

**TENTATIVE LECTURE OUTLINE**

<b><u>DATE</u></b>	<b><u>TOPIC</u></b>	<b><u>CHAPTER</u></b>
Jan.	20 Introduction	
	25 The Scope and Diversity of the Microbial World .....	1
	The History and Evolution of Microbiology .....	1
	27 Spontaneous Generation and the Germ Theory of Disease .....	1
Feb.	01 Characterization and Nomenclature of Microorganisms .....	1
	Microscopy.....	3
	03 Microscopy.....	3
	08 Microbial Structure and Function .....	4
	10 Microbial Structure and Function.....	4
	15 Holiday: Washington 's Day	
	17 Phases and Measurement of Microbial Growth .....	6
	22 Cultivation and Growth of Bacteria.....	6
	24 Microbial Methods.....	6
	Microbial Metabolism: Enzymology.....	2,5
Mar.	<b>01 FIRST EXAM:</b> Chapters 1, 3, 4, 6 and page 143	
	03 Microbial Metabolism: Energy Transformation.....	5
	08 Microbial Metabolism: Macromolecular Biosynthesis .....	5
	10 Microbial Metabolism: Microbial Genetics.....	8
	15 Microbial Metabolism: Microbial Genetics.....	8
	Microbial Metabolism: Regulation .....	8,9
	17 Biotechnology and Recombinant DNA	9
	22 Classification of Microorganisms.....	10
	Representative Bacteria.....	11
	24 The Fungi.....	12
	Spring Recess: March 29 - April 4	
Apr.	<b>05 SECOND EXAM:</b> Chapters 2, 5, 8-11	
	07 Fungal Diseases: Human Mycoses.....	12
	Virus Structure .....	13
	12 The Viruses: Methods of Study, Multiplication, and Genetics .....	13
	14 The Viruses: Methods of Study, Multiplication, and Genetics .....	13
	19 Viral Lysogeny and Implications .....	13
	The Viruses: Slow Viral Infections and Oncogenesis.....	13
	21 Oncogenesis.....	13
	26 Protozoa .....	12
	Multicellular Parasites & Disease.....	12
	28 Multicellular Parasites & Disease.....	12
May	<b>03 THIRD EXAM:</b> Chapters 12,13	
	05 Control of Microbial Growth .....	7
	10 Antimicrobial Agents .....	20
	12 Host-Parasite Relationships, Disease and Epidemiology .....	14
	Mechanisms of Pathogenicity .....	15
	17 Nonspecific Host Defenses .....	16
	Host Defenses and Immunology.....	17
	19 Host Defenses and Immunology .....	18
	Disorders of Immune System, AIDS, and Cancer.....	19
	<b>24 FOURTH EXAM @ 10:30 AM</b>	

<u>DATE</u>	<u>T</u> <u>Th</u>	<u>LAB</u>	<u>TENTATIVE LAB SCHEDULE</u>
Jan.	21	Microorganisms in the Environment	
	26	Microscopy, Pond Water, Food Preparation Survey	
	28	Microbial Morphology, Aseptic Technique	
Feb.	2	Simple Staining, Negative stain	
	4	Gram Stain	
	09	Gram Stain	
	11	Acid Fast Stain, Spore Stain Demonstration	
	16	Motility Media Inoculation; Motility via Hanging Drop Method	
	18	Capsule Stain and Cell Wall Stain	
	<b>23</b>	<b><u>Morphological Unknown I</u></b>	
	25	" " " " (Cont.), Selective, Differential and Enriched Media	
Mar.	02	Streak & Pour Plate Methods	
	04	Cultural Characteristics	
	09	Antimicrobial Chemicals, Antibiotics	
	11	Results & Discussion, Film	
	16	Bacteriology of Water and Milk	
	18	Results & Discussion, Recombinant DNA Technique	
	23	Effects of Temperature & UV Radiation on Growth	
	25	Results and film	
Spring Recess: March 29 - April 4			
Apr.	06	Unknown II Review	
	08	<b><u>Morphologic &amp; Cultural Unknown II</u></b>	
	13	<u>Morphologic &amp; Cultural Unknown II</u> (Cont.)	
	15	<u>Morphologic &amp; Cultural Unknown II</u> (Cont.)	
	20	Diagnostic Medical Microbiology, Biochemical Characteristics and Media	
	22	Results & Discussion	
	27	Diagnostic Medical Microbiology, Fermentation of Carbohydrates	
	29	Results & Discussion	
May	<b>4</b>	<b><u>Biochemical Unknown III</u></b>	
	6	Evaluation of Unknown	
	11	Review and film	
	13	Review	
	<b>18</b>	<b><u>Comprehensive Lab Practical</u></b>	
	20	Open Date	

COURSE GRADING SCHEME

<u>Lecture Points</u>		<u>Laboratory Points</u>	
Lecture Exam I	150	Unknown I	50
Lecture Exam II	150	Gram Stain	20
Lecture Exam III	150	Unknown II	50
Lecture Exam IV	150	Unknown III	50
		Comprehensive Laboratory Final	200
Total Lecture Points	<u>600</u>	Total Laboratory Points	<u>370</u>

Grand Total Points = 970

A = 873 to 970 Points  
B = 776 to 872 Points  
C = 679 to 775 Points  
D = 582 to 678 Points  
F = 581 and below

Note: All exams and write-ups (both lecture and laboratory) will be kept by the instructor.

