Microbiology & Bioinformatics - BIOL231 - Spring 2021

Prof. Janette Gomos Klein - Wendesday lecture, Mastering Microbiology

Email: jkle@hunter.cuny.edu
Office hours: By appointment on Navigate (virtual Zoom link will be sent as confirmation)

Prof. Konstantinos Krampis - Friday bioinformatics recitation

Email: kk104@hunter.cuny.edu
Office hours: Tues. 12 - 2pm , walk ins welcome, please note conditions at end of syllabus.
Office location: virtual, via Hunter Zoom: https://us02web.zoom.us/j/81013857687

Course purpose and description.

Prerequisites: BIOL 102 (plus CHEM 104/106). The Biol 231 is a 3 hour 3 credit lecture/recitation course for Biology Majors. Topics include scope, historical aspects, taxonomy, and survey of the microbial world. The course also includes a survey of genetics, viruses, epidemiology, immunity, and microbial disease. Recitation hours will cover the introduction to computer programming and bioinformatics techniques for biological data analysis, within the context of microbiology. We will be writing simple computer programs to analyze microbiology genomic data (DNA, RNA, Proteins). We will be using a computational platform based on the Google cloud to run our analysis, along with the easily accessible Python programming language. The analysis will involve loading and processing the data, creating visualizations and drawing interpretations from microbial genomic data, along with understanding the biological mechanisms and scientific hypothesis represented in the data and our analysis. At the end of course, you will have a solid understanding of bioinformatics, and you will be able to utilize the concepts learned in the course into further advanced courses on bioinformatics.

Instructional format.

Spring 2021 will be taught exclusively online.

Wednesday microbiology synchronous lectures (9am-10am Q&A; 11am-noon content review):
You MUST have a computer or tablet with internet access AND be able to use Zoom, Blackboard, including Blackboard Collaborate, VoiceThread, and MasteringMicrobiology (must be purchased) to successfully complete this course. The course is rigorous, often covering two chapters per week. You are responsible for the entire contents within each chapter that is on the syllabus. Homework is assigned for WEEKLY completion on MasteringMicrobiology.

Lecture/MasteringMicro material: Video will be posted weekly as part of lecture as a Voicethread (VT). Academic questions posted on the VT will be reviewed and addressed on Blackboard Q&A. The videos may not cover all the content in each chapter but you are still responsible for the material in the chapter. The class will also meet synchronously for Q&A weekly from 9:10-10am and lecture review 10am-11am via Zoom link:

https://us02web.zoom.us/j/82777269856

One tap mobile: 6465588656 and meeting ID 82777269856#

Friday bioinformatics recitation:
The course follows a hybrid format, combining asynchronous online instruction, in combination with live instruction. The **asynchronous sessions will be delivered via Blackboard learning modules**, that include materials such as pre-recorded videos, texts and other reading material, along with assessments in each module. The asynchronous modules become available every week at the scheduled time of the course, and are in a format that need to be completed sequentially. Along with the modules every week, *a homework will be posted that is due exactly one week later*, by the time of the next scheduled class.

While you are not required to go though the material at the scheduled time of the course, *it is highly suggested to do as soon after it is posted*, in order to start working on the homework. Following every few asynchronous modules and as we build towards more advanced concepts, I will schedule live lectures (approximately every 2-3 weeks).

Required texts:

Modified Mastering Microbiology, Authors: Tortora Funke Chase. with eText 13th Ed for Blackboard use. Pearson. ISBN: 9780134707310. The etext and Mastering Microbiology for Blackboard use are included, but it does NOT include paper book. Only this specific ISBN listed here will work on Blackboard for this course.

Alternatively you can purchase the same book with ISBN 978013470797 without eText. If you purchase without eText, it is your responsibility to read/review all chapters assigned.

MasteringMicrobiology technical support **on this link**.

Assessment, homework and grades.

You will be graded on a score of 500 points. 200pts Bioinformatics component, 210pts lecture exams, 90+ points homework/participation (on MasteringMicrobiology). Exams are NOT meant to be open book- as such they will be strictly timed. There will be THREE timed lecture exams at 35 points each (no more than 30-40 minutes). You have one week in which you can take each exam. However, you can only take the exam ONCE and it will be timed. I strongly suggest that you make arrangements to take the exam in an environment where you will be able to successfully complete the exam. THERE ARE NO MAKEUP EXAMS FOR EXAMS 1,2, OR 3. Exam questions come from a large pool that is randomized per student. The final is comprehensive and is worth 105 points. This final exam will consist of two parts- both timed. Make-ups for final will only be given in cases of documented emergencies for students with at least a C average from ALL other lecture exams. For students that take all 4 exams, a higher final exam grade will replace lower grades for Exams 1, 2, and 3. All students are expected to take all four lecture exams (Exams 1, 2, 3 and Final Exam). Student will receive lecture exam grades via Blackboard/MasteringMicrobiology posted within 10 days following the exam.

The bioinformatics component is composed of a total of 200 points and wil be divided in the categories of

Homeworks 40%, Class participation 40%, Final project 20%.

The **bioinformatics homeworks** are posted weekly along with the class material, and are due by the next week's class scheduled time. The homework is a mix of multiple choice or similar fill-in questions, along with writing Python code to complete a particular bioinformatics tasks. *The code must be written individually and not working in groups*. Code is like written English prose, and plagiarism can be easily identified, *students who engange in plagiarism will be contacted, and points will be deducted from the final grade*.

The class participation involved reading the material posted weekly, and I track via Blackboard the completion of the reading material by each student, and it might be also requested that you submit an assessment or screenshot for completed material as part of each homework. In addition, posting on the discussion forum on a certain topic will be requested frequently, the posting will follow a certain evaluation rubric and the posting counts as class participation. When we have live instruction sessions, attendance will be taken.

The final project will involve an extended coding project covering all the material in the course, and it will posted up to 2 weeks before the official finals week at Hunter College, and will be due by the official date of the semester ends.

Final Grades are determined using the Hunter College grading scale: found in **this link**.

Additional important information:

The Zoom will be recorded and attendance is not mandatory. However, we strongly encourage you to attend and participate actively. Letters of Recommendation or Evaluation Letters will not be submitted for students who are not making every effort to participate and meet with their instructors during the semester. Students who participate in this class with their camera on or use a profile image are agreeing to have their video or image recorded solely for the purpose of creating a record for students enrolled in the class to refer to, including those enrolled students who are unable to attend live. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live.

Prof. Krampis / Bioinformatics: Please note *I will not respond to individual emails* regarding questions on homeworks, deadlines, course materials etc. These questions should be posted on the corresponding discussion forums on the Blackboard, as described in the syllabus. Email is reserved for items not suitable for the discussion forum, for example if you missed a homework deadline due to medical or similar emergency and you request a chance to submit (only acceptable with proof of the emergency, otherwise late submissions will not be accepted).

Regarding Prof. Krampis' *office hours*, they *are not recitation hours*, meaning that office hours are not used for one to one explanation of the material (but you are welcome to stop by discuss any issues you have with learning in the course). During the course we will have regular material review / recap sessions, along with assessment quizzes, discussions and answering of questions on the Blackboard discussion forum.
