

Faculty of Engineering & Technology
Board of Studies in Computer Science & Engineering
Proposed Curriculum structure of First Year M.C.A.

w.e.f. July 2008

Part – I

Sr. No.	Subject Code	Subjects	Teaching Scheme [Hours/Week]		Examination Scheme [Marks]			
			Lecture	Pract.	Theory	TW	Pract.	Total
01	MCA 101	Programming in C	4	2	100	25	25	150
02	MCA 102	Computer Architecture	4	--	100	--	--	100
03	MCA 103	Mathematics	4	--	100	--	--	100
04	MCA 104	Computer Graphics	4	2	100	25	25	150
05	MCA 105	Behavioral Science & Organizational Skills	4	--	100	--	--	100
06	MCA 106	Visual Programming Lab[Visual Basic]	--	2	--	50	50	100
Total of I			20	6	500	100	100	700

Part – II

Sr. No.	Subject Code	Subjects	Teaching Scheme [Hours/Week]		Examination Scheme [Marks]			
			Lecture	Pract	Theory	TW	Pract	Total
01	MCA 107	Data Structures	4	2	100	25	50	175
02	MCA 18	Discrete Mathematical Structures	4	--	100	--	--	100
03	MCA 109	Object Oriented Programming	4	2	100	25	50	175
04	MCA 110	Communication Skills	2	2	--	50	--	50
05	MCA 111	Accounts & Financial Management	4	--	100	--	--	100
06	MCA 112	Web Development Lab [HTML / DHTML]	--	2	--	50	50	100
Total of II			18	8	400	150	150	700
Total of I and II					900	250	250	1400

Title of the subject: Programming in C

Course Code: MCA 101

Teaching Scheme:

Lectures: 4 hrs/week

Practical: 2 hrs/week

Examination Scheme:

Theory Paper: 100 marks [3 hrs]

Practical Exam: 25 Marks

Term work: 25 Marks

Objectives:

- Learn the C programming in detail.
- Facilitate the students to use C as a language of expression of logic
- Provide extensive hands on for C.

Section 1:

Introduction to C: importance of C, Basic structure of C program, creating a simple C program, executing a C program, why to include header files?

Data types, Operators and Expressions: Character set, keywords and identifiers, constants and variables, data types, declaration of variables, defining symbolic constants.

Operators: relational operators, logical operators, assignment operators, increment and decrement operators, conditional operator, library functions, arithmetic expressions evolution of expression, precedence of arithmetic operators, operator precedence and associativity

[8]

Section 2:

Data Input-Output, Branching and Loops: Reading a character, writing a character, formatted input and formatted output.

Decision making and *if... else* statement, nesting of *if... else* statement, the *switch* statement, the *?:* operator, the *goto* statement, The *while* statement, the *do* statement, the *for* statement.

[8]

Section 3:

Arrays and Functions: One dimensional arrays, two dimensional arrays, sorting algorithm- bubble sort and insertion sort. Defining a function, function prototype, return type, passing arguments, call by value, call by reference, recursive function, passing array to function, scope rule. [8]

Section 4:

Pointers: Pointer operators, pointer expressions, initializing pointers, pointer arithmetic, pointers and function arguments, pointers to function, pointers and arrays, pointers and strings, memory allocation *malloc[]*, *calloc[]*, *free[]*, *realloc[]* functions, array of pointers, pointers to pointers

Structure: structure declaration, initialization of structure, structure and functions, array of structures, nested structures, structures and pointers, unions, user defined data type[*typedef*], enumerated data type.

[8]

Section 5:

Files: File system basics, file operations, file open, file read, file close operations, file opening modes, string I/O in files, and record I/O in files, text and binary files. [8]

Text Books/Reference Books:

1. Byron Gottfried, "Programming with C" 2nd edition. Tata Mcgraw Hill.
2. Yashwant Kanetkar: "Let Us C", BPB publication
3. G.S.Baluja& G.K.Baluja:"Understanding C, a practical approach",Dhanpat Rai& Co.

Practical Examination:

The term work shall consist of at least 10 experiments/ assignments based on the syllabus above.

The Practical Examination shall consist of writing and performing an experiment / assignment and oral based on the syllabus as per the journal record. Duration of examination is three hours.

