

BIO 139: General Microbiology

Fall 2015 Syllabus

Part 1: Course Information

Instructor Information

Instructor: Enid T. Gonzalez-Orta, Ph.D.

Associate Professor of Biological Sciences

Director, Science Educational Equity Program

Classroom: 219 Amador Hall

Office: 211F Humboldt Hall

Office Hours: M/W 4:30-5:30 PM or by appointment. I will also be taking Skype office hours by appointment (video or chat).

Office Telephone: (916) 278-6519 (Science Educational Equity Office)

E-mail: gonzalezorta@csus.edu; for all class-related questions, please use the Message function on SacCT for all communication. NOTE: E-mails received Saturdays past noon will not be answered until Monday.

Social Media: @enidgonzorta (Twitter) and enidtgonzalez (Skype)

Course Description

Introduction to microorganisms, particularly bacteria and viruses, their physiology and metabolism. Laboratory work includes aseptic techniques, methods of cultivating and identifying bacteria, and demonstration of microbial properties.

Prerequisite

- BIO 10 or both BIO 1 and BIO 2; CHEM 20 or CHEM 24. Proof of pre-requisites is required. An unofficial transcript will be accepted as proof of taking pre-requisites and **MUST** be checked off by instructor during your lab section. Failure to provide proof of pre-requisites will result in removal from BIO 139 lecture & lab. Please, highlight pre-requisite courses on the transcript. No unstapled or non-highlighted transcripts will be accepted. If equivalent classes were taken at a local community college or other university, please visit assist.org and print out the equivalency. If your college is not available on assist.org, please bring a copy of the course description.

Textbook & Course Materials**Required Text**

- *Brock Biology of Microorganisms*. Madigan. 14th Edition **ISBN-10:** 0321897390; **ISBN-13:** 9780321897398

Recommended Texts & Other Readings

- Other readings/handouts will be made available in the course SacCT environment.

Course Requirements

- Internet connection (DSL, LAN, or cable connection desirable)
- Access to SacCT
- 5-Scantron 882; 4-Blue/Greenbooks 7"x 8 ½", 3"X5" notecards.

Course Structure

This course will be delivered as two 1 hour and fifteen-minute lectures and two 1 hour and fifteen minute laboratory sessions per week—a total of 5 hours will be spent in this class. Lecture will be comprised of PowerPoint Presentation/Prezis and handouts. Laboratory sessions will be comprised of demonstrations, lectures, and handouts.

Online Resources

All course materials presented during lecture will be provided on SacCT. This includes the syllabus, PowerPoint slides, and handouts. Students are responsible for checking if any handouts will be needed for the following class. NOTE: We will be using the new SacCT. <http://www.csus.edu/sacct/index.stm>

Part 2: Course Objectives

Objective: The objective of this course is to provide students with an introduction to the microbial world—a world that cannot be seen with the naked eye. In lecture, students will be introduced to several microorganisms, with a focus on bacteria and viruses. The physiology, diversity/ecology, metabolism, and genetics of bacteria will be discussed. In addition, the interactions between humans, microbes, and the environment will also be covered in lecture.

Assessments:

Biology & Chemistry Quiz: The bio/chemistry quiz will be used to assess your previous biology and chemistry knowledge. Studying for this quiz will help students refresh previous knowledge and prepare them to build upon basic concepts. The format for this quiz will be multiple choice and short answer.

Exams I, II, III: Lecture exams II, III, and I will cover topics discussed in lecture (book topics will not be tested directly, but will reinforce lecture topics). Each test will build on knowledge from the previous test with special focus on recent lectures. Students will be told which lectures are covered on the exam. Exam format will include multiple choice, matching, true/false and essay. Students will provide their own Scantron-882 sheet and blue/green book for each exam.

Lecture Questions: The lecture questions will be a way for me to assess how well students understand the course concepts. Sometimes I may give a couple of questions and other times I will ask you to write down a couple of questions that you may have. These will be worth up to 3 points each and you will be allowed to drop your lowest one. The questions can fall on either Monday or Wednesday for the class and can occur at any point during the class time.

