NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE PLAN – PART I			
Name of the programme and specialization	**B.Tech Computer Science and Engineering**		
Course Title	**Algorithms Laboratory**		
Course Code	**CSLR41**	**No. of Credits**	**2**
Course Code of Pre-requisite subject(s)	**CSLR32, CSPC42**	**Semester**	**IV**
Session	**~~July~~ / January 2021**	**Section (if, applicable)**	**A**
Name of Faculty	**Dr. Kamalika Bhattacharjee**	**Department**	**CSE**
Official Email	**kamalika@nitt.edu**	**Telephone No.**	
Name of Course Coordinator(s) (if, applicable)			
Official E-mail	**kamalika@nitt.edu**	**Telephone No.**	
Course Type (please tick appropriately)	√ **Core course (Lab)**	☐ **~~Elective course~~**	

Syllabus (approved in BoS)

COURSE OBJECTIVES

- To learn how to analyze the complexity of algorithms
- To compare and evaluate algorithms in terms of time and space complexity
- To program brute force, divide and conquer, decrease and conquer, transform and conquer, greedy, and dynamic techniques

MAPPING OF COs with POs

Course Outcomes	Programme Outcomes (PO) (Enter Numbers only)
• Solve and analyze general algorithms based on space and time complexity	**1, 2, 5, 6**
• Implement and empirically compare fundamental algorithms and data structures to real-world problems	**1, 6, 9, 10**
• Design, develop, and optimize algorithms in different paradigms	**3, 4, 11, 12**

COURSE PLAN – PART II

COURSE OVERVIEW

To learn different paradigms of algorithms and their complexity like brute force, divide and conquer, greedy, dynamic techniques and approximation algorithms etc.

COURSE TEACHING AND LEARNING ACTIVITIES **(** Add more rows)

S.No.	Week/Contact Hours	Topic	Mode of Delivery
1.	1/3	Estimating worst-case/average-case complexity of linear search algorithm via programs. Determining machine constants.	Online
2.	2/3	Estimating worst-case/average-case complexity of binary search algorithm via programs. Determining machine constants.	Online
3.	3/3	Estimating worst-case/average-case complexity of sorting (bubble, selection, insertion) algorithms via programs. Determining machine constants.	Online
4.	4/3	Estimating worst-case/average-case complexity of merge sort algorithms via programs. Determining machine constants.	Online
5.	5/3	Estimating worst-case/average-case complexity of heap sort algorithms via programs. Determining machine constants.	Online
6.	6/3	Estimating worst-case/average-case complexity of quick sort algorithms via programs. Determining machine constants.	Online
7.	7/3	Dynamic programming (matrix chain multiplication)	Online
8.	8/3	Dynamic programming (knapsack problem)	Online
9.	9/3	Greedy algorithm (knapsack problem)	Online
10.	11/3	Graph algorithms: BFS, DFS	Online

11.	12/3	Graph algorithms: Prims, Kruskal	Online
12.	13/3	Dijkstra and Bellman-Ford algorithm	Online
13.	14/3	Approximation algorithms	Online

Text Books

1. T. H. Cormen, C. E. Leiserson, R. L. Rivest, "Introduction to Algorithms", Prentice Hall.
2. H. S. Wilf, "Algorithms and Complexity", Prentice Hall.

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

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1.	Continuous Assessment	Every week of regular lab work	3 hours	50%
2.	Model Test	10th Week	3 hours	20%
3.	Final Assessment	As per Academic schedule	3 hours	30%
4.	Compensation assessment*	1st week of May	3 hours	20%

***mandatory; refer to guidelines on page 4**

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

1. Students' feedback through class committee meetings
2. Feedback questionnaire from students – from MIS at the end of the semester
3. Students may give their feedback at any time during the course to the faculty which will be duly addressed

COURSE POLICY (including compensation assessment to be specified**)**

Mode of Correspondence:
Through email

Compensation Assessment Policy:
In case of emergency, the student should submit compensatory assignments on submission of appropriate documents signed by competent authority as proof. Compensatory assessment would be framed according to the time frame available and the cycle test missed by the student.

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.

ADDITIONAL INFORMATION, IF ANY

Students can approach the faculty to clarify any doubt in any time of the working hours.

FOR APPROVAL

Course Faculty Ramalika Bhattacharjee _____ **CC- Chairperson** _____ **HOD** _____

Guidelines

a) The number of assessments for any theory course shall range from 4 to 6.

b) Every theory course shall have a final assessment on the entire syllabus with at least 30% weightage.

c) One compensation assessment for absentees in assessments (other than final assessment) is mandatory. Only genuine cases of absence shall be considered.

d) The passing minimum shall be as per the regulations.

B.Tech. Admitted in				P.G.
2018	2017	2016	2015	
35% or (Class average/2) whichever is greater.		(Peak/3) or (Class Average/2) whichever is lower		40%

e) Attendance policy and the policy on academic dishonesty & plagiarism by students are uniform for all the courses.

f) Absolute grading policy shall be incorporated if the number of students per course is less than 10.

g) Necessary care shall be taken to ensure that the course plan is reasonable and is objective.