Assessment of term work should be done at the time of practical examination which will consider the points below and the marks should be awarded accordingly.

* Continuous lab assessment

* Actually performing practicals in the laboratory during the semester

Title of the subject: Computer Architecture
Course Code: MCA 102

Teaching scheme:
Theory: 4 Hrs/ Week

Examination scheme:
Theory paper: 100 Marks, 03 Hrs

Objectives:

- Have a deeper understanding of how computers work.
- Learn the internal organization of computer and factors affecting their performance.
- Learn the design aspects of Processor, Control Section and Memory

Section 1:

Structure of a Computer System: Brief History of computers, Von Neumann Architecture, Functional Sections, Signed numbers, Integer Arithmetic, 2's Complement multiplication, Booths Algorithm, Hardware Implementation, Division, Restoring and Non Restoring algorithms, and IEEE standards. Logic gates, Sequential circuits — Flip Flops, Registers and Counters. [8]

Section 2:

Processor Design: Processor organization. Information representation, instruction set, instruction format, instruction types, fixed point arithmetic: Addition, subtraction, multiplication and Division. ALU design. [8]

Section 3:

Control Section Design: Introduction, instruction sequencing, instruction interpretation, hardwired control design, method, multiplier control Section, CPU control Section, Micro programmed control, control memory optimization. [8]

Section 4:

Memory organization: Memory types, memory device characteristics, RAM Secondary memory, their access techniques, Virtual memory, memory hierarchies, main memory allocation, High speed memories, internal memory, cache, associative memory. [8]

Section 5:

I/O Organization: Input/Output systems, Peripherals: Keyboard, Mouse, Scanners, Video Displays, Dot Matrix and Laser Printers, Standard Buses, Synchronous, Asynchronous, Parallel, Serial, PCI, SCSI, USB Ports. Programmed I/O, Interrupt driven I/O, Direct Memory Access [8]

Text Books/Reference Books:

- 1 John P Hayes, "Computer Architecture and Organization", McGraw Hill Pub
 - 2 William Stallings, "Computer Organization & Architecture", 7th Ed. Prentice Hall Pub
-

Title of the subject: Mathematics

Course Code: MCA 103

Teaching scheme:

Theory: 4 Hrs/ Week

Examination scheme:

Theory paper: 100 Marks [3 Hrs]

Section 1:

Complex number: Argand's Diagram, polar form, De-Moivre's Theorem, Exponential, Circular, Hyperbolic Functions, Inverse Hyperbolic Functions, Separation of real and imaginary parts of a circular and hyperbolic functions, Logarithm of complex quantity.

[8]

Section 2:

N^{th} Derivatives, Taylor's and Maclaurian's theorem, Expansion of Function using standard series, using method of differentiation & integration and using method of substitution. Intermediate forms.

Matrices: Rank of matrix, normal form, consistency of equations [Homogeneous and non-Homogeneous. Characteristics equations, eigen values, eigen vectors, Inverse of matrix by Cayley-Hamilton theorem, Linear dependence and linear independence of vectors, linear transformations, orthogonal transformation of a quadratic form. [8]

Section 3:

Differential equations of first order and first degree: Solution of linear differential equation, reducible to linear differential equation, exact differential equations, Applications to mathematics.

[8]

Section 4:

Partial differentiations: Partial differentiations, Total differentiations, Euler's Theorem, change of independent variables, Jacobian, Chain rule, Maxima and Minima of two independent variables, Lagrange's method of undetermined multipliers.

[8]

Section 5:

Sequences, series, convergences and divergence, ratio test, compression test, Integral test, Cauchy's root test, Raabe's test, Absolute and conditional convergence. [8]

Text Books/Reference Books:

1. A Textbook of Applied Mathematics, Vol. I and II,

Author: P. N. Wartikar , J. N. Wartikar

2. Higher Engineering Mathematics

Author: Dr.B. S. Grewal

3. Advanced Engineering Mathematics.

Author: H. K. Dass

4. A Text Book of Engineering Mathematics, Vol. I and II

D. T. Deshmukh

5. Engineering Mathematics Vol. I and II

Author: M. L. Bhatiya

Title of the subject: Computer Graphics
Course Code: MCA 104

Teaching Scheme :

