



## SECOND-YEAR DIPLOMA ENGINEERING SYLLABUS

Semester: 3<sup>RD</sup>

Course Code: 002204304

Type of Course: PCC-LC-6

Course Name: DATA & FILE STRUCTURE LAB

Course Prerequisites: Basic knowledge of data and file structure

### COURSE OBJECTIVE(S):

The course content should be taught and implemented with the aim to develop various types of skills so that students are able to acquire following competency:

- Implement various types of algorithms using Data Structures.

### TEACHING & EXAMINATION SCHEME:

Teaching Scheme (Hrs/Week)				Examination Scheme				
Theory	Tutorial	Practical	Credit	SEE		CA		
				Th	Pr	MSE	PLE	LA
0	0	4	2	00	25	00	00	25
				Total				
				50				

Th: Theory; Pr: Practical; FA: Final Assessment; CAT: Continuous Assessment Theory; CAP: Continuous Assessment Practical;

TOTAL Practical Hours: No. of Practical Hrs/Week\*15 = 60

LIST OF PRACTICALS: (sample for 2 hrs/week)\*15 weeks

Sr. No.	Content	Unit No.	Time Duration
1	Define various terms such as algorithm, various approaches to design an algorithm, time complexity, space complexity, big 'o' notation, best case, average case and worst case time complexity etc. Develop simple program using pointer to a structure	I	2
2	Implement array using row major order and column major order	I	2
3	Implement Sequential search algorithms	I	2
4	Implement Binary search algorithms	I	2
5	Implement various string algorithms	II	2
6	Implement push and pop algorithms of stack using array	III	2
7	Implement recursive functions	III	2
8	Implement insert, delete algorithms of queue using array	III	2
9	Implement insert, delete algorithms of circular queue	III	2
10	Implement simple structure programs using pointers	IV	2
11	Implement insertion of node in the beginning of the list and at the end of list in singly linked list	IV	4
12	Implement insertion of node in sorted linked list	IV	2



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13	Implement insertion of node at any position in linked list	IV	2
14	Implement searching of a node, delete a node and counting no of node algorithms in singly linked list	IV	4
15	Implement insertion of node in the beginning and at the end of doubly linked list	IV	2
16	Implement insertion of node at any position in doubly linked list	IV	2
17	Implement searching of a node, delete a node and counting no of node algorithms in doubly linked list	IV	4
18	Implement Bubble sort, Selection sort algorithms	IV	2
19	Implement Quick Sort	V	2
20	Implement Insertion sort, Shell sort algorithm	V	4
21	Implement Merge Sort algorithm	V	2
22	Solve hash table example using division method, method square method, folding method (paper work only)	V	2
23	Implement construction of binary search tree	VI	4
24	Implement inorder, preorder and postorder traversal methods in binary search tree	VI	2
25	Implement searching algorithm in binary search tree	VI	2
		<b>TOTAL</b>	<b>60</b>

**Text Book(s):**

Title of the Book	Author(s)	Publication
Data and file structure		Atulprakashan

**Reference Book(s):**

Title of the Book	Author(s)	Publication
Data and File Structures using C	Thareja, Reema	Oxford University Press New
Data Structures	Chitra, A Rajan, PT	Tata McGraw Hill, New Delhi,
Classic Data Structures	Samantha, D.	PHI Learning, New Delhi
Data Structures using C	ISRD Group	McGraw Hill, New Delhi

**Web Material Link(s):**

- a) <https://boonsuen.com/process-scheduling-solver>
- b) <http://cpuburst.com/ganttcharts.html>
- c) <https://codepen.io/faso/pen/zqWGQW>
- d) <https://www.tutorialspoint.com>
- e) [www.w3schools.com](http://www.w3schools.com)
- f) <https://nptel.ac.in/courses/106106144>
- g) <https://nptel.ac.in/courses/106105214>
- h) <https://nptel.ac.in/courses/106102132>



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#### Equivalent/Corresponding Course on NPTEL (SWAYAM):

NPTEL course on

[https://onlinecourses.nptel.ac.in/noc21\\_cs02/preview](https://onlinecourses.nptel.ac.in/noc21_cs02/preview)

<https://nptel.ac.in/courses/106/105/106105151/>

#### PRACTICAL EVALUATION:

Sr. No.	Activity	Marks	Weightage
1	Semester End Examination (External Practical)	30	60%
2	Continuous Assessment Practical (CAP)	20	40%
	Semester End Examination (External Practical)		
1(a)	Lab Experiment/Exercise		30%
1(b)	Viva-voce		20%
1(c)	Certified Record		10%
	Continuous Assessment Practical (CAP)		
2(a)	Day to day Laboratory Work & Attendance		15%
2(b)	Submission of Laboratory Work/Journal		10%
2(c)	Exam		15%

\* For 4 Credit Subjects

1 Credit = 25 Marks

Theory: 3 Credits = 75 Marks

Practicals: 1 Credit = 25 Marks

SEE Evaluation will be of 100 marks and converted to 50 Marks (75 Th + 25 Pr)

CA Evaluation will be of 100 Marks and converted to 50 Marks. (75 Th + 25 Pr)

#### Distribution of Marks for Theory Evaluation as per Bloom's Taxonomy Level:

Level	Remember	Understand	Apply	Analyse	Evaluate	Create
% Weightage	20%	20%	25%	15%	10%	10%

#### COURSE OUTCOMES:

CO1	Learning algorithms.
CO2	Implementation of stack & queue push pop operations.
CO3	Perform link list using c language.
CO4	Knowledge of trees – binary search tree.
CO5	Perform sorting methods.