Course Description:
This is a continuation of Bioinformatics I from last semester. It is similar in structure in that we will continue working through the same text covering topics such as RNA structure and Data mining, however the focus will change slightly. Because the former course has already provided you with many of the basic skills, we have the opportunity to work more on application of those skills in real life scenarios. In the final portion of the course we will have the flexibility to take a look at specialized topics in bioinformatics and business. If there are topics of particular interest to you, please talk to me and we'll see if they can be incorporated into the syllabus.

The goal of this course is to further develop your skills in applied bioinformatics and to provide substantial hands on experience in sequence analysis.

Professor:
Dr. Stephen Aley is a molecular biologist specializing in infectious disease. He has been part of the genome project for *Giardia lamblia*, and is currently involved in the annotation of that genome as well as data mining and proteomics of that same organism. You can usually find him in one of B303 (office), B310 (lab) or with the DNA sequencers or LC/MSMS. He can be contacted by email (saley@utep.edu), WebCT, or phone (747-6997). His formal office hours are immediately following class (T 3:30 or R 4:30), but the best way to see him is to simply drop by his office or lab -- if there isn't time to talk right then, he'll schedule a mutually agreeable time. There is a rumor that he has a chocolate dispenser on his desk for visiting students...

Course resources and text:
The Required Text Book for this semester is the same text as for part one – *Bioinformatics and Functional Genomics*, by Pevsner. A programming guide on your programming language of choice will also be beneficial (although Google does know all...) – *Beginning Perl for Bioinformatics*, from first semester, will do fine. Readings from the text or from other sources will be assigned as needed.

The course will be coordinated through a WebCT course connection. 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.

Computational problems in this semester will emphasize command line interfaces (e.g., unix or dos) and customized programs or scripts for parsing output. My preference is Perl, but you may use any language with which you are comfortable. Most of the software, including all major programs, will be available on Topgun, the IBM P690 that serves as the University’s mainframe and is accessed over network connections by SSH. In addition, we will make use of Sun stations in Biostatistics and other unix boxes. That being said, you will find that that most bioinformaticians perform their day to day work on a personal laptop! If you have a laptop computer, I strongly recommend that you practice using it in and for the course, if only for access to mainframes. A few University laptop computers may be available loan. If you are interested, please see Dr. Aley.
Class components and Grades:
The primary goal of this course is to develop and practice skills that would apply to a full scale bioinformatics program. As such, the grading for the course will emphasize the practical application of acquired skills. In particular, at most 30% of course grade determined by traditional exams.

Class participation includes coming to class having read the assigned material, active participation in course dialogue and participation in group and individual exercises. You should come to class with a good understanding of the reading and have several questions ready to discuss. This activity will not be directly graded, but will influence final grade assignment, UP OR DOWN.

30% of points for Homework and Computer Labs. These are short term or lab session projects, assigned for many of the classes and seldom extending more than a week. They are intended to gain skills or insight into the function of different programs or methods of analysis.

10% of points for Software installation, use instruction and manual. These assignments are to mimic installing and maintaining public domain software for use by OTHER research workers from diverse levels of bioinformatic experience. Each student will take responsibility for the installation or upgrade of a major software program set on the TOPGUN system. The final product should be a functioning research package for use by the UTEP community, including scripts for database maintenance (if appropriate), user manuals, training powerpoint presentation, and tutorial examples.

30% of points for a major research Informatics project, to be developed over the entire semester. This project will require topic research plus application of bioinformatics tools and interpretation and presentation of results. Actual topic is flexible, but requires approval of professor. Deliverables will include a white paper, full report, and oral presentation.

The remaining 30% of the point total will include a Final Exam, the format of which is yet to be determined but will likely include a take home computer component. In addition, there will either be a mid term exam or a second software install or small project. The decision on the final makeup of this component will depend on the instructors impression as to what approaches would best benefit the students. If you have preferences, sell them to the instructor!

COURSE POLICIES POLICY ON MAKEUP EXAMINATIONS AND LATE WORK: NO makeup exams or due date extensions will be given for reasons other than illness (doctor's note required), absence with the instructor's prior approval, or travel on official University business (documentation required BEFORE the absence). Makeup exams will be scheduled at instructors discretion. The same policy will be followed for missed laboratory work.

WHOSE WORK IS IT: For ALL ASSIGNMENTS and PROJECTS, you are to ASSUME that all work is to be done by the INDIVIDUAL student whose name is on the cover page unless the WRITTEN instructions specifically state otherwise. When teams are allowed, ALL
PARTICIPATING TEAM MEMBERS must be given credit. When outside work is incorporated (e.g., perl code from outside sources or copied powerpoint slides) the source must be clearly credited. All written reports must clearly cite sources in the format of a standard journal. Omissions will be reflected in the grading of that assignment.

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.