Course Curriculum

2-Year M.C.A Degree Programme (Batch 2020-22)
Credit Structure
Distribution of Total Credits & Contact Hours in all Semesters

S. No.	Semester Number	Credits/Semester	Contact hours/week
1	I	28	48
2	II	36	52
3	III	28	36
4	IV	28	40
	Total	120	176

Course Structure: M.C.A. 2020-22

Semester – I

S. No.	Course Code	Course Title	L	T	P	Credit(s)
1	MCA-T101	Principle of Programming Languages	3	1	0	4
2	MCA-T102	Operating System	3	1	0	4
3	MCA-T103	Database Management System	3	1	0	4
4	MCA-T104	MIS & E-Commerce	3	1	0	4
5	MCA-T105	Python Programming	3	1	0	4
6	MCA-P101	DBMS and OS Lab	0	0	8	4
7	MCA-P102	Python Programming Lab	0	0	8	4
8	MCA-P103	Skill Course	0	0	4	Audit
9*	MCA-B101	Data Structure	3	1	0	Audit
10*	MCA-B102	Basic Mathematics	3	1	0	Audit
					Total Credits	28
					Total Contact hours /week	48

* Bridge Course (For Students not having mathematics in UG or 12th level)

Semester – II

S. No.	Course Code	Course Title	L	T	P	Credit(s)
1	MCA-T201	Design & Analysis of Algorithms	3	1	0	4
2	MCA-T202	Java Programming	3	1	0	4
3	MCA-T203	Software Engineering	3	1	0	4
4	MCA-T204	Computer Networks	3	1	0	4
5	MCA-T205	Computer Architecture	3	1	0	4
6	MCA-P201	Design & Analysis of Algorithm Lab	0	0	8	4
7	MCA-P202	Java Programming Lab	0	0	8	4
8	MCA-P203	Industrial Training			16	8
		Total Credits				36
		Total Contact hours/week				52

MCA-P101   DBMS and OS Lab
Lab Based on courses MCA T102 and MCA T103

MCA-P102   Python Programming Lab
Lab Based on courses MCA T105

MCA-P103   Skill Course

Basic Language Skills, Comprehension of an unseen passage, Phonology and Stress Marking , Social and Official Correspondence, Interpretation of Short Unseen Literary Prose Pieces (fiction and non-fiction), Making presentations, public speaking.

MCA- B101*   Data Structure
UNIT I

Data Type - Data Object - Data Structure: Data abstraction and abstract data type; Notion of an algorithm - Complexity measures: Rate of growth, basic time analysis of an algorithm; ordering notion- detailed timing analysis - space complexity.
Arrays: Arrays and their representation-Single and multidimensional arrays-row major and column major ordering-address calculation.
Linked lists: Pointers and their uses- Continuous vs. linked storage. Singly and doubly linked lists- Operations on lists-representation of sparse matrices and polynomials using lists- Circular lists- generalized lists

UNIT II

Storage   Management: Dynamic   storage management-Reclamation   and compaction- Boundary Tag method.
Stacks and Queues: Stacks and Queues-representation and Manipulation-Uses of stacks and Queues-Recursion, polish expressions

UNIT III

Trees: Trees-Binary and N-ary trees-Representation of trees-Tree traversal algorithms-Threaded trees and advantages-Conversion of general trees to Binary trees-B trees-Applications: Decision trees, Game trees and expression parsing.

UNIT IV

Graphs: Graphs and their representations: Matrix representation-List structure-Graph traversal algorithm, Application of graphs.
Strings and their features: Strings-Representation and Manipulation using Arrays and lists-String matching algorithms. Brute force, Knuth-Morris-Pratt and Boyer-Moore strategies.

UNIT V

Sorting and Searching: Searching and sorting-Sequential, Binary and hashed Searching-Bubble sort, Insertion sort, shell sort, Merge sort and Quick sort-Comparison.
Tables: Decision tables-Symbol tables-Hash Tables-Examples of representation and implementation-Applications.

Recommended Books
1. Data Structure & Algorithms, Aho A.V. & Ullman J.E.
2. Data Structures using C, Aron M. Tannenbaum.
3. Data Management & File Structures, Mary E.S. Loomis.