Syllabus

Course Title	DATA STRUCTURES

I- Objective

In this course, you will learn data structures and basic algorithms by solving practice problems in Python. You will learn to solve defined problems related to data structure and implement basic algorithms. By the end of this course, you will be able to evaluate and assess different data structures and basic algorithms. As well as implementing efficient solutions to computational problems using data structure.

II- Course outline

- **Python basics review**
  - Control Flow and conditionals
  - Functions
  - Classes and methods
  - Sequence types: String, Lists, Tuples, Sets, Dictionaries

- **Learn/practice a systematic way of approaching and breaking down problems to find a solution.**

- **Complexity**
  - Time complexity
  - Space complexity

- **Lists**
- **Linked lists**
- **Stacks**
  - Implement a Stack using an Array.
  - Implement a Stack using a Linked-List.

- **Queues**
  - Implement a Queue using an Array.
  - Implement a Queue using a Linked-List.

- **Implement a Queue using a Stack.**
- **Recursion**
- **Trees**
- **Graphs**
- **Tries**
- **Heaps**
- **Hash tables**