SWARNANDHRA
COLLEGE OF ENGINEERING & TECHNOLOGY (Autonomous)
SEETHARAMAPURAM, NARSAPUR-534280 W.G.DT. AP

DEPARTMENT OF BACHELOR OF COMPUTER APPLICATIONS(Honours)

TEACHING PLAN

Course Code	Course Title	Year/Sem	Branch	Contact hr/week	Academic Year
24BC2T05	Data Structures	I/II	BCA(Honours)	6	2025-2026

Course Objectives:

- Solve problems using data structures such as linear lists, stacks, queues, hash tables
- Be familiar with advanced data structures such as binary search trees

Course Outcome(co's) : At the end of the course, student will be able to:

CO No.	Course Outcome	Knowledge Level (K)
CO1	Implement and analyze various search and sorting algorithms, and understand list ADTs including their implementations..	K4
CO2	Implement and apply stack and queue data structures using both arrays and linked lists, and understand their real-world applications.	K4
CO3	Apply hashing techniques and collision resolution strategies to efficiently manage and retrieve data.	K4
CO4	Implement heap operations and apply heaps in problem-solving, and understand the various types of tries.	K3
CO5	Implement and analyze binary trees and binary search trees, and understand basic graph concepts and algorithms for minimum cost spanning trees.	K3

Week No	Outcome	Blooms Level	Topic / Activity		Text Books	Contact Hours	Delivery Method
UNIT-I							
1,2	Implement and analyze various search and sorting algorithms, and understand list ADTs including their implement ations..	K4	1.1	Searching: Linear Search Method.	T1	1	Chalk & Board, PPT , Interactive Whiteboarding
			1.2	Binary Search Method.	T1	1	
			1.3	Sorting: Selection Sort,	T1	1	
			1.4	Insertion Sort,	T1	1	
			1.5	Quick Sort, Merge Sort.	T1	1	
			1.6	Heap Sort.	T1	1	
			1.7	Introduction to Data Structures: Abstract Data Types (ADTs),	T1	1	
			1.8	The List ADT:Simple Array Implementation of Lists.	T1	2	
			1.9	Simple Linked Lists.	T1	1	
			1.10	Doubly Linked Lists.	T1	1	
			1.11	Circularly Linked Lists.	T1	1	
UNIT-II							
3,4	Implement and apply stack and queue data structures	K4	2.1	The Stack ADT: Introduction to stack	T1	1	Chalk & Board,
			2.2	Implementation of Stacks.	T1	3	

	using both arrays and linked lists, and understand their real-world applications.		2.3	Applications of Stack.	T1	1	PPT , Interactive Whiteboarding
			2.4	The Queue ADT:Introduction to queues	T1	1	
			2.5	Types of queues	T1	1	
			2.6	Implementation of Queues.	T1	3	
			2.7	Application of Queues	T1	1	
			2.8	Stacks and Queue.	T1	1	
Mid I Exam							
UNIT-II							
5, 6	Apply hashing techniques and collision resolution strategies to efficiently manage and retrieve data.	K4	3.1	Hashing: Introduction to hashing	T1	1	Chalk & Board, PPT , Interactive Whiteboarding
			3.2	Hash Function.	T1	1	
			3.3	Separate Chaining.	T1	1	
			3.4	Introduction to Collision Resolution Techniques.	T1	1	
			3.5	Separate Chaining.	T1	1	
			3.6	Open Addressing: Linear Probing.	T1	1	
			3.7	quadratic probing.	T1	1	
			3.8	Double Hashing.	T1	1	
			3.9	Rehashing.	T1	1	
			3.10	Extendible Hashing.	T1	1	
UNIT-IV							

7,8	Implement heap operations and apply heaps in problem-solving, and understand the various types of tries.	K3	4.1	Inroduction to Heap .	T1	1	Chalk & Board, PPT , Interactive Whiteboarding
			4.2	Structure Property of Heap.	T1	1	
			4.3	Heap-Order Property.	T1	1	
			4.4	Basic Heap Operations.	T1	2	
			4.5	Applications : The Selection problem.	T1	1	
			4.6	Event Simulation.	T1	1	
			4.7	Inroduction to Tries.	T1	1	
			4.8	Standard Tries.	T1	1	
			4.9	Compressed Tries.	T1	1	
			4.10	Suffix Tries.	T1	1	
UNIT-V							
9, 10	Implement and analyze binary trees and binary search trees, and understand basic graph concepts and algorithms for minimum cost spanning trees.	K3	5.1	Introduction to Trees	T1	2	Chalk & Board, PPT , Interactive Whiteboarding
			5.2	Binary Trees-traversals	T1	2	
			5.3	Implementation of Trees.	T1	2	
			5.4	Expression Trees.	T1	1	
			5.5	Binary Search Trees- find, find Min and find Max	T1	2	
			5.6	insert,delete operations.	T1	2	
			5.7	Introduction to Graphs	T1	1	

			5.8	Basic Concepts of Graphs	T1	2	
			5.9	Storage Structures and Traversals.	T1	1	
			5.10	minimum cost spanning trees	T1	2	
Mid II Exam							
Total No. of Classes						**62**	

Recommended Text Books for Reading:

Textbook No.	Authors	Title	Edition	Publisher	Year of Publication
1	Mark Allen Weiss	Data Structures and Algorithm Analysis	4th Edition	Pearson	2013
2	Richard F. Gilberg & Behrouz A. Forouzan	Data Structures: A Pseudocode Approach with C	2nd Edition	Cengage	2007
3	N. B. Venkateswarlu & E. V. Prasad	C and Data Structures: A Snap Shot Oriented Treatise Using Live Engineering Examples	1st Edition	S Chand & Co	2010

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