Course Code & No. - Section:	BIOL 341 and BIOL 345 - Section 1
Course Title (Credits):	Microbiology (3) and Lab (1)
Term & Year:	Fall 2019
Course Ref. No. (CRN):	80092 (BIOL 341) and 80093 (BIOL 345)
Instructor:	Dr. Suzanne W. Gollery
Phone(s):	Office: 775-881-7456 cell: 775-813-4215 (8 AM to 9 PM or text)
Email:	sgollery@sierranevada.edu
Office:	TCES 223
Office Hours:	Mon 4:00-5:00 PM, Tues 2:00-3:00 PM, Fri 2:00-3:00 PM or by appointment
Class Meeting Time:	TR 9:00 AM – 12:45 PM (BIOL 341 and 345 combined)
Location:	TCES 204 (biology lab) – No food or drinks permitted by law!
Prerequisites (from Catalog)**:**	BIOL 101 and BIOL 102
Corequisites (from Catalog)**:**	BIOL 341 and BIOL 345 are co-requisites

Required Texts and Materials

1. Michelle Swanson, Gemma Reguera, Moselio Schaechter, and Frederick Neidhardt, *Microbe, 2nd edition*, American Society for Microbiology Press, Washington, DC, 2016.
   ISBN (print): 9781555819125 eISBN (eBook): 9781555819132 eBook is least expensive.

2. 3-ring binder (available at the bookstore) to hold reading and class notes and handouts.

3. Richard J. Meyer and Stacie A. Brown, *Challenges of the Unseen World: A Laboratory Course in Microbiology*, ASM Press, Washington DC, 2018. ISBN: 9781555819927. This text is NOT available as an eText (and you don't want your laptop in microbiology lab to get contaminated by bacteria, anyway).

4. A spiral or bound notebook or composition book (no loose-leaf binders) to use as a lab manual. A pencil designated for Microbiology Lab. These will remain in your drawer in TCES 204 **at all times** so that you do not accidently take bacteria from Microbiology Lab into your other environments. Obviously, you cannot use a section in a multi-subject notebook that you plan to also use for other classes.

5. A laptop computer (one that meets the published SNC Computer Requirements) and access to the internet and BIOL 341 Canvas course. You are automatically enrolled in the BIOL 341 Canvas course because you are registered in BIOL 341.

6. You MUST regularly check emails related to BIOL 341 and 345, as I use email to distribute information and materials to the class in addition to posting on Canvas. If needed, forward your SNC email to an email or message service that you actually use. See https://www.sierranevada.edu/resources/it-helpdesk-fa/ for email or computer help.

Grading policy: Since BIOL 341 Microbiology and BIOL 345 Microbiology Lab are co-requisites and the content and assignments of Microbiology and Lab are coordinated, students will earn the same cumulative grade for both courses. BIOL 341 (3 credits) assignments are worth 75% of the grade and BIOL 345 (1 credit) assignments are worth 25% of the grade. Grades will be assigned based on a 1200-point scale (top of next page). The instructor may adjust the grading scale very slightly to fit natural breaks in grade distributions.

1200-point Grading Scale

A	90 – 100%	1080 – 1200 points
B	80 – 89 %	960 – 1079 points
C	68 – 79%	816 – 959 points
D	58 – 67%	696 – 815 points
F	<58%	<696 points

Summary of BIOL 341/345 assignments: (75% BIOL 341, 25% BIOL 345)

Chapter Learning Outcomes (or outline), 10 points each, best 20	200 points
Unit Exams, 5 at 100 points each	500 points
Participation, 100 points earned throughout the semester	100 points
Research Paper: topic (5 points), annotated bibliography (15 points), draft (20 points), peer review (10 points), and final paper (50 points)	100 points
Lab notebook, checked weekly	120 points
Lab Challenge Write-ups, 30 points each, best 3	90 points
Lab Skills Exam	90 points
Total:	1200 points

Midterm grades: Midterm grades will be calculated using all work due through Tuesday, October 22, 2019 and Exam 2. There will not be a comprehensive midterm exam.

