# CPE 212 - Introduction to Software Engineering

*Final Exam Study Guide*

## OVERVIEW

The final for CPE 212 will be comprehensive going back to the beginning of the class. The focus of the final will be on the latter half of the class material. The breakdown of each section and how much it is worth is below.

## SECTIONS

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|---|---|
| Section 1 - C++ Basics, Hashing, Sorting, RB trees and AVL trees | 30% |
| Section 2 - Code Analysis | 30% |
| Section 3 - Binary Search Trees | 20% |
| Section 4 -Lists | 20% |

## TOPICS

Section 1 - C++ Basics, Hashing, Sorting, RB trees and AVL trees

- Be able to recognize basic C++ syntax
- Be familiar with pointers, classes and inheritance
- Be able to implement a hashing algorithm
- Be able to recognize and implement all of the sorting algorithms in Chapter 12 with the exception of RadixSort
- Be able to show how the AVL and RB trees are constructed

Section 2 - Code Analysis

- This can come from really any section of the exam

- 2 sets of short answers.

Section 3 - Binary Search Trees

- Be able to show how they are constructed
- Be able to implement the traversal algorithms
- Be able to identify key concepts of the BST

Section 4 - Lists

- Be able to construct a list using linked lists, doubly linked lists and arrays
- Be familiar with traversing the lists in any direction
- Identify key list concepts

## Important Data Structures to know:

- All of your lists from chapters 3, 4, 5, and 6.
- BST, heaps, priority queue, AVL, RB trees (chapters 8, 9, 10)
- Specialized structures such as a hashtable, map.
- Understand implementation and the reasons to use each.

## TEST DAY

On the day of the Final Exam, April 24th from 3:00pm to 5:30pm, I will set up a meeting that you can join for any questions. I will post an announcement on Canvas with the meeting link.

## ACADEMIC HONESTY

Since this exam is an open book and open notes it is imperative that you adhere to the academic honesty policy of this class. That means do not reference anyone other than the instructor for clarification.