Institute	**Chitkara University Institute of Engineering and Technology**		
Program Name	**B.E. (Electronics & Communication Engineering)**		
Course Code	**CSP2210**		
Course Name	**Data Structures Lab**		
Batch/Semester	**2016/5th**		
Lecture / Tutorial (per week)	**4/0**	**Course Credits**	**2**
Course Coordinator Name / SPOC Name	**Ms. Meenu Garg/ Ms. Meenu Garg**		

1. Scope and Objectives of the Course

1. To provide practical knowledge of algorithms and their implementation
2. To make the students solve classical problems practically by implementation of existing algorithms
3. To impart practical knowledge to perform comparative analysis of algorithms

2. Recommended Books

- **B1:** Seymour Lipschutz, **Data Structures**, Schaum's Outline Series, Tata McGraw Hill
- **B2:** Tenenbaum, Augenstein, & Langsam, **Data Structures using C and C++**, Prentice Hall of India.

3. Other readings and relevant websites

S.No.	**Link of Journals, Magazines, websites and Research Papers**
1	http://www.cs.cmu.edu/~adamchik/15-121/lectures/Stacks%20and%20Queues/Stacks%20and%20Queues.html
1.	http://www.cs.sunysb.edu/~skiena/214/lectures/
2.	http://technical-interview.com/DataStructures.aspx
3.	http://www.geeksforgeeks.org/data-structures/
4.	http://www.haskell.org/haskellwiki/Research_papers/Data_structures
5.	http://comjnl.oxfordjournals.org/content

4. Lab Plan

S. No.	**Experiment Detail**
1	Write a menu driven program that implements following operations on a linear array: • Insert a new element at a specified position • Delete an element either whose value is given or whose position is given • To find the location of a given element • To display the elements of the linear array
2	Write a program to accept N numbers from the user and store them in an array. Then, accept another number from the user and search that using Linear Search.
3	Write a program to accept N integers from the user and store them in an array. Sort the array in ascending order using Bubble sort. Then accept another number from the user, search whether that number exists in the array using Binary Search. If it does, display its index and if it doesn't, then print that the number is not found in the array.
4	Write a menu driven program that implements the following operations on a doubly and Circular linked list : • Insert a new element at the beginning ,end and in-between the given list • Delete an existing element • Search an element • Display all the elements
5	Write a menu driven program that implements the following operations on a Stack(either implement as Linear array and as Linked list) : • Push

	• Pop • Display Top of the stack
6	Write a program to demonstrate the use of stack in converting arithmetic expression from infix notation to postfix notation and in evaluating arithmetic postfix expression.
7	Menu driven Program to demonstrate the implementation of various operations on a Circular queue (using a linear array and a linked list)
8	Write a program to accept N numbers in an array, and then sort the array using Insertion Sort. Then accept a number from the user and insert it in the array according to the sequential order
9	Write a program to accept N numbers in an array, and then sort the array using Quick Sort.
10	Write a program to accept N numbers from the user in one array and M numbers in another array. Then, sort the arrays using Selection Sort and then merge these two arrays using Merge Sort.

11	Write a menu driven program that implements the following operations on a Binary search tree :
	• Insert a new element
	• Delete an existing element
	• Traversing the tree
	  ○ Pre-order Traversal
	  ○ In-order Traversal
	  ○ Post-order Traversal

12	Sort the list of integers using heap tree (Heap sort)
13	Program including all Operations on Graph and illustrate the traversals using DFS and BFS

5. Evaluation Scheme

Component 1	Internal(lab performance/file work/Internal viva-voce)	60
Component 2	External(Demonstration/External Viva – Voce)	40
	Total	100

*Lab Performance will be evaluated periodically (Minimum Three Times).
**The End Term examination for practical courses is held at the end of the term and includes conduct of experiment and an oral examination (viva voce).The mandatory requirement of 75% attendance in all lab classes is to be met for being eligible to appear in this component

This Document is prepared by

Teacher Incharge	**Ms. Meenu Garg**	

This Document is approved by

Designation	**Name**	**Signature**
Course Coordinator	Ms. Meenu Garg	
Program Incharge	Mr. Gurjinder Singh	
Dean	Dr. Shivani Malhotra	
DD/MM/YYYY	20/07/2018	