

UNIVERSITY OF MADRAS  
MASTER OF COMPUTER APPLICATIONS (MCA) DEGREE PROGRAMME  
SYLLABUS WITH EFFECT FROM 2023-2024

Title of the Paper	<b>Data Structures Using Python Lab</b>		
Core - IV Practical - I	I Year & I Semester	Credit:3	435C1D

**Course Objectives:**

- To understand Stack, Queue and Doubly Linked ADT structures.
- To implement different ADT structures with real-time scenarios.
- To analyze the recursion concepts.
- To apply different sorting and tree techniques.
- To implement modern data structures with Python language.

Implement the following problems using Python 3.4 and above

1. Recursion concepts.
  - i) Linear recursion
  - ii) Binary recursion.
2. Stack ADT.
3. Queue ADT.
4. Doubly Linked List ADT.
5. Heaps using Priority Queues.
6. Merge sort.
7. Quick sort.
8. Binary Search Tree.
9. Minimum Spanning Tree.
10. Depth First Search Tree traversal.

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**Course Outcome:**

On the successful completion of the course, students will be able to,

CO1	Strong understanding in various ADT concepts	K1-K6
CO2	To become a familiar with implementation of ADT models	
CO3	Apply sort and tree search algorithms	
CO4	Evaluate the different data structure models	
CO5	Learn how to develop ADT for the various real-time problems	

K1- Remember, K2 - Understand, K3 - Apply , K4 - Analyze, K5 - Evaluate, K6 -Create

**Mapping with Programme Outcomes:**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	L	L	L	L	S	S	M	M
CO2	S	M	S	M	M	L	S	M	S	L
CO3	S	S	S	L	L	L	M	M	M	M
CO4	S	S	S	M	M	S	M	M	S	S
CO5	S	S	S	S	L	M	S	M	M	M

L - Low, M- Medium, S - Strong

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Title of the Paper	<b>Data Engineering and Management</b>
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