جامعة الخليج للعلوم والتكنولوجيا GUST SINCE 2002 Gulf University For Science & Technology

Department of Computer Science

CSC 225 Programming & Data Structures

(3 contact hours – 2 lab hours - 3 credits)

Syllabus[2]

- **General Information**

Instructor	
Office	
Phone / Email	
Class Time	
Class Location	
Office Hours	
Teaching Assistant	

- **Required Textbook**

Object-Oriented Data Structures Using Java, 3rd edition by N. Dale, D. Joyce, C. Weems. Jones & Bartlett Learning, 2011.

- **Supplementary Textbook**

Intro to Java Programming, Comprehensive Version, 10th edition by Y. Daniel Liang, Pearson, 2014.

- **Course Description**

This course is an introduction to data structures. Topics include recursion, lists, trees, stacks, queues, graphs and hash tables. An introduction to time complexity.

- **Course Prerequisites**

CSC 125 & CSC 130

- **Course Category**

Required

[2] **This syllabus may change as needed. In such a case, students will be informed accordingly**

- **Course Outcomes:**

  At the completion of this course, students will be able to:

  6. Apply advanced programming techniques (e.g. recursion) for backtracking problems. [ABET a, i]
  7. Implement different data structures (lists, stacks, queues, trees, graphs, etc.) [ABET a, i]
  8. Analyze and compare the performance of different data structures. [ABET b, c, j]
  9. Select the appropriate data structure for a given problem. [ABET c, j]

- **Tentative Schedule**

Topic	**Week**
Syllabus	1
Ch1. Software Engineering Principles	1
Ch2. Data Design and Implementation	2,3
Ch3. ADT Unsorted List	3,4
Ch4. ADT Sorted List	5
Ch5. ADTs Stack and Queue	6,7
Ch6. Lists Plus	8
Ch7. Programming with Recursion	9,10
Ch8. Binary Search Trees	10-12
Ch9. Priority Queues, Heaps, Graphs, and Sets	13-15

- **Grading Scheme**

Lab Work	**15%**
Programming Assignments	**10%**
Quizzes	**15%**
Midterm Exam	**20%**
Final Exam	**40%**