Department of Computer Applications
National Institute of Technology Tiruchirappalli

1. Course Outline			
Course Title	**Data structures Lab**		
Course Code	CA704		
Department	Computer Applications	No. of Credits	2
Pre-requisites Course Code	CA701 , CA710	Faculty Name	Dr.Michael Arock Dr.S.Sangeetha
E-mail	michael@nitt.edu sangeetha@nitt.edu	Telephone No.	0431-2503743
Course Type	Laboratory Course		

2. Course Overview

This course concentrates on implementation various application with appropriate use of Data Structure under OOP Environment. This course allows students to understand practically the representation of data, algorithms, operations on data structures such as stacks, queues, linked list, tree and its variations, Graph as well as efficient sorting and searching techniques perfomed on data.

3. Course Objectives

1. Build and manipulate linear and non-linear data structures.
2. Perform Sorting, searching, and merging data.
3. Choose the appropriate data structure to use in solving typical computer science problems.

4. Course Outcomes (CO)

1. Implement linear and nonlinear data structures to solve real-time problems
2. Perform searching and sorting techniques to different application domains
3. Implement different design strategies to solve complex problems

5. Course Outcome (CO)	Aligned Programme Outcome (PO)											
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
Implement linear and nonlinear data structures to solve real-time problems	M	H	H	M								
Perform searching and sorting techniques to different application domains	H	H										
Apply different design strategies to solve complex problems		H	H	H								

6. Course Content

Week	Topics covered
1.	Implementation of an application using 2d array.
2.	Implementation of an application using Stack .
3.	Implementation of an application using linked lists.
4.	Implementation of an application using Tree.
5.	Implementation of an application using Hash table.
6.	Implementation of an application using binary tree.
7.	Implementation of an application tha requires sorting of data using an efficient sorting technique.
8.	Implementation of an application using Trie Data structure.
9.	Implementation of an application using Graph Data structure.
10.	Implementation of an application using B+ Tree.

7. Course Assessment Methods – Practical				
Sl. No.	Mode of Assessment	Week/Date	Duration	Weightage (%)
1.	Evaluation-1	3rd week	lab duration	15
2.	Evaluation-2	6th week	lab duration	15
3.	Evaluation-3	8th week	lab duration	10
4.	Evaluation-3	10th week	lab duration	10
5.	Model Examination	11th week	lab duration	25
6	End Semester Lab	-	lab duration	25
			Total	100

The assessment is done for a total of 100 marks. The continuous evaluation of lab exercises carries 50 marks (5 marks for each problem), Model examination will be conducted and to be evaluated to 25 marks and the semester examination wiil be given a weightage of 25 marks.

8. Essential Readings (Textbooks, Reference books, Websites, Journals, etc.)

REFERENCES:

- S. Lipschutz and G.A.V. Pai, "Data Structures", Tata McGraw- Hill,2010.
- M.A.Weiss, "Data Structures and Problem Solving using Java", 4 th Edition, Addison Wesley,2009.
- P. Brass, "Advanced Data Structures", Cambridge University Press, 2008
- R. Kruse and C.L. Tondo, "Data Structures and Program Design in C", 2 nd Edition, Prentice Hall,1996.

9. Course Exit Survey (mention the ways by which the feedback about the course is assessed and indicate the attainment level)

- The students through the class representative may give their feedback at any time to the course faculty which will be duly addressed.
- The students may also give their feedback during Class Committee meeting.
- The COs will be computed after arriving at the final marks.

10. Course Policy (including plagiarism, academic honesty, attendance, etc.)
• **Plagiarism** The students are expected to come out with their original code for problems given during the laboratory exercises, and tests/examinations. • **Attendance** 100% is a must. However, relaxation upto 25% will be given for leave on emergency requirements (medical, death, etc.) and representing institute events.
12. Additional Course Information
• The students can get their doubts clarified between 4.00 PM to 5.00 PM on Mondy and Tuesday of every week time with their faculty member .

For Senate's Consideration
Course Faculty Class Committee Chairperson HoD