CHEM 4933
SP-2014, January 13 - May 2
Physical Science Center #115

Current Topics in Biochemistry – Bioinformatics
learn.ou.edu

INSTRUCTOR
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E-MAIL
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CLASSROOM LECTURE
MWF, 9:30 - 10:20

OFFICE HOURS/ACTION CENTER
- T, 1:00 PM - 3:00 PM, at the office
- W, 4:00 PM - 6:00 PM, Adams Center, #105
- By appointment.

RECOMMENDED MATERIALS
- Supplemental readings of papers from the literature.

COURSE PURPOSE
This course is designed to give an introduction to Bioinformatics. As a result of this course, students should be familiar with common bioinformatics tools and analysis methods to examine different kinds of sequence data. Students should apply their bioinformatics knowledge to generate hypotheses and attempt to answer questions using their biochemical and biological knowledge accumulated over the past few years. Knowledge of common biological processes such as replication, transcription translation and major metabolic pathways is assumed.

RESOURCES
Each student will need an access to a computer with an internet connection.

GRADING
There will be two exams (20% each), several on-line quizzes (10% total), homework assignments (20% total), and a final project in lieu of a final exam. The distribution of the final grade is shown in the table below:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Exam 1</td>
<td>20%</td>
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<tr>
<td>Exam 2</td>
<td>20%</td>
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<tr>
<td>Assignments</td>
<td>20%</td>
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<tr>
<td>Quizzes</td>
<td>10%</td>
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<tr>
<td>Presentations/papers</td>
<td>30%</td>
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FINAL PROJECT/PAPER
The final project will have two components: a 15-minute in-class power-point presentation, and a final paper. The presentations will be scheduled throughout the month of April with the exception of the
18th as it will be reserved for a lecture presentation by Dr. Ann West. Each student will evaluate the presenter on D2L where a form will be available under the “Quizzes” section that day. The evaluations are part of the 30%. So please make sure you evaluate your fellow student constructively. The final papers are due by Friday, May 2 at 5:00 PM. Students will upload their papers to D2L’s Dropbox. There will be several projects to choose from, all of which will involve extensive characterization of a sequence. Details will be given later in the semester. The distribution of the final presentation/paper is shown below:

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<tbody>
<tr>
<td>Presentation</td>
<td>10%</td>
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<tr>
<td>Paper</td>
<td>15%</td>
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<tr>
<td>Evaluations</td>
<td>5%</td>
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<td><strong>Total</strong></td>
<td><strong>30%</strong></td>
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**EXAMS SCHEDULE**

<table>
<thead>
<tr>
<th>Exam</th>
<th>Date</th>
<th>Time</th>
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<tbody>
<tr>
<td>Exam-1</td>
<td>Friday, February 14</td>
<td>Class time</td>
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<tr>
<td>Exam-2</td>
<td>Friday, March 28</td>
<td>Class time</td>
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<tr>
<td>Presentations</td>
<td>April (except April 18th)</td>
<td>Class time</td>
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**LECTURE TOPICS**

The classroom lecture-discussion topics will follow the general order listed below. The background information will mainly come from Jonathan Pevsner’s "Bioinformatics and Functional Genomics" 2nd edition. Biochemistry review topics will mostly be presented from Berg, Tymozko and Stryer "Biochemistry" 7th edition. The tentative topics we will be covering include the following:

- Sequencing technology.
- Publically available genomes and databases.
- Sequence alignment.
- Advanced database searching.
- Multiple sequence alignment.
- Functional genomics / Metabolic reconstruction.
- Transcriptomics / Metabolic profiling.

**RECOMMENDATIONS**

- Students are responsible for checking D2L for announcements (learn.ou.edu).
- Take lecture notes and coordinate them with the on-line lecture notes.

**POLICY, STIPULATIONS, and DISCLAIMER**

- Any student in this course who has a disability that may prevent them from fully demonstrating their abilities should contact Dr. Najar as soon as possible to discuss accommodations needed to ensure full participation and facilitate their educational opportunity.
- Students should acquaint themselves with the University of Oklahoma code, policies, and procedures involving academic misconduct, integrity, and plagiarism; grievances; sexual and ethnic harassment; and discrimination.
- Dr. Najar reserves the right to change by addition and/or
subtraction of any and/or all materials contained in this syllabus. This includes, but is not limited to, course content, assignments, due dates, and portions(s) of the grade assigned to individual items within this course.

- Contact Dr. Najar prior to missing an exam.