

## BIOL 223: Genetics Laboratory Syllabus, Fall 2024 Thursdays at 9.30am & 2pm

### Course description

Selected experiments designed to demonstrate the principles of genetics and to introduce a range of genetics techniques and model systems. Pre/co-requisites: BIOL 222.

### Instructor

Dr. Varuni Jamburuthugoda

Office: ISC 355

Contact information: [jamburuthugoda@geneseo.edu](mailto:jamburuthugoda@geneseo.edu)

Office hours: Tuesdays from 2-3pm, Wednesdays from 9-10am, Fridays from 10.30-11.30am or by appointment.

Nathan Morris

Office: ISC 139C

Contact information: [nmorris@geneseo.edu](mailto:nmorris@geneseo.edu)

Office hours: Mondays from 2-3pm, Tuesdays from 10.30-11.30am and Wednesdays from 12.30-1.30pm

### Textbook

There is not a required textbook for the course. Appropriate resources will be posted on Brightspace.

### Required Supplies

- \*Notebook/binder for manuals and notes
- \*A computer running Windows or MAC OS
- \*A calculator with scientific notation
- \*A sharpie marker is required (permanent ultra-fine point recommended)
- \*A lab coat and goggles are optional (cannot store in lab)

### Course goals

- \*Students will learn about experimental design of genetic studies.
- \*Students will learn to collect, analyze, and interpret data.
- \*Students will learn to communicate scientific results in written and oral form.
- \*Students will gain experience with a variety of laboratory skills and model organisms.

### Flow of the class

Unlike some labs you've taken previously, some labs in this course do not have an outcome that can be determined or predicted ahead of time – so you won't know what "the right" answer is. **Instead, you will learn how to interpret the data you generate to determine what biological model is best supported.** We are working together not only to ensure you can master techniques, but also to prepare you for future technical and research work in which the "answer" is almost never known!

In addition, there will be an **IN LAB** quiz every week that will focus on the new material as well as the material that we went over the week before. Therefore, before you come to the lab, you should watch the pre-lab lecture (if applicable) and read the lab in detail. That way, you will be ready to take the quiz and do the work when you come in. In lab time, you will be working in groups. I will be there to assist with demonstrations of techniques and answering any questions you may have in the lab. For the use of shared equipment, we will go over sterilization techniques to be employed both before and after use.

### **Attendance and Public Health**

**Attendance of the Genetics lab is of the utmost importance, as the laboratories cannot be performed out of class. There is no simple way to make up hands on laboratories. Students that miss greater than two laboratories will not be able to earn credit for Genetics lab.** With that said, safety is paramount in the context of COVID-19. It is vital that we all do what we can to protect the health and safety of each other. If you are feeling unwell on a day that you are scheduled to come in person **do not attend**. Remember that it is better to stay home if you are not feeling well than to attend class and risk spreading illness to others. Throughout the semester be proactive in communicating about absences and contact the Dean of Students if you expect to be out for an extended period of time.

### **Genetics Lab Policies and Procedures**

\*Leave your backpacks and coats in the atrium area. Absolutely no food or drink allowed at the bench.

\*Sanitize your bench when you arrive AND before you leave with the provided paper towels and disinfectant spray. Wash your hands before you leave the lab.

\*Be sure you know what protective gear is necessary and follow lab safety guidelines.

\*Know where safety equipment is located.

\*Follow proper waste disposal procedures (bacterial/biohazard and chemical waste separate from other waste).

\*Cell phones should not be out during laboratory time. Talk to your instructor about emergencies.

\*Students should check Brightspace and their Geneseo email regularly for course update

## Evaluation

Activity	Weight (percentage)
Lab Quizzes (drop lowest score)	50 %
Lab Reports	30 %
Oral Presentations	20 %

## Grading Scale

Grades are based on the percentage of points you earned, weighted as above (no “curving”) The following scale will be used to calculate final grades, rounding the hundredths place.

### **Standard Grading option:**

<b>A</b> 93.0-100%	<b>B+</b> 87.0-89.9%	<b>C+</b> 77.0-79.9%	<b>D</b> 60.0-69.9%	<b>E</b> <60%
<b>A-</b> 90.0-92.9%	<b>B-</b> 80.0-82.9%	<b>C-</b> 70.0-72.9%		

NOTE: In the case of you needing to be absent from in person class, please keep the lines of communication open! You won't be penalized, but we need to figure out how best to help you meet the learning goals of the lab.

