

Course Syllabus and Overview

CSC 385/685; PHY 327/627; BIO 301: BICM 715

Time: 9:30-10:45 am TR

Instructors: Drs. William Turkett and Jacquelyn Fetrow

Office: Turkett: Manchester 240; Fetrow: Manchester 236 & Olin 301B

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Office Hours: Dr. Fetrow 5:00-6:00 T (physics office); 1:30-2:30 M (computer science office); Dr. Turkett 3-5 pm TR

Focus: This version of the course will focus on the area of *Systems Biology*.

Course meeting time: TR 9:30-10:45 am; Lectures will be held in Manchester 017. The course will be taught using a “Studio Style” of instruction. Generally, there will be a lecture followed by an in-class related laboratory. For the laboratory portion, students will work in teams with both computer scientists and biologists as members. Manchester 017 is reserved until 11:00 on both days so that you can continue to work in groups beyond the class time.

Course requirements:

CSC 385/685: To get credit for this course number, students will be required to actively participate in the software engineering and algorithm design aspects of the course. All students will be required to understand the research issues and master the key concepts in the field of bioinformatics.

BIO 301; PHY 327/627: To get credit for this course number, students will be required to master the biotechnical details behind the projects and effectively communicate those details to the students who are doing the engineering and algorithm design. All students will be required to understand the research issues and master the key concepts in the field of bioinformatics.

Course numbers and prerequisites:

CSC 385/685: Prerequisite for registering for this course number is CSC 112 (or permission of the instructor).

BIO 301; PHY 327/627; BICM 715: Prerequisites for registering for this course number are introductory courses in biology, chemistry, and molecular biology or biochemistry (or permission of the instructor).

Textbook: No textbook required for the class. A collection of relevant review and research articles will be distributed in class as required reading.

Blackboard: Papers and lab exercises will be posted on Blackboard under the CSC 385 course number. The reading quizzes will be done through Blackboard, as well.

Students with disabilities: If you have a disability that may require an accommodation for taking this course, then please contact the Learning Assistance Center (758-5929) within the first two weeks of the semester.

In the event of closure of the university for a significant part of the semester: In the event that the university closes due to pandemic or other disaster, please read and study the required papers (see list below). Reading quizzes (distributed over Blackboard, if the internet is available; or by postal mail if the internet is not available) must be completed to test your comprehension of the reading. Work the exercises (to be distributed either through Blackboard, email, or postal mail) that are listed on the schedule and send the solutions to: Jacque Fetrow (fetrowjs(at)wfu(dot)edu, if the internet is available; or 1014 Oaklawn Avenue, Winston-Salem, NC 27104). You will be mailed or e-mailed a mid-term test and a final examination that should be taken closed book, without access to papers, persons, or resources other than a calculator. The return dates for the examinations will be specified in the mailing. In the event of university closure, more detailed exercises and longer

mid-term and final exams will be used for grading, in place of the course project. If the internet is available, Professor Fetrow will be available for normal office hours by instant messenger: jsfetrow on Yahoo IM and jacquef40 on AIM. Professor Turkett will be available for office hours on Yahoo IM as roguetester and on turketwh@gmail.com (only if WFU email doesn't work).

Reading assignments and quizzes: Reading assignments are to be done prior to class. Online reading quizzes, due before each TR lecture marked with a (+) in the schedule below, cover the material in the reading assignments. These will be due by midnight the night before the class. The reading quizzes are to be completed without any assistance. Points cannot be earned on these assignments when there is an unexcused absence from class on the same day.

Research-based learning: The best way to learn to use bioinformatics and computational biology methods is to apply those methods in a research-based format. We will follow this learning approach in this course. We will teach methods and theory, but you will apply the methods and theory to a problem for which we do not yet know the "right answer;" however, it is a problem in which we are interested. The project topic will be presented in more detail in several weeks.

Grading:

Reading quizzes (16 quizzes at 4 points each)	64 points
Laboratory exercises (5 at 30 points each)	150 points (175 gr)
Project parts (25 points each) (scope v1, scope v2, design v1, design v2, documentation, presentations)	150 points
Final project	100 points
Class participation, observations, and creativity	50 points (100 gr)
Midterm examination	60 points
<u>Final examination</u>	<u>100 points</u>
Total:	674 points (749 gr)

Graduate credit: Students registered for any of the graduate course numbers and receiving graduate credit will be held to higher expectations than students receiving undergraduate credit. Graduate students will be expected to answer lab and exam questions in more detail. Often, there will be an additional, more difficult question that graduate students must answer in addition to the other questions, so the total number of allowed points will be higher for graduate students. Graduate students are expected to participate in class more often and to offer more insightful observations.

Software/hardware required: A laptop computer is required for this class. You must bring the laptop computer to each class, as we will usually be connecting to the internet to learn to use bioinformatics tools. Students registered for one of the CSC course numbers will be required to utilize certain programming tools and languages.