Final Exam: The final exam will cover topics discussed in the last two weeks of class. In addition, a portion of the exam (~25-30%) will be cumulative over the entire semester. Students will receive a review sheet for the cumulative topics covered on the exam. The format will be the same as the other lecture exams.

Part 3: Lecture Schedule

Week	Date	Topics	Associated Reading
Unit I		Evolution, Cell Structure & Function, Bacterial Growth & Control	
1	M 8/31	Introduction to Microbiology & BIO 139	Ch. 1 Section I and II
	W 9/2	Microbial Diversity, Evolution, and Origins	Ch. 1 Section II and Ch. 12 Sections I, II, and III
2	M 9/7	Labor Day Holiday	No Class!
	W 9/9	Structure & Function in <i>Bacteria</i> & <i>Archaea</i>	Ch. 2 Sections II, III, IV
3	M 9/14	Bio/Chemistry Quiz! Structure & Function in <i>Bacteria</i> & <i>Archaea</i>	Bring Scantron 882 and Blue book. Ch. 2 Sections IV, V, VI
	W 9/16	Bacterial Growth	Ch. 3.1 Ch. 5 Sections I, II, III
4	M 9/21	Bacterial Growth	Ch. 5 Section II and III
	W 9/23	Abiotic Factors affecting bacterial growth & Biofilm Formation	Ch. 5 Sections IV and V, Ch. 19.4
5	M 9/28	Control of Microbial Growth & Antibiotic Resistance	Ch. 27.11-27.14, 27.17 <i>Antibiotic Threats</i> found on SacCT
	W 9/30	Exam I	STUDY-Bring Scantron 882 and Blue Book.
Unit II		Information Flow, Genetics, and Metabolism	
6	M 10/5	Genomics and Molecular Biology of <i>Bacteria</i> and <i>Archaea</i>	Ch. 4 Sections I, II, & IV; Ch. 6 Sections I and II
	W 10/7	Genomics and Molecular Biology of <i>Bacteria</i> and <i>Archaea</i>	Ch. 4 Sections I, II, & IV; Ch. 6 Sections I and II
7	M 10/12	Regulation of Gene Expression in <i>Bacteria</i>	Ch. 7 Section I, II, II, and 7.11
	W 10/14	Regulation of Gene Expression and Horizontal Gene Transfer in <i>Bacteria</i>	Ch. 10 Section II
8	M 10/19	Horizontal Gene Transfer in <i>Bacteria</i>	Ch. 10 Section II
	W 10/21	Bacterial Metabolism—Chemoorganotrophy	Ch. 3 Section II, and III
9	M 10/26	Bacterial Metabolism—Anaerobic Respiration & Fermentation	Ch. 13 Sections III and IV
	W 10/28	Exam II	Study—Bring Scantron 882 and Blue book

BIO 139 Lecture Schedule Continued...

Unit III		Host-Pathogen Interactions	
10	M 11/2	Microbial Interactions with Humans	Ch. 23 Section I; Ch. 28.3
	W 11/4	Microbial Pathogenicity Mechanisms—Guest Lecturer	Ch. 23 Section II
11	M 11/9	Microbial Pathogenicity Mechanisms	Ch. 23 Section II; Ch. 8 Section I, 8.9 Ch. 29 Section II
	W 11/11	Veteran’s Day Holiday	No Class!
12	M 11/16	Microbial Diagnostics and Intro to Human Immune System	Ch. 27 Section I and II; Ch. 23 Section III
	W 11/18	Immunology—Innate Immunity	Ch. 23 Section III, Ch. 24.1, 24.2 24.3-24.5, Ch. 25.1, Ch. 26.1
13	M 11/23	Immunology—Adaptive Immunity	Ch. 24.3, 24.4, Ch. 25.2, Ch. 25 section II, III, 25.7, 25.8
	W 11/25	Exam III	Study—Bring Scantron 882 and Blue book
Unit IV		Microbial Systems and Impact of Microorganisms in the Environment	
14	M 11/30	Public Health Microbiology and Vaccination	Ch. 28 Section I and II
	W 12/2	Microbial Interactions with the Environment—Chemolithotrophy and Nutrient Cycling	Ch. 13.10 and Ch. 14 Section IV
15	M 12/7	Microbial Interactions with the Environment—Bioremediation	Ch. 21.5 and 21.5. Readings on SacCT
	W 12/9	Microbial Interactions with the Environment—Microbial Ecology and Biosynthesis	Ch. 3.17 and Ch. 22.3 Readings on SacCT
	12/14	Final Exam (3-5 PM)	Bring Scantron 882 and Bluebook

