

Computer Science 480 Sec. 1
Topics in Computer Science: Bioinformatics Algorithms
TTh 10:00-11:50AM, Room: SH 160

Instructor: Lindsay Jamieson, SH 152

Contact Information Phone: x4474, Email: lhjamieson@smcm.edu

Office Hours: MTW 1:00-1:50 PM or by appointment

Textbook: “An Introduction to Bioinformatics Algorithms”, Jones and Pevzner

Course Description:

This course will explore Bioinformatics algorithms and how they are used in both academic and industrial projects. This will include a look at the history of Bioinformatics as well as how the topic of Bioinformatics can be applied in Biology and Chemistry. Algorithms discussed may include mapping and sequencing DNA, predicting genes, comparing sequences, and genome rearrangements. Projects for the class will involve using real data and real world projects in order to apply concepts discussed in class. *Prerequisite: COSC201 or BIOL270 or BIOL471 or permission of the instructor.*

Objectives:

By the end of this course, students should be able to:

1. Look at an algorithm and analyze the best and worst case scenarios for that algorithm’s run time.
2. Describe various types of algorithms and their run times.
3. Describe the complexity of an algorithm.
4. Understand the space/time complexities and how they inter-relate.

Schedule:

The schedule for this class will be published on Blackboard. At least one project and the midterm exam will occur and be graded before the last day to withdraw. Any changes to the schedule will be announced in class and on Blackboard.

Evaluation:

There will be a midterm exam, a cumulative final exam, and 2 projects in this class:

1. Paper - 20%
2. Programming Project - 20%
3. Mid-term Exam - 20%
4. Final Exam - 20%
5. Homework - 5%
6. Portfolio - 15%

Homework Portfolio:

During the term, you will complete approximately 10 homework assignments for grades. At the end of the term, you will compile these homework assignments into a portfolio which will show the progress of knowledge through the semester. In addition to the original copies of the graded homework assignments, you will be expected to provide corrected versions of the assignments as well as an explanation of the changes you have made. After the mid-term exam, a full description of this assignment with grading criteria will be distributed.

Policies:

1. Academic Integrity - Please refer to the Student Handbook Article III Section 1 for definitions of Cheating, Plagiarism, Falsification and Resubmission of work. Violations of these types will be dealt with accordingly.
2. Work "In Groups" - Outside of class and in class, you may discuss concepts together. However, submissions should be in your own words. Projects should be individual unless specifically stated in the project description.
3. Late Submissions - Late work will suffer a 10% penalty for every 24 hours the work is late. This means that if a project is due at 5PM Monday and is handed in anywhere from 5:01PM Monday until 5PM Tuesday, it will have a 10% late penalty.
4. Cell Phones - Please turn cell phones to silent or off during class. You get one freebie. After that, any interruptions by cell phones may result in you being asked to leave and counted as absent for the class period.
5. Computer Usage - During class time computers may only be used for class related activities. This means, specifically, no email, no chat clients, and no web browsing. Unless the current class activity requires internet usage, no internet activity of any kind is acceptable. Again, you get one freebie. Repeated offenses may result in you being asked to leave and counted as absent for the class period.
6. Tardiness - Repeated and excessive tardiness is rude to me and your classmates. Again, you get one freebie. Repeated offenses may result in you being told that you were never here for that class period. If you have a legitimate commitment elsewhere that may result in your tardiness, let me know ahead of time.