Lectures: 4 hrs/week
Practical: 2 hrs/week

Examination Scheme :

Theory Paper: 100 marks [3 hrs]
Term Work: 25 Marks
Practical Exam: 25 Marks

Objectives:

- To learn about the basic building blocks of Computer Graphics
- To make the students understand the various object perspectives

Section 1:

Computer graphics system : video display devices, raster scan systems, random scan systems, graphics monitors and workstations, 3d viewing devices, input devices, hard –copy devices, applications of computer graphics. [8]

Section 2:

Graphics output primitives and their attributes: line-drawing algorithms: DDA and Bresenham’s line algorithm, frame buffer, line function, circle generating algorithms, other curves, character generation, line attributes, and curve attributes, color and grayscale levels, character attributes. [8]

Section 3:

Two-dimensional transformations and viewing: basic transformations, matrix representation and homogenous coordinates, composite transformations: translation, scaling and rotation, reflection, shear, window-to- viewport coordinate transformation, clipping operations, point clipping, line clipping: Cohen-Sutherland line clipping, polygon clipping, interior/exterior clipping, text clipping. [8]

Section 4:

Graphical user interface and interactive input methods: the user dialogue input of graphical data, interactive picture construction techniques, and virtual reality environments.

[8]

Section 5:

Three-dimensional object representations:three-dimensional display methods: parallel projection, perspective projection and depth cueing, blobby objects, Bezier curves, B-Spline curves, fractals.

[8]

Text/Reference Books:

1. Computer Graphics: Donald Hearn and M. Pauline Baker, PHI
2. Computer Graphics: James D. Foley, Andries Van Dam, Steven K. Feiner, John F. Hughes, Addison Wesley 1997

Practical Examination:

The term work shall consist of at least 10 experiments/ assignments based on the syllabus above.

The Practical Examination shall consist of writing and performing an experiment / assignment and oral based on the syllabus as per the journal record. Duration of examination is three hours.

Assessment of term work should be done at the time of practical examination which will consider the points below and the marks should be awarded accordingly.

* Continuous lab assessment

* Actually performing practical in the laboratory during the semester

Title of the subject: Behavioral Science & Organizational Skills
Course Code: MCA 105

Teaching Scheme:
Lectures: 4 hrs/week
Objectives:

Examination Scheme:
Theory: 100 Marks

- To learn the basic skills of management.
- To understand human behavior in the organization.

Section 1:

Introduction to organizational behavior, the challenge facing management, Approaches to organizational behavior, framework and organizational behavior framework, The early practice of management, Organizational special scientific manager, Human relations movement, Approach to management, Functions of a management, Planning: Importance of planning in an organization, types of plans objectives, Strategies, Policies, Decision – making.

[8]

Section 2:

Organization – Organization structures, Classical Neoclassical and modern theories of organization, line staff and functional organization, authority and responsibility, span control, centralization and decentralization, authority and responsibility, span of control, centralization and decentralization, The organizational design, Socio technical systems, organizational effectiveness.

[8]

Section 3:

Conflict: Sources and types of conflict in organization, conflict management. [8]

Section 4:

Motivation: Primary and secondary motives, Maslow's theory of motivation, Herzberg's two factor theory, leadership – it's theories and skills, styles of management leadership, Job satisfaction- measuring job satisfaction, factors influencing job satisfaction, Outcomes of job satisfaction with respect to productivity, turnover, absenteeism etc Job enrichment, job rotation, MBO technique, management of change.

[8]

Section 5:

Control: its significance to the organization, Steps: setting of an effective control system, how to make control acceptable, and characteristics of an effective control system.

Communication – Process of communication, its importance, barriers to communication ways of improving communication significance to an organization.

[8]

Text/Reference Books:

1. Organisation behaviour - Fred Luthans, McGraw Hill
2. Principal of Management - Econiz Ueihrich
3. Principal of Management - Terry Franklin, AITBS
4. Principal of Management - Tripathy and Reddy, TMH
5. Management - Stemer and Freeman

Title of the subject: Visual Programming Lab
Course Code: MCA106

Teaching Scheme:

Practical: 2 hrs/week

Examination Scheme:

Term work : 50

Practical exam: 50

Objectives:

- To learn the basics of Event-Driven Programming
- To develop the Windows application in Visual Environment

Section 1:

Introduction to visual basic development environment –IDE, the menu bar, toolbar, project explorer, toolbox, property window, form designer, form layout, immediate window, designing the user interface, event driven programming.

