

## BIOL 223: Genetics Laboratory Syllabus, Spring 2023 Tuesdays at 9:30 AM and 1:00 PM

### 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. Kevin Militello (Tuesday sections)

Office: ISC 357

Contact information: militello@geneseo.edu, 585-245-5312

Office hours: Mon: 2:30-3:45 PM, Wed: 10:30-11:30 AM, Fri: 8:15-9:15 AM, by appointment

Office hours mechanism: In person with online option, see Canvas for link

### Textbook

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

### 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 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. On occasions when you need to come into the lab (e.g. to check on bacterial plates), you will sign up so you are the only person in the lab at that time, and again must follow all techniques to avoid contamination.

### 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 and other illnesses. 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.
- \*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 Canvas and their Geneseo email regularly for course updates.

**Evaluation**

Activity	Weight (percentage)
Lab Quizzes, Online Activities (drop lowest score)	60 %
Lab Reports	20 %
Oral Presentation	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>B+</b> 87.0-89.9% | <b>C+</b> 77.0-79.9% |                      |                     |               |
| <b>A</b> 93.0-100%   | <b>B</b> 83.0-86.9%  | <b>C</b> 73.0-76.9%  | <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 2022-2023 Undergraduate Bulletin of the following link for more details: [https://www.geneseo.edu/dean\\_office/dishonesty](https://www.geneseo.edu/dean_office/dishonesty) .

<b>Date</b>	<b>Activity</b>	<b>Notes</b>
1/24/2023	Syllabus, Safety	
1/31/2023	Intro to Genetics Lab Techniques	quiz 1
2/7/2023	Transformation of <i>E. coli</i> 1	quiz 2
2/14/2023	Transformation of <i>E. coli</i> 2, Mendelian Genetics (start)	quiz 3
2/21/2023	Transformation of <i>E. coli</i> 3	quiz 4
2/28/2023	<b>NO CLASSES, DIVERSITY SUMMIT</b>	
3/7/2023	Mendelian Genetics, data analysis	quiz 5, Presentation 1
3/14/2023	<b>NO CLASSES, SPRING BREAK</b>	
3/21/2023	Luria Delbruck Fluctuation Test 1	quiz 6
3/28/2023	Luria Delbruck Fluctuation Test 2	online activity
4/4/2023	Luria Delbruck Fluctuation Test 3	quiz 7
4/11/2023	Regulation of the lac operon 1	quiz 8, Report 1 due
4/18/2023	Regulation of the lac operon 2	quiz 9
4/25/2023	qPCR Analysis of Viral Genomes 1	quiz 10, Report 2 due
5/2/2023	qPCR Analysis of Viral Genomes 2	quiz 11
5/9/2023	Presentations	quiz 12, Presentation 2