

# Course Syllabus

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## BIOLOGY 349: Principles of Microbiology, Fall 2020

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

### Prerequisites:

BIOL 222 Minimum Grade of D or Undergraduate level BIOL 271 Minimum Grade of D. It is assumed that you have the knowledge from these courses and their prerequisites.

### Instructor:

Dr. Betsy Hutchison

Office: ISC 359

Email: 585-245-5038

Office Hours: All office hours will be held virtually via zoom on Tues and Thurs from 10:00-11:00 am, or by appointment. My virtual office hours can be accessed [here](#) (<https://geneseo.zoom.us/j/9455305491?pwd=eXVQKzZzWVpSK0VDMGxkWk1zbDRpZz09>), and through zoom on Canvas.

### 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 20354): Tuesdays 11:00 am -12:50 pm

Section 03 (CRN 20355): Tuesdays 02:00 pm - 03:50 pm

Section 04 (CRN 21034): Thursdays 11:00 am - 12:50 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 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.

<b>Lecture Grades</b>	
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
<b>Lab Grades</b>	
Lab Notebook	10 pts
Presentation	25 pts
Group Lab Reports (2@25)	50 pts
Techniques Assessment	25 pts
Biochemical Tests Assignment	5 pts
<b>Total</b>	<b>567 pts</b>

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.
- 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.

## 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 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>) [www.geneseo.edu/accessibility-office](http://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
(T) 09/01	Introduction	-
(R) 09/03	History of Microbiology; <i>Mycobacterium tuberculosis</i>	1.9-1.13; 30.4 (pg 893-895)
(T) 09/08	Basics of microscopy; Microbial size & shape; <i>Thiomargarita</i>	1.5-1.8, 2.1-2.2
(R) 09/10	Microbial cell wall & membrane; <i>Mycoplasmas, Deinococcus</i> ; <b>Quiz 1</b>	2.3-2.6, 16.9, 16.20
(T) 09/15	Antibiotics & Antibiotic Resistance; <i>Staphylococcus aureus</i> ; <i>Bdellovibrio</i>	28.10-28.12, 30.9, 15.17 ( <i>Bdellovibrio</i> section)
(R) 09/17	Extracellular & intracellular microbial structures; <i>Neisseria gonorrhoeae</i> ; <b>Quiz 2</b> ; <b>HW 1 due</b>	2.7-2.10; 30.13
(T) 09/22	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
(R) 09/24	Microbial Growth I; <b>Quiz 3</b>	5.1-3, 5.6-5.11
(T) 09/29	Microbial Growth II	7.1-7.5
(R) 10/01	Nutrition & Metabolism I; <i>Yersinia pestis</i> ; <b>Quiz 4</b> ; <b>HW 2 due</b>	3.1-3.12; 31.7
(T) 10/06	Nutrition & Metabolism II	3.1-3.12
(R) 10/08	<b>EXAM I (material up to &amp; including 10/01, &amp; including HW1 &amp; 2)</b>	<b>EXAM</b>
(T) 10/13	Metabolic diversity– Photosynthesis	14.1-14.5
(R) 10/15	Metabolic diversity – Fermentation & Fermented Foods; <b>Quiz 5</b>	14.17; 14.19-14.23
(T) 10/20	Metabolic diversity – Fermentation & Fermented Foods; Methanogenesis	
(R) 10/22	Metabolic diversity – Chemolithotrophy; <b>Quiz 6</b>	14.8-14.9, 14.11-12, 14.14

