Syllabus for Bioinformatics I

BIOL 5351  (lecture 1 hr/lab 2 hr)Monday 1:30 pm - 4:20 pm
(lecture 1 hr/lab 1 hr) Wednesday 1:30 pm - 3:20 pm

Course Description:
Within the last 20 years there has been a literal explosion in the quantity and variety of information in molecular biology. In order to cope with this ocean of data, molecular biologists have had to develop new tools that rely heavily on the power of statistics and computing yet still incorporate an understanding of the underlying biological principles. The development and application of these tools in conjunction with assembled databases of biological information has become a field of its own, known as either Bioinformatics or as Computational Biology. In the sister courses Bioinformatics I and Bioinformatics II, we explore the principles underlying the analyses of sequence and molecular databases and work to provide students with the understanding and practical experience for intelligent and efficient application of these tools. In part one, we focus primarily on the analysis of nucleic acid sequences. In part two, we expand these studies to include gene prediction, protein function and structure studies and analysis of whole genomes. Both of these courses are core components of the Interdepartmental Master’s Degree in Bioinformatics. In addition, they are open to any graduate student with relevant experience in molecular biology. This course does assume that the student has some familiarity with both basic molecular biology and with the use of computers and the internet.

Course Goals: There are two major goals for this course. First, we want students to understand both the advantages and the limitations of a Bioinformatics approach to molecular biology. This requires that students understand the underlying principals for each technique and realize where compromises have been made and why. Second, we want students to have practical experience in the application of specific tools to research problems. This experience will include working in multiple computer environments, including UNIX, perl, and making use of specific web-based and computer based software tools.

Instructor:
Dr. Elizabeth Walsh - I encourage you to feel free to contact me anytime with questions or to set up special meetings. I especially encourage email as a means of communicating with me:
   Dr. Elizabeth Walsh
   Biol 216 (lab 221)
   747-5421
   ewalsh@utep.edu

Teaching Assistant: TBA
Course Resources:
The Required Text Books for this course is Bioinformatics by David Mount (2nd edition; Cold Spring Harbor Press). The primary text includes a proprietary web site that will be used as a source of exercises during the course. For lab we will be using Beginning Perl for Bioinformatics by James Tisdall (O'Reilly).

The course will be coordinated through a WebCT course connection (Webct.utep.edu). If you are not familiar with WebCT, please see the instructor. WebCT will provide an online syllabus, course calendar, course bulletin board, and some supplemental web sites and notes for lectures. Grades will also be presented through WebCT.

You will need regular access to a computer with internet connection. While this can be done through one of the computer labs at UTEP, there are advantages to having connectivity from your home. If you do not already have internet access but do have an internet capable computer, we can arrange connectivity through a UTEP dial up. See one of the instructors.

Determining Grades...
Grading for this course will be on a point system with the lecture exam grade comprising 2/3 of the final grade and lab in-class and homework assignments making up the other 1/3.

Lecture grade will be determined as follows:
Class participation includes coming to class having read the assigned material, active participation in course dialogue and participation in group and individual exercises and on time submission of complete and accurate exercises as assigned through the semester. You should come to class with a good understanding of the reading and have several questions ready to discuss. (5%)

Exams will consist of two written examinations to evaluate understanding of the underlying principles of the analyses presented in this course. (95%)

Lab grade will be determined as follows:
Class participation and Homework includes coming to class having read the assigned material, active participation in course dialogue and participation in group and individual exercises and on time submission of complete and accurate exercises as assigned through the semester. You should come to class with a good understanding of the reading and have several questions ready to discuss. (100%)

Course Schedule: Full course schedule is available on WebCT. Exams are October 13th and Dec 10th (4:00-6:45 pm). Either or both exams may have take-home and in-class components.
COURSE POLICIES

POLICY ON CIVILITY: Please come to class on time. It is disturbing and distracting everybody if people come in late. Please do not hold private conversations during lectures, but feel free to ask questions or start a discussion at any time. Cell phones MUST be turned off during class. DO NOT answer phones while in class.

DISABILITY STATEMENT: If a student has or suspects he/she has a disability and needs an accommodation, he/she should contact the Disabled Student Services Office (DSSO) at 747-5148 or at dss@utep.edu or go to Room 106 Union East Building. The student is responsible for presenting to the instructor any DSS accommodation letters and instructions.

MILITARY STATEMENT: If you are a military student with the potential of being called to military service and/or training during the course of the semester, you are encouraged to contact me no later than August 28.

POLICY ON HOMEWORK: All homework assignments are to be individual efforts unless specifically told otherwise. This policy will be strictly enforced.

POLICY ON MAKE-UP EXAMINATIONS: NO make-up exams will be given for reasons other than illness (doctor's note required), absence with the instructor's prior approval, or when a student is on official University business (documentation required BEFORE the absence). Make-up exams will be scheduled on Fridays at 5 pm. The same policy will be followed for missed laboratory work.

POLICY ON ACADEMIC HONESTY: Academic Dishonesty will not be tolerated. All university guidelines will be strictly followed. Please read these guidelines carefully. If you have any questions regarding the university policy please contact the Dean of Students.
It is the official policy of the university that all suspected cases or acts of alleged scholastic dishonesty must be referred to the Dean of Students for investigation and appropriate disposition. Any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes, but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.

A. "Cheating" includes:

1. Copying from the test paper of another student, engaging in written, oral, or any other means of communication with another student during a test, or giving aid to or seeking aid from another student during a test;
2. possession and/or use during a test of materials which are not authorized by the person giving the test, such as class notes, books, or specifically designed "crib notes";
3. using, obtaining, or attempting to obtain by any means the whole or any part of non-administered test, test key, homework solution, or computer program; using a test that has been administered in prior classes or semesters but which will be used again either in whole or in part without permission of the instructor; or accessing a test bank without instructor permission;
4. collaborating with or seeking aid from another student for an assignment without authority;
5. substituting for another person, or permitting another person to substitute for one's self, to take a test; and
6. falsifying research data, laboratory reports, and/or other records or academic work offered for credit;

B. "plagiarism" means the appropriation, buying, receiving as a gift, or obtaining by any means another's work and the unacknowledged submission or incorporation of it in one's own academic work offered for credit, or using work in a paper or assignment for which the student had received credit in another course without direct permission of all involved instructors;

C. "collusion" means the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any provision of the rules on scholastic dishonesty.