

# COSC242 Course Outline

Lecture /Lab	Lecture Topic	Lab Topic
1	Introduction	Imperative programming
2	Big-O and Theta	Manipulating Data
3	Proof techniques	Manipulating Memory
4	Induction examples	Sorting Items in an Array
5	Divide & Conquer Algorithms	More Data Manipulation
6	Recurrences & mergesort analysis	Recursive Functions
7	Quicksort	Practical Test 1
8	Quicksort analysis & improvements	Mergesort
9	Sorting in linear time	Faster Mergesort
10	Hash tables	Flexible Arrays
11	Hashing techniques	Quicksort
12	Perfect hashing	Hash Tables
13	Binary search trees 1	Hash Tables (continued)
14	Binary search trees 2	Binary Search Trees
15	Red-black trees 1	Binary Search Trees (continued)
16	Red-black trees 2	Red-Black Trees
17	B-trees	Red-Black Trees (continued)
18	Graph algorithms 1	(Free Lab)
19	Graph algorithms 2	Two Queue Implementations
20	Graph algorithms 3	Practical Test 2
21	Greedy algorithms	Graphs 1
22	Invited talk	Practical test 3
23	Dynamic programming 1	Graphs 2
24	Dynamic programming 2	Extension Graph Exercises
25	Classes P & NP, NP-complete problems	Dynamic Programming
26	Wrap up and exam advice	