Semester 2

Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
							Internal	Final Exam	Total
MCA-201	Data Structures	**PCC**	4	4	0	0	40	60	100

Course Outcomes

	At the end of the course the student will be able to
CO1	Understand the basics of data types and data structures.
CO2	Compare different data structures in context of their properties.
CO3	Identify the use of appropriate data structures to solve a given problem.
CO4	Apply different data structures to solve different sorting and searching problems.
CO5	Appreciate applicability of advanced data structures to model and solve real world problems.

Detailed Syllabus
Section-A

UNIT–I: Fundamental Notations: Primitive and composite data types, self-referential structures, Algorithms, Types of data structures, Operations, Time and space complexity of algorithms, Asymptotic notation.

(10Hrs)

UNIT–2 : Linear Data Structures: Arrays, Linked lists, Stacks, Queues, operations and their complexities, Implementations, Applications.

(10Hrs)

UNIT–3:Non-Linear Data Structures: Trees, Binary Trees, traversing binary trees, threaded binary trees, Binary search trees, heaps, Graphs, Traversing graphs.

(10Hrs)

Section-B

UNIT–4: Indexing Structures : ISAM, m-way trees, B–trees, B+–trees, Hashing techniques for direct access, Collision in hashing, Collision resolution.

(08 Hrs)

UNIT–5: Sorting & Searching: Internal and External sorts, Bubble sort, Insertion sort, Selection sort, Shell sort, Quick sort, Radix sort, Merge sort, Types of merging. Searching-linear and binary search methods, Comparison of sorting and searching methods.

(12Hrs)

Textbooks

S. No.	Name of the Books	Author	Publisher	Edition (Pub. Yr.)
1	Data Structure using C	Langsam, Yedidyah, Moshe J. Augenstein, and Aaron M. Tenenbaum	Pearson Education	1st (2019)
2	Data Structures and Program Design in C	Robert L. Kruse and Bruce P. Leung	Pearson Education	2nd (2006)

Reference Books

S. No.	Name of the Books	Author	Publisher	Edition (Pub. Yr.)
1	Data Structures with C	Seymour Lipschutz,	Schaum Outlines	2011