

**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**  
**NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI**

COURSE PLAN – PART I			
Name of the programme and specialization	B.Tech		
Course Title	Data Structures and Algorithms		
Course Code	EEPE 37	No. of Credits	03
Course Code of Pre-requisite subject(s)			
Session	July 2023	Section (if, applicable)	A & B
Name of Faculty	Dr. S. Sudha	Department	EEE
Email	sudha@nitt.edu	Telephone No.	8754888396
Name of Course Coordinator(s) (if, applicable)	-----		
Course Type	<input type="checkbox"/> Core course <input checked="" type="checkbox"/> Elective course		
<b>Syllabus (approved in BoS)</b>			
<p>Algorithms –Algorithmic Notation, Statements and Control Structures, Operations and Expressions, Functions, Procedures, Time and Space Analysis. Information -nature, storage and transmission of information, Primitive Data structures.</p> <p>Linear Data structures and their sequential storage representation –arrays, hash, structures and array of structures, stacks, queues; their storage representation and applications. Strings –storage representation and string manipulation applications. Linear Data structures and their linked storage representation –pointers, linked allocation-single, double and circular linked list and their applications.</p> <p>Nonlinear data structures –Trees, storage representation and operation on binary trees, application of trees; Graphs-representations and applications of graphs.</p> <p>Sorting and searching –Selection Sort –Bubble Sort –Merge Sort –Tree Sort –Partition-Exchange Sort. Searching –Sequential Searching –Binary Searching-Search trees, Hash-Table methods.</p> <p>File Structures -External Storage Devices, Record Organization, File types and their structure. Exercises covering topics of functions, arrays, stacks, queues, linked lists and trees.</p>			

COURSE OUTCOMES (COs) Aligned Programme Outcomes (POs)							
<p>Upon completion of this course, students will have</p> <ol style="list-style-type: none"> <li>1. Knowledge on algorithmic notations and concepts</li> <li>2. Clear understanding of the primitive data structures and their applications</li> <li>3. Familiarity of linked linear and non-linear data structures and operations on such data structures</li> <li>4. The awareness of various sorting, searching algorithms and file structures</li> <li>5. The ability to design and develop menu driven application programs</li> </ol>	Course outcomes (Cos)						
	COs/POs	1	2	3	4	5	
	Programme Outcomes (POs)	1	L	L	L	L	L
		2	M	M	M	M	M
		3	L	L	L	L	L
		4	L	L	L	L	L
		5	M	M	M	M	M
		6	L	L	L	L	L
		7	L	L	L	L	L
		8	L	L	L	L	L
		9	L	L	L	L	L
		10	L	L	L	L	L
		11	M	M	M	M	M
12		M	M	M	M	M	

COURSE PLAN – PART II			
COURSE OVERVIEW			
<p>This course on data structures and algorithms involves the study of different primitive and non-primitive data types in the digital sources and algorithms to operate on these data for processing. The internal storage representation of the various data types is also dealt. The usage of these data types in certain applications through algorithms is covered. The course deals with few searching, sorting techniques and also file structures.</p>			
COURSE TEACHING AND LEARNING ACTIVITIES			
S.No.	Week/Contact Hours	Topic	Mode of Delivery
1	Week 1 1-2 Aug 2023 (2 contact hour)	Introduction about the course & its outcome. Introduction to data and its types. Types of memory, sequential execution.	Chalk and Talk
2	Week 2 7- 9 Aug 2023 (3 contact hours)	Algorithmic Notation, Statements and Control Structures, Operations and Expressions, Functions, Procedures.	
3	Week 3 14 & 16 Aug 2023 (2 contact hours)	Time and Space Analysis. Information -nature, storage and transmission of information, Primitive Data structures.	
4	Week 4 21 – 23 Aug 2023 (3 contact hours)	Linear Data structures and their sequential storage representation –arrays, hash, structures, and array of structures.	



