Biology 349 Microbiology Lab Syllabus
Fall 2025

Section 02: Monday 9:30am – 12:20pm (ISC 302)
Section 03: Monday 2:00pm – 4:50pm (ISC 302)
Section 04: Tuesday 2:00-4:50pm (ISC 302-Dr. Hutchison)

Instructor: Dr. Matthew Hatkoff
Office: ISC 139A
Email: mhatkoff@geneseo.edu
Office Hours
Tuesday 9:30am – 11:30am
Thursday 9:30am – 11:30am
Or By Appointment (Face to Face or Virtual)

Course Description

An introduction to microorganisms, including Bacteria, Archaea, Eukaryotes, and Viruses. Topics include cell structure and function, cultivation, genetics, metabolism, ecology, evolution, and diversity of microbes. The role of microorganisms in human health and disease will also be examined. Laboratory activity complements lecture material. **PREREQUISITES: BIOL 222 or BIOL 271, minimum grade of D. It is assumed that you have the knowledge from these courses and their pre-requisites.**

Required Text

For the laboratory portion of the course there are no required materials. All laboratory materials will be available on Brightspace. Students are expected to print out lab materials before coming to class and to check Brightspace for materials. A three-ring binder is encouraged to organize these materials.

Grading

Your final grade in BIOL 349 a combination of your lecture and lab grade. Please see the table. Below is a breakdown of your lab grade.

Lab Grades	
Unknown Bacteria Presentation	7.5%
Group Lab Report (Draft and Final)	7.5%
Short Reports (3 total)	7.5%
Lab Skills Assessment	7.5%

Assignment Descriptions

Unknown Bacteria Presentation

During the lab portion of the course, you will collect, grow, stain, and identify an environmentally sampled “unknown” bacteria using various metabolic tests. You will then use Bergey’s Manual to determine the identity of this bacteria. We will then take a lab period in which you will present the identity of you bacteria using Powerpoint/Google slides. This presentation will include the logic and tests used to determine the identity of the bacteria, as well as a background and important information on your unknown.

Group Lab Report

As a lab group there you will write a formal lab report on one of the labs during the semester. Both a rough and final draft will be required to be submitted, and this should be properly cited, formatted, and follow standard conventions of lab reports.

Short Reports

There will be three submissions expected from various labs throughout the semester. These submission, or short reports, will take on various forms depending on the lab protocol that is followed. More information on these short reports will be covered throughout the semester.

Lab Skills Assessment

During Weeks 10-14 a Lab Skills Assessment will be conducted by your instructor. You do not need to turn anything in for this assignment, however you will be observed on various techniques that have been reinforced during the beginning of the semester. This will allow your instructor to assess the skills you have been building through the semester to ensure a sound understanding of Microbiological techniques. The various skills and information will not be disclosed beforehand, but any portion of the laboratory or activities are able to be assessed. During Finals week students will be able to review their Lab Skills Assessment rubric if any questions arise during this process.

Tips for Success

Laboratory activities will be posted on Brightspace and you are required to read over them before coming to lab. One of the components of success in the lab is keeping a good lab notebook. Since lab materials are posted on and printed from Brightspace, you can keep your materials in a binder, and add in pages for any notes that you have. I will allow you to use your notebook for the lab practical, so it will greatly benefit you to keep an organized notebook.
To be a good microbiologist, there are some basic skills (aseptic technique, media making, plate streaking, microscopy, etc) that you need to learn, and these skills will be necessary in almost any microbiology or molecular biology lab. You’ll have two opportunities to demonstrate your mastery of these skills in a lab practical. If we have any down time in lab, use this time to practice skills, or you can schedule some extra time outside of lab (for example during office hours) to practice.

Be sure to keep up with the lectures, practice problems, and quizzes, and attend office hours as often as you can; don't procrastinate - if you're struggling or don't understand something, get help from me during class or office hours as soon as possible. There are many resources available if you need help.

My suggestion is to read over the assigned reading before class. This will help familiarize you with the topics that will be covered, and if any topics are completely unfamiliar to you then you can do a more in-depth reading of that section.

Asking for help

My goal for the course is for you to learn about microbiology. My job is to create learning materials and assessments that promote learning, and provide you with clear guidelines on how to succeed. My job is also to answer your questions and help to foster your scientific curiosity. I'm here to help, and in fact chatting with students and answering their questions is one of the best parts of my job! So, please don't hesitate to reach out if you have questions about the course material, or other general student questions. Asking for help is a sign of self-awareness and strength.