Visual basic language – variables, constants, arrays, procedures, functions, control statements, loops.

Section 2:

Managing forms in visual basic – startup form, form events, designing menus, building dynamic forms at runtime, multiple documents interface.

Basic ActiveX controls – text box control, label control, command button, checkboxes, option buttons, list boxes, combo boxes, scroll bars, sliders, picture boxes, image controls, shape and line controls

Section 3:

Advanced activex controls – rich text controls the common dialog control, tree view and list view control, tab control, toolbars, status bar, progress bar.

Section 4:

Database programming - visual data manager, data controls, data bound controls, ado data controls.

Section 5:

File handling and file controls – sequential files, random access files, binary files filesystemobject. Ole – linking vs embedding, ole terminology, and ole container control.

Text/Reference Books:

1. VB6 Programming by Steven Holzner, Black Book
2. Mastering VB6 by Evangelos Petroutsos, BPB Publication

Term Work

Term work shall consist of at least 8 experiments and mini project based on the above syllabus and assessment of term work should be done as follows:

- * Continuous lab assessment
- * Actual practical performance in Laboratory
- * Oral Examination conducted [internally] at the time of submission.

Practical Examination:

Practical Examination shall consist of mini project demo and oral based on the syllabus as per the journal record.

Title of the subject: Data Structures**Course Code: MCA 10****Teaching Scheme:****Lectures: 4 hrs/week****Practical: 2 hrs/week****Examination Scheme:****Theory Paper: 100 marks [3 hrs]****Practical Exam: 50 Marks****Term work: 25 Marks****Objectives:**

1. To introduce algorithmic analysis, fundamental data structures, problem solving paradigms
2. To study the representation, implementation and application of basic data structures.
3. To introduce algorithmic strategies and time complexity analysis of problems.
4. Apply Data Structures and other techniques to Real life problems.

Section 1:

Pointers and Dynamic Memory Allocation: Pointers, Dynamic Memory Allocation, Algorithm Specification, Introduction to recursion, Recursive algorithm, Data abstraction, Performance Analysis , Space Complexity, Time complexity, Asymptotic notation, Practical Complexities, Performance Measurement, Clocking, Generating Test Data

Arrays: The Abstract Data Type, Arrays in C, Dynamically Allocated Arrays, One Dimensional Arrays, Two Dimensional Arrays, Structures and Unions , Structures, Unions, Internal Representation of Structures, Self Referential Structures, Polynomials, The Abstract Data Type, Polynomial Representation, Polynomial Addition, Sparse Matrices, The Abstract Data Type, Sparse Matrix Representation, Transposing a Matrix, Matrix Multiplication, Representation of Multidimensional Arrays, Strings, The Abstract Data Type. [8 hrs]

Section 2:

Stack and queues: Stacks, Stacks using Dynamic Arrays, Queues, Circular Queues using Dynamic Arrays, Mazing Problem, Evaluation of Expressions, Expressions, Evaluating Postfix Expressions, Infix to Postfix, Multiple Stacks and Queues.

Linked lists: Singly linked List and Chains, Representing Chains in C, Linked Stacks and Queues, Polynomials, Polynomial representation, Adding Polynomials, Erasing Polynomials, Circular List Representation of Polynomials, Additional List Operations, Operations for Chains, Operations for Circularly Linked List, Equivalence Classes, Sparse Matrices , Sparse Matrix Representation, Sparse Matrix Input, Sparse Matrix Output, Erasing Sparse Matrix, Doubly Linked Lists. [8 hrs]

Section 3:

