

# CS 2604 Final Exam Study Guide

## Chapter 1

- Know all those definitions.

## Chapter 2

- Know all those math definitions
- Know proof by mathematical induction
- Know estimating

## Chapter 3

- Understand best, worst and average case
- Know  $\Theta$  notation for loops and stuff like that

## Chapter 4

- Know the pros and cons for linked versus array based implementations for common list data structures
- Know when one implementation might be more desirable than another
- Know common ways and thoughts on implementing stacks and queues

## Chapter 5

- Know the definitions
- Know the full binary tree theorem
- Know tree traversals
- Know the different ways to implement trees
- Know the common way to implement a complete binary tree
- Know how to find parents, kids and the such for complete binary trees
- Know BSTs
- Skip Section 5.6

## Chapter 6

- Know general tree traversals
- Know the different kinds of implementations
- Know UNION/FIND and path compression
- Know the different ways to serialize a tree.

## Chapter 7

- Know the three  $n^2$  squared sorts
- Understand the family of shell sorts
- Know how quicksort works
- Know understand how bin and radix sort work.

## **Chapter 8**

- Know all the definitions
- Know the golden rule of disk access
- Know buffer pools
- Know binary file i/o

## **Chapter 9**

- Know the heuristics for self-organizing lists
- Know hashing
- Know the difference between open and closed hashing
- Know probing

## **Chapter 10**

- Know the definitions
- Know tree indexing
- Understand 2-3 (mainly insertion)
- Understand B-trees

## **Chapter 11**

- Know the definitions
- Know the two ways to programmatically represent graphs
- Know the graph traversals
- Understand the shortest path problem
- Be familiar with Dijkstra's algorithm
- Understand the minimal spanning tree problem