## Students with Disabilities

SUNY Geneseo will make reasonable accommodations for persons with documented physical, emotional, or cognitive disabilities. Accommodations will be made for medical conditions related to pregnancy or parenting. Students should contact the Office of Accessibility Services ([access@geneseo.edu](mailto:access@geneseo.edu) or 585-245-5112) and their faculty to discuss needed accommodations as early as possible in the semester. Quizzes at the testing center should be scheduled for the same day as the quiz is held in class.

## Mental Health Policy

We take mental health problems exactly as seriously as we would issues with your physical health. Counseling Services, a part of the Lauderdale Center for Student Health & Counseling, offers free, confidential psychological services to help you manage personal challenges that may threaten your well-being. Call 585-245-5716 to make an appointment (and also see this page for emergency resources:<https://www.geneseo.edu/health/emergency-info>).

## **Academic Dishonesty & Plagiarism**

All students are expected to follow the specific rules of academic honesty and plagiarism for SUNY Geneseo. Presenting others' work as if it were your own, or providing such help to others, constitutes academic dishonesty. Assignments that fall into this category will be scored as a zero and students may be given an E for the course. Please refer to the 2021-2022 Undergraduate Bulletin of the following link for more details:  
[https://www.geneseo.edu/dean\\_office/dishonesty](https://www.geneseo.edu/dean_office/dishonesty)

## **Communication**

Due to the nature of academic work, I occasionally send or read emails outside of normal business hours, but for the most part do not reply to emails received after 5:30pm until the next day. Please know that I do not expect that you will read or respond to my messages outside of normal business hours, and also please adjust your expectations about my responses accordingly.

## **Grade Appeal**

If you disagree with how I have graded a report or a quiz question, you must come to me within one week of the day I returned the report or quiz. You must make an argument *in writing* for why you think your report should receive more points. If your dispute is about arithmetical mistakes in adding points or a clearly misgraded answer, you do not have to submit a written justification.

## **Assignment Late & Make Up Policy**

If you believe you have a valid excuse (illness or other extenuating circumstance) for late work, or need make-up work, you must contact Dr. Jamburuthugoda as soon as possible, and ***before the end date of the module in which the work is due***. I will work with each student individually to determine the best solution to the missed deadline.

## **Diversity and Equity**

It is my intent to create a learning environment that supports all students. I believe the diversity that you bring to this class should be viewed as a resource, strength, and benefit. I strive to present materials and activities that are respectful of gender identity, sexuality, disability, age, socioeconomic status, ethnicity, race, nationality, religion, and culture. Your suggestions are encouraged to improve the course's effectiveness personally, or for other students or student groups. I recognize that this feedback may not be easy to give. I will listen to feedback in whatever form it is given and work to be mindful of my own power and privilege. For ideas, questions, or concerns related to diversity, equity, and inclusion in the Biology Department, please reach out to [bio-diversity@geneseo.edu](mailto:bio-diversity@geneseo.edu).

### Tentative Schedule for Fall 2024

Date	Laboratory	Notes
8/29/2024	Introduction and Lab Safety	
9/5/2024	Introduction, Working with Bacteria and Plant seeds	
9/12/2024	Transformation of <i>E. coli</i> with plasmid DNA	Pre-Lab Quiz 1
9/19/2024	Plasmid DNA extraction (miniprep) and Gel electrophoresis	Pre-Lab Quiz 2
9/26/2024	Mendelian Genetics-Data Analysis: Plants	Pre-Lab Quiz 3
10/3/2024	Lac Operon Lab 1	Pre-Lab Quiz 4
10/10/2024	Lac Operon Lab 2	Pre-Lab Quiz 5 Presentation 1 (Transformation lab)
10/17/2024	Virus Detection Lab 1	Pre-Lab Quiz 6
10/24/2024	Virus Detection Lab 2	Pre-Lab Quiz 7 Lab Report 1 due (Lac operon lab)
10/31/2024	Virus Detection Lab 3	Pre-Lab Quiz 8
11/7/2024	Luria Delbruck Lab 1	Pre-Lab Quiz 9
11/14/2024	Luria Delbruck Lab 2	Pre-Lab Quiz 10 Lab Report 2 due (Virus Detection lab)
11/21/2024	Luria Delbruck Lab 3	Pre-Lab Quiz 11
11/28/2024	Thanksgiving	
12/05/2023	Final Presentation	