

San Diego Community College District, Miramar College
Tentative Course Syllabus, Spring 2012
Bio 205 General Microbiology



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🕒 Class Hours: MW 5:00 – 9:50 pm

The course website can be accessed via the URL <http://www.professorcrista.com/>

Required Materials

Textbooks:

Tortora, Gerard *et al.* Microbiology, An Introduction. Any recent edition, syllabus refers to the 10th edition.

Alexander, Steve K. & Dennis Strete. Microbiology A Photographic Atlas For The Laboratory.

DiBernardo-Wagner, Crista. Ancillary Materials for Biology 205 General Microbiology. Current Semester edition (purchase at Mira Mesa Copy Center)

Laboratory materials:

1. A lab packet purchased from the college bookstore, including microscope slides, lens paper, bibulous paper, inoculating loop and inoculating needle.
2. A bound laboratory notebook to be used only for the lab portion of this course. Loose sheets of paper are NOT acceptable.
3. A permanent fine-tipped marker (*e.g.*, a Sharpie). A "Twin Tip" Sharpie is extra handy.

Additional Materials available for your use during lab

Holt, John *et al.* Bergey's Manual of Determinative Bacteriology

Catalog Description

This is an introductory course covering the fundamental aspects of microbiology including taxonomy, structure, physiology, reproduction, genetics, control, immunology and host-parasite relations. Basic techniques for culturing, staining, counting and identifying microorganisms are emphasized in the laboratory. This course is designed to meet the requirements to enter para-medical or medical fields. Field trips may be taken during laboratory periods. (FT) Transfer Credit: CSU; UC.

Prerequisites

The Written English Proficiency (WEP) and a recent college chemistry course with a grade of C or better. Because microbiology is a specialized science, Miramar College requires that you complete a basic life science such as Biology 105 and 106 or Biology 107 AND chemistry before you attempt Microbiology. High School Chemistry and biology is not equivalent. NO PREREQUISITES, NO ADMITTANCE!

Course Student Learning Outcomes (SLOs)

Upon completion of General Microbiology, the student will have:

Recognized terminology, specific facts, experimental methodologies and general concepts associated with the following topics:

1. Development of lab techniques used in microbiology; chemical evolution, microbial diversity and taxonomy; morphology and fine structure of microorganisms; microbial metabolism, physiology and growth; microbial genetics; microbial disease and the immune response; environmental and industrial microbiology.
2. Employed concepts learned when studying the above topics to analyze new situations in microbiology.
3. Demonstrated a proficiency in performing each lab technique and an ability to interpret qualitative and quantitative data generated by these techniques.
4. Distinguished between the principle and purpose of each procedure and diagnostic test introduced in the laboratory.
5. Designed a flow chart incorporating cultural and cellular diagnostic tests to distinguish bacterial species.
6. Inspected the role of research in microbiology and become aware of its impact on society.

Special Notes for General Microbiology

The study of microbiology requires even the beginning student to learn and put into practice a series of difficult techniques and concepts. As a staff, we will constantly be evaluating your grasp of these fundamentals; your ability to follow both written and verbal directions; and your observational and analytical skills. It is estimated that you will, on average, spend 15-24 hours a week studying for this course, in addition to the 18 hours a week you spend in class. If you do the math, you'll see that you'll have nearly no spare time while you're in this course.

I am aware that every student enrolled in this course has done so to advance toward a specific career goal, and I am aware that low grades may prohibit your advancement into your chosen field. This is not a coincidence, most professional programs consider microbiology a "weeder course." As health care professionals, you will be expected to provide safe and appropriate care to your patients. I take my part in preparing you to be that responsible person seriously and as such I assign grades based solely on your performance in this class.

If you need to get an A or B grade, make sure you earn it. There will be no extra credit, alternative assignments or special circumstances made so that your grade can be raised.

Special Announcements

There are many Rights and Responsibilities afforded to students at San Diego Miramar College. If you are unaware of these, it is your responsibility to make yourself knowledgeable. This syllabus is not intended to be all inclusive in its discussion of these areas of the academic relationship between student, faculty & staff and the college.

Any cheating or plagiarism for any assignment or examination will result in a grade of zero for the assignment and may result in a lowering of your course grade by one full letter grade. Further disciplinary action may be taken if it is deemed necessary by your instructor. In addition, any incidence of cheating

and/or plagiarism will be reported to the Dean of Student Affairs. For further information, you may refer to the School District's policies on Honest Academic Conduct, contained in District Procedures, section 3100.

