

# Spring 2020 BIOL-3300-001 Syllabus

## BIOL3300 General Microbiology

### Course Description

Students learn about biology, ecology, and diversity of microorganisms. Emphasis is placed on bacteria, viruses, fungi, and protists, and their role in the environment. It consists of two lectures and two labs. 4 credits.

**Prerequisite/Restriction:** The following with a C- or better:

- BIOL 1610 ([https://catalog.usu.edu/search\\_advanced.php?cur\\_cat\\_oid=12&search\\_database=Search&search\\_db=Search&cpage=1&epage=1&ppage=1&spage=1&tpage](https://catalog.usu.edu/search_advanced.php?cur_cat_oid=12&search_database=Search&search_db=Search&cpage=1&epage=1&ppage=1&spage=1&tpage))
- BIOL 1615 ([https://catalog.usu.edu/search\\_advanced.php?cur\\_cat\\_oid=12&search\\_database=Search&search\\_db=Search&cpage=1&epage=1&ppage=1&spage=1&tpage](https://catalog.usu.edu/search_advanced.php?cur_cat_oid=12&search_database=Search&search_db=Search&cpage=1&epage=1&ppage=1&spage=1&tpage))

And one of the following, which may be taken concurrently:

- CHEM 1120 ([https://catalog.usu.edu/search\\_advanced.php?cur\\_cat\\_oid=12&search\\_database=Search&search\\_db=Search&cpage=1&epage=1&ppage=1&spage=1&tpage](https://catalog.usu.edu/search_advanced.php?cur_cat_oid=12&search_database=Search&search_db=Search&cpage=1&epage=1&ppage=1&spage=1&tpage))
- CHEM 1220 ([https://catalog.usu.edu/search\\_advanced.php?cur\\_cat\\_oid=12&search\\_database=Search&search\\_db=Search&cpage=1&epage=1&ppage=1&spage=1&tpage](https://catalog.usu.edu/search_advanced.php?cur_cat_oid=12&search_database=Search&search_db=Search&cpage=1&epage=1&ppage=1&spage=1&tpage))
- CHEM 2300 ([https://catalog.usu.edu/search\\_advanced.php?cur\\_cat\\_oid=12&search\\_database=Search&search\\_db=Search&cpage=1&epage=1&ppage=1&spage=1&tpage](https://catalog.usu.edu/search_advanced.php?cur_cat_oid=12&search_database=Search&search_db=Search&cpage=1&epage=1&ppage=1&spage=1&tpage))
- CHEM 2310 ([https://catalog.usu.edu/search\\_advanced.php?cur\\_cat\\_oid=12&search\\_database=Search&search\\_db=Search&cpage=1&epage=1&ppage=1&spage=1&tpage](https://catalog.usu.edu/search_advanced.php?cur_cat_oid=12&search_database=Search&search_db=Search&cpage=1&epage=1&ppage=1&spage=1&tpage))
- To receive University Studies Breadth Life Sciences (BLS) credit, students must complete both BIOL 1610 and BIOL 3300. The BIOL 1610 and BIOL 3300 option for BLS credit is available only to students majoring in Biological Engineering or Environmental Engineering.

### Fees

As part of your registration for this class, you are required to pay a lab fee (\$140). This fee is used to pay for lab expenses for this course (e.g. reagents), including those associated with the provisioning and care for lab safety coats. In sum, these fees ensure a high-quality learning experience through exposure to state-of-the-art microbiological techniques.

### Instructor

Dr. Robert Schaeffer | Office: LSB 341 | E-mail: [robert.schaeffer@usu.edu](mailto:robert.schaeffer@usu.edu) (mailto:robert.schaeffer@usu.edu)

Virtual office hours: Cisco Webex platform - T/Th 12-1 PM, or by individual appointment

### Course Resources

Auto Access: Brock Biology of Microorganisms 15<sup>th</sup>Ed., by Madigan et al., plus Mastering Microbiology. This course requires all-inclusive digital materials that are provided to you at a lower price than traditional printed materials. These materials are paid for through an “Auto Access Digital Materials” charge placed on your student account when you registered for the course. **To access the materials, visit the Canvas course site.** For more details, including dates, deadlines, and opt-out information, visit: <https://portal.verba.io/usu/login> (<https://portal.verba.io/usu/login>).

