

# Microbiology 151- Biology of Microorganisms

**Dr. Tina Salmassi**

**Office:** ASCL 315

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**Office Hours:** TBA

**Lecture:** T/R 9:50 - 11:05 AM KH L2

**Lab:** TR 8:30 - 9:45 AM ASCL 226

**Lab:** TF 11:15 - 12:30 PM ASCL 226

**Lab:** TF 11:15 - 12:30 PM ASCL 266

**Course Description:** MICR 151 is a lower division general education course (Natural Science block B1). It is an inquiry-based course in microbiology designed for non-majors addressing the impact of microorganisms on the human experience and the biosphere. The course includes both lectures and laboratory applications of selected microbiological procedures and exercises.

**Course Objectives:** By completing this course, students will gain a basic understanding of the following:

- How microbes affect our world in areas of agriculture, industry, research, medicine and the environment
- The history and origins of microbiology
- The diversity and ubiquity of microbes
- The characteristics that separate prokaryotes from eukaryotes
- The units of measurement used for microbes and how various microbes relate to one another in size
- Principles of microscopy
- The morphology of fungi and bacteria
- The procedures used to grow and study bacteria
- The process of bacterial reproduction
- Submicroscopic structures associated with a bacterial cell
- Structure of viruses, including their small size and relatively simple components
- The stages and details of the replication process exhibited by viruses
- The existence of subviral particles
- Some general features of protists and fungi
- The dynamics of a growth curve for a bacterial population
- Factors influencing microbial growth
- Fermentation processes as related to food microbiology
- The physical and chemical methods used to control microbes
- The effectiveness of antibiotics, disinfectants, and antiseptics
- How antibiotics work and the problem of antibiotic resistance
- Some of the contributions of microorganisms to food and agriculture
- General concepts associated with food spoilage and food preservation
- The contributions of microorganisms to industrial microbiology, biotechnology and microbial products
- The role of microbes in the biogeochemical cycling of elements in the environment
- The role of microbes in bioremediation
- How bacterial contamination of water is evaluated
- Some unique niches for microbes
- The relationship between microbes and their human hosts and factors that contribute to the establishment of infectious disease

- Key aspects of nonspecific and specific resistance and immunity
- Some important viral and bacterial diseases

**Course Text:** *Microbes and Society an Introduction to Microbiology* by I. Edward Alcamo 2<sup>nd</sup> edition

**Laboratory Manual:** A prepared laboratory manual can be purchased at the Student Bookmart. The Bookmart is located at 1725 N. Eastern Ave. All students are REQUIRED to purchase their own individual copy of this manual. Students must bring their laboratory manual to all laboratory sessions.

**Drop Policy:** Please see the schedule of classes for information. No exceptions will be made to the established University deadlines.

**Expectations:** Regular attendance and participation are required for both lecture and laboratory sessions. There will be 5 in-class assignments, some of which will require a SCANTRON form 815-E for 15 multiple choice questions during the lecture portion of the course. You are expected to bring your textbook and these blank SCANTRON forms with you to class everyday.

**Exams:** There will be no make-up exams or assignments. Please inform your instructor should any special circumstances arise.

**Lecture Group Project:** Students will be divided into groups of 4 persons. Each group will research a current, specific topic in microbiology and prepare a short paper (5 pages) and oral, Powerpoint presentation (10 min). The topic for the group project must be approved by the instructor (see lecture schedule for timeline). Group reports must be produced with a word processing program.

**Laboratory Requirements:** Students must provide their own a laboratory coat, microscope slides and permanent marker. These items can be purchased at the student bookstore.

**Academic Honesty:** Students are expected to read and abide by the University's Academic Honesty Policy, which can be found at [www.calstatela.edu/academic/senate/handbook/ch5a.htm](http://www.calstatela.edu/academic/senate/handbook/ch5a.htm). Students who violate this policy will be subject to disciplinary action, and may receive a failing grade in the course for a single violation.

**ADA Policy:** Reasonable accommodation will be provided to any student who is registered with the Office of Students with Disabilities and requests needed accommodation.