(T) 10/27	No class (Fall Break Part II)	-
(R) 10/29	Microbial Genomes; CRISPR; <a href="#">Quiz 7</a>	9.1-9.6; pg 298
(T) 11/03	Genetic Regulation; <i>Aliivibrio fischeri</i>	6.1-6.6, 6.8; 23.8
(R) 11/05	Microbial Evolution; <a href="#">Quiz 8</a>	13.1-13.5, 13.8, pg 377 on black queen hypothesis
(T) 11/10	Archaea	(no required textbook reading; I'm going to assign an article instead)
(R) 11/12	<a href="#">EXAM II (material from 10/08-11/05)</a>	<a href="#">EXAM</a>
(T) 11/17	Viruses;	Ch 8, 10.1-10.2
(R) 11/19	Viruses; <a href="#">Quiz 9</a>	10.8 (polioviruses), 10.9 (rabies, influenza)
(T) 11/24	SARS-CoV2 and the COVID-19 pandemic; <a href="#">HW 3 due</a>	no assigned textbook reading - I will post assigned readings on Canvas
(R) 11/26	<a href="#">Thanksgiving Break - no classes</a>	
(T) 12/01	Eukaryotes; <a href="#">draft of group presentation due to me today</a>	18.1-18.4, 18.8
(R) 12/03	Eukaryotes - Fungi; <a href="#">Quiz 10</a>	FILL IN
(T) 12/08	Symbiosis; <a href="#">Group presentations due this week</a>	23.1-23.4, 23.12-23.13
(R) 12/10	Epidemiology; <a href="#">Quiz 11</a>	29.1-29.6
(T) 12/15	Review day	-
(R) 12/17	<a href="#">EXAM III (material from 11/10-12/10, including HW3)</a>	-
Monday 12/21	<a href="#">Reflective assignment due (6 pts, can replace a quiz grade)</a>	

## Course Summary:

Date	Details	
Thu Sep 10, 2020	<a href="#">Quiz 1</a> ( <a href="https://canvas.geneseo.edu/courses/18674/assignments/136970">https://canvas.geneseo.edu/courses/18674/assignments/136970</a> )	due by 11:59pm
Thu Sep 17, 2020	<a href="#">Quiz 2</a> ( <a href="https://canvas.geneseo.edu/courses/18674/assignments/136971">https://canvas.geneseo.edu/courses/18674/assignments/136971</a> )	due by 11:59pm
Thu Sep 24, 2020	<a href="#">Homework #1</a> ( <a href="https://canvas.geneseo.edu/courses/18674/assignments/128548">https://canvas.geneseo.edu/courses/18674/assignments/128548</a> )	due by 11:59pm
Thu Oct 1, 2020	<a href="#">Quiz 3</a> ( <a href="https://canvas.geneseo.edu/courses/18674/assignments/136972">https://canvas.geneseo.edu/courses/18674/assignments/136972</a> )	due by 11:59pm
Thu Oct 8, 2020	<a href="#">Quiz 4</a> ( <a href="https://canvas.geneseo.edu/courses/18674/assignments/136973">https://canvas.geneseo.edu/courses/18674/assignments/136973</a> )	due by 11:59pm
Thu Oct 22, 2020	<a href="#">Exam 1</a> ( <a href="https://canvas.geneseo.edu/courses/18674/assignments/136983">https://canvas.geneseo.edu/courses/18674/assignments/136983</a> )	due by 6pm
Thu Oct 29, 2020	<a href="#">Quiz 5</a> ( <a href="https://canvas.geneseo.edu/courses/18674/assignments/136975">https://canvas.geneseo.edu/courses/18674/assignments/136975</a> )	due by 11:59pm
Thu Nov 5, 2020	<a href="#">Quiz 6</a> ( <a href="https://canvas.geneseo.edu/courses/18674/assignments/136976">https://canvas.geneseo.edu/courses/18674/assignments/136976</a> )	due by 11:59pm
Thu Nov 12, 2020	<a href="#">Exam 2</a> ( <a href="https://canvas.geneseo.edu/courses/18674/assignments/136984">https://canvas.geneseo.edu/courses/18674/assignments/136984</a> )	due by 6pm
Thu Nov 19, 2020	<a href="#">Quiz 7</a> ( <a href="https://canvas.geneseo.edu/courses/18674/assignments/136977">https://canvas.geneseo.edu/courses/18674/assignments/136977</a> )	due by 11:59pm
Tue Nov 24, 2020	<a href="#">Homework #3</a> ( <a href="https://canvas.geneseo.edu/courses/18674/assignments/128552">https://canvas.geneseo.edu/courses/18674/assignments/128552</a> )	due by 11:59pm
Thu Dec 3, 2020	<a href="#">Quiz 8</a> ( <a href="https://canvas.geneseo.edu/courses/18674/assignments/136980">https://canvas.geneseo.edu/courses/18674/assignments/136980</a> )	due by 11:59pm
Thu Dec 10, 2020	<a href="#">Quiz 11</a> ( <a href="https://canvas.geneseo.edu/courses/18674/assignments/136981">https://canvas.geneseo.edu/courses/18674/assignments/136981</a> )	due by 11:59pm
Thu Dec 17, 2020	<a href="#">Exam 3</a> ( <a href="https://canvas.geneseo.edu/courses/18674/assignments/136985">https://canvas.geneseo.edu/courses/18674/assignments/136985</a> )	due by 6pm
Mon Dec 21, 2020	<a href="#">Reflective Assignment</a> ( <a href="https://canvas.geneseo.edu/courses/18674/assignments/128540">https://canvas.geneseo.edu/courses/18674/assignments/128540</a> )	due by 11:59pm
	<a href="#">Biochemical Tests Assignment</a> ( <a href="https://canvas.geneseo.edu/courses/18674/assignments/138219">https://canvas.geneseo.edu/courses/18674/assignments/138219</a> )	
	<a href="#">Homework #1 - Peer Evaluation</a> ( <a href="https://canvas.geneseo.edu/courses/18674/assignments/128549">https://canvas.geneseo.edu/courses/18674/assignments/128549</a> )	
	<a href="#">Homework #2 - Peer Evaluation</a> ( <a href="https://canvas.geneseo.edu/courses/18674/assignments/128551">https://canvas.geneseo.edu/courses/18674/assignments/128551</a> )	