Exams, quizzes and assignments are timed to allow for both lecture and laboratory components to be completed during the allotted class hours. Unless otherwise noted in this syllabus, any assignment that is not turned in at/before its deadline will not be graded and will receive an automatic grade of zero.

Behavior construed as harmful/disruptive to the learning environment of this classroom will not be tolerated. Situations will be dealt with according to the policies outlined in the District Procedures. Please note that this can include removal from the class and suspension from the San Diego Community College District.

Safety

The techniques practiced in this course are very similar to those you will encounter in the clinical setting. They are designed to help you develop the confidence, dexterity and understanding to apply proper sterile technique both in this lab and in your career. Your work will be observed and evaluated according to 1) the appropriate use and mastery of these techniques and 2) your ability to work independently. Any student displaying careless, hazardous or faulty techniques will be warned and directed to improve. If there is no improvement, steps will be taken to initiate a drop.

Although several Laboratory Exercises in this course require you to work in groups, you are responsible for understanding all of the experiments done in class. Additionally, you are expected to complete your own lab reports and unknown assignments. You will be required to perform and analyze all of your own individual assignments, using your own laboratory materials and assigned microscopes.

You are not permitted to eat, drink, chew gum, and/or apply cosmetics or eye drops in lab. Further information concerning safe laboratory practices will be given to you in class.

Disabled Student Services

Students with disabilities who may need academic accommodations should contact me as soon as possible. You and I can coordinate with the Disabled Students Programs and Services (DSPS) department to identify your appropriate accommodations. DSPS is located in building C-304 and can be reached at (619) 388-7312.

Attendance

1. **Any student who does not attend all class meetings prior to the add/drop deadline will be dropped from the course.**
2. It is the student's responsibility to drop all classes which he/she is no longer attending.
3. Attendance in this course is mandated by the State of California and excessive absences are grounds for being dropped from the course. **For this course, excessive absences are defined as missing more than 3 classes, regardless of the reason.**
4. Students who remain enrolled in a class beyond the published withdrawal deadline, as stated in the published *Class Schedule*, will receive an evaluative letter grade in the class.

Make up exams and/or quizzes are not offered for the lecture portion of this course, regardless of circumstance. As an alternative, you may choose to take the optional cumulative lecture exam. If the score on this cumulative exam is higher than a previous lecture exam or quiz score, you may choose to replace that score with the cumulative exam score. Your score on this exam can only take the place of any ONE of your previous lecture exam/quiz grades (including a zero). Laboratory midterm exams can be made up only with a document attesting to the emergent nature of the student's absence (i.e., an emergency room visit or a police report). This does not include visits to the doctor for treatment of non-emergent illnesses, is subject to the sole discretion of the instructor and in any case will not include the practical portions of the missed exam. **There are no make ups for laboratory quizzes.**

Assignments & Student Evaluation

Lecture & Laboratory Exams

Exams are based on the units in the schedule found at the end of the syllabus and are not cumulative. As in many courses, however, concepts build on each other and so exams may include references to relevant information from past units.

Lecture: Microbial Diversity Presentations & Diversity Quiz

You will be required to present a PowerPoint mini-lecture to the class. This presentation will cover a specific section of the microbial community and will be chosen from a list provided by your instructor. More information will be given to you as this assignment draws near. Your mastery of the material covered during these diversity presentations will be evaluated as part of the Diversity Quiz.

Lecture: Case Studies of Microbial Diseases & Case Study Quiz

You will work independently using a technique called "differential diagnosis" on a series of Case Studies which will present a patient's symptoms and various laboratory test results. More information will be given to you as this assignment draws near. Your mastery of the material covered during the case studies will be evaluated using the Case Study Quiz.

Laboratory Quizzes

You will be given short quizzes during the first 5 minutes of lab. These quizzes will test your general knowledge of the laboratory activity performed during previous lab sessions as well as the introductory/methodology information for that day's lab experiments. If you are late or you miss lab, you will not be allowed to make up these assignments. You may use your Laboratory Notebook (discussed below) during these quizzes, but you may not use the printed Lab Exercises nor any Lab Manual.

Laboratory Notebook

You will be required to maintain a laboratory notebook throughout the semester. You should use this notebook to keep records of all of your experiments and as incentive, you will be allowed to use this laboratory notebook during your timed laboratory quizzes.

