Biology 333/533 General Microbiology

Syllabus
Spring 2013

Instructor: Madhulatha Pantrangi
Office TNR 445
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Office hours: Monday 14:00-16:00

Class times & Locations:

Lecture:	Mon & Wed 16:00-16:50	TNR - 461
Labs:	Mon & Wed 18:00-19:50	TNR - 451

Textbook: Prescott's *Microbiology*, Willey, Sherwood & Woolverton. Eighth Edition. Wm. C. Brown Publishers. (Available though text rental.)
Did you know you can buy your textbook at a discount?

Lab Manual: *Microbiology in the Laboratory* 2012-2013 edition *(in-house lab manual)*. University of Wisconsin-Stevens Point Offset. (Purchase in DUC Bookstore) Do not use a copy from a previous semester.

Optional lab Supplement: *A Photographic Atlas for the Microbiology Lab*, by Leboffe and Pierce, is available for purchase in the DUC bookstore.

Other Materials Permanent **black** marker (such as a Sharpie®) and asafety goggles required for lab. three ring binder, loose-leaf paper—highly recommended

Open labs: The laboratory is usually open when there are not any scheduled labs. However, for safety reasons, students are not allowed to work alone in the lab. An instructor, or another student must be present in the area.

DROP DEADLINES:	Last day to drop without a grade: *Thursday, January 31* *Last day to drop the course**: Friday, April 5*** (See me no later than April 4 to get the required signature)

Students with Learning Disabilities:
If you need special accommodations for exams due to a recognized learning disability, please consult disability services and notify me at least two weeks before the first scheduled exam.

Veterans: Thank you for your service. Please feel free to stop by my office if there is anything I can do to assist you, especially if you are a new student.

Classroom Courtesies:
Please turn off your cellular phones or switch them to silent mode during class and leave them in your purse or backpack. If you must answer your phone, you will be asked to leave the room to do so.

Texting and the use of ipods/mp3 players during lecture or lab is strictly prohibited.

TESTS, ASSIGNMENTS, AND GRADING

Your grade in this course is based on the percentage of points you earn based on the **total possible points** described below (555 points). Your percentage will also be updated in D2L on a regular basis. You can keep track of your points in the class on the **Grades** page

1) Lecture Exams (350 pts). There will be two semester exams, weeks 7 & 12, each worth 100 points. Each exam will be based on lecture material, plus any assigned reading (announced in class). The final exam is worth 150 points and will be based mainly on all units of the course, but will be comprehensive in nature.

Exam 1, March 4 (during lab period)
Exam 2, April 15 (during lab periods)
Final exam: Wed May 15 (time to be anounced)

Note: If you can document that you have three final exams scheduled on the same day, please see me by the last week of class to arrange an alternate exam day.

2) Lecture and Lab quizzes (90 pts). There will be six scheduled lab and lecture quizzes, each worth 15 points. These quizzes will cover theory and techniques as well as actual and/or expected results from previously conducted lab exercises.

3) Practical lab exercises--PLEs (35 pts). There will be four practical lab exercises (PLEs), each worth 10 points except for PLE#2 (15 pts). The PLEs are explained in the lab manual. The due dates are listed on the Laboratory Schedule.

4) **Pre-Lab Quizzes (40pts)**. There will be a short quiz (3 questions) for each lab session, that must be completed on-line through D2L before your enrolled lab period (no exceptions). There will be 26 quizzes for a total of approximately 40 points.

5) Post-Lecture Quizzes (40pts). There will be a short quiz (3 questions) after each lecture session. There will be about 26 quizzes in a total that carry approximately 40 points.

Please note: I reserve the right to add any assignments I think are necessary for the course if they work to your advantage.

In addition to the above point-generating activities, you are expected to have complete attendance and full attention and participation in class. You will also be evaluated on your ability to follow directions, practice safety, and properly use and care for the microscope and other equipment. Lack of attention to these things may result in deduction of points.

*******Biology 533:** Students enrolled for graduate credit are required to write an additional term paper, worth 50 points. The nature of the paper will be worked out between the student and myself. The paper will be added to the total points described above and the same grading scale will be used.