**Grading:**

In Class Assignments (5)	10 points each
Lecture Exam #1	50 points
Lecture Exam #2	50 points
Group Project	100 points
Lecture Final Exam	200 points
Laboratory Quiz #1	35 points
Laboratory Quiz #2	35 points
Laboratory Reports	95 points
Laboratory Final	85 points
<b>TOTAL</b>	<b>700 points</b>

**Final Course Grade:**

Percent of Total	Point Total	Letter Grade
91-100	>637	A
90-90.9	630-637	A-
89-89.9	623-629	B+
81-88.9	567-622	B
80-80.9	560-566	B-
76-79.9	532-559	C+
60-75.9	420-531	C
59-59.9	413-419	C-
50-58.9	350-412	D
Below 50	<350	F

**Lecture Schedule:**

Week	Date	Topic	Reading
1	01/05	Introduction and Microbes in Perspective	Ch. 1, 2
	01/07	<i>Video #1, Intimate Strangers Vol.1</i>	
2	01/12	Bacteria	Ch. 5
	01/14	Viruses, Protists & Fungi	Ch. 6,7,8
3	01/19	Bacterial Growth and Metabolism	Ch. 9
	01/21	Controlling Microbes	Ch. 11
4	01/26	<b>Exam #1 (50 points)</b>	
	01/28	<i>NO CLASS*</i>	
5	02/02	Food Microbiology <i>Group Members Determined</i>	Ch. 12,13
	02/04	<i>Video #2, Intimate Strangers Vol.4</i>	
6	02/09	Biotechnology and Industrial Microbiology <i>Group Topics Due to Instructor</i>	Ch. 10, 14, 15
	02/11	<i>Video #3, Intimate Strangers Vol. 2</i>	
7	02/16	Microbes and the Environment	Ch. 16
	02/18	Defense and Resistance	Ch. 17
8	02/23	<i>Video #4, Intimate Strangers, Vol.3</i>	
	02/25	<b>Exam #2 (50 points)</b>	
9	03/02	Medical Microbiology and Disease	Ch. 18,19
	03/04	Student Reports	
10	03/09	Student Reports	
	03/11	Student Reports	
	03/18	<b>Final Exam 8:00 - 10:30 am (200 points, cumulative)</b>	

\*In July of 2009, members of the California Faculty Association voted to allow the California State University Chancellor to impose unpaid furlough days for all professors and lecturers at all 23 Cal State Campuses. The purpose of furloughs is to minimize the need for faculty layoffs given the current budget crisis. At Cal State LA, this means that most professors and lecturers are required to take 6 days of unpaid leave each quarter, during which time they are prohibited from performing any university work. My furlough days are January 15, 27 & 28 and February 19.

**Laboratory Schedule:**

Week	Date	Exercise	Exercise Number	Lab Report Due Date
1	01/05	Check in		
	01/07	<b>Lab #1:</b> Microscopy, Prepared Slides (Blood and Disease)	1	
2	01/12	<b>Lab #2:</b> Examination of Pond Water	2	1
	01/14	<b>Lab #3:</b> Survey of Microorganisms (Fungi and Mold)	3	2
3	01/19	<b>Lab #4:</b> Smear Preparation and Simple Staining	4	3
	01/21	<b>Lab #5:</b> Gram Staining	5	4
4	01/26	<b>Quiz #1 (50 points)</b>	1-5	5
	01/28	NO CLASS*		
5	02/02	<b>Lab #6:</b> Ubiquity of Bacteria	6	
	02/04	<b>Lab #6:</b> <i>Ubiquity of Bacteria, continued</i> <b>Lab #7:</b> Antiseptics and Disinfectants	6 7	
6	02/09	<b>Lab #7:</b> <i>Antiseptics and Disinfectants, continued</i> <b>Lab #8:</b> UV and Temperature Effects	7 8	6
	02/11	<b>Lab #8:</b> <i>UV and Temperature Effects, continued</i>	8	7
7	02/16	<b>Lab #9:</b> Antibiotics	9	8
	02/18	<b>Lab #9:</b> <i>Antibiotics, continued</i>	9	
8	02/23	<b>Lab #10:</b> Bacterial Examination of Water **(bring water sample from home)**	10	9
	02/25	<b>Lab #10:</b> <i>Bacterial Examination of Water, continued</i> <b>Lab #11:</b> Food Microbiology **(bring food sample: ground beef, lettuce, yogurt etc...)**	10 11	
9	03/02	<b>Lab #10:</b> <i>Bacterial Examination of Water, continued</i> <b>Lab #11:</b> <i>Food Microbiology, continued</i>	10 11	
	03/04	<b>Quiz #2 (50 points)</b>		10, 11
10	03/09	<b>Lab #12:</b> Simulated Epidemic	12	
	03/11	<b>Laboratory Final Exam (150 points, cumulative)</b>	1-12	12

Laboratory Instructor Name \_\_\_\_\_

Lab Instructor's Contact Information \_\_\_\_\_

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Lab Instructor's Office Hours \_\_\_\_\_