

# Course Syllabus

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## BIOLOGY 349: Principles of Microbiology, Spring 2022

The BIOL 349 course will be held in person (ISC 131; TR 11:30-12:45pm). Please see [SUNY Geneseo guidelines](https://www.geneseo.edu/fall-2021) (<https://www.geneseo.edu/fall-2021>) for vaccination, masking, and COVID-19 testing policies. Please also be aware that due to the dynamic nature of the COVID-19 pandemic, it is possible that some changes to the syllabus and/or content delivery mode will need to be made after the semester has started. If this is the case, be assured that my priorities are student success, course continuity, and accessibility of information.

### 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.

### Instructor:

Dr. Betsy Hutchison

Office: ISC 359

Email: [hutchison@geneseo.edu](mailto:hutchison@geneseo.edu)

Phone: 585-245-5038

Office Hours: Tues (1:00-1:30 pm), and Thurs & Fri (10:00-11:00 am). On Thurs and Fri I will be in the ISC 302 lab for my office hours, in case you have questions about lab material. Office hours for BIOL 349 are typically not overly crowded, so for now I will hold them in person; this may change depending on any updates to the COVID-19 safety precautions.

### Course Description

This course focuses on the structure, cultivation, physiology, ecology, and importance of microorganisms (including bacteria, archaea, eukaryotes, and viruses). Interaction of these microbes with each other and with humans, including aspects of symbiosis and disease, will be examined. Laboratory activities complement lecture material.

### Required Texts

Biology of Microorganisms, Brock, Michael T. Madigan, John M. Martinko, Paul V. Dunlap, David P. Clark. Pearson Benjamin Cummings, San Francisco, CA 15<sup>th</sup> Edition (2017) ISBN 9780134261928.

\*If you're using an older edition or an international edition, please note that you're responsible for the material in the required version of the textbook.

### Calculator

You'll need a simple calculator (with basic functions and logs) in order to complete some assignments for the course.

### Grading

Caption: this table summarizes the point breakdown for your semester grades.

Lecture Grades	
Exams (3 exams, 15% each)	45%
Homework Assignments (3)	10%
Microbe Presentation	5%
Weekly quizzes (10, each worth 6 points)	5%
Lab Grades	
Lab Notebook	5%
Lab Presentation	5%
Group Lab Reports and Biochemical Tests Assignment	15%
Practical	10%

The following scale will be used to calculate final grades. Student point totals or grading scheme may be adjusted to reflect course difficulty or section differences at the instructor's discretion.

Caption: this table summarizes the grade point scales for the course.

	<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%		

Standard rounding procedures will apply. For example, an 82.94 would be rounded to a B-, and an 82.95 would be rounded to a B.

- Grade disputes must be initiated within one week from when the assignment was handed back. If you have a grade dispute, you must submit your original assignment along with a written justification of your answer.

### Late Assignments

Late assignments will have a 10% grade reduction per day, and will not be accepted more than 1 day late.

### Homework

- Homework assignments will be completed in groups, and one copy will be turned in per group. For each homework assignment, there will be a chance to evaluate your group members and their contributions to the group homework. There will be 3 homework assignments, and each will deal with solving microbiology-related problems and/or reading a scientific article.

### Weekly Quizzes

- Quizzes will occur on **Thursdays** (of most weeks), and will cover the material from the previous two classes. Quizzes are designed to help you keep up with the lecture and reading material for the course. We will have 10 quizzes, and I will drop your lowest quiz grade. Since I drop the lowest quiz grade, I will not administer make-up quizzes except for extenuating circumstances or for university approved absences.

## Presentation

- There is a huge amount of microbial diversity (bacterial, archaeal, eukaryotic, and viral). We can only cover a small fraction of this diversity in lecture, and so this assignment will allow you and your group members to make a brief informational presentation about a microbe of your choice. Your presentation should be short (~8 minutes), include participation from all group members, and convey all of the information on the assignment rubric. You will also need to be able to answer questions about this microbe. Group members are expected to contribute equally, and you will be evaluated by your peers for this assignment, just like for the HWs. You and your group will get a chance to sign up for a presentation date during the few weeks of class.

## Exams

- Make up exams are not administered without prior approval to missing the exam. Safety is a priority, and please do not attend class or an exam if you are ill and suspect you have COVID. However, it is your responsibility to be in contact with me for (1) approval for missing the exam and (2) scheduling a make up exam.
- Please note the exam dates for this course. If you have a legitimate scheduling conflict you must notify me within the first 2 weeks of class. Otherwise, you will have to take exams as scheduled in the syllabus. If you are ill or have another unexpected issue come up, you must have approval for a make up exam before missing it, otherwise you cannot make up the exam.
- Exam format: exams will be administered in class (75 min). Depending on the COVID-19 situation I may need to modify the exam delivery format (i.e. administer exams online), but this will not be done without advance notice to students.

## Tips for Success

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.

Assigned readings for class: 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. After lecture, take a more careful look at the assigned readings, using what we covered in class to focus your reading, and to prepare yourself for the quiz on Thursday.