I. Assignments for BIOL 341 Microbiology (75% of the joint BIOL 341/345 grade)

A. Chapter Learning Outcomes (Process Assignment)

1. Assignment value: 200 points or 16.7% of the BIOL 341/345 grade. Chapter Learning Outcomes are worth 10 points each. The best 20 (of 23) Chapter Learning Outcome assignments will count toward each student's grade. Late Learning Outcomes are worth 50% (5 points). Late Learning Outcomes will NOT be accepted for credit AFTER the exam over that unit.
2. Purpose of the assignment: to help students learn most content from the text prior to attending class, so students are prepared to ask questions in class about what they find difficult. People recall and can use information for much longer if they learn it themselves through reading and writing about it, then when they listen to a "sage on the stage" talk about it. This assignment will help you remember content from this course in later courses and your science career, long after the exam.
3. Option 1: Read the assigned chapter and write in your own words about learning outcomes listed at the end of the chapter. Chapter Learning Outcomes will be scored based on effort, rather than factual accuracy.

   OR

   Option 2: Outline the assigned chapter in your own words. Outlines should be relatively detailed for full credit.
4. Instructions: Type and upload your chapter learning outcomes (or outlines) to Canvas. Write in your own words (not copied from text, classmates, or cut and pasted from the internet). Suzanne will provide written feedback about missing information or misconceptions evident from student work.

B. Unit Exams (Mastery Assignment)
   1. Assignment value: 500 points or 41.7% of the BIOL 341/34 grade. Each course module will end with a unit exam worth 100 points.
   2. Purpose of the assignment: students will answer questions about course content to show they understand concepts, remember key information, and can solve problems related to content.
   3. This is an in-class written, individual exam with questions in short answer, multiple choice, matching, or problem solving formats. Athletes who miss class on exam dates for competitions will be able to take make-up exams on the same day (home games/meets) or proctored by their coach while traveling. Students (including athletes) who miss an exam for any other reason or want to improve an exam or class grade can take a cumulative make-up exam at the end of the semester. Students who pass the make-up exam with a higher grade than their course grade can earn the make-up exam grade instead of their course grade, but only if they earn a C or higher on the make-up exam. This will allow students who learn the material, but have been negligent about completing assignments, to pass the course. **WARNING**: it is a rare student who can pass a comprehensive exam without having done assignments for the course, so please don't count on this opportunity to pass without working on the course.
   4. Suzanne will return exams with written feedback within one week of the exam date.

C. Participation (Process Assignment)
   1. Assignment value: 100 points, or 8.3% of the BIOL 341/345 grade.
   2. Purpose of the assignment: Encourage students to practice and review course content throughout the class, because practice improves long-term memory and learning.
   3. Each student will have the opportunity to earn participation points by doing small activities to help with learning course content. For example:
      a. Doing both Learning Outcomes options (writing about learning outcomes AND outlining the chapter) earns 2 points per chapter
      b. Submitting answers to end-of-chapter questions earns 1 points per chapter
      c. Working practice exams earns 2 points
      d. Submitting written questions for a class earns 1 point
      e. Documenting team study sessions earns 1 point
      f. Making flashcards, study outlines, vocabulary lists… earns 1 point per chapter
      g. Working in-class handouts earns 1 point
      h. Request participation credit for other things you do to learn course material

D. Research paper (Process Assignment)
   1. Assignment value: 100 points, or 8.3% of the BIOL 341/345 grade.
   2. Purpose of the assignment: Research and write about a course topic of particular interest to you, in order to practice scholarly research and writing skills introduced in ENGL 102. Researching a topic helps you develop skill in distinguishing between information supported by evidence and "fake news." Writing well is a tremendously important skill for all careers, so SNC faculty have committed to giving and evaluating written assignments so that SNC students continuously practice good writing throughout college.
   3. Students will earn points by choosing a topic, submitting an annotated bibliography of sources on that topic, submitting a draft research paper, giving feedback on other students' drafts, and submitting a polished research paper. Students who aren't happy with their final grade will be able to rewrite their research paper for more credit.
   4. Suzanne will give detailed feedback on research paper content, style, and grammar using the Sierra Nevada College Common Rubric for Written Assignments, which will be posted on Canvas.

