Data structures & algorithms (COSC202A)

Description of Course

Introduction to and analysis of algorithms and characteristics of discrete structures. Course topics include algorithm analysis techniques, recurrence relations, structural induction, hierarchical structures, graphs, hashing, and sorting.

Instructor and Contact Information

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Office Hours: Monday, Friday, 11AM-12PM, and appointment by email

Mark Distribution

Exams:

- 45% mark
- First midterm: Week 5
- Second midterm: Week 10
- Final exam

Online quizzes:

- 10% mark
- A set of simple questions after 3-5 lectures

Homeworks:

- 45% mark
- Implementation of lab assignments
- 10-11 homeworks, 5% mark each, will count best 9

Topics

Week	Topic
1	Correctness/efficiency Runtime/space w.r.t. order notation Linear vs binary search
2	Review of basic data structures Arrays/linked lists Hashing Stacks and queues
3	Sorting
4	Divide and conquer
5	Binary search tree
6	Tries (data structure for string operation)
7	Priority queue/heaps

8	Graph representation, searching in graphs
9	Application of graph search
10	Shortest path Minimum spanning tree Union find
11	Max flow Bipartite matching
12	Greedy algorithms Huffman coding
13	Dynamic programming
14	NP-completeness/reductions