5	Week 5 28-30 Aug 2023 (3 contact hours)	stacks, queues; their storage representation and applications. <b>Assessment- I (Objective test -1)</b>	Chalk and Talk
6	Week 6 4 - 6 Sept. 2023 (3 contact hours)	Strings –storage representation and string manipulation applications.	
7	Week 7 11 - 13 Sept. 2023 (3 contact hours)	Linear Data structures and their linked storage representation – pointers	
8	Week 8 18 & 20 Sept. 2023 (2 contact hours)	single, double linked lists storage representation	
9	Week 9 25 – 27 Sept. 2023 (3 contact hours)	single, double linked lists applications. Circular linked list and their applications. <b>Assessment- II (Cycle test -1)</b>	
10	Week 10 3 & 4 Oct 2023 (2 contact hours)	Nonlinear data structures –Trees, storage representation	
11	Week 11 9 - 11 Oct 2023 (3 contact hours)	Operation on binary trees, application of trees <b>Assessment- III (Objective test -2)</b>	
12	Week 12 16 - 18 Oct 2023 (3 contact hours)	Graph-representations and its application.	
13	Week 13 25 Oct 2023 (1 contact hours)	Introduction to Sorting and searching- Selection sort	
14	Week 14 30- 31 Oct & 1 Nov 2023 (3 contact hours)	Bubble Sort, Merge Sort, Tree Sort, Partition-Exchange Sort. <b>Assessment- IV (Cycle test -2)</b>	
15	Week 15 6 - 8 Nov 2023 (3 contact hours)	Searching -Sequential Searching, Binary Searching-Search trees	
16	Week 16 13 - 15 Nov 2023 (3 contact hours)	Hash-Table methods. File Structures -External Storage Devices	
17	Week 17 20 - 22 Nov 2023 (3 contact hours)	Record Organization, File types and their structure.	

18	Week 18 28 & 29 Nov 2023	<b>Mini project Assessment and Compensation Assessment (CPA)</b>	
19	Week 19 4 – 8 Dec 2023	<b>Assessment – V (Final semester exam – 40 marks)</b>	

**COURSE ASSESSMENT METHODS (shall range from 4 to 6)**

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1.	Assessment – 1 (Unit I & part of unit II) (Objective type)	Week 5 August 2023	15 mins	10
2.	Assessment – 2 (Units I & II) (Cycle test I)	Week 9 September 2023	60 mins	15
3.	Assessment – 3 (Second half of unit II & First half of unit III) (Objective type)	Week 11 October 2023	15 mins	10
4.	Assessment – 4 (Units III and part of unit IV) (Cycle test II)	Week 14 November 2023	60 mins	15
5.	Assessment -5 Mini Project	Week 18 November 2023	2 months	10
CPA	Compensation Assessment (Portions of Cycle test 1 & 2)	Week 18 November 2023	60 mins	15
5.	Assessment – 6 <b>Final Assessment</b> (All units) (Written test)	Date decided by Class committee / Dean office	120 mins	40

**COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)**

Feedback from the students during class committee meetings  
Anonymous feedback through questionnaire

**COURSE POLICY (preferred mode of correspondence with students, compensation assessment policy to be specified)**



### MODE OF CORRESPONDENCE (email/ phone etc)

1. All the students are advised to check their NITT WEBMAIL regularly. All the correspondence (schedule of classes/ schedule of assessment/ course material/ any other information regarding this course) will be done either through their webmail or the class representative.
2. Queries (if required) may be emailed to me / contact me from 3.00 pm to 4.00 pm on Friday with prior intimation for any clarifications.

### COMPENSATION ASSESSMENT POLICY

1. Attending all the assessments (except CPA) is MANDATORY for every student.
2. If any student is not able to attend either of the Cycle tests or both due to genuine reasons, the student is permitted to attend the compensation assessment (CPA) with 15% weightage (15 marks).
3. At any case, CPA will not be considered as an improvement test.
4. There is no compensation test for the Objective tests.
5. Relative grading will be based on the clusters (range) of the total marks (all the Assessments i.e. from 1 to 6, put together for each student) scored for grading by adopting Gap theory / Normalized curve. Letter grades, minimum pass marks and the corresponding grade points will be as per institute norms.
6. Suggestion (if any) from Class Committee / Office of the Dean (Academic) on the assessment / grading will be honored with intimation to the students.

### ATTENDANCE POLICY (A uniform attendance policy as specified below shall be followed)

- **At least 75% attendance in each course is mandatory.**
- **A maximum of 10% shall be allowed under On Duty (OD) category.**
- Students with **less than 65% of attendance** shall be prevented from writing the final assessment and **shall be awarded 'V' grade**

### ACADEMIC DISHONESTY & PLAGIARISM

- Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.
- Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
- The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.
- The above policy against academic dishonesty shall be applicable for all the programmes.

### FOR APPROVAL

Course Faculty S. Sridhy CC-Chairperson N. Ganani HOD A. H. M. P.  
8/8/2023 08/08/23