II. Assignments for BIOL 345 Microbiology Lab (25% of the joint BIOL 341/345 grade)

A. Lab Notebook (Process Assignment)

1. Assignment value: 120 points, or 10% of the BIOL 341/345 grade.
2. Purpose of the assignment: Train students to keep a detailed research notebook, as will be required for academic and industrial work in science professions.
3. Students will record their microbiology lab activities in a notebook, as described on pages 7-8 in the BIOL 345 text. These should be kept up-to-date each time a student does lab work, including inoculating cultures or transferring cultures to the refrigerator between BIOL 345 classes, with complete procedures, data, and pictures. Microbiology lab notebooks and pencils will remain in the lab classroom at all times to avoid transfer of bacterial strains to other student environments. This means that you must make entries in your notebook continuously during lab time.
4. Include answers to questions in the lab manual in your notebooks. You MAY handwrite or type answers to questions outside of lab class and staple these onto a blank page in your notebook. Lab teams can share a set of identical answers, but include a copy in both team members' notebooks.
5. The instructor will give feedback on lab notebooks weekly. Lab notebooks will be judged excellent, satisfactory, or needs improvement with detailed feedback about how they could be improved. Students who show consistent improvement or usually have complete information will earn full points for their notebooks. Students who intermittently write complete notebooks will earn points consistent with the proportion of weeks their notebooks are complete.

B. Lab Challenge Write-ups (Process Assignment)

1. Assignment value: 90 points or 7.5% of the BIOL 341/345 course grade. The best 3 Lab Challenge Write-ups (of 5), worth 30 points each, will count toward the student's grade. The extra Lab Challenge Write-ups give students an opportunity to improve their scientific writing and scores for this assignment as the semester progresses.
2. Purpose of the assignment: Students will practice writing in the form of peer-reviewed scientific papers, which are structured differently than writing assignments from ENGL 101 or 102. This will help students understand how to most effectively read and understand primary science sources, an essential skill for any science career.
3. Detailed instructions for Lab Challenge Write-ups are posted on Canvas. Students will summarize their work, results, and conclusions from each Lab Challenge in the form of a peer-reviewed scientific article. Typed Lab Challenge Write-ups will be uploaded to Canvas.
4. The instructor will provide detailed feedback on Lab Challenge Write-ups within a week of the due date.

C. Lab Skills Exam (Mastery Assignment)

1. Assignment value: 90 points or 7.5% of the BIOL 341/345 course grade.
2. Purpose of the assignment: Microbiology lab skills, such as using a compound microscope, staining specimens, sterile technique, culturing bacteria, using micropipettes accurately, following protocols, and evaluating data, can be included on resumes for entry-level biology research jobs. Students will be able to claim mastering of professional microbiology lab skills taught in BIOL 345 if they have been tested on them and shown to be proficient.
3. Students will take an individual practical exam in which they demonstrate that they can perform microbiology research tasks that they have practiced during class.
4. The instructor and students will jointly evaluate lab practical exam outcomes in the following class, so students know which tasks they have mastered.

Consistent with a growth mindset, assignments will help you learn best when you:

1. Do your own work. Compare answers to other students to confirm that you did it right, but don't look at other students' work or internet resources to get the answers without trying. Cheaters never learn!
2. Write answers in your own words. It shows greater understanding when you can answer in your own words than when you recognize a correct answer in the text or internet source. If you can express the correct answer in your own words, you've got it! If you have a hard time, you don't understand it well and should keep reading about it or discussing it before you write about it. Cutting and pasting from internet sources or copying from other students or the text is plagiarism, a form dishonesty that has consequences at SNC (see The Honor Code on page 7 of this syllabus). If you plagiarize in this upper division course, I WILL turn you in for academic dishonesty.
3. Give yourself enough time to make a good effort on reading and other assignments. Plan to spend an average of 2-3 hours per week outside of Microbiology class for each hour that you spend in class. This means that you may need to spend 12-18 hours per week on Microbiology and Lab outside of class!
4. Work on assignments as we go along, rather than waiting until a day or two before an exam. Studies of how people learn show that sleeping after learning helps us remember concepts and facts. If you study a little at a time and sleep between study sessions, then you will learn much more and recall it better in more advanced classes or in your careers, when you are expected to know it.
5. Take regular breaks from studying to get a snack, spend a few minutes exercising, go outside… Breaks shouldn't be hours longer than study sessions, but they will make studying much more effective.
6. Try out different options for learning and remembering facts and vocabulary: use flashcards, do labeling activities, quiz other Micro students... Find the options that are most effective at helping YOU learn. (It may be different than what works best for your peers.)
7. Reflect on how you have been working toward learning Microbiology after each exam. Is it working? Do you understand and remember material well enough to earn a C or higher on the exam? If not, then change your game plan and try different assignment options, study times, and talk to me about your experience.
8. If you are learning challenged with dyslexia, ADD, fear of taking exams with the class, or some other situation that makes academic work hard for you, then see Henry Conover to get the accommodations that you are entitled to because of your challenge. I will support all arrangements that help you learn.
9. Work with other Microbiology students. Humans are social animals and we pay more attention to each other than to books and computers. Collaborative learning works! However, the "divide and conquer" method is NOT a good collaborative learning strategy UNLESS you actively teach each other the material that each person was responsible for. Discuss all learning outcomes, questions and answers and make sure that everyone understands. If you get answers from someone else without working to understand them, then you won't learn much.
10. Come to office hours and ask for help. It is a chance for me to talk with YOU and explain in a way that YOU understand. I enjoy talking with students more than other parts of my job, so I won't resent you asking for help. Many of you say you chose SNC to have small class sizes and access to professors, so please take advantage of this perk of attending a small college.

