BIOL 223: Genetics Laboratory Syllabus, Fall 2025
Tuesdays at 2 pm (Section 01)
Thursdays at 2pm (Section 02)

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

Mr. Nathan Morris
Office: ISC 139C
Contact information:
Email: nmorris@geneseo.edu
Office Phone: 585-245-6396
Office hours: Monday: 1:30-2:30, Tuesday: 10-11, Wednesday: 12-1 or by appointment.

Textbook

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

Required Supplies

*Notebook for notes and a folder lab procedures and handouts
*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

There will be an **IN LAB** quiz most weeks 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.

During labs, 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 and lab spaces, we will go over disinfection techniques to be employed both before and after use.

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 will be 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!

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, health and 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 **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 to me by email. 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 me about emergencies.

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

Evaluation

Activity	Weight (percentage)
Lab Quizzes (I will drop lowest score)	40 %
Lab Reports	30 %
Oral Presentations	20 %
Participation	10 %

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:

A 93.0-100%	**B+** 87.0-89.9%	**C+** 77.0-79.9%	**D** 60.0-69.9%
A- 90.0-92.9%	**B** 83.0-86.9%	**C** 73.0-76.9%	**E** <60%
	B- 80.0-82.9%	**C-** 70.0-72.9%	

Getting help

Please do not hesitate to reach out for help during this course. The goal of this course is for you to *learn* about genetics. The learning materials, quizzes and assignments that I provide to you are designed to promote that learning. I also aim to provide clear guidelines on how to succeed in this course. If at any point you feel that a topic, assignment or expectation is unclear, please reach out! I *want* to hear from you. I want to help. I want you to enjoy this course! I have office hours (listed above) and will try to accommodate other times as well.

Accessibility

SUNY Geneseo is dedicated to providing an equitable and inclusive educational experience for all students. The Office of Accessibility will coordinate reasonable accommodations for persons with documented physical, emotional, or cognitive disabilities, as well as medical conditions related to pregnancy or parenting. Students with letters of accommodation should submit a letter to each faculty member at the beginning of the semester and discuss specific arrangements. Please contact the Office of Accessibility Services for questions related to access and accommodations: Erwin Hall 22, (585) 245- 5112, access@geneseo.edu, https://www.geneseo.edu/accessibility-office).

Quizzes at the testing center should be scheduled for the same day and time 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

Use of AI and writing assignments

Artificial Intelligence is here, and it is here to stay! I think it's important to talk about my expectations, and the potential significant academic dishonesty issues that can arise. I strongly recommend not using AI when completing your reports for several reasons: (1) if you don't complete assignments yourself, you are not learning. Learning about genetics is the point of taking this course. (2) AI is not an expert in genetics or biology in general and will likely be prone to significant errors in writing assignments. These errors will be obvious to me as your instructor. If you do use AI to generate any text you must cite the program used in a works cited section. Assignments containing text written by AI will not receive full credit compared to assignments that contain original work. Using AI-written work without citing it constitutes an academic dishonesty violation (see section below).

Academic Dishonesty & Plagiarism

Students are expected to adhere to the University's policy on academic dishonesty and plagiarism, located in the student handbook. Academic dishonesty and plagiarism have serious consequences, and if you're struggling in class, please ask for help rather than resort to academic dishonesty! Academic dishonesty will result in a zero on the assignment or exam. In addition, a report will be filed to the department chair and Dean of the College, and a record of academic dishonesty will be placed in the student's file at the Dean of Students Office.

Please refer to the following link for more details:
https://www.geneseo.edu/advising/policies#AcademicDishonestyandPlagiarism

Communication

Due to the nature of academic work, I do occasionally send or read emails outside of normal business hours, but please do not plan on this! Generally, I delay responding to emails received after 5pm until the next day. In return, please know that I do not expect that *you* will read or respond to my messages outside of normal business hours either.

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. Also, please do not hesitate to reach out if you think that I have made a math mistake or clearly misgraded an answer.

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 me as soon as possible, and ***before 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.

Tentative Schedule for Section 1 Spring 2025 Tuesdays

Date	Laboratory	Notes
Tue: 8/26/2025	Introduction, Lab Safety and Working with Bacteria	
Tue: 9/2/2025	Mendelian Genetics - Plant seeds Transformation of *E. coli* with plasmid DNA	
Tue: 9/9/2025	Plasmid DNA extraction (miniprep) and Gel electrophoresis	Pre-Lab Quiz 1
Tue: 9/16/2025	Mendelian Genetics - Data Analysis: Plants	Pre-Lab Quiz 2
Tue: 9/23/2025	Lac Operon Lab 1	Pre-Lab Quiz 3
Tue: 9/30/2025	Lac Operon Lab 2	Pre-Lab Quiz 4 Presentation 1 (Transformation lab)
Tue: 10/7/2025	Virus Detection Lab 1	Pre-Lab Quiz 5
Tue: 10/14/2025	No Lab Fall Break	
Tue: 10/21/2025	Virus Detection Lab 2	Pre-Lab Quiz 6 Lab Report 1 due (Lac operon lab)
Tue: 10/28/2025	Virus Detection Lab 3	Pre-Lab Quiz 7
Tue: 11/4/2025	Luria Delbruck Lab 1	Pre-Lab Quiz 8
Tue: 11/11/2025	Luria Delbruck Lab 2	Pre-Lab Quiz 9
Tue: 11/18/2025	Luria Delbruck Lab 3	Pre-Lab Quiz 10 Lab Report 2 due (Virus Detection lab)
Tue:11/25/2025	No Lab Thanksgiving	
Tue: 12/2/2025	Presentation 2 (Luria Delbruck)	

Tentative Schedule for Section 2 Spring 2025 Thursdays

Date	Laboratory	Notes
Thu: 8/28/2025	Introduction, Lab Safety and Working with Bacteria	
Thu: 9/4/2025	Mendelian Genetics - Plant seeds Transformation of *E. coli* with plasmid DNA	
Thu: 9/11/2025	Plasmid DNA extraction (miniprep) and Gel electrophoresis	Pre-Lab Quiz 1
Thu: 9/18/2025	Mendelian Genetics - Data Analysis: Plants	Pre-Lab Quiz 2
Thu: 9/25/2025	Lac Operon Lab 1	Pre-Lab Quiz 3
Thu: 10/2/2025	Lac Operon Lab 2	Pre-Lab Quiz 4 Presentation 1 (Transformation lab)
Thu: 10/9/2025	Virus Detection Lab 1	Pre-Lab Quiz 5
Thu: 10/16/2025	Virus Detection Lab 2	Pre-Lab Quiz 6
Thu: 10/23/2025	Virus Detection Lab 3	Pre-Lab Quiz 7 Lab Report 1 due (Lac operon lab)
Thu: 10/30/2025	Luria Delbruck Lab 1	Pre-Lab Quiz 8
Thu: 11/6/2025	Luria Delbruck Lab 2	Pre-Lab Quiz 9
Thu: 11/13/2025	Luria Delbruck Lab 3	Pre-Lab Quiz 10 Lab Report 2 due (Virus Detection lab)
Thu: 11/20/2025	No Lab (Fall Break Makeup)	
Thu: 11/27/2025	No Lab Thanksgiving	
Thu: 12/4/2025	Presentation 2 (Luria Delbruck)	