Student Accommodations and 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 physical, emotional, or cognitive disabilities to ensure equal access to academic programs, activities, and services at Geneseo. Students with letters of accommodation should submit a letter to each faculty member and discuss their needs at the beginning of each semester. Please contact the Office of Accessibility Services for questions related to access and accommodations.
Office of Accessibility Services Erwin Hall 22 (585) 245-5112 access@geneseo.edu; (mailto:access@geneseo.edu;) www.geneseo.edu/accessibility-office

Use of AI and writing assignments

Technology changes almost as rapidly as microbes mutate! This is not a bad thing, but it's important to be aware of how it can impact learning, and there are significant potential academic dishonesty issues that can arise. Most of you are likely aware of the wildly popular AI program chatGPT. It's fascinating! However, I strongly recommend not using it for your coursework for several reasons: (1) if you don't complete assignments yourself, you are not learning. If you're not going to do the work, honestly it's a waste of your time to take this course; (2) chatGPT is not an expert in microbiology, and will likely be prone to errors in writing assignments. If you do use chatGPT to generate any text you must cite the program in your references or works cited section. Assignments containing text written by chatGPT 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). Finally, please note that there are programs (e.g. GPTZero, created by student Edward Tian (https://www.npr.org/2023/01/09/1147549845/gptzero-ai-chatgpt edward-tian-plagiarism) that can detect AI-written work.

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.

Guidelines for Attendance and Public Health

As we continue to deal with variants of the COVID-19 virus well into the future, I share these expectations for classroom attendance and protecting public health. SUNY Geneseo is a residential liberal arts college where we all learn together in a shared space. This classroom community is vital for engaging in discussions, solving problems, and answering questions together. Learning is an active process, and it requires engagement - on my part and yours. I promise to create an interactive and collaborative classroom space, and in return I expect you to attend and engage in the activities.

We know that COVID is shifting from a pandemic to endemic stage, and it's possible that some of you may get infected over the course of the semester. Because we want you to be successful and because we value your contribution to the course, we expect you to prioritize attendance. If you are experiencing symptoms associated with COVID* on a day we have class, please take a COVID test. Testing is available through the Health Center, or you may take a self-test if you have one. If you test negative and feel well enough to attend (no fever without fever-reducing medication), put on a well-fitting mask, come to class, and maintain physical distance as much as possible. If your symptoms do not allow you to attend class, stay home (except to go to the health center), rest, and take care of yourself. I expect you to communicate with me directly about your absences. I can support you to keep up with class if you are out for COVID-related reasons, but I need you to take responsibility for being transparent and clear in letting me know when you are out and why. Although I can work with you on keeping up, you may miss some course content and extended absences may impact your ability to realize your full potential in this class. For extended absences (i.e., more than a couple of days of classes), you should contact the Dean of Students who can assist with reaching out to your faculty.
Finally, I want you to succeed and learn in this class, and I want to protect our community from COVID as best as I can.

Policies Governing Religious Observances

Under state law (Education Law, Section 224-a) students should be excused from course requirements, such as examinations, class attendance, or other academic study and work requirements, for religious observance. Students must be permitted to make up missed work without penalty. It is the student's responsibility to notify the College about any religious practices that may interfere with their attendance. See the full policy and links to holidays.

Tentative Lab Schedule (subject to change at instructor's discretion)

It is expected that you check Brightspace at the beginning of each week for all lab materials and instructions and for any assignments that may be submitted through the LMS. You should print out and review each weekly protocol before every lab

Week Date	Subject	***Assignments*** Due on Friday of Indicated Week
1 Aug 25/26	1.1 Check In & Intro 1.2 Aseptic Technique & Transferring Cultures 1.3 Making Media 1.4 Effectiveness of Handwashing	N/A
2 **Sept 1/2**	**Labor Day- No Lab**	N/A
3 Sept 8/9	3.1 Streaking Bacteria 3.2 Serial Dilutions 3.3 Introduction to Microscopy 3.4 Simple Staining	N/A
4 Sept 15/16	4.1 Gram Staining 4.2 Acid-Fast and Endospore Staining	***Short Report 1 Due: Serial Dilution Series (Exp 3.2 and 3.4)***
5 Sept 22/23	5.1 Bacterial Growth Curve 5.2 PCR	N/A
6 Sept 29/30	6.1 Gel Electrophoresis 6.2 BLAST Lab 6.3 Epidemiology Lab	N/A
7 Oct 7/8	7.1 Kirby Bauer & Chemical Inhibition Tests 7.2 Physical Methods of Control (UV and Heat 7.3 Ames Test	N/A
8 **Oct 13/14**	**Fall Break-No Lab**	***Short Report 2 Due: BLAST Lab (Exp 5.2)***
9 Oct 20/21	9.1 Collect Environmental Sample 9.2 Biofilm Formation (I) 9.3 Quantifying Microbial Contamination in Water	N/A
10 Oct 27/28	10.1 4-way Streak of Unknown 10.2 Fermentation Experiment 10.3 Biofilm (II)	***Short Report 3 Due: Kirby Bauer and Chemical Inhibition (Exp 6.1)***
11 Nov 3/4	11.1 Identification of "Patient Sample"	N/A

12 Nov 10/11	12.1 Read “Patient Sample” Tests; 12.2 Identification of Unknown	***Rough Draft of Bacterial Growth Curve Report Due (Exp 4.1)***
13 Nov 17/18	13.1 Read Unknown Tests & Tentative ID of Unknown	N/A
14 Nov 24/25	14.1 Finish any remaining lab work 14.2 Work on Presentation of Unknown 14.3 Work on Group Lab Report	N/A
15 Dec 1/2	**Presentation on Unknown Bacteria**	***Final Draft of Bacterial Growth Curve Report Due***