Class Policies

1. There is no eating or drinking in TCES 204. Please come to class hydrated. I will give the class a break between lecture and lab. If you leave lab to eat, drink, or use the restroom, you MUST wash your hands with antibacterial soap before leaving the room.
2. Class and lab will take up the entire class period. Students should not expect to leave early.
3. All students should read the lab assignment before class and plan to organize your time. Failure to prepare for lab class will make it more likely that you cannot finish your lab work during class time.
4. Lab safety rules must be followed, including wearing personal protective gear and disinfecting your workspace before you leave class. Lab notebooks and pencils will remain in your lab drawer, so that you

don't accidently transport bacteria from class into your other environments. Students who demonstrate lack of concern for lab safety will be administratively dropped from the class.

5. Always write using your own words. Writing in your own words shows that you have learned the fact or concept you are writing about. If you can't write about it in your own words, you haven't mastered it yet. It is ok to reveal misconceptions or lack of understanding in written assignments, because this helps Suzanne to know when students need topics explained more fully or in a different way. This furthers the aim of the class: student learning, whereas plagiarism detracts from learning. Cutting and pasting from the internet and copying the text, internet sources, or other students does NOT help you learn, is plagiarism (a form of cheating), and will NOT be tolerated. Students found to have plagiarized in any written assignments will be turned into to the Provost as described in the Honor Code.
6. You cheat yourself of an opportunity to learn when you let your cell phone or laptop distract you from paying attention. Students who cannot resist their phones may be asked to stow them. Also, you are wise to keep your personal items away from desks and work spaces during lab activities, so that they don't become contaminated with bacteria.

Attendance: Success in Microbiology and Lab (learning course content) is greatly assisted by faithful attendance at class and lab. You obviously cannot learn lab skills without coming to lab. Our class activities, lectures, and discussions will help you understand and practice course content.

Course Descriptions: BIOL 341: Microbiology**:** Study of the phylogeny, physiology, identification, and ecology of microbes, including fungi, bacteria, algae, and protists. Applications include medicine, industry, brewing, and agriculture. BIOL 345: Microbiology Lab: Identification, physiology, and ecology of microbes

Student Outcomes: At the completion of BIOL 341 and BIOL 345, students will

1. Demonstrate sufficient understanding and recall of facts and concepts of microbiology to score well on related topics on pre-professional exams, such as the MCAT and GRE, and to be successful at related post-graduate course work.
2. Answer questions about microbiology topics like those on standardized exams (such as the GRE, MCAT, or Major Field Test).
3. Demonstrate skill at reading and comprehending science texts.
4. Research and communicate about scientific concepts in review and primary source formats.
5. Analyze information in order to solve problems involving facts and concepts of microbiology.
6. Demonstrate competent compound (brightfield) microscopy skills, sterile technique for culturing bacteria, and manipulation of small volumes for molecular genetic applications.

