

BIOLOGY 349: Principles of Microbiology, Spring 2021

The BIOL 349 course will be held online, and material will be delivered asynchronously.

Prerequisites:

BIOL 222 (Genetics) or Undergraduate level BIOL 271 (Heredity) Minimum Grade of D. It is assumed that you have the knowledge from these courses and their pre-requisites.

Instructor:

Instructor: Robert Feissner

Office: ISC 356

Email: 585-245-5022

Office Hours: Wed, Thurs 11:00 - 12:00 (virtual, or in person by appointment)

My virtual office hours can be accessed [from this link](#), and through zoom on Canvas.

(<https://geneseo.zoom.us/j/92375365500?pwd=WkFNMG1hQ1ZVbWxjdHovdXQzSllCdz09>)

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.

Laboratory Sections (all in ISC 302)

Section 02 (CRN 59455): Tuesdays 9:00 am -10:55 am

Section 03 (CRN 59456): Tuesdays 11:30 am - 01:25 pm

Section 04 (CRN 59921): Tuesdays 2:00 pm - 3:55 pm

Required Texts

Biology of Microorganisms, Brock, Michael T. Madigan, John M. Martinko, Paul V. Dunlap, David P. Clark. Pearson Benjamin Cummings, San Francisco, CA 15th 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, 100 pts each)	300 pts
Homework Assignments (3)	72 pts
Microbe Presentation	20 pts
Weekly quizzes (10, each worth 6 points)	60 pts
Lab Grades	
Lab Notebook	10 pts
Presentation	25 pts
Group Lab Reports (2@25)	50 pts
Techniques Assessment	25 pts
Biochemical Tests Assignment	5 pts
Total	567 pts

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+ 87.0-89.9%	C+ 77.0-79.9%		
A 93.0-100%	B 83.0-86.9%	C 73.0-76.9%	D 60.0-69.9%	E <60%
A- 90.0-92.9%	B- 80.0-82.9%	C- 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.
- For each day that an assignment is late, you will lose 10 pts from your grade for that assignment.

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 11 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.

Reflective Assignment

- The reflective assignment can replace one of your lowest quiz grades, and is due on the last day of the course. This assignment will involve reflecting on what you've learned in the course, and does not have to be in a written format (it will provide an outlet for you to do something creative if you'd like to do so).

Microbe 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 except under special circumstances (such as significant medical or family issues). No other excuses (vacations, weddings, travel, *etc*) will be accepted. Please notice the exam dates. If you have a legitimate scheduling conflict, make sure to let me know the two weeks of class. After that, I will not reschedule any exams. Note: vacation plans are not legitimate scheduling conflicts.
- I will post a video discussing the exam format closer to the date of the first exam, but here are a few details: exams will be a mix of short answer and multiple choice questions. The exams will be open note and open book, but collaboration with other students will not be permitted. For each lecture, I post a corresponding list of questions, and I will pull the exam short answer questions from those. The exams will be the length of a regular in-person class, 75 min. We will not be using a Lockdown browser for the exams.

Tips for Success

Even though this course is online, make a schedule and keep up with the course as you would an in-person class. 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. 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.

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
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
1	(T) 02/02	Introduction	-
1	(R) 02/04	History of Microbiology; <i>Mycobacterium tuberculosis</i>	1.9-1.13; 30.4 (pg 893-895)
2	(T) 02/09	Basics of microscopy; Microbial size & shape; <i>Thiomargarita</i>	1.5-1.8, 2.1-2.2
2	(R) 02/11	Microbial cell wall & membrane; <i>Mycoplasmas</i> , <i>Deinococcus</i> ;	2.3-2.6, 16.9, 16.20

		Quiz 1	
3	(T) 02/16	Antibiotics & Antibiotic Resistance; <i>Staphylococcus aureus</i>	28.10-28.12, 30.9
3	(R) 02/18	Extracellular & intracellular microbial structures; <i>Neisseria gonorrhoeae</i> ; Quiz 2; HW 1 due	2.7-2.10; 30.13
4	(T) 02/23	Microbial Motility – chemotaxis & other taxes; <i>Proteus</i> ; <i>Listeria monocytogenes</i>	2.11-2.13; 6.7; pg 502-503 (<i>Proteus</i> section); 32.13
4	(R) 02/25	Microbial Growth I; Quiz 3	5.1-3, 5.6-5.11
5	(T) 03/02	No Class – Rejuvenation Day	-
5	(R) 03/04	Microbial Growth II Quiz 4; HW 2 due	7.1-7.5
6	(T) 03/09	Nutrition & Metabolism I; <i>Yersinia pestis</i> ;	3.1-3.12; 31.7
6	(R) 03/11	EXAM I (material up to & including 4/4, & including HW1 & 2)	EXAM
7	(T) 03/16	Nutrition & Metabolism II	3.1-3.12
7	(R) 03/18	Metabolic diversity– Photosynthesis Quiz 5 (covers 3/16 & 3/18)	14.1-14.5
8	(T) 03/23	Metabolic diversity – Fermentation & Methanogenesis;	14.17; 14.19-14.23
8	(R) 03/25	Metabolic diversity – Fermentation cont'd Quiz 6	-
9	(T) 3/30	Metabolic diversity – Chemolithotrophy;	14.8-14.9, 14.11-12, 14.14
9	(R) 04/01	Microbial Genomes; CRISPR; Quiz 7 (covers 3/30 material)	9.1-9.6; pg 298

10	(T) 04/06	Genetic Regulation; <i>Aliivibrio fischeri</i>	6.1-6.6, 6.8; 23.8
10	(R) 04/08	Microbial Evolution; Quiz 8	13.1-13.5, 13.8, pg 377 on black queen hypothesis
11	(T) 04/13	Archaea	(no required textbook reading; I'm going to assign an article instead)
11	(R) 04/15	EXAM II (material from 3/16 - 4/8)	EXAM
12	(T) 04/20	Viruses;	Ch 8, 10.1-10.2
12	(R) 04/22	No Class – Rejuvenation Day	-
13	(T) 04/27	Viruses part II;	10.8 (polioviruses), 10.9 (rabies, influenza)
13	(R) 04/29	SARS-CoV2 and the COVID-19 pandemic; Quiz 9 HW 3 due	no assigned textbook reading - I will post assigned readings on Canvas
14	(T) 05/04	Eukaryotes; draft of group presentation due to me today	18.1-18.4, 18.8
14	(R) 05/06	Eukaryotes - Fungi; Quiz 10 (covers 4/29 and 5/4 material)	
15	(M) 05/10	Symbiosis; Group presentations due this week	23.1-23.4, 23.12-23.13
15	(W) 05/12	Epidemiology; Quiz 11	29.1-29.6
16	(T) 05/18	EXAM III (material from 4/13 - 5/12, including HW3)	-
16	(R) 05/20	Reflective assignment due (6 pts, can replace a quiz grade)	-