

CPE 202 Course Plan – Winter 2019 (Subject to change)

Week 1: January 7 **Course Structure, Python Refresher, Analysis**

Mon: Course Intro: Python overview, Classes

Reading: Chapter 1 (omit 1.13.2)

Lab 0: Python Environment

Wed: Unit testing, Recursion

Reading: 4.1-4.4

Lab 1: Unit testing, Recursion

Fri: Analysis of Algorithms (time complexity, Big O notation, counting instructions)

Reading: Chapter 2.1-2.6

Assignment 1: Generating Permutations

Week 2: January 14 **Stacks, Expressions**

Mon: Stacks, Stack Frames

Reading: Chapter 3.1-3.5, 4.6

Lab 2: Both stack implementations

Wed: Infix, Prefix and Postfix Expressions

Reading: 3.6, 3.7, 3.9

Quiz #1

Assignment 2: Evaluating infix expressions

Fri: ADT Queue Implementations, Printing Simulation

Reading: Chapter 3.10 – 3.13

Lab 3: Circular Array Implementation of Queue, simulation

Week 3: January 21 **Queues, Lists**

Mon: Academic Holiday, No Lecture/Lab

Wed: Lists. ADT List, List implementations, singly linked

Reading: Chapter 3.19-3.23

Fri: List implementations, doubly linked

Quiz #2

Lab 4: Implement List using linked data structure

Week 4: January 28 **Trees**

Mon/Wed: BST basics

Reading: Chapter 6.1 – 6.3, 6.7

Lab 5: Implement basic BST operations

Fri: BST and Huffman Coding

Quiz #3

Assignment 3a: Huffman Coding – Part A

Week 5: February 4 **Trees 2**

Mon: Binary Search Trees

Reading: Chapter 6.11 – 6.14

Lab: Implement delete

Wed: Parse and Expression Trees

Reading: 6.6

Fri: MIDTERM

Week 6: February 11 **Sorting**

Mon: Naïve Sorting: Insertion and Selection

Reading: Chapter 5.6 – 5.9

Lab 6: Selection/Insertion Sort

Wed: Merge Sort

Reading: Chapter 5.11

Fri: Quick Sort

Reading: Chapter 5.12

Lab 6b: Implement QuickSort

Quiz #4

Assignment 3b: Huffman Coding – Part B

Week 7: February 18 **Heaps, Priority Q**

Mon: *Academic Holiday, will have Lecture/Lab on Tuesday*

Tue: Heaps

Reading: Chapter 6.8 – 6.10

Wed: Heaps continued and Heap Sort

Lab 7: Implement Max Heap, Heap Sort

Fri: Hashing and hash functions

Reading: Chapter 5.5.1

Week 8: February 25 **Hash functions, Tables**

Mon: Hashing and hash functions

Reading: Chapter 5.5.1

Quiz #5

Wed: Open addressing, chaining

Reading: Chapter 5.5.2

Lab 8: Hashing – Separate Chaining

Assignment 4: Hashing Application

Fri: Implementing the Map ADT and Analysis, Hashing applications, assignment

Reading: Chapter 5.5.3 and 5.5.4

Week 9: March 4 **Graphs**

Mon: Graphs and graph representations

Reading: Chapter 7.1-7.6

Wed: Depth first and Breadth First search

Reading: Chapter 7.9, 7.15

Lab 9: Fill in skeleton for Graph Class

Fri: Balanced Trees

Reading: Chapter 6.15-6.18

Assignment 5: Graphs

Week 10: March 11 **Balanced Trees**

Mon: Balanced Trees

Reading: Chapter 6.15-6.18

Wed: Review for final

Lab 10: AVL Examples/Worksheet

Fri: No lecture, in lab from 7:10-9:00am