Biol 612 Topics in Physiology and Development--Bioinformatics
Spring 2014**
Wednesdays 2-4:50pm

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The aim of this course is to introduce you to some of the commonly used techniques in bioinformatics. Simply put, bioinformatics is the intersection between biology and computer science—it uses computational approaches to answer biological questions. Much of modern biology deals with large datasets, too large to be analyzed by eye. Knowing how to navigate your way around bioinformatics websites is key, but you can go beyond this and ask your own, custom research-driven questions if you know even simple programming. You do not need to know computer science to take this course, but you will be learning to write simple queries using SQL and basic programming using Perl scripts. You must have access to a laptop with internet capabilities for this course and bring it with you to class each week. If you do not have a laptop, the instructor will try to provide one for you.

Tentative grading and assignments

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
<th>Grading scale</th>
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</thead>
<tbody>
<tr>
<td>Class attendance/participation</td>
<td>70 pts</td>
<td>93-100% A</td>
</tr>
<tr>
<td>In-class assignments</td>
<td>100 pts</td>
<td>90-93% A-</td>
</tr>
<tr>
<td>Student-designed final project</td>
<td>30 pts</td>
<td>87-90% B+</td>
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<tr>
<td></td>
<td>200 pts</td>
<td>83-87% B</td>
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<td></td>
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<td>80-83% B-</td>
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<td></td>
<td></td>
<td>Below 60% F</td>
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<td>77-80% C+</td>
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Class attendance: 5 pts are earned for every class you attend and participate fully in. Lack of participation will result in points lost. Showing up late will result in points lost. Absences may (or may not) be excused if you contact the instructor beforehand.
In-class assignments: 10 pts x approximately 10. These are assignments designed to be completed and turned in during class. They will cover a range of topics from online bioinformatics resources to writing basic scripts. If you miss a week, you may still turn in the assignment for full points.

Student-designed final project: This will be a student-designed research project in which you use bioinformatics to answer a biological question. If you are working towards a thesis, you may apply bioinformatic principles to one of your thesis-related questions. It must incorporate some basic script-writing as part of the project. You will make a poster that will be presented at the 2014 Biology Research Symposium on Friday May 9th. Abstracts are due on Friday May 2nd.

Date

Topic

Assignments

January 22

Introduction to bioinformatics

Genome browser-sickle cell anemia

January 29

Pairwise sequence alignment

NCBI-BLAST

February 5

Multiple sequence alignments
Multiple sequence alignments

February 12

Phylogenies

ClustalW and MEGA

February 19

February 26

March 5

March 12

March 19

Spring Break-No class

March 26

April 2

April 9
April 16

Student-designed investigations

April 23

Student-designed investigations

April 30

Student-designed investigations

May 2 (Fri)

Abstracts due—Biology Research Symposium

May 7

Presentations

May 9 (Fri)
Biology Research Symposium

May 14

Finals week

** This schedule is tentative, including both topics and assignments.