

Branch Name:	Computer Engineering / Information Technology / Information and Communication Technology
Program Code:	ET103/ ET105 / ET107
Course Title:	Data Structure Practical
Course Code:	2ET1030302P
Pre-requisite Course:	Introductory Course in Computer Programming

Course Objectives:

The Objective of this course is to make the students learn about the mapping between data structures & algorithms, designing and analyzing algorithms for real world problems.

Teaching and Examination Scheme:

Credit	Teaching Scheme Hours per week				Evaluation Scheme (Marks)								Total (Marks)
					Theory (Marks)				Practical (Marks)				
	L	T	P	Total	SEE		CCA		SEE		CCA		
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
1	-	-	2	2	-	-	-	-	10	25	10	25	50

Course Contents:

Sr.No	Practical Exercise
1	Write a program to check whether a given matrix is a magic square matrix or not.
2.	Write a program to implement the following string operation using pointers. (a) Strlen b) Strcpy (c) Strcat (d) Strcmp(e) Strrev
3.	Implement a program for stack that performs following operations using arrays. (a) PUSH (b) POP (c) PEEP (d) CHANGE (e) DISPLAY
4.	Implement a program to convert infix notation to postfix notation using stack.
5.	Write a program to implement QUEUE using arrays that performs following operations INSERT (b) DELETE (c) DISPLAY
6.	Write a program to implement Circular Queue using arrays that performs following operations. (a) INSERT (b) DELETE (c) DISPLAY
7.	Write a menu driven program to implement following operations on the singly linked list. (a) Insert a node at the front of the linked list. (b) Insert a node at the end of the linked list. (c) Insert a node after and before a given position. (e) Delete a node from a specified position. (f) Display the linked list.
8.	Write a program which create binary tree and Implement recursive tree traversing methods in-order, preorder and postorder traversal. .
9.	Write a program to implement Binary Search.
10.	Write a program to implement Bubble Sort and Insertion Sort.
11.	Write a program to implement Queue Sort and Merge Sort.

Reference Books:

1. An Introduction to Data Structures with Applications. by Jean - Paul Tremblay & Paul G. Sorenson
Publisher - Tata McGraw Hill.
2. Data Structures: A Pseudocode approach with C -By Gilberg & Forouzan Publisher Thomson Learning.
3. Data and File Structures using C: Thareja, Reema Oxford University Press New Delhi 2011
4. Fundamentals of Computer Algorithms By Horowitz, Sahni, Galgotia
5. Data Structures using C & C++ -By Ten Baum Publisher – Prentice-Hall International.
6. Data Structures: A Pseudocode approach with C -By Gilberg & Forouzan Publisher-Thomson Learning.

List of Open-Source Software/learning website:

- <http://www.nptelvideos.in/2012/11/data-structures-and-algorithms.html>
- https://www.tutorialspoint.com/data_structures_algorithms/
- <https://nptel.ac.in/courses/106103069/>
- Data structure video <http://www.youtube.com/watch?v=tORLeHHtazM>
- Data Structure Fundamentals: <http://www.cprograms.in/index.htm>
- <https://nptel.ac.in/courses/106103069/>

Course Learning Outcomes (CLO):

Course Outcomes	Description	Bloom's Taxonomy Level
COL1	Understand basic knowledge of data structure operations and some of the mathematical operations with their application.	2. Understanding 3. Applying
COL2	Analyze the problem and create an appropriate algorithm	4. Analyze 5. Creating
COL3	Develop and implement programs using C for nonlinear data structures such as stacks, and queues using arrays and linked lists.	2. Understanding 3. Applying 5. Creating
COL4	Implement various searching, sorting, and traversal techniques and know when to choose which technique.	2. Understanding 3. Applying 5. Creating

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	M	M	M		L						L		M			
CLO2	L	H	H										M	H	M	
CLO3		H	H	H	M						M		M	M		
CLO4	H				L										H	
CLO5		M	M	L										H	H	

H: High, M: Medium, L: Low