

Course Delivery Plan

Department of Computer Science and Engineering

Course Code : CSE134/CSE135

Credit Hours: 3+1

Course Title : Data Structures

Course Intended Learning Outcome:

- (1) Apply structural programming approach to solve more complex computation problems
- (2) Demonstrate applications of standard data structures such as linked list, stack, queue, tree and graph
- (3) Solve computation problems using data structure
- (4) Apply knowledge in development project based on data structure

Theory Session Plan:

Week No	Topics	Expected Learning Outcome	Assessments (ASSN/CT/Mid/Final)
WK 1	a. Introduction and importance of Data Structure in computing; Applications b. Review discussion on recursion, pointer, structure, self-referential structure; dynamic memory allocation	a. Appreciate the needs of data structure b. Visualize the applications b. Perform exercise on basic self-referential structure	2/3 problems related to discussion in the class
WK 2	a. Computational Complexity and exercises b. Self-referential structure application for link list c. Exercise on visualization of data node d. Course Project Team and discussion on presentation and deliverables	a. Solution on computational complexity b. Identify the data node from self-referential structure c. Team formation for the course project	2/3 problems related to discussion in the class
WK3	a. Link-List and operations on link list b. Project Discussion and execution plan	a. Visualization of the link list b. Write code for the designed link list c. Selection of project topic by team	CLASS TEST 1 (on last class of the week)
WK4	a. Review operations on Link list and applications b. Discussion on Stack data structure	a. Write code for the link list operations	None
WK5	a. Application of stack in processing expressions b. Discussion on Queue data structure	a. Writing code for the processing of expression using stack	PRESENTATION 1 (student present on the idea of the team project)
WK6	a. Discussion on Queue and applications b. Exercise for expression processing c. Review discussion	a. Problem solving for expression processing using stack b. Writing code for the processing of queue	CLASS TEST 2
WK7	----- midterm week -----	----- midterm week -----	MIDTERM EXAM
WK8	a. Discussion on Tree data structure b. Tree traversals and applications	a. Implementation of tree data structure b. Problem solving for tree traversal	None
WK9	a. BST and operations on BST b. Applications of BST	a. Implementation of BST and related operations	PRESENTATION 2 (student present on the design of the project)
WK10	a. HEAP data structure and applications of Heap b. Exercise on BST and Heap	a. Implementation of Heap and operations b. Problem solving using BST	None
WK11	a. Graph data structure and applications of graph b. Traversal of Graph	Implementation of graph data structure	CLASS TEST 3
WK12	Review exercises on Tree, BST, Heap and Graph	Problem solving using Tree, BST, Heap, and Graph	PRESENTATION 3 (student present on the implementation of project)
WK13	Review exercises on Tree, BST, Heap and Graph	Problem solving using Tree, BST, Heap, and Graph	LAB Assessment
WK14	----- final exam week -----	----- final exam week -----	FINAL EXAM

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Lab Session Plan:

Week No	Topics	Expected Learning Outcome	Assessments (ASSN/CT/Mid/Final)
WK 1	Working with recursive function, pointer, structure and self-referential structure	Write code to implement self-referential structure	None
WK 2	a. Working with self-referential structure b. Working on project planning in a team	a. Write code to implement self-referential structure b. Plan for the project work	None
WK3	a. Implement link list and operations on link list b. Working for the team project	a. Write code to implement link list b. Plan for the development of the project	None
WK4	a. Working with link list applications b. Working for the team project	a. Write code to implement applications of the link list	None
WK5	a. Working with the stack b. Prepare presentation of the project	a. Writing code for the processing of expression using stack	PRESENTATION 1 (student present on the idea of the team project)
WK6	a. Working with Queue and applications b. Work for the team project	Writing code for expression processing using stack	None
WK7	----- midterm week -----	----- midterm week -----	MIDTERM EXAM
WK8	a. Working with Tree data structure b. Working with Tree traversals and applications c. Working for the team project	a. Implementation of tree data structure b. Problem solving for tree traversal	None
WK9	a. Working with BST and operations on BST b. Prepare presentation of the project	a. Implementation of BST and related operations	PRESENTATION 2 (student present on the design of the project)
WK10	a. Working with HEAP data structure and applications of Heap b. Working with the team project	a. Implementation of Heap and operations	None
WK11	a. Working with graph data structure and applications of graph b. Working with the team project	Implementation of graph data structure	None
WK12	Working for the implementation of the team project and get ready with demo	Implementation of the team project	PRESENTATION 3 (student present on the implementation of project)
WK13	Lab assessment based on performance	Lab performance appraisal based on Project Work	LAB Assessment
WK14	----- final exam week -----	----- final exam week -----	FINAL EXAM

Text Book(s):

- (1) Data Structures and Algorithms, Annotated references with example, Granville Barnett, 2008
- (2) Data Structures and Algorithm Analysis in C by Mark Allen Weiss, 2006 (refer time to time)

Reference Material/Book(s):

- (1) Handbook of Data Structures and Applications, Dinesh P. Mehta and Srataj Shani, Chapman and Hall, 2005
- (2) Google search engine