For lab: Benson’s Microbiological Applications (Selected material, 15<sup>th</sup>Ed., by Brown)

## Evaluation Methods and Criteria

Lecture (2/3 of grade):

Mid-term Exam I	20%
Mid-term Exam II	20%
Mid-term Exam III	20%
Mastering Microbiology	16%
Final Exam (comprehensive)	<u>24%</u>
	100%

Lab (1/3 of grade)\*:

Technique, preparation, and cleanup	5%
Lab reports and questions	15%
Lab quiz I	19%
Lab quiz II	19%
Lab quiz III	19%
Final lab exam (comprehensive)	<u>23%</u>
	100%

\*The laboratory portion of the course will be graded by your TA and added to your total at the end of the semester.

## Grade Scheme

The following grading standards will be used in this class:

Grade	Range
A	100 % to 93.0%
A-	< 93.0 % to 90.0%

<b>Grade</b>	<b>Range</b>
B+	< 90.0 % to 87.0%
B	< 87.0 % to 83.0%
B-	< 83.0 % to 80.0%
C+	< 80.0 % to 77.0%
C	< 77.0 % to 73.0%
C-	< 73.0 % to 70.0%
D+	< 70.0 % to 67.0%
D	< 67.0 % to 60.0%
F	< 59.0 % to 0.0%

## Course Schedule/Outline

<b>Date</b>	<b>Topic</b>	<b>Readings in Text</b>
Jan. 7	Overview/History	Sect. 1.1-1.11
9	History	". "
14	Microbial cell structure	Sect. 2.1-2.5
16	". "	Sect. 2.7-2.10, 3.2
21	". "	Sect. 2.11-2.13, 6.6-6.7
23	Microbial metabolism	Sect. 3.3-3.7
28	". "	Sect. 3.8

30	". "	Sect. 3.9-3.12
Feb. 4	<b>Start MIDTERM EXAM I</b>	
6	Microbial metabolism (cont.)	Sect. 14.10, 14.12, 14.24
11	Flow of molecular info	Sect. 4.1-4.6
13	Flow of molecular info	Sect. 4.7-4.13
18	Bacterial genetics	Sect. 11.5-11.9
20	Bacterial genetics	Sect. 11.11, 23.5
25	Microbial growth	Sect. 5.1-5.11
27	Microbial growth/Molecular regulation	Sect. 5.12-5.17, 6.1-6.4
Mar. 3	<i>SPRING BREAK</i>	
5	<i>SPRING BREAK</i>	
10	<b>Start MIDTERM EXAM II</b>	
12	Molecular regulation of catabolism / Guest lecture	Sect. 6.1-6.4
17	Molecular regulation of chemotaxis, quorum sensing, etc	Sect. 6.6-6.9
19	RNA-based regulation	Sect. 6.11-6.13
24		
26		
31	Viruses: basics	Sect. 8.1-8.4, 10.1

Apr. 2	Viruses: replication	Sect. 8.5-8.8
7	<b>Start MIDTERM EXAM III</b>	
9	Viruses: diversity	Sect. 10.8, 10.9, 10.11, 10.13
14	Epidemiology	Sect. 29.1-29.5
16	Microbial ecology	See lecture slides
21	Wild & Wool - Infectious disease documentary	<a href="http://wildlifefilms.org/portfolio/wild-wool/">http://wildlifefilms.org/portfolio/wild-wool/</a>