Trees: Terminology, Representation of Trees, Binary Trees, Abstract Data Type, Properties of Binary Trees, Binary Tree Representation, Binary Tree Traversals, Inorder Traversal, Preorder Traversal, Postorder Traversal, Iterative Inorder Traversal, Level-order Traversal, Traversal without a Stack, Additional Binary Tree Operations, Copying Binary Trees, Testing Equality , The Satisfiability Problem, Threaded Binary Trees, Threads, Inorder Traversal of Threaded Binary Tree, Inserting a node into Threaded Binary Tree, Heaps, Priority Queues, Definition of Max Heap, Insertion into a Max Heap, Deletion from a Max Heap, Binary Search Trees, Definition, Searching a Binary Search Tree, Insertion into Binary Search Tree, Deletion from Binary Search Tree, Joining and Splitting Binary Search Trees, Height of Binary Search Tree, Selection Trees, Winner Trees, Loser Trees, Forests, Transforming a Forest into a Binary Tree, Forest Traversals, Representation of Disjoint Sets, Union and Find Operations, Application to Equivalence Class, Counting Binary Trees, Distinct Binary Trees, Stack Permutations, Matrix Multiplication, Number of Distinct Binary Trees [8 hrs]

Section 4:

Graphs: Graph Abstract Data Type, Definition, Graph Representation, Elementary Graph Operations, Depth First Search, Breadth First Search, Connected Components, Spanning Trees, Biconnected Components, Minimum Cost Spanning Trees, Kruskal s Algorithm, Prim s Algorithm, Sollin s Algorithm, Shortest Path and Transitive Closure. Single Source/All Destination: Nonnegative Edge Costs, Single Source/All Destination: General Weights, All Pair Shortest Path, Transitive Closure, Activity Networks, Activity-On-Vertex [AOV] Networks, Activity-On-Edge [AOE] Network [8 hrs]

Section 5:

Sorting: Insertion Sort, Quick Sort, Merge Sort, Merging, Iterative Merge Sort, Recursive Merge Sort, Heap Sort, Sorting on several Keys, List and Table Sort, External Sorting, k-way Merging, Buffer Handling for Parallel Operation, Run Generation, Optimal Merging of Runs [8 hrs]

Text Books:

1. Fundamentals of Data Structures in C [2nd Edition], Ellis Horowitz, Sartaj Sahani, Susan Anderson Freed, Universities Press.
2. Data structure by Lipschutz, MGH

Ref. books:

1. Data and file structure by A. Tanenbaum by PHI
2. Data structure using C by Trembly

Practical Examination:

The term work shall consist of at least 10 experiments/ assignments based on the syllabus above. The Practical Examination shall consist of writing and performing an experiment / assignment and oral based on the syllabus as per the journal record. Duration of examination is three hours. Assessment of term work should be done at the time of practical examination which will consider the points below and the marks should be awarded accordingly.

* Continuous lab assessment

* Actually performing practical in the laboratory during the semester.

Title of the subject: Discrete Mathematical Structure

Course Code: MCA 18

Teaching Scheme:

Lectures: 4 hrs/week

Examination Scheme:

Theory Paper: 100 marks [3 hrs]

Objectives:

- To train the students with mathematical foundations of Computer Science
- To give a feel of core mathematics required in many subjects of Computer Science

Section 1:

Sets and Probabilities :Contribution of sets, finite and infinite sets, unaccountably infinite sets. The rules of sum and product, discrete probability, conditional probability.

[8]

Section 2:

Relations and Functions: Properties of Binary Relations, Equivalence relation and partitions, Partial ordering Relations and Lattices. Chain and Anti-chains, A Job-Scheduling problem, Functions and Pigeonhole principles.

[8]

Section 3:

Graphs & Trees :Basic terminology, Multigraphs and Weighted graphs, Paths and Circuits, Shortest paths in weighted graphs, Eulerian paths and circuits, The traveling salesman problem, factors of a graph, Planner graphs, Trees, Rooted Trees, Path lengths in rooted trees, Prefix codes, Binary search trees, spanning trees and cutsets, Minimum spanning trees. Transport networks.

[8]

Section 4:

Discrete Numerical Functions and Recurrence Relations:Manipulation and Numerical Functions, Asymptotic behavior, Generating functions and Combinatorial Problems, Recurrence relations, linear recurrence relations with constant coefficients, Homogeneous solutions, Particular Solutions, Total Solutions, Solutions by the method of generating functions.

[8]

Section 5:

Boolean Algebra: Principal of duality, Basic properties of Algebraic systems defined by lattices, Boolean lattices and Boolean algebras, Boolean functions and Boolean expressions, Propositional Calculus, Design and implementation of digital networks, switching circuits.