A good lab notebook will usually include each of the following: table of contents, introduction, methods, results and discussion/conclusion sections for each lab activity- clearly labeled and easy to locate. **The introduction and methods sections should be completed prior to your arrival in class.** An introduction is typically one to two paragraphs in length and includes relevant background information as well as the purpose of the day's laboratory assignment. Your methods section need only be a rough outline or "flowsheet" of the day's activities- it is not necessary to copy the entire methods section out of your Lab Manual. However, I STRONGLY suggest that you record any deviations from the stated protocol. These changes will be highly useful to you during the latter

half of the semester when you are working independently and may end up on your Lab Quiz. Results should always be completed during lab and typically include any data tables, graphs or information/observations you may have collected during your experiments. The discussion/conclusion section should include answers to the questions at the end of the Lab Exercises as well as an overall assessment of the data obtained- these are typically done after the laboratory exercise is completed.

With the exception of data tables, figures and diagrams, there is to be absolutely no photocopying of the Lab Manual within your lab notebook, if you're not clear...ask. If you use photocopied information during your lab quiz, your quiz will be given a score of zero.

Laboratory: Technique & Cleanliness Points

Lab technique points are based on good, safe lab practices, being a good "lab citizen" and preparation for lab and clean up. Proper disposal of microbes and clean-up are emphasized. These points also include maintenance of your equipment and supplies as well as the timely completion of laboratory exercises.

Laboratory: Unknown Reports

More information will be given to you as these assignments draw near. You will be required to turn in one Minor Unknown, a set of Streptococcal/Staphylococcal/Enteric (SSE) Unknowns and two Major Unknowns.

Late assignments will receive a 10% deduction in points for each day (including non-class days) they are late. If you absolutely cannot make it to class on the day an assignment is due, you may email your assignment as a WORD DOCUMENT to me before midnight on its due date. If you email your assignment to me, be sure to also email it to yourself so that you are sure that the assignment was correctly sent. You may also fax your assignment to me at the fax number listed in my contact information.

Grading

General Microbiology is a 5 total unit course, 3 units of work are derived from lecture and 2 units from lab. Grades are based on a straight percentage scale, there is no curve. As mentioned previously, there is no extra credit given in this course and borderline grades are not "bumped up" so please do not ask. As such, A= ≥90%; B= 89.99-80%; C= 79.99-70%; D= 69.99-60%; and F= <60%.

Your individual assignment and/or course grade will be affected by the timely completion of all assignments including exams, quizzes, written assignments and the online submission of data.

I highly recommend that you retain all of your graded assignments until the semester is complete and your official grades have been submitted. Additionally, when you submit data online, please print out and save the Form Confirmation your web browser is automatically redirected to so you have proof that you submitted your data.

Assignment	Total Points
Exams	
Lecture Midterms I & II (200 pts each)	400 pts
Laboratory Midterms I & II (65 points each)	130 pts
Written Assignments	
Minor Unknown	20 pts
Streptococcal/Staphylococcal/Enteric Unknowns	45 pts
Major Unknown Reports (30 points each)	60 pts
Quizzes	
Laboratory Quizzes (24 @ 5 points each)	120 pts
Lecture Diversity Quiz	100 pts
Case Study Quiz	50 pts
Laboratory Technique & Cleanliness	25 pts
Oral Presentations	50 pts
Course Total	1000 pts

Conflict Resolution

If you feel that you have valid grounds to challenge a grade, you must first attempt to resolve your problem informally with your instructor. If the grade challenge cannot be resolved, you must file a petition for grade challenge with the Dean of Business, Math & Science who will work with the Department Chair to help resolve the issue. If resolution does not occur, your next step is to file an appeal with the Vice President of Instruction. The Grade Challenge Procedure may be found in the college catalogue.

Letters of Recommendation

I reserve the right to deny student requests for letters of recommendation and only requests from students who have earned an A in this course will be considered. If you wish to request a letter of recommendation, asking sooner rather than later is a good idea. Having the chance to write down my thoughts while your performance as a student is fresh in my mind will make for a more personalized and detailed letter.

PLEASE NOTE: It is your responsibility to read and understand this *Course Syllabus* in its entirety. Ignorance of the stated policies and/or College policies is not an excuse for failing to adhere to the guidelines outlined therein.