Date	Details
	 <a href="https://canvas.geneseo.edu/courses/18674/assignments/128553">Homework #3 - Peer Evaluation</a> ( <a href="https://canvas.geneseo.edu/courses/18674/assignments/128553">https://canvas.geneseo.edu/courses/18674/assignments/128553</a> ).
	 <a href="https://canvas.geneseo.edu/courses/18674/assignments/128554">Lab Notebook</a> ( <a href="https://canvas.geneseo.edu/courses/18674/assignments/128554">https://canvas.geneseo.edu/courses/18674/assignments/128554</a> ).
	 <a href="https://canvas.geneseo.edu/courses/18674/assignments/128555">Lab Report #1</a> ( <a href="https://canvas.geneseo.edu/courses/18674/assignments/128555">https://canvas.geneseo.edu/courses/18674/assignments/128555</a> ).
	 <a href="https://canvas.geneseo.edu/courses/18674/assignments/128556">Lab Report #2</a> ( <a href="https://canvas.geneseo.edu/courses/18674/assignments/128556">https://canvas.geneseo.edu/courses/18674/assignments/128556</a> ).
	 <a href="https://canvas.geneseo.edu/courses/18674/assignments/128558">Microbe Presentation</a> ( <a href="https://canvas.geneseo.edu/courses/18674/assignments/128558">https://canvas.geneseo.edu/courses/18674/assignments/128558</a> ).
	 <a href="https://canvas.geneseo.edu/courses/18674/assignments/128559">Peer Evaluation for Microbe Presentation</a> ( <a href="https://canvas.geneseo.edu/courses/18674/assignments/128559">https://canvas.geneseo.edu/courses/18674/assignments/128559</a> ).
	 <a href="https://canvas.geneseo.edu/courses/18674/assignments/138220">Presentation</a> ( <a href="https://canvas.geneseo.edu/courses/18674/assignments/138220">https://canvas.geneseo.edu/courses/18674/assignments/138220</a> ).
	 <a href="https://canvas.geneseo.edu/courses/18674/assignments/128557">Techniques Assessment</a> ( <a href="https://canvas.geneseo.edu/courses/18674/assignments/128557">https://canvas.geneseo.edu/courses/18674/assignments/128557</a> ).