**Final Examination is April 27-29**

## Lab Schedule/Outline

Month	Day		Laboratory exercises
	T/Th	W/F	
Jan	7	8	1, 5, 7
	9	10	1, 5, 7, inverts (read 8)
	14	15	(read 19), 9, 10
	16	17	10, 21
	21	22	10, 21,22
	23	24	10, 11, 12, 18
	28	29	<b>Lab Quiz I</b> , 22 (refer to 8), 15
	30	31	15, 16, 17
Feb	4	5	28, 29, 31
	6	7	28, 29, 31
	11	12	Lib. Unk., 37, 38
	13	14	Lib. Unk., 37, 38, 42
	18	19	39, 40
	20	21	39, 40
	25	26	39.40,41, misc

	27	28	<b>Lab Quiz II, 41, misc</b>
Mar.	3	4	<b>Spring Break- No labs</b>
	5	6	<b>Spring Break- No labs</b>
	10	11	EnteroPluri Test, 68
	12	13	EnteroPluri Test, 68
	17	18	68, 34, 35 Snyder caries
	19	20	34, 35, Snyder caries
	24	25	Snyder caries, 36
	26	27	<b>Lab Quiz III, 36</b>
Apr	31	1	24, conjugation
	2	3	24, conjugation, direct counts
	7	8	(read 58), 57, 59, <b>bring water sample</b>
	9	10	<b>Lab Exam, 57, 59</b>
	14	15	Yogurt, 63
	16	17	6, Yogurt, 63, clean-up

**Grading:** Your laboratory grade is one third of your grade in the course. Exams will be based on materials presented in the lab lectures, lab exercises, and questions asked in lab reports. Reports are due 7 days after the completion date of the activity. Late reports will lose 20% per week.

## Attendance and Excused Absences Policy

**Lecture exams:** All lecture exams will be proctored in the Materials and Testing Center beginning on the Tuesday listed on the schedule and continuing through Friday. You will be responsible for making a reservation in the Testing Center to take the exam during this period.

### Policy on make-up exams:

- If you notify me at least one week prior to the scheduled exam start date and arrange to take the exam before the scheduled date, there is no penalty
- If you must miss an exam but you contact me during the last day of the exam, you will be allowed to make-up the exam during the following week; however, there will be a 20% penalty. (This applies to mid-terms only; no make-up final exams are allowed).
- If you miss an exam and fail to contact me prior to the end of the exam period, your exam score will be zero. No exceptions.

## Nonattendance Policy

## Students May Be Dropped For Nonattendance

If a student does not attend a class during the first week of the term or by the second class meeting, whichever comes first, the instructor may submit a request to have the student dropped from the course. ***(This does not remove responsibility from the student to drop courses which he or she does not plan to attend.)*** This option is typically used for classes that are full and the instructor is trying to make a seat available for another student, but may be considered for other courses. Requests must be made during the first 20 percent of the course and will be considered on an individual student basis. Students who are dropped from courses will be notified by the Registrar's Office through their preferred e-mail account (see 2018-2019 General Catalog (<http://catalog.usu.edu/content.php?catoid=12&navoid=3955>)).

## Assumption of Risk

All classes, programs, and extracurricular activities within the University involve some risk, and certain ones involve travel. The University provides opportunities to participate in these programs on a voluntary basis. Therefore, students should not participate in them if they do not care to assume the risks. Students can ask the respective program leaders/sponsors about the possible risks a program may generate, and if students are not willing to assume the risks, they should not select that program. By voluntarily participating in classes, programs, and extracurricular activities, a student does so at his or her own risk. General information about University Risk Management policies, insurance coverage, vehicle use policies, and risk management forms can be found at: <http://www.usu.edu/riskmgt/> (<http://www.usu.edu/riskmgt/>)

## Library Services

All USU students attending classes in Logan, at our Regional Campuses, or online can access all databases, e-journals, and e-books regardless of location. Additionally, the library will mail printed books to students, at no charge to them. Students can also borrow books from any Utah academic library. Take advantage of all library services and learn more at [libguides.usu.edu/rc](http://libguides.usu.edu/rc). (<http://libguides.usu.edu/rc>)

## Classroom Civility

Utah State University supports the principle of freedom of expression for both faculty and students. The University respects the rights of faculty to teach and students to learn. Maintenance of these rights requires classroom conditions that do not impede the learning process. Disruptive classroom behavior will not be tolerated. An individual engaging in such behavior may be subject to disciplinary action. Read Student Code Article V Section V-3 (<https://studentconduct.usu.edu/studentcode/article5>) for more information.

