St. Mary's College of Maryland

Department of Mathematics and Computer Science

COSC 201 – Algorithms and Data Structures

Fall 2014 Syllabus

Meeting Time: TR 2:00-3:50 pm

Room: Schaefer 165

Instructor: Abdel Salam Sayyad

Office: Schaefer 152

Office Hours: MTWR 12:30-1:50 pm

Email: asayyad@smcm.edu

Textbook: Weiss, M A. Data Structures and Problem Solving Using Java. Fourth Edition, Pearson Press.

Primary Website: https://blackboard.smcm.edu

Secondary Website: http://faculty.smcm.edu/asayyad/cosc201.htm

Catalog Description

This course examines the representation (data structures) and manipulation (algorithms) of information. The emphasis is on choosing the most memory and/or time efficient implementation for a particular application. Topics: common implementation of lists, sets, maps, stacks, queues, trees and graphs, and a survey of some common algorithms for processing these data structures. Students will compare implementations of the data structures commonly provided by language-specific libraries. Prerequisite: COSC 130.

Overview

In this course you will be learning how to use the knowledge you obtained in previous COSC courses to help create the building blocks that are necessary as you start to think about more complex programs. We will discuss several fundamental data structures, namely stacks, queues, lists, trees, hashes and heaps as well as algorithmic basics like sorting, searching and walks. We will discuss some concepts as it relates to the Object Oriented paradigm and algorithm analysis for complexity in both space and time. You will become familiar and comfortable with many of these data structures and be able to implement and use them correctly without the use of any reference materials.

Grade Distribution

Formative Assessment (pre-class, in-class, and post-class) – 20%

Programming Project (divided into 3 stages) – 30%

Midterm Exam (Tue 10/28/2014) – 20%

Final Exam – 30%

Policies

Cell Phones: Please, turn off or turn to silent any cell phones prior to getting to class. If they go off in class they are distraction not only to myself, but to everyone else in the class as well. Habitual offenders will be excused from the class with a 0 for any assessments that day.

Computer Use: Computer use in this lab is for academic use only. If you bring a laptop with you to this class I expect you to be only using it for purposes related to this class. The same goes for the desktops in the lab.

Collaboration: Assignments, projects and other inside- and outside-of-class work should be done on an individual basis unless otherwise specified in the description of the assignment. Any violation of this will be considered a breach of academic honesty code of conduct, explained next.

Academic Honesty

Academic misconduct policies are covered in the Student Code and Student Rights and Responsibilities, Article III. Pay close attention to the definitions of academic misconduct noted in Section 1. This can be found in the Student Handbook.

Disability

If you have any kind of disability that requires any special accommodation in this class, please let me know privately through email or stopping by my office.

Tentative schedule

Please check the class website http://faculty.smcm.edu/asayyad/cosc201.htm for a detailed and up-to-date schedule.

Week	Topic(s)
1	Syllabus and introduction Review of Java
2	Review of Java
3	Review of Java
4	Algorithm Analysis **9/25 Project stage 1 due**
5	Collections API
6	Lists
7	Stacks, Queues
8	Sets, Recursion **10/23 Project stage 2 due**
9	**10/28 Midterm Exam** More Recursion
10	Sorting
11	More Sorting
12	Even More Sorting **11/20 Project stage 3 due**
13	Randomization
14	More Randomization
15	Graphs
16	**Mon 12/15 Final Exam 7:00pm – 9:15pm**