[8]

Text/Reference Books:

- 1.C.L.Liu , "Elements of Discrete Mathematics", Tata McGraw-Hill Publication
 2. Kollman, Busby and Ross, "Discrete Mathematical Structures", PHI
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Title of the subject: Object Oriented Programming
Course Code: MCA 109

Teaching Scheme:

Lectures: 4 hrs/week
Practical: 2 hrs/week

Examination Scheme:

Theory: 100 Marks
Term work: 25
Practical exam: 50

Objectives:

- To learn the Object-Oriented approach to programming
- To train students to use Object-Oriented features effectively in real world

Section 1:

Introduction to C++ - Procedural Vs Object oriented programming, Features of object oriented programming. Classes and Objects – Class, Object, Class members, Access specifiers, Scope resolution operator, Static class members, Nested classes, Local Classes, passing an object to function , Returning an object to function, Dynamic memory allocation.

[8]

Section 2:

Constructors, Destructors, Function overloading, Types of constructors, Default function arguments, Function overloading and ambiguity.

[8]

Section 3:

Operator Overloading – Unary operators, Binary operators, Data conversion, Operator overloading using friend function, Special operators like [], [], -, Pitfalls of operator overloading and conversion.

[8]

Section 4:

Inheritance – Derived class and base class, Constructor, Destructor, Overriding member function, Scope resolution, Access specifiers, Public & private inheritance, Levels of inheritance, multiple inheritance, Virtual base class, Containership.

[8]

Section 5:

Polymorphism – Virtual functions, pure virtual functions, Abstract class, Virtual destructors, Early Vs late binding. File I/O – Stream class hierarchy, Formatted file I/O, Character I/O, Binary I/O, File pointers. Exception Handling – Simple exceptions, multiple exceptions, throw.

[8]

Text/Reference Books:

1. The Complete Reference – C++ by Herbert Schildt, Tata McGraw Hill
2. Object Oriented Programming in C++ by Robert Lafore, Galgotia
3. Object Oriented Programming in Turbo C++ by E. Balguruswami, McGraw Hill

Practical Examination:

The term work shall consist of at least 10 experiments/ assignments based on the syllabus above.

The Practical Examination shall consist of writing and performing an experiment / assignment and oral based on the syllabus as per the journal record. Duration of examination is three hours.

Assessment of term work should be done at the time of practical examination which will consider the points below and the marks should be awarded accordingly.

* Continuous lab assessment

* Actually performing practical in the laboratory during the semester

Title of the subject: Communication Skills
Course Code: MCA 110

Teaching Scheme:
Lectures: 2 hrs/week
Practical: 2 hrs/ week

Examination Scheme:
Term work: 50 Marks

Basic Communication Skills:

Communicating with peers, communicating formally, communicating casually, and communicating for daily requirements.

Personality Development:

Formal dressing, casual dressing, dressing up for occasion, interview dressing, body language, eye contact, personal management.

Effective group discussion:

What is group discussion? Why group discussions held? What is judged in a group discussion? Keys to successful group discussion, different topics for group discussion, different ways or modules of group discussion.

Effective Public Speaking:

How to deliver an effective speech, How to involve public large, Stage courage, effective crowd alertness.

Art of Effective English Communication:

Importance of English communication, what difference does it make? Motivation Therapy, New avenues for improved communication, new therapies for inculcating English

Presentation for Aptitude Test:

What is an aptitude test? Why are aptitude tests held? What is judged in an aptitude test? What are the keys to a successful aptitude test? Different areas for an aptitude test, different ways or modules of aptitude test.

English Grammar:

Why is grammar important? Different types of English grammar, How do we practice it?

Interview Techniques:

Types of interview, why is the interview held? What is judged in an interview? Types and round of interviews, operations round for an interview, HR round for an interview, Technical round for an interview, How to express freely and ethically in an interview? How to prepare a resume or Bio-data? Things meant to be said in an interview and vice-versa, How to crack and get an offer from an interviewer? Psychological aspects of question, reading interviewer's mind

Telephonic Etiquettes:

How to give Telephonic interviews? How to introduce yourself and speak on a call? How to speak to anyone on the phone? What are telephonic interviews held for? How to crack a telephonic interview?