## University Policies & Procedures

### Academic Freedom and Professional Responsibilities

Academic freedom is the right to teach, study, discuss, investigate, discover, create, and publish freely. Academic freedom protects the rights of faculty members in teaching and of students in learning. Freedom in research is fundamental to the advancement of truth. Faculty members are entitled to full freedom in teaching, research, and creative activities, subject to the limitations imposed by professional responsibility. Faculty Code Policy #403 (<http://www.usu.edu/hr/files/uploads/Policies/403.pdf>) further defines academic freedom and professional responsibilities.

## Academic Integrity – "The Honor System"

Each student has the right and duty to pursue his or her academic experience free of dishonesty. To enhance the learning environment at Utah State University and to develop student academic integrity, each student agrees to the following Honor Pledge:

*"I pledge, on my honor, to conduct myself with the foremost level of academic integrity."*

A student who lives by the Honor Pledge is a student who does more than not cheat, falsify, or plagiarize. A student who lives by the Honor Pledge:

- Espouses academic integrity as an underlying and essential principle of the Utah State University community;
- Understands that each act of academic dishonesty devalues every degree that is awarded by this institution; and
- Is a welcomed and valued member of Utah State University.

## Academic Dishonesty

The instructor of this course will take appropriate actions in response to Academic Dishonesty, as defined the University's Student Code. Acts of academic dishonesty include but are not limited to:

- **Cheating:** using, attempting to use, or providing others with any unauthorized assistance in taking quizzes, tests, examinations, or in any other academic exercise or activity. Unauthorized assistance includes:
  - Working in a group when the instructor has designated that the quiz, test, examination, or any other academic exercise or activity be done "individually;"
  - Depending on the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments;
  - Substituting for another student, or permitting another student to substitute for oneself, in taking an examination or preparing academic work;
  - Acquiring tests or other academic material belonging to a faculty member, staff member, or another student without express permission;
  - Continuing to write after time has been called on a quiz, test, examination, or any other academic exercise or activity;
  - Submitting substantially the same work for credit in more than one class, except with prior approval of the instructor; or engaging in any form of research fraud.
- **Falsification:** altering or fabricating any information or citation in an academic exercise or activity.
- **Plagiarism:** representing, by paraphrase or direct quotation, the published or unpublished work of another person as one's own in any academic exercise or activity without full and clear acknowledgment. It also includes using materials prepared by another person or by an agency engaged in the sale of term papers or other academic materials.

For additional information go to: ARTICLE VI. University Regulations Regarding Academic Integrity (<https://studentconduct.usu.edu/studentcode/article6>)

## Sexual Harassment/Title IX

Utah State University is committed to creating and maintaining an environment free from acts of sexual misconduct and discrimination and to fostering respect and dignity for all members of the USU community. Title IX and USU Policy 339 (<http://www.usu.edu/policies/339>) address sexual harassment in the workplace and academic setting.

The university responds promptly upon learning of any form of possible discrimination or sexual misconduct. Any individual may contact USU's Office of Equity (<https://equity.usu.edu/>) for available options and resources or clarification. The university has established a complaint procedure to handle all types of discrimination complaints, including sexual harassment (USU Policy 305 (<http://www.usu.edu/policies/305/>)), and has designated the Office of Equity Director/Title IX Coordinator as the official responsible for receiving and investigating complaints of sexual harassment.



