Syllabus for Bioinformatics I

YOU MUST BE REGISTERED FOR BOTH COURSES!

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
BIOL 5130  (seminar)  Monday 11:30-12:20 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:
We have 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 including the Genetics Computer Group (GCG) suite.

Instructor:
Dr. Elizabeth Walsh is an expert in DNA sequence comparison, construction of phylogenetic and evolutionary trees, and in genotyping of organisms. Rather than just posting office hours, 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:  
Robert Padilla

Course Resources:  
The Required Text Books for this course is Bioinformatics and Functional Genomics by Jonathan Pevsner (Wiley Liss). 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 grade comprising 2/3 of the final grade and lab 1/3.

Lecture 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. (40%)

Exams will consist of two written examinations to evaluate understanding of the underlying principles of the analyses presented in this course. (60%)
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 11th (4:00-6:45 pm). Either or both exams may have take-home and in-class components.

COURSE POLICIES

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.