

Biology 331 Course Information – Spring 2006
General Microbiology (W, 4 credits)

Lecture Meeting Times: MW, 10:00-10:50 a.m.

Laboratory: T AND R, 8-10 a.m. (nearly half grade is lab, some determined by attendance)

Instructor: Sarah Boomer, Ph.D.

Office/Hours: 219; 8-8209; office hours M 11-12, T/R 10-11

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This writing intensive biology core course is designed to give you a broad knowledge of microbiology in the context of the planet, humankind, and general science. Course pre-requisites include 200-level biology (Bi211-3) and chemistry (Bi221-3). Genetics and Cell Biology are both STRONGLY recommended and, if you have not taken them, you will need to do some additional background reading in this course text.

Text and Required Course Materials: The course text is Brock's Biology of Microorganisms (11th Edition). For lab, your team will be provided with a lab notebook that I grade and keep following the course, and you and your team will construct web-destined reports using provided Word templates, lab computers, and digital cameras.

Writing: Assignments include: (1) Emerging Disease/Epidemic Paper; (2) Genome Paper; and (3) all-term team lab assignments (informal notebook and formal electronic assignments).

Exams: 1 lecture exam and 1 lab exam during term, and 1 non-comprehensive lecture and lab final. Owing to pre-professional exam format (MCAT, DAT, GRE), 30% all exams will be multiple-choice.

Late Policy: Any student who misses an exam or turns in an assignment late without a valid excuse (e.g. university-sanctioned trip, note from doctor) will lose 10% total assignment points per day late.

Grade Breakdown:

Lecture Midterm: 100 points

Individual Papers (Genome and Epidemic/Emerging Disease): 50 points each (100 total)

Lab Midterm: 100 points Culture Labs; 50 points DNA Exam)

Course Final: 150 points - 100 pts lecture, 50 points DNA Labs

Lab Assignments: 200 total - comprised of...

- Culture Project Notebook (10 points per lab) = 50
- Culture Project Webpage (20 points per lab) = 100
- DNA Project Notebook (5 points per lab) = 10
- DNA Project Webpage (20 points per lab) = 40

Total: 650 points

Cave video and Campus Scholarship Day presentations will provide extra credit (XC on syllabus) opportunities. Alternative assignments/days not available for these special points. Please note that the Prion Video is not extra credit and will be covered on the final. None of the videos are available in the library and will not be available outside of class as they are things I personally own/purchased.

Grade scale: 90-100% (A); 80-89% (B); 70-79% (C); 60-69% (D); 59% or less = F

I do not grade using the (+) system but will sometimes give out (-)'s for people who are in the 78-79 or 88-89 range if they show promise through most of the course (e.g. only mess up 1 exam).

Course Syllabus - Spring 2006

	Topics/Exams	Lab/Exams
4/3	Introduction/Diversity	T: No Labs Week One
4/5	Prokaryotic Cell Biology	R: No Labs Week One
4/10	Unique Chemotrophic Bacteria	T: Introduction and Microbial Growth
4/12	Video - Microbiology of Caves XC	R: Introduction FINISH
4/17	Phototrophic Bacteria	T: Nitrogen Set-Up
4/19	Genetics and Genomes	R: Applied Set-Up
4/24	Control and Defenses	T: River/Phototroph Set-Up
4/26	Immunology	R: Nitrogen/River Follow-Up
5/1	Normal Flora, Gram Positive Pathogens I	T: River ID Set-Up
5/3	Exam 1: Through Immunology	R: River ID, Alcohol FINISH
5/8	More Positives and Mixed Phyla	T: Antibiotic Test Set-Up, Nitrogen FINISH
5/10	Proteobacterial Pathogens	R: Antibiotics/All Applied FINISH
5/15	Protozoa; Epidemic Paper DUE	T: Phototroph FINISH
5/17	Virology I	R: Culture Unit Catch-Up; Culture Unit DUE
5/22	Lab Culture Unit Exam	T: Out of Town - Professional Meeting*
5/24	Out of Town - Professional Meeting*	R: Out of Town - Professional Meeting*
5/29	Holiday - Memorial Day	T: Plasmid Isolation
5/31	Campus Scholarship Day - XC TBA	R: Electrophoresis Methods
6/6	Virology II	T: DNA Sequencing/BLAST
6/8	Prion Video - Mandatory/On Final	R: Clean-Up; DNA Unit and Genome Paper DUE