Part 4: Grading Policy

Graded Course Activities

Lecture exams will cover all material presented in lecture. Typical formats encountered on the test are multiple-choice, true/false, matching, and short answer/essay questions. Each lecture exam will be cumulative up to the lecture previous to the exam. This includes all lectures, handouts, and assigned reading materials. The final exam will be partially comprehensive (~30%). The lecture portion of this course will make up 75% of your grade.

EXAM	Date	Points
Biology & Chemistry Quiz	9/14	25
Exam I	9/30	100
Exam II	10/28	100
Exam III	11/25	100
Exam IV*	12/14	125
Lecture Questions	ongoing	30 (allowed to drop your lowest score)
Total Points		480

***Exam IV=Final Exam 3:00-5:00 PM in Alpine Hall 204**

The laboratory portion of BIO 139 makes up approximately 25% of the combined lecture and lab grade. Your lab instructor, A. Christin Bendorf or Vanessa Dunne, will have a separate syllabus for this portion of the course. Your lecture instructor, Enid Gonzalez-Orta will assign all final grades in the course.

Requests for re-grades for exams or quizzes will be accepted for up to ONE WEEK AFTER the exam is graded and handed back to the student. It typically takes two weeks for tests, quizzes, reports, etc. to be turned back to students.

All tests and assignments for this class, if not picked up by the student, will be held in my office until the end of the first week of the following semester. All items will be discarded at that time.

Viewing Grades in SacCT

Points you receive for graded activities will be posted to the SacCT Grade Center. Click on the My Grades link (if available) on the left navigation to view your points.

Letter Grade Assignment

The lecture portion of this course is worth 75% of your final grade, while the laboratory portion of makes up 25% of the combined lecture and lab grade. Your lab instructors, A. Christin Bendorf or Anne Dunne, will have a separate syllabus for this portion of the course. Dr. González-Orta will assign all final grades in the course.

Letter Grade	Percentage	Performance
A	91-100%	Excellent Work
A-	90%	Nearly Excellent Work
B+	89%	Very Good Work
B	81-88%	Good Work
B-	80%	Mostly Good Work
+	79%	Above Average Work
C	71-78%	Average Work
C-	70%	Mostly Average Work
D+	69%	Below Average Work
D	60-68%	Poor Work
F	0-59%	Failing Work

Important note: For more information about grading at Sac State, visit the academic policies and grading section of the university catalog.

Part 5: Course Policies

Class Attendance and Participation

Students are expected to attend all class sessions as listed on the course calendar. In addition students are expected to participate in class discussions. To help facilitate both of these, there will be unannounced quizzes/formative assessments throughout the semester. You may drop one at the end of the semester.

Lecture Conduct & Etiquette:

1. All cellular phones and other communication devices **MUST** be silenced prior to class. If a phone call **MUST** be taken due to an emergency, **QUIETLY** excuse yourself from the classroom or laboratory as to not disturb the instructor or classmates.
2. Attendance/Late Policy. Formal attendance is not taken during for the lecture portion of class; however, you are responsible for acquiring materials that you may have missed during your absence. If you anticipate being absent, please contact the instructor to gather material that may be missed. If you must arrive late, please do so as **QUIETLY** as possible as to not disturb instructor or classmates. If you must arrive late routinely due to scheduling, please tell instructor within the first two weeks of the semester.
3. Computer usage: Feel free to use a computer to take notes during class. However, distracting behavior to other students or the instructor such as Internet chatting, web surfing, and other non-related activities will not be tolerated. Please sit on the edges of the room or in the back to minimize disturbance to other students.
4. Voice Recorders: Students may record my lecture for later use. Students must ask permission prior to recording lectures. Please set recorders on the front table/podium prior to the start of lecture.
5. Absolutely no video or cameras allowed in the classroom. Please, ask before taking a picture of anything in the class.

