

Biology 218 Microbiology Syllabus

Spring 2009

MWF 11:30-12:55
Druckenmiller 4

Professor
Anne McBride
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Lab: Tu, W 1:00-3:55
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McBride Office Hours and Communication

I will be in my office or lab (230B and 236B, respectively) during my office hours, which will be posted on the course website and Blackboard. If you cannot make one of these times, you can **set up a time** to talk to me by **emailing me at least 3 times you are free**; I will let you know within a day after I receive your email if one of the times works for me. Also, we send occasional **announcements, reminders and clarifications via email**, so it is a good idea to **check your email at least once every day or two**.

The Bio218 **Blackboard** site will **only** be used for **lab** and **discussion handouts**. The **main course website**, which is available to people outside the class, will grow with **useful information** and **links relevant to microbiology** throughout the semester. We **welcome any suggestions for enhancing the site**, from information that you would like posted, to articles you have found that relate to what we are discussing, to microbiology web pages (from bonafide sources). The URL for the course home page is: <http://academic.bowdoin.edu/faculty/A/amcbride/courses/bio218>

Text: Madigan, Martinko, and Parker. Brock Biology of Microorganisms 11th ed. Prentice Hall, 2006.

Other reading assignments: **Articles** from scientific journals will be placed on **Blackboard one week before** we are scheduled to discuss them in class.

Dates to remember

Midterms: Thursdays Feb. 26 and April 16 (7:30pm; place TBA)

Final Exam: Monday, May 11, 9 am, Druck 4

Discussions: In class: Mon., Jan. 26, Wed., Apr. 1 and Mon., May 4

Seminars:

Thurs., Mar. 5 (4 pm):	Jennifer Hood-DeGrenier	Druck 20
Thurs., Mar. 26 (4 pm):	Anya Forche	Druck 20
Fri., Apr. 17 (3 pm):	Vernon Reinhold	Druck 20
Fri., Apr. 24 (3 pm):	Linda McGown	Druck 20

****Attendance at one seminar is mandatory****

*****If you have a conflict for either of the evening exams or cannot make any of the seminars, come see me by Fri. Jan. 23*****

Week of:		Text Readings	Other Assignments
1/23	Introduction to microbiology Macromolecules, microscopes & microbes	Ch. 1, 2 Ch. 3, 4.1-4.4, 4.8, 4.9	<i>Discussion preparation & Scientific citations and references handouts</i>
1/26	Koch paper discussion Microbial cell biology	Ch. 4.5-10, 4.13, 4.14-16	Discussion Mon., Jan. 26 article: Koch, R. (1882, 1884)
2/2	Nutrition and metabolism Microbial growth I	Ch. 5.1-13, pp. 130-1 Ch. 6.1-6.5	
2/9	Microbial growth II Microbial molecular biology	Ch. 6.1-8, 10-16 Ch. 7.1-5, 10-17	Project presentation #1 in lab
2/16	The molecular biology revolution Regulation of gene expression	Ch. 7.7-9 Ch. 8.1-7, 8.13-14	Student-written exam questions due Thurs. by email
2/23	Microbial genetics I <i>In-class help session</i>	Ch. 10.1-6	Thurs., Feb. 26: Midterm #1: 7:30 pm
3/2	Microbial genetics II Genetic engineering	Ch. 10.7-14 Ch. 7.7, 10.15-16, 31.1-3	<i>Thurs., 4 pm: Hood-DeGrenier seminar</i>
3/7-3/22 SPRING BREAK			
3/23	Viruses	Ch. 9.1-8, 9.12-14 Ch. 16.8-9, 16.12, 16.15	<i>Thurs., 4 pm: Forche seminar</i> Lab paper #1 due Fri., 4 pm
3/30	Microbial growth control Paper discussion & introduction to human-microbial interactions	Ch. 20, p. 880-882 Ch. 21	Discussion Wed., Apr. 1 (no joke!) article TBA
4/6	Overview of the immune system Adaptive immunity	Ch. 22.1-5, 22.9-10 Ch. 22.6-8, 22.11	Student-written exam questions due Thurs. by email
4/13	Vaccines <i>In-class help session</i>	Ch. 22.12-14	Thurs., Apr. 16: Midterm #2: 7:30 pm <i>Fri., 3 pm: Reinhold seminar</i>
4/20	Epidemiology and public health Public health action: Water treatment & introduction to microbial ecology	Ch. 25.1-11 Ch. 28.1-3, Ch. 18.1-2, 19.1-4	Lab paper #2 due Fri., 4 pm <i>Fri., 3 pm: McGown seminar</i>
4/27	Microbial ecology: Nitrogen cycle & bioremediation Ecology, sociology & infectious disease	Ch. 17.13-14 Ch. 19.12, 19.17-18, 19.22 Ch. 26.12, 27.4-5	Project presentation #2 in lab Student-written exam questions due Fri. by email
5/4	Paper discussion Microbiology in the news		Discussion Mon., May 4 article TBA Lab notebooks due in class Wed., May 6