Grading Scale. Individual tests will not be assigned letter grades. Your grade in this course will be determined by dividing the total points earned by the total possible points to arrive at a percentage. The following scheme will be used for translating percentage into letter grades:

≥ 92.0%	= A	77.5-79.9%	= C+
90-91.9%	= A–	72-77.4%	= C
87.5-89.9%	= B+	70-71.9%	= C–
82-87.4%	= B	67.5-69.9%	= D+
80-81.9%	= B–	60-67.4%	= D
		< 60 %	= F

If you are on the edge of a D+ and C–and want to repeat this course, please make an appointment with me to discuss this.

POLICIES ON ATTENDANCE AND MAKE-UP TESTS

You are expected to attend **ALL** of the lecture and laboratory sessions. Because of the multiple sections, and the preparation involved with living cultures, make-up lab sessions will NOT be available. You will be responsible for any material from missed labs. Unexcused lab absences may result in 1% deduction of the final grade. (Note: In order for an absence to be excused, it must be unavoidable (see below), and you must notify me in advance.) Due to the emphasis on acquiring lab skills in this course, *any* absences (even excused ones) can have an impact on your grade.

Make-up exams and quizzes will be permitted ONLY for unavoidable emergencies provided that you have called in advance. If I am not available to take your call, you should leave a message on voice-mail (it will record the date and time of your call). *If you cannot call, please have someone else call.* The format of the make-up quiz/exam may differ from that of the original.

Despite the importance of attendance, PLEASE DO NOT COME TO CLASS if you believe you have influenza or any other serious communicable disease. For more information about influenza and how to protect yourself, visit www.flu.gov.

Academic Integrity. You are encouraged to work and study with each other in order to get the most out of the course. Lab experiments also involve working in pairs or

groups. However, you are expected to work independently on assignments and examinations.

Standards and Disciplinary Procedures for UWSP can be found at:
http://www.uwsp.edu/stuaffairs/Documents/RightsRespons/SRR-2010/rightsChap14.pdf

Academic misconduct is an act in which a student:

(a) Seeks to claim credit for the work or efforts of another without authorization or citation;

(b) Uses unauthorized materials or fabricated data in any academic exercise;

(c) Forges or falsifies academic documents or records;

(d) Intentionally impedes or damages the academic work of others;

(e) Engages in conduct aimed at making false representation of a student's academic performance; or

(f) Assists other students in any of these acts.

(g) Violates electronic communication policies or standards as agreed upon when logging on initially (See

uwsp.edu/it/policy).

Examples of academic misconduct include, but are not limited to: cheating on an examination; collaborating with others in work to be presented, contrary to the stated rules of the course; submitting a paper or assignment as one's own work when a part or all of the paper or assignment is the work of another; submitting a paper or assignment that contains ideas or research of others without appropriately identifying the sources of those ideas; stealing examinations or course materials; submitting, if contrary to the rules of a course, work previously presented in another course; tampering with the laboratory experiment or computer program of another student; knowingly and intentionally assisting another student in any of the above, including assistance in an arrangement whereby any work, classroom performance, examination or other activity is submitted or performed by a person other than the student under whose name the work is submitted or performed.

Plagiarism or other forms of academic misconduct will not be tolerated. If any student is found committing academic misconduct or aiding another student in doing so, I will initiate disciplinary action in accordance with section 14.04 of the UW System Administrative Code. Penalties may range from a zero on that exam to a failing grade in the course.

THE TWO MOST FREQUENTLY ASKED QUESTIONS (FAQs):

FAQ#1: DO I "CURVE" EXAMS?

ANSWER: I do **not** curve exam scores for the following reasons:

- Most student think curving means adding points to everyone's exam until some arbitrary number of students get a certain percentage. That is NOT curving.
- Curving really means is that your grade is based on your performance relative to peers, and as a result, grading standards fluctuate from test to test.

- Curving discourages students from helping each other learn because students who achieve higher scores on tests in effect "lower" the grade of their peers.
- Curving is only valid when there is a bell-shaped distribution of scores. It assumes the same number of students above and below the class average. This distribution almost never occurs.
- Curving actually limits the number of students who can get an "A" to only the top 7% of the class (the next 24% must receive a "B," the next 38% must receive a "C," etc.). This also means the *bottom 7% must fail*!
- For these reasons, I employ a mastery learning model in which all students have the same opportunity to get a good grade, and are evaluated on the same standard.