150 point final = Flora to Prions (100 pts) and DNA Unit Labs (50 pts)

**On the days I am out of town, it is STRONGLY recommended that you complete genome paper and hands-on computer activities. Waiting until the end of the term of not wise.*

Lab Policy - Labs Begin Week Two

Because of student feedback, I take silent roll every lab at 8 a.m. Unexcused absences or tardiness beyond 10 minutes will cost 5% final lab grade. There are no opportunities to make up labs.

Safety and Etiquette

NO experiments or dirty hands in the computer zone (tape to wall).

Disinfect lab work zones at beginning/end of lab with bleach and sponges.

Wash hands at beginning/end of lab, before/after restroom, and before using computers.

Do not put anything in your mouth during lab.

If you spill or break contaminated materials, disinfect area first and alert me ASAP.

Place contaminated materials in special bins at your lab benches or on front table, NOT in trash.

Be careful with the Bunsen burner and turn off the gas at the end of class.

Use aseptic technique when handling microorganisms and equipment.

Handle materials in the lab with care. Everything costs money or time to make.

Treat microscopes carefully and return to cabinets at the end of every period.

Alert me of lab injuries; wash wounds immediately. First Aid Kit/Eye Rinse by back sink.

Notebooks - NOTE Due Dates in Syllabus (Notebook and Web = Unit Projects, Due Together)

GOAL: to keep a legible and detailed account of EVERYTHING you do, see, or generate.

A DATED entry must appear for every day of lab and for any extra follow-up.

Record what you label on your plates and tubes in your notebook so you can identify things later.

Record where ALL experiments are at end of each activity (incubator, refrigerator, discarded, etc.).

Record which pictures you took and where you put them (preferably in Word template).

For visual tests, VERBALLY record description in notebook. (i.e. avoid "test was positive").

All team members present must initial the notebook at the end of each dated entry.

Digital Cameras and Imaging

It is YOUR responsibility to review templates for picture requirements before starting activities.

One Sony Mavica will be provided to each team during each lab session (I will collect for re-charging).

Pictures will be graded for quality. All pictures must be HORIZONTAL, downsized to 3" wide.

Shooting Plates: one plate per shot, shot with lid off from above - to see as much detail as possible.

Use chalk on benches to label; write small and make sure target item is largest thing in picture

Load all images into templates EVERY SESSION to avoid confusion later.

Grant-Acquired Lab Computers and Software - ONLY Use Assigned Computer

Lab computers NOT networked; everything you need to complete these projects is on the desktop.

Access "this computer" with User = microbiology; password = germs.

Retain folder structure: I will ONLY accept assignments placed in the correct folder at this location.

You will not turn in templates; I will access your machine and grade assigned folders.

The ONLY program you will use is Word. DO NOT MAKE HTML CONVERSIONS.

DO NOT COPY/TRANSFER TEMPLATES AND WORK ON ELSEWHERE AS SOME COMPUTERS SAVE THINGS SUCH THAT I CANNOT ACCESS THEM LATER AFTER TRANSFER BACK; TEAMS HAVE LOST WHOLE ASSIGNMENTS THIS WAY POINTS WILL BE LOST!

Lab Application Questions

For many labs, team members will locate research data using a given technique. For these, I strongly recommend that you go to www.asm.org and select publications/journals. The best for medical papers are J. of Clinical Microbiology and Clinical & Diagnostic Laboratory Immunology. The best for environmental and general research papers are Applied and Environmental Microbiology and J. of Bacteriology. In each case, search title, abstract, or whole article using chosen method. Articles that are 1+ year old will be available for full view. Record the complete reference citation and read enough to answer questions below. For most methods, you will be asked to download an image from the article that shows this method being used - so have a disk, CD, or portable USB handy. To download images, open the HTML article version of the article, click the full figure image, and "save as." Then insert into web template as you would for lab pictures.