Understand When You May Drop This Course

It is the student's responsibility to understand when they need to consider disenrolling from a course. Refer to the Sac State Course Schedule for dates and deadlines for registration. After this period, a serious and compelling reason is required to drop from the course. Serious and compelling reasons includes: (1) documented and significant change in work hours, leaving student unable to attend class, or (2) documented and severe physical/mental illness/injury to the student or student's family. Please let me know right away if you need any assistance with dropping this course. I will try to help you the best that I can.

Incomplete Policy

Under emergency/special circumstances, students may petition for an incomplete grade. An incomplete will only be assigned under emergency circumstances outlined in University Policy. All incomplete course assignments must be completed within one year.

Inform Your Instructor of Any Accommodations Needed

If you have a documented disability and verification from the Office of Services to Students with Disabilities (SSWD), and wish to discuss academic accommodations, please contact your instructor as soon as possible. It is the student's responsibility to provide documentation of disability to SSWD and meet with a SSWD counselor to request special accommodation *before* classes start. SSWD is located in Lassen Hall 1008 and can be contacted by phone at (916) 278-6955 (Voice) (916) 278-7239 (TDD only) or via email at sswd@csus.edu.

Commit to Integrity

As a student in this course (and at this university) you are expected to maintain high degrees of professionalism, commitment to active learning and participation in this class and also integrity in your behavior in and out of the classroom.

Sac State's Academic Honesty Policy & Procedures

“The principles of truth and honesty are recognized as fundamental to a community of scholars and teachers. California State University, Sacramento expects that both faculty and students will honor these principles, and in so doing, will protect the integrity of academic work and student grades.”

Read more about Sac State's [Academic Honesty Policy & Procedures](#)

Definitions

At Sac State, “**cheating** is the act of obtaining or attempting to obtain credit for academic work through the use of any dishonest, deceptive, or fraudulent means.”

“**Plagiarism** is a form of cheating. At Sac State, “plagiarism is the use of distinctive ideas or works belonging to another person without providing adequate acknowledgement of that person’s contribution.”

Source: Sacramento State University Library

Important Note: Any form of academic dishonesty, including cheating and plagiarism, will be reported to the office of student affairs and will result in a grade of ‘F’ in the courses. All incidents of suspected academic dishonesty will be reported to the Chair of the Department of Biological Sciences, College of Natural Sciences and Mathematics Dean’s Office, and Student Affairs.

Course policies are subject to change. It is the student’s responsibility to check SacCT for corrections or updates to the syllabus. Any changes will be posted in SacCT.

**Commit to Study--Tips for Success In Lecture**

1. Attend all lectures. If you miss lectures, please arrange to get notes from a study partner. Although slides are handed out to students, they are often missing information only delivered in class.
2. Read Assigned Textbook Chapters. Please pay careful attention to the sections assigned as reading. Students who read the book perform markedly better than those that do not.
3. Answer Thought Questions of the Week. Each week you will be provided as series of "Thought Questions" to serve as a study guide. By writing out answers to each thought questions, students will be adequately prepared for examinations.
4. Form a study group with your fellow classmates.
5. Visit office hours or arrange appointment with Dr. González-Orta.
6. **Learn to study like a pro**-Complete Dr. Paradis' online tutorial:
<http://www.csus.edu/indiv/p/paradisj/studyskills.htm>

Study Habits of Successful Students

1. Study at least 25 hours/week
2. Work no more than 20 hours/week
3. Attend every class meeting
4. Go to class prepared
5. Rewrite class notes within 24 hours
6. Enter all assignments in a planner
7. Participate in a study group
8. Seek help when needed