FAQ#2: CAN I DO EXTRA CREDIT TO RAISE MY GRADE?
ANSWER: I do not offer extra credit assignments (such as papers, projects, etc.) on an individual basis to students trying to boost a low grade. If you're having trouble with the material you're already expected to do, you should not be asking for additional work. Students who ask for extra credit are usually asking for something "easy" to replace something "hard" like learning the regular material. It is better to concentrate on your study habits and test-taking skills rather than look for an "easy fix." Here's another way to look at it: Would you trust a nurse, doctor, dentist, veterinarian, auto mechanic, or airline pilot that only passed because of extra credit? (*I wouldn't!)* It is also unfair to offer some students grade-boosting opportunities without extending the option to all students. Everyone's grade should be based on the same criteria. However, having just said that, there might be a few opportunities offered to the entire class to earn "enrichment" points from a course related exercise or academic enrichment activity such as attending a seminar or research presentation.

If you are having trouble in the course, don't wait-- GET HELP EARLY! Please come see me during office hours to discuss options for improving your grades other than doing "extra credit."

HOW CAN YOU DO WELL IN THIS COURSE?

- **Come to class (on time) everyday.** Be present, mentally as well as physically. Put the cell phone out of reach while in class. Do whatever it takes to stay awake and participate fully. Don't rely on someone else's notes to learn what is important.
- **Preview the material before coming to class.** Skim through the relevant part of the textbook on that material, paying attention to headings and figures.
- **Take good notes.** Develop a good shorthand technique that works for you so you can concentrate on what's being said. Leave lots of space for adding things and clarifying during review.
- **Study every day.** Short term memory lasts only about a day. Waiting more than 48 hours before reviewing notes means starting the learning process all over again instead of building on it. Plan to spend at least an hour each day for studying this class. *Schedule your study time.*
- **Study your notes when they are fresh,** i.e., as soon as possible after class even if only briefly (to get material from short-term memory into long-term memory).
- **Maximize your productivity.** Research has shown that people learn better by studying for short intervals frequently compared to longer periods less frequently).

Study intensively, limiting distractions, for 25-30 minutes followed by a short (5 min max) break. Don't try to study just after waking from a nap (your brain needs some time to wake up).

- **Study in an active manner.** Don't just read your notes--analyze them; quiz yourself, make comparative tables, term lists, one-page summaries, etc. Find some way to *make the knowledge your own.* One way to review is to recopy your notes. One technique I do not recommend is note cards because they fragment information, not connect it.
- **Analyze your notes for the most important points.** Use the 80/20 rule. Determine what is the most important 20% of the material first. Get the main points and concepts down, then add additional levels of detail.
- **Use your textbook** for clarification and to study illustrations. Some people may learn by thoroughly reading the text, but remember, the tests are based on lecture notes. There is more in the text than what I cover, and I may cover topics that are not in the text. Be selective.
- **Find a study group or study partner.** You can quiz each other and help each other learn. Participate in Group Tutoring.
- **Spend your time in lab wisely.** Really look at the material and try to understand it. Think about the experiment you are doing. Ask questions. Don't just look for ways of getting out of class early. Use extra time to review old material. Don't rely too much on the black & white lab manual diagrams. You need to review the actual specimens to do well on the lab tests.
- **Make use of my office hours.** If you need help, get it *right away*. You're always welcome to come in and ask me questions, or have me ask you questions to assess your understanding. One of the biggest mistake students make is waiting too long to get help. Please see me right away if you are having trouble understanding the material. I will do whatever I can to help you find the best way to comprehend the subject.
- **Put your cell phone away while you are studying.** Texting and calling while studying interferes with your ability to concentrate and learn.
- **Keep a regular schedule, get enough sleep, eat a sensible diet, and stay sober. Seriously.** An all too common consequence of alcohol use is the inability to keep up on academic responsibilities. Research shows a strong negative correlation between alcohol and grades. Students with D/F averages consume 6.4 more drinks per week than "A" students. And even "B average" students drink an average of 1.1 more drinks per week than A students.

SUCCESS IS A CHOICE!