## Withdrawal Policy and "I" Grade Policy

Students are required to complete all courses for which they are registered by the end of the semester. In some cases, a student may be unable to complete all of the coursework because of extenuating circumstances, but not due to poor performance or to retain financial aid. The term 'extenuating' circumstances includes: (1) incapacitating illness which prevents a student from attending classes for a minimum period of two weeks, (2) a death in the immediate family, (3) financial responsibilities requiring a student to alter a work schedule to secure employment, (4) change in work schedule as required by an employer, or (5) other emergencies deemed appropriate by the instructor.

## Students with Disabilities

USU welcomes students with disabilities. If you have, or suspect you may have, a physical, mental health, or learning disability that may require accommodations in this course, please contact the Disability Resource Center (DRC) (<http://www.usu.edu/drc/>) as early in the semester as possible (University Inn # 101, (435) 797-2444, [drc@usu.edu](mailto:drc@usu.edu) (<mailto:drc@usu.edu>)). All disability related accommodations must be approved by the DRC. Once approved, the DRC will coordinate with faculty to provide accommodations.

## Diversity Statement

Regardless of intent, careless or ill-informed remarks can be offensive and hurtful to others and detract from the learning climate. If you feel uncomfortable in a classroom due to offensive language or actions by an instructor or student(s) regarding ethnicity, gender, or sexual orientation, contact:

- Division of Student Affairs: <https://studentaffairs.usu.edu> (<https://studentaffairs.usu.edu/>), (435) 797-1712, [studentservices@usu.edu](mailto:studentservices@usu.edu) (<mailto:studentservices@usu.edu>), TSC 220
- Student Legal Services: <https://ususa.usu.edu/student-association/student-advocacy/legal-services> (<https://ususa.usu.edu/student-association/student-advocacy/legal-services>), (435) 797-2912, TSC 326,
- Access and Diversity: <http://accesscenter.usu.edu> (<http://accesscenter.usu.edu/>), (435) 797-1728, [access@usu.edu](mailto:access@usu.edu) (<mailto:access@usu.edu>); TSC 315
- Multicultural Programs: <http://accesscenter.usu.edu/multiculture> (<http://accesscenter.usu.edu/multiculture>), (435) 797-1728, TSC 315
- LGBTQA Programs: <http://accesscenter.usu.edu/lgbtqa> (<http://accesscenter.usu.edu/lgbtqa/>), (435) 797-1728, TSC 3145
- Provost's Office Diversity Resources: <https://www.usu.edu/provost/diversity> (<https://www.usu.edu/provost/diversity/>), (435) 797-8176

You can learn about your student rights by visiting:

The Code of Policies and Procedures for Students at Utah State

University: <https://studentconduct.usu.edu/studentcode> (<https://studentconduct.usu.edu/studentcode/>)

## Grievance Process

Students who feel they have been unfairly treated may file a grievance through the channels and procedures described in the Student Code: Article VII (<https://studentconduct.usu.edu/studentcode/article7>).

## Full details for USU Academic Policies and Procedures can be found at:

- Student Conduct (<http://www.usu.edu/studentconduct>)
- Student Code (<https://studentconduct.usu.edu/studentcode/>)
- Academic Integrity (<https://studentconduct.usu.edu/studentcode/article6>)
- USU Selected Academic Policies and Procedures (<http://www.usu.edu/provost/faculty-life/syllabus.cfm>)
- USU Academic Policies and Procedures (<http://catalog.usu.edu/content.php?catoid=4&navoid=546>)
- Academic Freedom and Professional Responsibility Policy (<http://www.usu.edu/hr/files/uploads/Policies/403.pdf>)

## Emergency Procedures

In the case of a drill or real emergency, classes will be notified to evacuate the building by the sound of the fire/emergency alarm system or by a building representative. In the event of a disaster that may interfere with either notification, evacuate as the situation dictates (i.e., in an earthquake when shaking ceases or immediately when a fire is discovered). Turn off computers and take any personal items with you. Elevators should not be used; instead, use the closest stairs.