Methods of Assessing Student Outcomes: Student outcomes will be assessed by:

1. Written Chapter Learning Outcomes or Chapter Outline assignments.
2. Exams (covering 2 to 4 chapters) in multiple choice, matching, true or false, and short answer format.
3. Written laboratory notebook and Challenge Write-up assignments.
4. A written research paper
5. Instructor evaluation of student participation in class, laboratory activities, and office hours

Instructional Strategies: Microbiology and Lab will utilize:

1. Reading the text and summarizing important concepts and facts from reading assignments in writing
2. Lectures, class discussions, and class activities in which students apply content of the reading assignments
3. Inquiry-based laboratory activities in which students culture and test microbes to solve challenges that mimic real world problems addressed by modern microbiologists.
4. Keeping a professional laboratory notebook in real time
5. A relatively large term paper assignment to practice independent scholarly research and writing
6. Course material and resources will be available through a Canvas course.

Sanctions for Cheating and/or Plagiarism

The Honor Code

The faculty of SNC believes students must be held to high standards of integrity in all aspects of college life in order to promote the educational mission of the College and to encourage respect for the rights of others. Each student brings to the SNC community unique skills, talents, values and experiences which, when expressed within the community, contribute to the quality of the educational environment and the growth and development of the individual. Students share with members of the faculty, administration and staff the responsibility for creating and maintaining an environment conducive to learning and personal development, where actions are guided by mutual respect, integrity, responsibility and trust. The faculty and students alike must make diligent efforts to ensure high standards are upheld by their colleagues and peers as well as themselves, therefore, faculty and students accept responsibility for maintaining these standards at Sierra Nevada College and are obligated to comply with its regulations and procedures, which they are expected to read and understand.

Consequences of Violating the Student Honor Code

SNC students and faculty share the responsibility for maintaining an environment of academic honesty. Thus, all are responsible for knowing and abiding by the SNC Faculty/Student Honor Code published in the current SNC Catalog. Faculty are responsible for presenting the Honor Code and the consequences of violating it to students at the start of their classes AND for reporting all incidences of academic dishonesty to the Provost. Students are responsible for knowing what constitutes CHEATING, PLAGIARISM and FABRICATION and for refraining from these and other forms of academic dishonesty. Violations of the Honor Code become part of a student's academic record.

1st Offense: Student receives a zero for assignment/exam and counseling with faculty on the honor code, consequences for violating the honor code, and the value of academic honesty in learning.

2nd Offense: Student fails course and receives counseling with faculty on the honor code, consequences for violating the honor code, and the value of academic honesty in learning.

3rd Offense: Student is expelled.

ADA Accommodations

In accordance with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973, students with a documented disability are eligible for support services and accommodations. If a student wishes to request an accommodation, please contact the Director of Academic Support Services, Henry Conover, at (775) 831-1314 x7534, hconover@sierranevada.edu, office in Prim Library: PL-304.

Prim Library Resources

Using the library's resources effectively (not just Internet resources) contributes to developing each of SNC's core themes by exposing students to high quality academic resources, diverse opinions, new ideas, and a future that includes building on a liberal arts education. In this course, you will be expected to utilize the library's resources (either on-site or remotely) as you complete your assignments.

Prim Library Resources for BIOL 341 and BIOL 345: Microbiology and Lab include, but are not limited to:

1. Reference materials (for use inside Prim Library):
2. Books (can be checked out):
   a. In general, books related to biology have Library of Congress Classification numbers ranging from QH 300 through QK. Books about health treatments have LCC numbers beginning with

TP. However, you will find books related to our course with other LCC numbers, so search the Prim Library Catalog using key words related to your topic.

b. Blum, D., Knudson, M., and Henig, R. M., eds. (2006) *A Field Guide for Science Writers, 2nd ed.* London: Oxford University Press. LCC number: T11.F52 2006. A detailed resource for writing scientific papers that will help you with voice, tense, and other nuances of scientific writing.

3. Electronic databases (for peer-reviewed research articles, reviews, newspaper and magazine articles): Electronic databases most likely to include articles related to biology are EBSCO: Academic Search Premier, Environment Complete, General Science Collection, GreenFILE, Health Source, Newspaper Source, and TOPICsearch; BioOne; and GREENR.
4. Hardcopy periodicals: Prim Library has current subscriptions for Science, New Scientist, Science News, and National Geographic Magazine. Any of these are likely to have review and science news articles that you can easily read and understand. Full-text articles from many more periodicals are available through the electronic databases.
5. Lib Guides: http://Libguides.sierranevada.edu These contain instructions about how to use resources available at Prim Library, how to evaluation the appropriateness of information from the Internet for research, how to cite sources, and other topics related to finding and using information.