TENTATIVE LECTURE SCHEDULE

Tentative Dates	Topics	Text ref.
Jan 23 - Feb 6	Course Intoduction, Evolution of Microorganisms and Microbiology, A review of the Chemistry of Biological Molecules, Prokaryotic cell structure	Chap 1; pp 1 to 22 Chap 1; pp 1 to 22 Appendix I Chap 3: pp 46-87
Feb 11 - Feb 25	Microbial Nutrition and growth, Microbial metabolism	Chapters 6-7 Chapter 9
Feb 27 - Mar 13	Bacterial Genetics: gene structure, DNA replication Microbial Genetics: Regulation of Gene Expression	Chapter 12 Chapter 13
March18-Apr 8	Mechanisms of Genetic variation Recombinant DNA Technology Microbial Genomics	Chapter 14 Chapter 15 Chapter 16
Apr 10 -Apr 24	Fungi & Protozoal pathogens Viruses and Other Acellular Agents Human-Microbe Interactions; Normal Flora Infection and Pathogenecity	Chapter 24 Chapter 25 Chapter 30 Chapter 31
Apr 29 -May 8	Host Defenses/Immunology Epidemiology	Chapter 32-33 Chapter 36

*Chapters are provided for reference; not everything in the chapters will be covered.
*Tentative dates that cover the topics are given. But you might see some changes as some topics might go longer or take less time. After each class you will answer three short answer questions that will carry some points.

LAB SCHEDULE

Spring 2013

Labs are designed to be completed within an approximate two hour period. Preparedness for lab and efficient work habits are essential to making that a relity.

You are expected to read through the lab exercise(s) in the manual before coming to lab. Proper safety precautions and respect for others in the lab is required. Careless or sloppy work in the laboratory cannot be tolerated. Students who demonstrate careless work that endangers themselves or others in the lab will lose points in the course, and if the behavior continues, will be asked to withdraw from the course.

Please note: Experimental results will usually be recorded and discussed during the next day's lab session.

The **lab quizzes** are given at the beginning of the period (dates noted below).

Week	Dates	Days	Lab Exercises	Page
	Jan 22	T	No Lab	
1	Jan 23, 24	W/R	Fomites/Handwashing	8, 15
2	Jan 28, 29 30, 31	M/T W/R	Culture Media Aseptic Technique	30 35
3	Feb 4, 5 6, 7	M/T W/R	Selective and Differential Media Microscopes & Measurement**; Quiz 1**	45 20
4	11/12	M, T	Gram Stain	49
	13/14	W, R	Bacterial Morphology	52
5	18, 19	M, T	More Differential Staining: Capsule, Spore, Acid-fast Stains	54
	20, 21	W, R	PLE #1 (Morph. Unknowns); Motility; **Quiz 2**	59, 62
6	25, 26	M, T	Relationship of Oxygen to Growth	66
	27, 28	W, R	Environmental Parameters: Temp, pH Osmosis	70
7	Mar 4, 5	M, T	PLE #1 due; **EXAM I**	
	6, 7	W, R	(Read temp, osmosis) Quantitating Microbial Populations	89
8	11, 12	M, T	Growth curve; Control of Microbial Growth (temp, UV); **Quiz 3**	76, 97
	13, 14	W, R	Chemical Control of Growth	82
	18, 19	M, T	Biochemical Characterization	102
	20, 21	W, R	Read biochemical tests	
9	25, 26	M, T	SPRING BREAK	
	27, 28	W, R		
10	Apr 1, 2	M, T	PLE #2-Biochemical unknown; start Fungi;	111, 118
	3, 4	W, R	Read PLE #2 biochemical tests; **Quiz 4**	
11	8, 9	M, T	Complete Fungi; Bacteriophage	114
	10, 11	W, R	Finish bacteriophage; Bacterial Genetics: transformation	159
12	15, 16	M, T	**EXAM 2**	
	17, 18	W, R	PLE#2 due; Soil Microbiology	124
13	22, 23	M, T	Water Microbiology; **Quiz 5**	128
	24, 25	W, R	Food Microbiology; PLE # 3(mixed culture)	135
14	29, 30	M, T	Enterics; PLE #4 (serial dilution)	139
	May 1, 2	W, R	Normal Flora: the Cocci	144
15	6,7	M, T	Dental Microbiology; Chemotherapeutic Agents	151, 153
	8, 9	W, R	ELISA; white blood cells; clean up; **Quiz 6**	169, 167