Date	Week	LECTURE TOPIC & TORTORA CHAPTER #	LAB EXERCISE (LE) NUMBER PLEASE CONSULT THE LAB READING LIST FOR ADDITIONAL INFORMATION
1/23	1	Course Introduction & Description	Microbiological Safety & Guidance LE 1: The Microscope
1/25		Introduction to Microbiology (1) Observing Microorganisms Through a Microscope (3)	LE 2: Aseptic Technique
1/30	2	Functional Anatomy of Prokaryotic & Eukaryotic Cells (4)	LE 5: The Smear and Simple Staining LE 6: The Gram Stain
2/1		Microbial Metabolism (5)	LE 4: Pure Culture Techniques LE 7: Microbial Motility "DROP" DEADLINE: February 3
2/6	3	Microbial Metabolism, con't (5)	LE 8: Differential & Special Staining LE 9: Using the Spectrophotometer and Pipetman
2/8		Microbial Growth (6)	LE 10: Bacterial Growth Curve & Serial Dilutions
2/13	4	Microbial Growth con't (6) The Control of Microbial Growth (7)	LE 11: Physical Growth Requirements
2/15		The Control of Microbial Growth con't (7)	LE 12: Physical Growth Control
2/20	5	WASHINGTON'S BIRTHDAY- No School	WASHINGTON'S BIRTHDAY- No School
2/22		Microbial Genetics (8)	LE 13: Chemical Growth Control Complete LE11
2/27	6	Biotechnology and Recombinant DNA (9)	LE 15: DNA Fingerprinting- Polymerase Chain Reaction
2/29		Classification of Microorganisms (10) The Prokaryotes: Domains Bacteria & Archaea (11) Assignment of Diversity Presentation Topics	LE 16: DNA Fingerprinting- Restriction Enzyme Digestion & Agarose Gel Electrophoresis
3/5	7	MIDTERM EXAM I (1-9)	LE 14: pBluescript Transformation
3/7		The Eukaryotes: Fungi, Algae, Protozoa and Helminths (12) Viruses, Viroids and Prions (13)	LE 17: Data Analysis & Presentation (Labs 10-16)
3/12	8	Microbial Diversity (27 & 28) Student Diversity Presentations Due	LE 18: Serial Dilution & Titration of Bacteriophage LE 19: Minor Unknowns: Morphological & Cultural inoculations
3/14		STUDENT DIVERSITY PRESENTATIONS	STUDENT DIVERSITY PRESENTATIONS Minor Unknown: Storage Molecule, Protein & Respiration inoculations

3/19	9	Principles of Disease and Epidemiology (14)	LAB MIDTERM
3/21		Principles of Disease and Epidemiology (14)	Minor Unknown: Fermentation & Multi-Test Media inoculations
3/26	10	DIVERSITY QUIZ (10–13, 27–28, Presentations)	Minor Unknown Due LE 20: Simulating an Influenza Epidemic
3/28		Microbial Mechanisms of Pathogenicity (15)	LE 21: Staphylococcal, Streptococcal and Enteric (SSE) Unknowns WITHDRAWAL DEADLINE: March 30
4/2	11	SPRING BREAK- No School	SPRING BREAK-No School
4/4		SPRING BREAK- No School	SPRING BREAK- No School
4/9	12	Nonspecific Defenses of the Host (16)	SSE Unknowns Minor Unknown Due
4/11		Specific Defenses of the Host: The Immune Response (17)	SSE Unknowns
4/16	13	Practical Applications of Immunology (18)	Complete SSE Unknowns LE 22: The Major Unknown
4/18		Disorders Associated with the Immune System (19)	Major Unknown LE 23: ELISA: Simulated HIV Diagnosis
4/23	14	Antimicrobial Drugs (20) Case Study Introduction	SSE Unknowns Due Major Unknown
4/25		Case Studies	Major Unknown
4/30	15	MIDTERM EXAM II (14–20)	Major Unknown LE 24: Water Quality & Colilert [®] Test Kit
5/2		Case Studies	Major Unknown
5/7	16	Case Studies	Major Unknown- LAST DAY TO INOCULATE MEDIA Clean out Personal Boxes, Clean microscopes & straighten and fill Community Box supplies LE 25: Dental Caries Susceptibility Testing
5/9		Case Studies	Complete Major Unknowns (read results & add reagents, if necessary) Discard ALL media & inoculations
5/14	17	CASE STUDY QUIZ (quiz will be given from 5:00–6:00 pm)	OPTIONAL CUMULATIVE LECTURE EXAM (exam will be given from 6:10–7:10 pm) Major Unknowns Due
5/16		No Lecture	FINAL LAB EXAM (exam will be given from 5:00–7:00 pm) Clean up Personal & Community Boxes

* Dates and assignments may be changed at the discretion of the instructor.