## COVID-19 precautions

For the safety of your fellow students, faculty, and staff, please do not attend class if you feel ill. If you start to feel ill during class, please let me know and feel free to leave if you need to. Lecture slides and corresponding readings are posted online, and I can facilitate helping you get notes from class if needed if you're absent. It is imperative that you communicate with me about your absence from class - you should notify me *before* class that you will be absent, unless it's an emergency. Wearing masks is required in the buildings and classrooms on campus, and it's expected that you wear your mask (correctly, covering both your nose and mouth) at all times. Safety is a top priority and I'm confident that if we communicate and work together we can have a safe and productive semester!

## 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.

## 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](mailto:access@geneseo.edu), [.mailto:access@geneseo.edu](mailto:access@geneseo.edu), [www.geneseo.edu/accessibility-office](http://www.geneseo.edu/accessibility-office), [.https://www.geneseo.edu/accessibility-office](https://www.geneseo.edu/accessibility-office)

## 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.

Caption: this table shows the syllabus dates and content covered, as well as the assigned readings, for the semester.

Tentative Schedule (subject to change at instructor's discretion)		
Date	Subject	Reading
(R) 01/27	Introduction	-
(T) 02/01	History of Microbiology; <i>Mycobacterium tuberculosis</i>	1.9-1.13; 30.4 (pg 893-895)
(R) 02/03	Basics of microscopy; Microbial size & shape; <i>Thiomargarita</i> ; <b>Quiz 1 (covers 02/01)</b>	1.5-1.8, 2.1-2.2
(T) 02/08	Microbial cell wall & membrane; <i>Mycoplasmas</i> , <i>Deinococcus</i>	2.3-2.6, 16.9, 16.20
(R) 02/10	Antibiotics & Antibiotic Resistance; <i>Staphylococcus aureus</i> ; <b>Quiz 2 (covers 02/03, 02/08)</b>	28.10-28.12, 30.9
(T) 02/15	Extracellular & intracellular microbial structures; <i>Neisseria gonorrhoeae</i> ; <b>HW 1 due</b>	2.7-2.10; 30.13
(R) 02/17	Microbial Motility – chemotaxis & other taxes; <i>Proteus</i> ; <i>Listeria monocytogenes</i> ; <b>Quiz 3 (covers 02/10, 02/15)</b>	2.11-2.13; 6.7; pg 502-503 ( <i>Proteus</i> section); 32.13
(T) 02/22	Microbial Growth I	5.1-3, 5.6-5.11

(R) 02/24	Microbial Growth II; <b>Quiz 4 (covers 02/17, 02/22)</b>	7.1-7.5
(T) 03/01	Nutrition & Metabolism I; <i>Yersinia pestis</i>	3.1-3.12; 31.7
(R) 03/03	Nutrition & Metabolism II; ; <b>HW 2 due; Quiz 5 (covers 02/24, 03/01)</b>	3.1-3.12
(T) 03/08	Metabolic diversity– Photosynthesis	14.1-14.5
<b>(R) 03/10</b>	<b>EXAM I (material up to &amp; including 03/03, &amp; including HW1 &amp; 2)</b>	<b>EXAM</b>
<b>(T) 03/15</b>	<b>No class - Spring Break</b>	--
<b>(R) 03/17</b>	<b>No class - Spring Break</b>	--
(T) 03/22	Metabolic diversity – Fermentation & Methanogenesis I	14.17; 14.19-14.23
(R) 03/24	Metabolic diversity – Fermentation & Methanogenesis II; <b>Quiz 6 (covers 03/08, 03/22)</b>	14.17; 14.19-14.23
(T) 03/29	Metabolic diversity – Chemolithotrophy	14.8-14.9, 14.11-12, 14.14
(R) 03/31	Microbial Genomes; CRISPR; <b>Quiz 7 (covers 03/24, 03/29)</b>	9.1-9.6; pg 298
(T) 04/05	Genetic Regulation; <i>Allivibrio fischeri</i> ; <b>HW 3 due</b>	6.1-6.6, 6.8; 23.8
(R) 04/07	Microbial Evolution; <b>Quiz 8 (covers 03/31, 04/05)</b>	13.1-13.5, 13.8, pg 377 on the black queen hypothesis
(T) 04/12	Archaea	(no required textbook reading; I'm going to assign an article instead)
<b>(R) 04/14</b>	<b>EXAM II (material up to &amp; including 03/08-04/07)</b>	<b>EXAM</b>
(T) 04/19	Viruses I; <b>draft of presentation due</b>	Ch 8, 10.1-10.2
<b>(R) 04/21</b>	<b>No class - GREAT day</b>	--
(T) 04/26	Viruses II: SARS-CoV2 and the COVID-19 pandemic	no assigned textbook reading - I will post assigned readings on Canvas
(R) 04/28	Eukaryotes; <b>Quiz 9 (covers 04/19, 04/26)</b>	18.1-18.4, 18.8
(T) 05/03	Symbiosis; <b>Presentation from groups #1, 2</b>	23.1-23.4, 23.12-23.13
(R) 05/05	Epidemiology I; <b>Quiz 10 (covers 04/28, 05/03)</b>	29.1-29.6

(T) 05/10	Epidemiology II; Presentation from groups #3, 4	29.1-29.6
(R) 05/12	EXAM III (material from 04/12-05/12)	EXAM
Friday May 20	Presentation from groups #5-12 during the final exam period (12:00-2:30 pm)	