Note: Napa Valley College Catalog states: "...a student who has been absent for as many times as a class meets each week will have exhausted this provision for unavoidable absences. Further absences may cause the instructor to drop the student from the class."

Note: Students must participate in all aspects of the course to receive a passing grade.

**Students in need of accommodations in the college learning environment:**

Any student who feels s/he may need an accommodation based on the impact of a learning disability should contact Diagnostic Learning Services in room 861 in the 800 building to schedule an appointment with a Learning Disabilities Specialist.

Accommodations for physical or other types of disabilities should schedule a time to meet with Sheryl Fernandez of the Counseling Department in the Administration building.

**COURSE SCHEDULE**    SPRING 2010

	<u>Mon</u>	<u>Tues</u>	<u>Wed</u>	<u>Thurs</u>
<u>Fri</u>				
8:00				
8:30				
9:00				
9:30		Biol 220		Biol 220
10:00	<i>Office</i>	<u>Lab. A</u>	<i>Office</i>	<u>Lab. A</u>
10:30	2037	9:30-12:20	2037	9:30-12:20
11:00		Rm. 2031		Rm. 2031
11:30				
12:00				
12:30	Biol 220		Biol 220	
1:00	<u>Lec.</u>		<u>Lec.</u>	
1:30	12:30- 1:50 Rm. 2240	Biol 220 <u>Lab. B</u> 1:30-4:20 Rm. 2031	12:30- 1:50 Rm. 2240	Biol 220 <u>Lab. B</u> 1:30-4:20 Rm. 2031
2:00				
2:30				
3:00				
3:30				
4:00				
4:30				
5:00				

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### **Student Learning Outcomes:**

- 1. Describe and analyze the differences between the major groups of microorganisms and the non-living infectious agents.**
- 2. Compare and contrast methods of microbial growth control in the body and in the environment.**
- 3. Analyze in detail the human host defenses and immune mechanisms.**

**Course Objectives:** Upon completion of this course, the student will be able to:

1. Describe and analyze the differences between the major groups of microorganisms.
2. Distinguish and compare the function of structures found in bacteria, fungi, viruses, helminths and protozoa.
3. Differentiate between the types of light microscopy and electron microscopy and their utilization.
4. Differentiate between aerobic and anaerobic metabolism in bacteria, evaluating the energy flow between glycolysis, the citric acid cycle and the electron transport systems.
5. Differentiate between the growth cycles and nucleic acid replication of bacteria and viruses, viroids and prions.
6. Apply microbial molecular genetic and biochemical techniques to the understanding of evolutionary concepts and to the development and applications of recombinant DNA technology.
7. Compare and contrast methods of microbial growth control in the body and in the environment.
8. Analyze in detail the human host defenses and immune mechanisms.
9. Distinguish the differences in morphology, staining reactions and biochemical reactions of common bacterial species encountered in both clinical laboratories and the environment.
10. Analyze the results of data collected from laboratory experiments and relate the results to clinical and environmental situations.

**Course Content:** (Provides a comprehensive, sequential outline of the course content, including all major subject matter and the specific body of knowledge covered.)

### **LECTURE**

1. Scope and diversity of the microbial world.
2. History and evolution of microbiology.
3. Theory of and practice of microscopic visualization of microorganisms.
4. Bacterial structure and function.
5. Cultivation and growth of bacteria.
6. Microbial metabolism.
7. Microbial Genetics.
8. Fungal structure and function.
9. Virus structure, growth methods and reproduction techniques.
10. Protozoa structure and function.
11. Multicellular parasites.
12. Control of microbial growth and antimicrobial agents.
13. Host-parasite relationships.
14. Host defenses and immunity.

## LABORATORY

1. Microorganisms in the environment.
2. Staining methodology.
3. Morphologic unknown.
4. Media and pure culture techniques.
5. Cultural characteristics of bacteria.
6. Morphologic and cultural unknown.
7. Control of microbial populations by physical agents.
8. Control of microbial populations by chemical agents.
9. Biochemical activities of bacteria.
10. Biochemical unknown.
11. Applied microbiology.
12. Molecular techniques in microbiology.
13. Recombinant DNA techniques.

## **Course Description**

Morphology, metabolism, molecular genetics and ecology of bacteria, fungi, viruses, helminths and protozoa. Extensive laboratory work include aseptic techniques, methods of cultivation, identification and enumeration of bacteria, examination of physiologic characteristics and recombinant DNA techniques using common bacteria. For students majoring in biological sciences, medicine, veterinary medicine, dental hygiene, nursing, public health.