**Republic of Iraq**
**The Ministry of Higher Education & Scientific Research**

**University: Hamdaniya**
**College: Education**
**Department: Computer Science**
**Stage: Second**
**Subject: Data Structure**
**Lecturer name:**

# Course Weekly Outline

| Week | Date | Topics Covered | Lab. Experiment | Notes |
|---|---|---|---|---|
| 1 | | **Introduction ,Benefits ,Types of data structure. How to select the suitable data structure.** | | |
| 2 | | **Representation element in one and two dimensional array.** | | |
| 3 | | **Representation element in array with structures** . | **Programs of arrays in c++** | |
| 4 | | **Stack: definition, operations, and algorithms** | **Programs of stack algorithms in c++** | |
| 5 | | **Array representation of stack record implementation of stack** | | |
| 6 | | **Queue: definition, operations, and algorithms** | **Programs of queue algorithms in c++** | |
| 7 | | **Array representation of Queue** | | |
| 8 | | **record implementation of Queue** | | |
| 9 | | **Circular queue: definition, operations, and algorithms** | **Programs of circular queue algorithms in c++** | |
| 10 | | **Array representation of Circular Queue** | | |
| 11 | | **record implementation of Circular Queue** | | |
| 12 | | **Linked structures: sequential & dynamic Storage Allocation** | | |

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| 13 | | **Linked list: definition, operations, and algorithms** | **Programs of linked list algorithms in c++** | |
| 14 | | **Linked Stack & Queue. Double linked list** | | |
| **Half – Year Break** | | | | |
| 15 | | **Graph:<br>-Directed graph<br>-Undirected graph** | | |
| 16 | | **Graph representation:<br>-adjacency matrix<br>-adjacency lists** | | |
| 17 | | **Trees: tree structure and mathematical concepts .** | | |
| 18 | | **Types of trees.** | | |
| 19 | | **Tree traversing.** | | |
| 20<br>21 | | **Tree representation:<br>-General tree<br>-Binary tree** | | |
| 22 | | **tree transformations.** | | |
| 23 | | **Representation of arithmetic expression using binary tree.** | | |
| 24 | | **Binary search tree.** | | |
| 25<br>26 | | **Sorting algorithms: selection, bubble, insertion, and quick sort.** | **Programs of sorting algorithms in c++** | |
| 27<br>28 | | **Searching algorithms: sequential & binary search.** | **Programs of searching algorithms in c++** | |
| 29 | | **Different examples & programs for all data structure.** | | |