

Biosc 119, Sections 1348 and 4209
Fall, 2008

NURSING MICROBIOLOGY
4 Units

Prerequisites: BIOSC-106 **and** BIOSC-110 *or* CHEM-119

Class Meetings: Section 1348: Tuesday and Thursday,
Lecture, 1:10 – 2:30, room B-2
Laboratory, 2:40 – 4:00, room B-21
Section 4209: Tuesday and Thursday,
Lecture, 1:10 – 2:30, room B-2
Laboratory, 11:10 – 12:30, room B-21

Instructor: Dr. Kate Levine, office is B14, phone is 235-7800 x4288
klevine@contracosta.edu; office hours are Tuesday and Thursday, 10:00 –
11:00, Wednesday, 2:30 – 4:00, and Friday, from 1:00 – 2:30.

Lab Commander: Dr. Aleida Perez, office is B13, phone is 235-7800 x4463.

Required Texts: *Microbiology, An Introduction* by Tortora, Funke and Case, 9th Edition,
A Photographic Atlas for the Microbiology Laboratory, 3rd Edition
by Leboffe and Pierce, **and** *Experiments in Microbiology*, by Kate
Levine. Please provide a 3-ring binder.

Final Exams: Section 1348, Lecture exam, Thursday, Dec. 16, 1:00 -- 2:30.
Laboratory exam, Tuesday, Dec 16, 3:00 – 4:30
Section 4209, Lecture exam, Thursday, Dec 16, 1:00 -- 2:30
Laboratory exam, Tuesday, Dec. 16, 11:00 – 12:30

EXPECTATIONS, RULES AND EVALUATIONS

This course is designed for students intending to enroll in the nursing program or allied health fields. Successful completion of this course will provide the student with a working knowledge of:

- 1) the structure and function of the bacterial cell and viruses
- 2) the roles of bacteria and viruses in the disease process
- 3) the control of microorganisms using physical means
- 4) the immune system of the human body and its response to bacterial and viral infections
- 5) standard microbiological laboratory techniques
- 6) laboratory calculations and dilutions
- 7) scientific writing techniques

Student Responsibilities: Your prepared attendance at all class meetings is crucial for your success in this course. I expect you to read assigned lecture material and assigned laboratory exercises and handouts **before** class meets. Laboratory exercises utilize living cells and specialized culture media and equipment which will only be available during the designated class period; because of these constraints, missed labs CANNOT be made

up. If you must miss an exam, **IT IS YOUR RESPONSIBILITY** to notify me **IN ADVANCE** of the scheduled exam period. Written, signed and documented excuses are required. Make-up exams may differ in content and format from scheduled exams. Dishonesty and cheating will not be tolerated. You are encouraged to collaborate with other students in several lab exercises and in study groups. Any written assignments you submit for grading must be your own work.

EXAMINATIONS, HOMEWORK, LAB REPORTS AND GRADING:

LECTURE: There will be three, one hour, non-comprehensive lecture exams and a semi-comprehensive lecture final exam. Each of these exams is worth 100 points. These exams will include multiple choice, matching, true-false, and short answer questions. There will be assigned homework problems worth a total of 50 points. In addition, there will be sporadic, announced quizzes worth a total of 50 points.

LABORATORY: There will be two quizzes (each worth 25 points) on laboratory calculations and dilution problems. Two very important laboratory technique demonstrations will be evaluated (each evaluated demonstration is worth 50 points). Practice problem sets will be provided before scheduled lab quizzes; evaluation sheets used during the technique demonstrations will also be provided in advance of the demonstrations. Three formal lab reports will be required; each lab report is worth 50 points. Lab report format is described in the lab manual and will be discussed in class. There will be two comprehensive lab practical exams that will cover everything accomplished in laboratory, including laboratory lectures. Each of the lab practical exams is worth 100 points. I strongly urge you to construct a laboratory notebook organized so that you can effectively use it as a reference while preparing for these exams. You are required to hand in brief pre-lab write-ups before the start of each scheduled laboratory exercise; the goals of these write-ups are to ensure that you have carefully read through assigned material before attempting the experiment and to give you practice in critical thinking and writing. While not formally graded, a student who has handed in more than 90% of the pre-lab write-ups will benefit, if her/his final grade is within 0.5% of a boundary between grades.

Late assignments: Assigned lab reports, problem sets, etc. will be accepted up to one class period late with a penalty of 10% of the total points possible deducted from your score. Reports and other assignments more than one class period late will not be graded.

Extra Credit: There will be extra credit questions worth ~10% of the total on each quiz and exam. There will not be an extra credit project.

Total points and grading:

Lecture: 3 X 100 = 300 (lecture exams)
1 X 100 = 100 (lecture final exam)
5 X 10 = 50 (homework assignments)
5 X 10 = 50 (lecture quizzes)
Subtotal = 500 points (lecture)

Laboratory: 3 X 50 = 150 (laboratory reports)
2 X 25 = 50 (lab quizzes)
2 X 50 = 100 (technique demonstrations)
2 X 100 = 200 (practical exams)
Subtotal = 500 points (laboratory)

Total lecture + laboratory = 1000 points

Grading will follow the guidelines below. Numbers refer to the percentage of total points earned by the student:

A = >89.5%
B = 78.5 – 89.4%
C = 64.5 – 78.4%
D = 49.5 – 64.4%
F = < 49.4%

Grade tally. Keep track of your scores so you will know your current class standing:

<u>Lab</u>	<u>Lecture</u>
Lab report 1, _____ of 50	Homework 1, _____ of 15
“ 2, _____ of 50	“ 2, _____ of 10
“ 3, _____ of 50	“ 3, _____ of 10
	“ 4, _____ of 10
	“ 5, _____ of 10
Lab quiz 1, _____ of 25	Quiz 1, _____ of 10
“ 2, _____ of 25	“ 2, _____ of 10
Lab practical 1, _____ of 100	“ 3, _____ of 10
“ 2, _____ of 100	“ 4, _____ of 10
	“ 5, _____ of 10
Gram Stain Evaluation, _____ of 50	Exam 1, _____ of 100
Streak Plate Evaluation _____ of 50	Exam 2, _____ of 100
	Exam 3, _____ of 100
	Exam 4, _____ of 100

TENTATIVE LECTURE SCHEDULE

<u>WEEK/DATE</u>	<u>TOPIC</u>	<u>READINGS</u>	
1	8-19 8-21	Introduction and overview The Microworld; Microscopy	Chap 1 Chap 1
2	8-26 8-28	Microscopy, Chemistry Review Chemistry Review	Chap 3, 2 Chap 2
3	9-2 9-4	Chemistry Review, Ultrastructure I, Ultrastructure I, continued	Chap 2, 4 Chap 4
4	9-9 9-11	Ultrastructure II Ultrastructure III	Chap 4 Chap 4
5	9-16 9-18	Microbial Metabolism I Microbial Metabolism II	Chap 5 Chap 5
6	9-23 9-25	EXAM 1 , Chapters 1, 2, 3, 4 Microbial Metabolism III	Chap 5
7	9-30 10-2	Microbial Metabolism IV Microbial Growth	Chap 5 Chap 6
8	10-7 10-9	Microbial Growth Control of Microbial Growth	Chap 6 Chap 7
9	10-14 10-16	EXAM 2 , Chapters 5 and 6 Microbial Genetics I	Chap 8
10	10-21 10-23	Microbial Genetics II Microbial Genetics III	Chap 8 Chap 8
11	10-28 10-30	Microbial Genetics IV Antimicrobial Chemotherapy	Chap 8 Chap 20
12	11-4 11-6	Antimicrobial Chemotherapy EXAM 3 , Chapters 7, 8, 20	Chap 20
13	11-11 11-13	Viruses I Viruses II	Chap 13 Chap 13
14	11-18 11-20	Principles of Disease Principles of Disease	Chap 14 Chap 14

<u>WEEK/ DATE</u>	<u>TOPIC</u>	<u>READINGS</u>
15 11-25 11-27	Microbial Pathogenicity Holiday	Chap 15
16 12-2 12-4	Host-Parasite Relationships Host-Parasite Relationships	Chap 16 Chap 16
17 12-9 12-11	To Be Announced To Be Announced	

LECTURE FINAL EXAM; Chapters 13, 14, 15, 16

TENTATIVE LABORATORY SCHEDULE

<u>WEEK/DATE</u>	<u>TOPIC</u>	<u>LAB ASSIGNMENT</u>
<p>NOTE: Lab assignments are indicated as follows. <i>Lab Manual</i>, p NN, <i>Photographic Atlas</i>, (p NN)</p>		
1	8-19	Lab introduction, sign in
		Hand washing
		Microbes in the environment
	8-21	Simple Stain, Microscope Use
		p 1, 2 p 3 p 5 p 7, 11 (p 23-25, 27)
2	8-26	Microscope Use
	8-28	Microscope Use
		prepared slides prepared slides
3	9-2	Streak plate
		Transfer technique
	9-4	Gram Stain I
		p 19 (p 13) p 21 (p 9, 10) p 13 (p 35-37)
4	9-9	Gram Stain II (report 1, section 1348)
	9-11	Spore Stain (report 1, section 4209)
		p 13 (p 35-37) p 17 (p 41-42)
5	9-16	Acid-Fast Stain
	9-18	Pipet use, Pour and spread plates
		p 15 (p 38-40) p 23, 73
6	9-23	Dilution mathematics, calculations
	9-25	Dilution mathematics, calculations
		p 77, 79, 87 p 77, 79, 87
7	9-30	Viable Cell Count
	10-2	Results of Viable Cell Count
		p 27 (p 83-85)
8	10-7	Practice Gram Stain, Streak Plate Serial dilution quiz
	10-9	Gram stain, Streak Plate
		Evaluated
9	10-14	Lab practical EXAM, Part I
	10-16	Control of growth—disinfectants (report 2, section 1348)
		p 31
10	10-21	Growth control-- ultraviolet radiation (report 2, section 4209)
	10-23	Dilution problems
		p 33 (p 109-110) p 81
11	10-28	Control of growth—antibiotics
	10-30	Results of culture and sensitivity experiment
		p 35 (p 89-91)

<u>WEEK/DATE</u>	<u>TOPIC</u>	<u>LAB ASSIGNMENT</u>	
12	11-4 11-6	Dilution quiz Pathogenic cocci, differential media	p 39 (pp 18-19, 47-48, 48-49, 50-51, 52, 57-59)
13	11-11 11-13	Pathogenic cocci, continued Enterics-demonstration media	same as above p 43, (pp 16, 18, 51-52, 57-59, 60, 67, 72-73, 78-79, 79-80, 80-81)
14	11-18 **** 11-19 11-20	Enterotube inoculation (report 3) must return to score Enterotube 16-24 hours after inoculation Enterics, discussion	p 51, (p 56-57)
15	11-25 11-27	Gram stain and streak plate Holiday	Evaluated
16	12-2 12-4	Enterotube report due ELISA	p 59 (p 117-118)
17	12-9 12-11	Discussion of ELISA results Lab check-out, Review for lab practical 2	

Lab Practical EXAM, Part II