Help session: Sunday May 10, time & place TBA

Final Exam: Monday May 11, 9 am, Druck 4

Requirements and Grading Criteria

Midterm exams (2): 20% each

Lab: 25%

Final exam: 20%

Participation: 15%

Exams:

To allow ample time for **thought** as well as **clear, concise writing**, the two midterms will be given on **Thursday evenings (Feb. 26 & Apr. 16, 7:30 PM, place TBA)**. **If you have a conflict** with either of these dates, **please come talk to me at the beginning of the semester**. **Help sessions** will be held **during class on the Wednesday before the exam**; make sure you have done the **problem sets well in advance** of the **help session** so that you come prepared with questions and ideas you find confusing!

The final exam will include questions **specific** to the material from **the last third of the course as well as questions that ask you to synthesize ideas from throughout the semester**.

Participation:

The participation portion of the grade combines a number of aspects that are critical to scientific pursuits.

1. Discussions: Three classes over the course of the semester will include **analyzing an article from the scientific literature**. You will be assigned the article **a week in advance** and will **get ready to discuss** it in class by **writing a short preparation** (see Discussion Preparation handout). You should make sure that you **attend** these classes and **actively participate** in the discussions. **I will read** your preparations and **make comments** and **suggestions for improvement**. **Handing** the preparations in **on time** and **participating** in discussions is more important than the mark on each preparation (\checkmark , $\checkmark+$, $\checkmark-$).

2. Seminars: An excellent way to learn about microbiology is through listening to researchers talk about their recent results. This semester the Biology and Chemistry Department is sponsoring multiple seminars that relate to microbiology, including talks by: **Jennifer Hood-DeGrenier**, who studies cell division in baker's yeast, **Anya Forche**, who studies genomic dynamics of a pathogenic fungus, and **Vernon Reinhold** and **Linda McGown**, who study biological molecules from a chemist's perspective. You should **plan to attend at least one** of these seminars (see various dates and times on p. 1).

3. Class: The more actively everyone becomes involved during class, the more **dynamic, exciting, and comprehensible Microbiology** will become. Active participation includes **asking questions, responding** to my queries, and **making comments** that are **relevant** to the topic we are discussing. You can also participate by coming to **talk with me** after class or at other times.

4. Problem sets and study groups: One of the best ways to **prepare** for **exams** is to work through **problems**. I will be posting problems sets regularly. Although you will not turn in your answers, it is in your best interest to **work on the questions each week** and to **come to office hours** if you are confused by a problem or wish to know whether you are on the right track. I encourage you to **form study groups** to work together and help each other **understand ideas** and **solve problems** throughout the semester.

5. Student-written questions: One useful studying exercise is to think about what sort of questions ***you*** might include on an exam, if you were teaching Microbiology. The questions should attempt to be **synthetic** (e.g. relating two concepts that were approached separately or applying a general concept to a specific, novel situation) rather than regurgitant. After working on problem sets throughout the semester, one week before each exam each student will write a question. I will **select 6-8** of these questions and **post them on the course website** as practice questions. **One student-written question** will be included **on each exam**.

Impact of microbiology on the world today

Divide each set into categories and state what the members of a category have in common.

	Category 1	Category 2	Category 3
anthrax			
chickenpox			
common cold			
Ebola			
food poisoning			
influenza			
mad cow disease			
tuberculosis			
walking pneumonia			
Shared characteristic:			

	Category 1	Category 2
bacitracin		
beer		
bread		
insulin		
lentil soup		
penicillin		
vinegar		
yogurt		
Shared characteristic:		