BIO 139: General Microbiology--Lecture

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

Office & Hours: 211F Humboldt Hall
M: 3:30 PM-4:30 PM; T: Noon-1 PM; or by appointment.

Class Time & Location: Lecture: T/Th: 3:00-4:15 PM; 456 Sequoia Hall.

Phone: (916) 278-6438

Email: gonzalezorta@csus.edu

Please contact me through SacCT for all class-related questions. **Note**: E-mails received Saturdays past noon will not be answered until Monday AM.

Prerequisites: BIO 10 or both BIO 1 and BIO 2; CHEM 6B, CHEM 20 or CHEM 24. You must have both the biology and chemistry pre-requisites in order to enroll in the course. No exceptions will be made.

Required Texts: *Brock Biology of Microorganisms*. Madigan. 13th Edition
· **ISBN-10:** 978-0-321-64963-8
· **ISBN-13:** 0-321-69463-X

Required Materials Scantron 882 Forms (5 forms)

Online Resources: Materials for this course, including syllabus, notes, handouts, etc. can be found on SacCT 9.1 (Blackboard).

Course Catalogue 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.

Course 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—by lecture and laboratory exercises. 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. A hands-on laboratory component will complement topics discussed in lecture. The laboratory is an opportunity for students to learn and practice common techniques used in the field of microbiology, both in clinical and environmental settings. Common techniques include learning and practicing aseptic techniques, cultivation and identification of microbes, and biochemical/physiological tests for specific microbial functions/traits.

Pre-Requisites:

BIO 10 or both BIO 1 and BIO 2; CHEM 6B, 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 by **February 5th**. 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 unhighlighted 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.

Method of Instruction:

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 and handouts. Laboratory sessions will be comprised of demonstrations, lectures, and handouts.

Online Component

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

Grading & Exam Schedule

Your grade will be determined as the combination of lecture and lab: 75% of your grade is determined by your lecture score and 25% of your grade is determined by your laboratory score. Final grades will be determined using the fixed grading scale listed below.

Grading Scale for S2013 BIO 139

Percentage	Grade	Percentage	Grade	Percentage	Grade
≥ 91%	**A**	79%	**C+**	60	**D-**
90%	**A-**	78-71%	**C**	≤59	**F**
89%	**B+**	70	**C-**		
88-81%	**B**	69	**D+**		
80%	**B-**	68-61%	**D**		

Grades for this course will be assigned based on the above scale. ***I typically do not scale or curve grades.***

Lecture Exam Schedule for S2013 BIO 139

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	2/7	25
Exam I	2/21	100
Exam II	3/21	100
Exam III	4/25	100
Exam IV*	5/21	100
Lecture Questions	ongoing	45 (allowed to drop one)
Total Points		

***Exam IV=Final Exam 3:00-5:00 PM Tuesday 5/21.**

The laboratory portion of BIO 139 makes up 25% of the combined lecture and lab grade. Your lab instructor, Dr. Parisa Jazbi, will have a separate syllabus for this portion of the course. Dr. González-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.

Course Policies:

Registration and Waiting Lists:

1. **Failure to attend the first two laboratory meetings (1/29 & 1/31) will result in an administrative drop by the instructor.**

2. **Dropping/Adding the course during the first two weeks of class.**

   During the first two weeks of class, students can drop this course by logging into MySacState. All adds will be completed by the instructor. BIO 139 is has a maximum of 24 students per lab section due to space and safety concerns. A maximum of 48 students will be allowed to enroll in this section of BIO 139.

   If fewer than 24 students/lab section are registered or a student withdraws from the lab section, other students will be added with the following priority (Note: all students will have to meet the pre-requisite requirement prior to add; degree program status is subject to verification)

   Department of Biological Sciences Add Policy

   Students will be added to the course in accordance with the Department of Biological Sciences Policy.

   1. Those for whom the class is a major requirement.
   2. Those for whom the class is a major elective.
   3. Those taking the class for career goals or other reasons

   Within each category, priority is by class standing (grad. Sr., Sr., Jr., etc.)

3. Check the Fall 2012 Class Schedule for more information. There is **no** such thing as an automatic drop. **You are responsible** for entering the drop on either MySacState or by petition. Failure to do this could result in a grade of "F" or "WU". Please familiarize yourselves with the new repeat and withdraw policy found on the Academic Advising web page: http://www.csus.edu/acad/

Cheating and Scholastic Dishonesty:

All students are expected to be familiar with the University's Academic Honesty, Policy & Procedures. The policy on Academic Honesty can be accessed from the University Policy Manual (http://www.csus.edu/umanual/index.htm).

Cheating in this course will result in a failing grade (F). All cheating incidents, actual or suspected, will be reported to the Department Chair of Biological Sciences and Dean of the College of Natural Sciences and Mathematics.