The SNC Email System

The SNC email system is the official communication vehicle among students, faculty members and administrative staff and is designed to protect the confidentiality of student information as required by the Family Educational Rights and Privacy Act of 1974 Act (FERPA). Students should check their college email accounts daily during the school year.

Students have a right to forward their SNC e-mail to another e-mail account (for example, @hotmail or @gmail). However, confidentiality of student information protected by FERPA cannot be guaranteed for SNC e-mail forwarded to an outside vendor. Having email redirected does not absolve a student from the responsibilities associated with official communication sent to his or her SNC email account.

The Sierra Nevada College Mission Statement:

Sierra Nevada College graduates will be educated to be scholars of and contributors to a sustainable world. Sierra Nevada College combines the liberal arts and professional preparedness through an interdisciplinary curriculum that emphasizes entrepreneurial thinking and environmental, social, economic and educational sustainability.

The Core Themes:

Liberal Arts	Professional Preparedness
Entrepreneurial	Thinking Sustainability

Changes to the syllabus and schedule for Microbiology and Lab

The instructor reserves the right to change the schedule of classes, assignments, due dates, exam dates, class policies, and grading policy described on the syllabus when it is in the best interest of students in the class to do so. Changes will be communicated in class and on the Canvas course. If the schedule is permanently changed (we don't return to the published schedule within a few class periods), then a new schedule will be distributed in class or on Moodle.

Schedule of classes and assignment due dates for BIOL 341 and 345 follow on the next pages

Unit 1: Microbes, microbial growth, culturing microbes, basic microscopy					
Week	**Date**	**Day**	**Do this to prepare for class**	**Topic**	**Work due**
1	Sept 17	T	Purchase texts, binder, and lab notebook Bring computer to class	Class introduction, expectations, assignments Microbial World Lab Safety	Safety Contracts
	Sept 19	R	Read Chapters 1 and 2 Write about Ch 1 Learning Outcomes (or outline Ch 1) Read Lab Manual Introduction and Challenge 1, Lab 1	Prokaryotic cell exterior structures Challenge 1, Lab 1	Ch 1 Learning Outcomes Lab notebook for Challenge 1, Lab 1
	Sept 21	Sat			Ch 2 Learning Outcomes
2	Sept 24	T	Read Chapter 3 Write about Ch 2 Learning Outcomes (or outline) Read/prepare for Chlng 1, Lab 2	Prokaryotic cell interior structures Challenge 1, Lab 2	Ch 3 Learning Outcomes
	Sept 26	R	Read Chapter 4 Write about Ch 3 Outcomes Read Challenge 1, Lab 3	Microbial growth Challenge 1, Lab 3	Ch 4 Learning Outcomes Lab notebook
3	Oct 1	T	Study Chapters 1-4, Challenge 1 background and questions Work practice exam	**Unit Exam 1** Solve Challenge 1 (analysis, finish questions, plan write-up, dispose of cultures)	Ch 4 Outcomes
	Unit 2: Bioenergetics, Inheritance, and Metabolic Control in Prokaryotes				
	Oct 3	R	Read Ch 5 Write Ch 5 Learning Outcomes Read/prepare for Challenge 2, Lab 1	Microbial metabolism Challenge 2, Lab 1	Ch 5 Outcomes Lab notebook with Challenge 1 complete
4	Oct 8	T	Read Ch 6 Work on Ch 6 Outcomes/outline Read Challenge 2, Lab 2, to p. 93	Bioenergetics of Fueling Challenge 2, Lab 2	Challenge 1 write-up
	Oct 10	R	Read Ch 10 Work on Ch 10 Outcomes Finish Ch 6 Outcomes/outline	Review Bioenergentics Inheritance and gene transfer	Ch 6 Outcomes Lab notebook
5	Oct 15	T	Finish Ch 10 Outcomes Read Ch 11 Work on Ch 11 Outcomes Read "Solving Challenge 2" p. 93	Coordination of Cell Processes Solve Challenge 2, questions, plan write-up, clean up	Ch 10 Outcomes
	Oct 17	R	Finish Ch 11 Outcomes Read Challenge 3, Lab 1 Meet to plan how to do all parts of the lab in 3.75 hrs (225 min)	Challenge 3, Lab 1 (whole microbiology class)	Ch 11 Outcomes Lab notebook with Challenge 2 complete

