and Scope of Accounting-Principles-Concepts-Conventions-Accounting Standards-Final Accounts-Trail Balance-Trading Account-Profit and Loss Account-Balance Sheet-Accounting Ratio Analysis-Funds Flow Analysis-Cash Flow Analysis

UNIT II ACCOUNTING 9

Meaning-Objectives-Elements of Cost-Cost Sheet-Marginal Costing and Cost Volume Profit Analysis-Break Even Analysis-Applications-Limitations-Standard Costing and Variance Analysis-Material-Labor-Overhead-Sales-Profit Variances

UNIT III BUDGETS AND BUDGETING CONTROL 9

Budgets and Budgetary Control-Meaning-Types-Sales Budget-Production Budget-Cost of Production Budget-Flexible Budgeting-Cash Budget-Master Budget-Zero Base Budgeting-Computerized Accounting

UNIT IV INVESTMENT DECISION AND COST OF CAPITAL 9

Objectives and Functions of Financial Management-Risk-Return Relationship-Time Value of Money Concepts-Capital Budgeting-Methods of Appraisal-Cost of Capital Factors Affecting Cost of Capital-Computation for Each Source of Finance and Weighted Average Cost of Capital

UNIT V FINANCING DECISION AND WORKING CAPITAL MANAGEMENT 9

Capital Structure-Factors Affecting Capital Structure-Dividend Policy-Types of Dividend Policy-Concepts of Working Capital-Working Capital Policies-Factors affecting Working Capital-Estimation of Working Capital Requirements

L : 45 T : 15 TOTAL : 60 PERIODS

TEXTBOOKS:

1. S.N.Maheswari, "Financial and Management Accounting", Sultan Chand & Sons, 2003
2. I.M.Pandey, "Financial Management", Vikas Publications, 4th Reprint, 2002

REFERENCES:

1. S.P.Iyengar, "Cost and Management Accounting", Sultan Chand & Co,
2. I.M.Pandey, "Elements of Management Accounting" Vikas Publishing House, 19993

MC9217 PROGRAMMING AND DATA STRUCTURES LAB L T P C
0 0 3 2

1. Stack and Queue
2. Binary tree Traversals
3. Merge Sort
4. DFS and BFS
5. Warshall's Algorithm
6. Dijkstra's Algorithm
7. Huffman's Algorithm
8. Insertion Sort

TOTAL : 45 PERIODS

MC9218 DBMS LAB L T P C
0 0 3 2

1. Creation of base tables and views.
2. Data Manipulation
   INSERT, DELETE and UPDATE in tables
   SELECT, Sub Queries and JOIN
3. Data Control Commands
4. High level language extensions – PL/SQL. Or Transact SQL
5. Use of Cursors, Procedures and Functions
6. Embedded SQL or Database Connectivity.
7. Oracle or SQL Server Triggers.
8. Working with Forms, Menus and Reports.
9. Front-end tools – Visual Basic/Developer 2000

TOTAL : 45 PERIODS