Syllabus: BINF 6111/ BINF 8111, Bioinformatics Programming I, Fall 2014

BINF 6111/ BINF 8111, BIOINFORMATICS PROGRAMMING I
SYLLABUS – FALL 2014

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Note: I am usually around during business hours; you are free to drop by my office.

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Office Hours: (Bioinformatics 104) Tuesday 2-3:15pm at lab session or by email appointment

A. COURSE DESCRIPTION

This course introduces fundamentals of programming for bioinformatics. The course will cover core data types, syntax, data structures, and programming languages, focusing on construction of programs from small, testable parts. Students will learn productive use of the Unix environment, focusing on Unix utilities that are particularly useful in bioinformatics. Students will learn to write well-organized programs in Perl. By the end of the class, students will have gained the ability to analyze bioinformatics data and write well-documented, well-organized programs.

The course meets in 104 Bioinformatics Bldg on Tuesdays and Thursdays, from 9:30am to 10:45am. BINF 6111 is for Master’s students and BINF 8111 is for PhD students. The lab session meets in 104 Bioinformatics Bldg on Tuesdays from 2pm to 3:15pm.

B. PRE- OR CO-REQUISITES

Corequisite: BINF 6111L/8111L – a required lab session for Bioinformatics programming.
Prerequisite: Admission to graduate standing Admission to graduate standing in Bioinformatics.
Provides a foundation in bioinformatics and programming for graduate training in bioinformatics and genomics.

C. OBJECTIVES OF THE COURSE

Having successfully completed this course, the student will be able to:

• Understand concepts in bioinformatics and data analysis in genomics.
• Gain the ability to analyze large-scale data in genomics and write well-documented, well-organized programs.

D. INSTRUCTIONAL METHOD

The course is presented in a lecture format which will include the following elements as appropriate: presentation of factual material in a standard lecture format, interactive demonstrations of methods to be applied in assignments, and opportunities for student questions, discussion, and presentations by students.

E. MEANS OF STUDENT EVALUATION
Students will be evaluated on their ability to answer factual questions regarding material presented in the class and assigned texts. Assignments will be given frequently during the course of the semester.

Grading: 40% assignments; 20% midterm; 30% final; 10% participation.

F. SPECIFY POLICIES THAT APPLY TO THIS COURSE:

The following policies apply to students in BINF 6100/ITSC 8100:

1. UNIVERSITY INTEGRITY
All students are required to read and abide by the Code of Student Academic Integrity. Violations of the Code of Student Academic Integrity, including plagiarism, will result in disciplinary action as provided in the Code. Definitions and examples of plagiarism are set forth in the Code. The Code is available from the Dean of Students Office or online at: http://www.legal.uncc.edu/policies/ps-105.html. A set of links to various resources on plagiarism and how to avoid it is available at the UNCC Library website: http://library.uncc.edu/display/?dept=instruction&format=open&page=920.

2. ATTENDANCE
Attendance at lecture is required, although exceptions will be made for reasons such as illness or family emergency.

3. GRADING POLICY
Grades will be assigned on the following scale:
A=90-100%
B=80-90%
C=65-80%
U=0-65%

4. ADDITIONAL POLICIES.
The use of cell phones, beepers, or other communication devices is disruptive, and is therefore prohibited during class. Except in emergencies, those using such devices must leave the classroom for the remainder of the class period. Students are permitted to use computers during class for note-taking and other class-related work only.

G. TEXTBOOK

Bioinformatics Programming I (fall 2014):
We’ll cover basic Unix environment, scripting and Perl programming. Besides the materials listed below, there are rich online resources and the students are suggested to do a search on "Unix/Perl tutorials for beginners" for topics they are not familiar with.

Additional readings from the current literature may be assigned as needed.
Textbooks:
* Beginning Perl for Bioinformatics By James Tisdall
  http://it-ebooks.info/book/284/

Recommended books:
  http://it-ebooks.info/book/669/

Recommended online materials:

Unix Tutorial for beginners:
http://www.open-of-course.org/courses/course/view.php?id=45

Perl tutorials and e-books:
Learn Perl in about 2 hours and 30 minutes:
http://qntm.org/files/perl/perl.html

Learning Perl:
http://www.perl.org/books/beginning-perl/
http://qntm.org/files/perl/perl.html
http://perl-begin.org/tutorials/

H. SCHEDULE OF LECTURES {SUBJECT TO CHANGE}

DATE:         TOPIC (ASSIGNMENTS ARE DUE 9AM THURSDAY THE FOLLOWING WEEK)

8/19  Introduction and Setup

8/21  Unix (Assignment 1)

8/26  Unix

8/28  Unix  (Assignment 2; Due Assignment 1)

9/2   Perl

9/4   Perl  (Assignment 3; Due Assignment 2)

9/9   Perl

9/11  Perl  (Assignment 4; Due Assignment 3)

9/16  Perl
9/18  Perl   (Assignment 5; Due Assignment 4)
9/23  Perl / Guest lecture
9/25  Perl
9/30  Perl   (Assignment 6; Due Assignment 5)
10/2  Perl
10/7  Student Recess (no class)
10/9  Perl (Assignment 7; Due Assignment 6)
10/14 Perl
10/16 Review (Due Assignment 7)

**10/21 Midterm**
10/23 Review of Midterm
10/28 Perl
10/30 Perl   (Assignment 8)
11/4  Perl
11/6  Perl   (Assignment 9; Due Assignment 8)
11/11 Perl
11/13 Perl   (Assignment 10; Due Assignment 9)
11/18 Perl
11/20 Perl   (Assignment 11; Due Assignment 10)
11/25 Perl
11/27 Thanksgiving holiday (No class)
12/2  Review (Due Assignment 11)
12/4  Reading Day

**12/9 Final Exam**