Mock call Handling

Benefits of Mock calls, How does one benefit from the Mock call sessions

Title of the subject: Accounts & Financial Management
Course Code: MCA 111

Teaching Scheme:
Lectures: 4 hrs/week

Examination Scheme:
Theory Paper: 100 marks [3 hrs]

Objectives:

1. To introduce students to accounting as the "language of business" and to the various financial accounting topics covered in the course with the understanding that some students may pursue more in-depth study in subsequent courses while others do not intend to continue their accounting education.
2. To teach students to apply accounting theory, standards, principles and procedures to practical accounting problems in the elementary topical areas covered in the course.
3. To teach students the fundamental rationale for the various financial accounting procedures introduced in the course.

Section 1:

Financial Accounting: Double Entry Accounting system, Concepts and conventions in accounting, Accounting process, Depreciation. Journalisation: Rules for Journalisation, posting in a ledger, subsidiary books, preparation of trial balance, Bank Reconciliation statement. [8]

Section 2:

Final Accounts: Preparation of Trading and profit and loss Account and Balance sheet of a proprietary and partnership firms. [8]

Section 3:

Cost Accounting: Advantages of Cost Accounting, Comparison with financial accounting, Classification and elements of cost, Methods of costing [8]

Section 4:

Techniques of costing: Marginal costing, Break-even chart, cost, volume profit analysis., Standard costing, Advantages, Variance analysis Budgetary Control –Types of budgets and Flexible Budget VS Fixed Budget ,Preparation of Simple cash budget & flexible budgets Cost Reduction and cost control, value analysis. [8]

Section 5:

Management Accounting: Concept of Management Accounting, Objectives of Management Accounting, Comparison with financial and cost accounting. [8]

Text/Reference Books:

1. Satish Inamdar, Cost and Management accounting”, Everest Publishing House
 2. Khan and Jain “Management Accounting”, Tata Mcgraw Hill.
 3. A.P. Rao, Management Accounting”, EPH
 4. Dr.Sanjay Patankar, Management Accounting”,
 5. Dr.Mahesh Kulkarni , Management Accounting” ,
 6. Duncan Williamson ,Cost and Management Accounting”, PHI
 7. T.S. Grewal, Element of Accounts, S. Chand & Co.
 8. Engineering Economics and financial Accounting – scitech publication 2004.
 9. Accounting and financial management by Ramchandran T – Scitech publication
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Title of the subject: Web Development Lab
Course Code: MCA 112

Teaching Scheme:
Practical: 2 hrs/week

Examination Scheme:
Practical Exam: 50 Marks
Term work: 50 Marks

Objectives:

1. To increase the students knowledge of available Web technologies.
2. To become familiar with scripting
3. To become familiar with graphics and interactive animations.
4. To learn and apply techniques that enhances a user's web experience.

Section 1:

Introduction to Internet Technology, Introduction to HTML- Core HTML elements and it's attributes, Headings, Paragraphs, Breaks, Divisions & Centering, Preformatted text, Lists, Horizontal rules, Block level elements, Text level elements.

Section 2:

Linking in HTML – Anchor element, Anchor attributes, Images & Anchors, Image maps, Semantic linking with the <link> element, Basic Layout – Text, Colors and Backgrounds.

Section 3:

Tables – Simple tables, Rowspan and Colspan, Tables for layout, Frames – Simple frame, noframes, Frame targeting, Frame layout, HTML & Multimedia

Section 4:

Style Sheets – Adding style sheets to a document, Creating style sheets rules, Color and background properties, Font properties, Text properties, List Properties, Box properties.

Section 5:

HTML <form> element, Form field elements, Introduction to JavaScript – Purpose of Scripting, Basics of JavaScript language, and Document object model, Events, Form validation.

Text/Reference Books

1. The Complete Reference – HTML by Thomas a. Powell, Tata McGraw Hill
2. Introduction to JavaScript, BPB

Term Work

The term work shall consist of at least 8 experiments and mini project based on the above syllabus and assessment of term work should be done as follows:

- * Continuous lab assessment
- * Actual practical performance in Laboratory
- * Oral Examination conducted [internally] at the time of submission.

Practical Examination:

The Practical Examination shall consist of mini project demo and oral based on the syllabus as per the journal record.