

Faculty of Computers and Information Technology

Data Structures

Information :

Course Code : CSC 222 **Level :** Undergraduate **Course Hours :** 3.00- Hours

Department : Faculty of Computers and Information Technology

Instructor Information :

Title	Name	Office hours
Lecturer	Khaled Ahmed Morsy Ahmed	2
Teaching Assistant	YASMIN AMR AHMED ANWAR ALI BADR	8
Teaching Assistant	Ayman Adel Moner Iskandar Matta	

Area Of Study :

By the end of the course the students will be able to:
 Understand the concepts of the Data Structures.
 Define and use standard data structures classes.
 Design program with different data structures: array, linked list, stacks, queues, and trees.
 1.4) Describe common applications for each data structure in the topic list.
 Compare alternative implementations of data structures with respect to the performance.
 Compare and contrast the costs and benefits of dynamic and static data structure implementations.
 Choose the appropriate data structures for modeling a given problem

Description :

Built-in data structures. Stacks, queues, linked lists, and tree structures. Sorting algorithms, searching algorithms, and hashing. Abstract data types (ADT).

Course outcomes :

a. Knowledge and Understanding: :

- 1 - Understanding Programming concepts, Object Oriented concepts and different Data Structures.

b. Intellectual Skills: :

- 1 - 2.1) Ability to define the computer science problems
- 2 - 2.2) Ability to drive different solution alternatives for the computer science problems
- 3 - 2.3) Ability to analyze the solution alternatives and choose the optimum one

c. Professional and Practical Skills: :

- 1 - 3.1) Ability to use computer aided design tools
- 2 - 3.2) Management of computer systems resources
- 3 - 3.3) Using and coding for computer application in different domains.
- 4 - 3.4) Design, build and develop programs of varying levels of complexity using C++.

d.General and Transferable Skills :

1 -	4.1) Use data structures effectively to solve practical problems.
2 -	4.2) Write and present effective computer programs that employ efficient algorithms.
3 -	4.3) Work in stressful environment and within constraints.
4 -	4.4) Search for information and adopt life-long self-learning.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Programming Principles, Array Structure	3	2	2
Stacks and Queues	3	2	2
Dynamic Allocation and Pointers	3	2	2
Linked Lists	3	2	2
Mid Term Exam 1	2	1	2
Linked Stacks and Queues	3	2	2
Circular and Doubly Linked Lists	3	2	2
Recursion	3	2	2
Mid Term Exam 2	2	1	2
Binary Trees	3	2	2
Binary Search Trees & Graphs	3	2	2
Revision	3	2	2
Final Exam	3	2	2

Teaching And Learning Methodologies :

~ Lectures
~ Exercises
~ Practical training
~ Presentation
~ Open Discussion
~ Project
~ Web site searches
~ E-Learning
~ Self-studies
~ Case Study

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
~ Final Exam	40.00	16	~ Final Exam to assess knowledge, understanding, intellectual and professional skills.

Mid-Term Exam1	20.00	6	Mid-Term Exam 1 to assess following up and understanding the first part of the studied topics
Mid-Term Exam2	20.00	12	Mid-Term Exam 2 to assess following up and understanding the second part of the studied topics
Practical Exam	10.00	15	Practical Exam to assess the participation of the student during the tutorial, professional and general skills.
Projects	10.00	14	Projects to assess professional and general skills