



GC211: Data Structures

Spring, 2015

Instructor Information:

Name: Khulud Alsultan

Email: kalsultan1@ksu.edu.sa

Website: <http://fac.ksu.edu.sa/kalsultan1>

Office: Building 26 / Lab 3

Office hours: Sunday, Tuesday, and Thursday 09:00 to 10:00

Tuesday 01:00 to 02:00

Monday 12:00 to 01:00

Class Schedule:

Sunday, Tuesday, and Thursday 08:00 to 09:00

Thursday 10:00 to 11:00 (Tutorial)

Course Description:

This course provides students with basic knowledge in:

Data types, structured data type, about abstract data types (ADT); data structure implementation; basic data structures such as lists, stack, queues, and trees; data structures using different storage structures, analyze the implementation; design and implement data structures for programming problems.

Topics will be Covered for this Course:

- Data Types, Structured Data types, Abstract Data Types.
- Performance Measurement: Time and Space Complexity, Big-O notation.
- List, Stack, Queues, Priority Queues.
- Trees: Recursion, Terminology, General Trees, Binary Trees, BSTs, AVL Trees.
- Multiway Trees: Family of B-trees.

- Heaps: HeapSort, Priority Queue as a Heap.
- Hashing Techniques: Hashing functions, Collision resolution strategies.
- Graphs Traversal Algorithms.
- Sorting.

Grading Policy:

Final Exam: 40

Mid-Term I: 15 Mid-Term II: 15

Quizzes: 15 Homework, Participation, and Tutorial: 15

Textbook:

- Data Structures and Algorithms in Java, 5th edition, by M.T. Goodrich and R. Tamassia. John Wiley and Sons, Inc., ISBN: 0-471-73884-0
- In addition to the above, the lecturer will provide the students with handouts and lecture notes.

Course Academic Calendar:

Week	Date	Lecture Topics	Tutorial
1	05/04	Introduction + Syllabus	Review
2	12/04	Performance Analysis, Performance Measurement: Time and Space Complexity, Big-O notation	Tutorial#1
3	19/04	Introduction to data structures ADT + ADT List (Linked List)	Tutorial#2-1+ Quiz#1
4	26/04	ADT List (Array List)	Tutorial#2-2
5	03/05	Queue	Tutorial# Extra Lists Tutorials
6	10/05	Priority Queue + Stack	Tutorial#3 + Quiz#2
7	17/05	Stack +Trees: Recursion, Terminology, General Trees	Tutorial#4
8	24/05	Binary Tree	Mid-Term I Tuesday (26/05)
9	02/06	Spring Break	Spring Break
10	09/06	BSTs	Tutorial#5
11	16/06	AVL Trees	Tutorial#6 + Quiz#3
12	23/06	B+ Trees	Tutorial#7
13	30/06	Heap + Priority Queues	Tutorial#8
14	07/07	Hashing	Mid-Term II Thursday (11/07)
15	14/07	Graphs + Sorting	Tutorial#9 + Quiz#4
16	21/07	Revision	Revision
17	28/07	Final Exam Week	
18	06/08	Final Exam Week	
19	13/08	Final Exam Week	

Email and Homework Policy:

- Homework due dates will be during tutorial class.
- Late homework will not be accepted, you have to send homework before OR during class time.
- If you would like to send me email, please add your full name and course name to the subject line.

Class Policy:

- Attendance is very important, if you absent more than 25% of lectures , you will be not able to get final exam
- If you come late, you can attend the lecture, but if you come late for three times, you will be considered absent.
- If you miss one of the major exams, you will be not excused unless the instructor accepts your formal medical report.
- This course requires constant studying if you have any questions do not hesitate to come and ask me at any time or email me.