Cheating includes, but is not limited to, the following:

1. Looking at a classmate's paper during an exam or quiz.
2. Talking to a classmate during an exam or quiz.
3. Communicating via cell phone, laptop (i.e. text messaging, talking, sending e-mails, etc.) during an exam or quiz.
4. Falsifying laboratory data for the identification of unknowns.

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.

4. Voice Recorders: Students may record my lecture for later use. Students must ask permission prior to recording lectures.

5. Absolutely no video or cameras allowed in the classroom. Please, ask before taking a picture of anything in the class.

Make-up Exam & Accommodation Policy:

If you are in need of any reasonable accommodation due to disability, please contact the instructor immediately. Please refer to the Office of Services to Students with Disabilities web page for more details to apply for support and accommodation: http://www.csus.edu/sswd

If you MUST miss a lecture exam or quiz due to illness please call or e-mail the instructor before noon on the day of the lecture exam (gonzalezorta@csus.edu). Make-up exams will be given contingent on the following: 1) Providing a doctor's note & 2) timely notification of instructor.

BIO 139 Lecture Objectives and Assessments

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 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 3 points each and you will be allowed to drop one. The questions can fall on either Tuesday or Thursday for the class.

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.

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

Lecture and Assigned Reading Schedule

Date	Topic*	Associated Reading
1/29	Introduction to Microbiology	Ch. 1 Sections 1.1-1.10 Ch. 2 Section 7
1/31	Prokaryotic Structure and Function	Ch. 2 Sections 2.5; Ch. 3 Sections 3.1-3.6.
2/5	Prokaryotic Structure and Function	Ch. 3 Sections 3.6-3.12
2/7	**Quiz!** Prokaryotic Structure and Function	Ch. 3 Sections 3.12, 3.13, 3.15
2/12	Bacterial Growth & Nutrition; IN CLASS EXERCISE	Ch. 4 Section 4.1, Ch. 5 Sections 5.1-5.7, 5.9-5.11
2/14	Bacterial Growth, Growth Control, and Biofilms	Ch. 5 Sections 5.12-5.18
2/19	Bacterial Growth, Growth Control, and Biofilms	Ch. 26 Sections 26.1-26.7; Ch. 23 Section 23.3
2/21	**Exam I**	**STUDY!**
2/26	Metabolism-Catabolism and Aerobic Respiration	Ch. 4 Sections 4.6-4.12, 4.16
2/28	Metabolism-Anaerobic Respiration and Fermentation	Ch. 14 Sections 14.1-14.7
3/5	Metabolism-Chemolithotrophy	Ch. 13 Sections 13.6, 13.10; Ch. 23.12
3/7	Metabolism-Biosynthesis	Ch. 4 Sections 4.13-4.15
3/12	Metabolism-Nutrient Cycling in the Environment	Ch. 23 Sections 23.1, 23.2 Ch. 24 Sections 24.1, 24.3
3/14	Industrial Microbiology	Ch. 15 Sections 15.1, 15.2, 15.9
3/19	Bacterial Genetics and Molecular Biology	Ch. 6 Sections 6.4, 6.5-6.7, 6.12-6.15, 6.17, 6.19.
3/21	**Exam II**	**STUDY!**
3/26-3/28	**SPRING BREAK!**	
4/2	Bacterial Genetics-Gene Regulation	Ch. 8 Sections 8.1, 8.2-8.5, 8.9
4/4	Bacterial Genetics-Genetic Exchange	Ch. 10 Sections 10.6-10.11, Chapter 10 Section 12.1
4/9	Microbial Interactions with the Environment-Aquatic Habitats	Ch. 23 Sections 23.3, 23.8, 23.11, 23.12.
4/11	Microbial Interactions with Humans-Disease Transmission-Water Borne Diseases	Ch. 25 Sections 25.8; Chapter 27 Section 1. Ch. 35 Section 35.1-35.5; 35.8.
4/16	Microbial Pathogenicity Mechanisms	Ch. 27 Sections 27.6-27.11
4/19	Virology and Viral Diseases	Ch. 9 Sections 9.1-9.8.
4/23	Virology and Viral Diseases	Ch. 9 Sections 9.1-9.8.
4/25	**Exam III**	
4/30	Introduction to the Immune system	Ch. 33 Section 33.6-33.8, Ch. 33 Section 33.13. Ch. 28 Sections 28.1-28.5
5/2	Immunology-Innate Immunity	Ch. 28 Sections 28.2; Ch. 29 Sections 29.1, Ch. 30 Sections 30.1.
5/7	Immunology-Adaptive Immunity	Ch. 29 Sections 29.1, 29.4-29.9, Ch. 30 Sections 30.2-30.4.
5/9	Immunology-Adaptive Immunity & Vaccination	Ch. 28 Sections 28.6-28.8
5/14	Immunology-Adaptive Immunity & Vaccination	Ch. 28 Sections 28.6-28.8
5/16	Final Exam Review	
5/21	**Final Exam-456 SQU**	**STUDY!**