CSC 314-01, Introduction to Bioinformatics
Spring 2020
Eastern Connecticut State University

Instructor: Dr. Garrett Dancik
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Science Building, Rm 257

Office Hours: MWF: 10-11:00
MF: 3-4:00, or by appointment

Course information:

Title:	Introduction to Bioinformatics
Day/Time:	MWF 1:00 – 1:50 PM (SCI 138)
Section:	01
Credit:	3 hours

Course Materials:

Textbook: Understanding Bioinformatics by Marketa Zvelebil and Jeremy O. Baum, Garland Science, Taylor & Francis Group, 2008 (ISBN: 9780815340249)

Technology:

1. Course notes and class website: https://gdancik.github.io
2. Python (http://www.python.org), Jupyter Notebooks (https://jupyter.org/) and Biopython (https://biopython.org/) will be used for programming assignments. Installation instructions are available on the Info section of the course web page.
3. Piazza (https://piazza.com) will be used for online discussion and several assignments. Note: a mobile app is available from the App store (iPhone/iPad) or Google Play (Android devices)

Course Description

Bioinformatics is an interdisciplinary science where computational and statistical tools are used to store and analyze large biological datasets. This course will provide an introduction to fundamental concepts in bioinformatics, including genetics, genomic and proteomic databases, sequence alignment algorithms and database searching, and protein structure and function prediction.

Grading

Labs / Exercises	25%
Exam I	25%
Exam II	25%
Final Project	25%

Online discussion: We will use Piazza (https://piazza.com) as an online discussion and question and answer forum in this course. Shortly after the beginning of the semester, you will receive an e-mail with registration instructions sent to your Eastern e-mail address. Piazza allows for students to post and answer questions, anonymously if desired. The class benefits by seeing questions asked by other students (who often have the same questions as you) and by contributing answers. As the instructor, I will answer questions and can endorse correct student answers as well. For these reasons, all non-personal (e.g., not grade-related) questions should be posted to Piazza rather than e-mailed to me. Questions regarding homework assignments should be posted to Piazza. Questions regarding homework must be specific and may contain no more than *several* lines of code. Note that posts not meeting these criteria will be deleted and the poster penalized if warranted. Note that piazza will be required for several assignments.

Exam Policy: Make-up exams will only be given if you have an official excuse for missing class. If you know ahead of time that you will miss an exam, please talk to me before the exam to make arrangements for taking it. Missing **two** or **more** exams without official excuses will result in your dismissal from the course with a grade of **F**.

Grading Scale

93-100: **A**	90-92: **A-**	
87-89: **B+**	83-86: **B**	80-82: **B-**
77-79: **C+**	73-76: **C**	70-72: **C-**
65-69: **D+**	60-64: **D**	59 and below: **F**

Academic Honesty

You are encouraged to discuss projects and exercises with one another unless specified otherwise. However, copying answers from another student (unless otherwise specified) is *cheating* and this will not be tolerated. A student found cheating will automatically receive a grade of "F" on the assignment and will be reported to the department head with further potential consequences. In addition, students are responsible for familiarizing themselves with the University's numerous policies and procedures contained in the University Catalog and Student Handbook. The Code of Conduct policies and the Policy on Academic Misconduct are of special significance, since cheating, plagiarism, and personal misconduct are strictly prohibited and carry severe penalties. Students should read and understand Eastern's Academic Misconduct Policy, which can be found in the student handbook. *www.easternct.edu/academicmisconduct*
All violations will be handled under the procedures established in this policy.

Classroom civility

Cell phones are not appropriate in class and must be turned off or set to vibrate and stored off of the class desk. In general, follow the Golden Rule and treat others with respect and how you want to be treated.

Accommodations for Students with Disabilities
Eastern Connecticut State University is committed to following the requirements of the Americans with Disabilities Act (ADA) of 1990, the ADA Amendment Act of 2008, and Section 504 of the Rehabilitation Act of 1973, as amended in 1998. If you are a student with a disability (or think you might have a disability) and require accommodations or assistance evacuating a building in the case of an emergency, please contact the Office of AccessAbility Services (OAS) at 860-465-0189 to discuss your request further. Please note that accommodations are not retroactive and must be communicated through a Letter of Accommodation, which is drafted by the OAS.

***Tentative course schedule**

Week	Week of	Topic	Chapters
1	1/20/20	***Martin Luther King Holiday – No Class Monday***	
		Intro to Bioinformatics	
2	1/27/20	Mendelian and Chromosomal Basis of Inheritance	
3	2/3/20	Cells and DNA	
4	2/10/20	Python Programming and Protein Structure	
		Lincoln's Birthday (Observed) - No Class Friday	
5	2/17/20	***President's Day - No Class Monday***	
		From Genes to Proteins	
6	2/24/20	**Review / Exam I**	
7	3/2/20	Gene and Protein Databases	Chapter 3
8	3/9/20	BioPython	
9	3/16/20	***Spring Break - No Class***	
10	3/23/20	Regular Expressions and UCSC Genome Browser	
11	3/30/20	Producing and Analyzing Sequence Alignments	Chapter 4
12	4/6/20	Dynamic Programming Methods for Pairwise Sequence Alignment	Chapter 5
		Day of Reflection - No Class Friday	
13	4/13/20	Multiple Alignments and BLAST	Chapter 5
14	4/20/20	**Review / Exam II**	
15	4/27/20	Methods for Gene Prediction and Genome Annotation	Chapter 10
16	5/4/20	Work on Final Projects	
		Final Project Due (May 13, 4:00 PM)	