Week	Date	Day	Do this to prepare for class	Topic	Work due
6 Mid-term week	Oct 22	T	Study Chapters 5, 6, 10, 11, 12 and Challenges 2 Re-read Lab manual pp. 117-119	**Unit 2 Exam** Count colonies& calculate viable cells/ml at OD600 = 1 Plan Challenge 3, Lab 2	
	Unit 3: Bacterial and Viral Diversity				
	Oct 24	R	Read Ch 13 Ch 13 Outcomes/outline Read Challenge 3, Lab 2	Bacterial differentiation and development Challenge 3, Lab 2	Challenge 2 write-up Ch 13 Outcomes Lab notebook
	Oct 25	*F*	*Nevada Day Holiday*		
Academic advising Oct 28 – Nov 8: Make an appointment with your advisor and plan your spring 2020 classes					
7	Oct 29	T	Read Ch 14 Ch 14 Outcomes/outline Review Challenge 3	Bacteria and Archaea Solve Challenge 3, answer questions, clean up	Ch14 Outcomes
	Oct 31 	R	Read Ch 17 Ch 17 Outcomes/outline Read Challenge 4 Lab 1	Begin conjugation experiment Isolate plasmid DNA Viruses Finish conjugation experiment	Ch 17 Outcomes Lab notebook w/ Chlng 3 complete
8	Nov 5	T	Read Ch 18 Ch 18 Outcomes/outline Read Challenge 4 Lab 2	Set up restriction digests Viral Latency Run electrophoresis	Challenge 3 write-up Ch 18 Outcomes
	Nov 7	R	Study Chapters 13, 14, 17, 18 and Challenges 3 and 4 Review Challenge 4	**Unit 3 Exam** Solve Challenge 4: analysis, questions, clean-up	Lab notebook with Challenge 4 complete
	Nov 8	*F*	*Last Day to drop 12-week class*		
Unit 4: Microbial ecology					
9	*Nov 11*	*M*	*Veteran's Day Holiday*		
	Nov 12	T	Read Chapters 19 Write Ch 19 Outcomes Read Ch 20	Microbial Communities Metagenomics documentary Biogeochemical cycles	Ch 19 Outcomes
	Nov 14	R	Write Ch 20 Outcomes Read Ch 21 Read Challenge 5	Microbial Interactions Challenge 5	Ch 20 Outcomes Challenge 4 write-up Lab notebook
	Nov 16	Sat	Write Ch 21 Outcomes		Ch 21 Outcomes
10	Nov 19	T	Read Ch 22 Write Ch 22 Outcomes Review Challenge 5	Infection, the Vertebrate Host Solve Challenge 5, questions, cleanup	Ch 22 Outcomes
	Nov 21	R	Study Chapters 19, 20, 21, 22, and Challenge 5	**Unit 4 Exam**	Lab notebook w/ Chlnge 5 complete
Week of November 25 – Thanksgiving Break					

Unit 5: Microbial Pathogenesis and Disease					
Week	**Date**	**Day**	**Do this to prepare for class**	**Topic**	**Work due**
11	Dec 3	T	Read Ch 23/write Outcomes Read Ch 24/write Outcomes	MRSA: opportunistic infections Intracellular pathogens	Challenge 5 write-up Chs 23 and 24 Learning Outcomes
	Dec 5	R	Read Ch 25/write Outcomes Read Ch 26/write Outcomes	Herpes: pathogen evolution Cholera: toxins	Chs 25 and 26 Learning Outcomes
12	Dec 10	T	Review lab skills Read Ch 27/write Outcomes	**Lab Practical Exam** Zoonoses: Plague	Ch 27 Learning Outcomes
	Dec 12	R	Study Chapters 23 - 27	**Unit 5 Exam** Evaluate lab practical results	
	Dec 18	*W*	*12-week block grades are due*	*Check SNCSIS for grades on*	*Dec 19*