

# BIOSCI 1999 MEDICAL MICROBIOLOGY Fall Term 2012 Syllabus

**Instructor****Dr. Jon Boyle**

Life Sciences Annex 102

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Office Hours: Mondays 10:00-11:00, Wednesdays 10:00-11:00

While I prefer that you use the posted office hours, please contact me to make an appointment if those hours do not work for you.

**Lecture Time/Place**

M/W/F 9:00-9:50 A.M., **A214** Langley Hall

**Course Objectives**

This course will focus on mechanisms of microbial pathogenesis and the host response, and the scientific approaches that are used to investigate these processes. How do microbes gain entry into the host? How do constituents of the “normal” microbial flora cause disease? How do microbial pathogens modulate the host to facilitate their survival? How do host cells respond to microbial pathogens? How, in turn, do microbes respond to these insults? What does genomics tell us about how microbial pathogens evolve? How do emerging pathogens take advantage of new ecological niches? How can microbial pathogens be thwarted?

The course will be roughly divided into three sections based on the pathogens we cover: Bacterial pathogens, viruses, and eukaryotic pathogens (parasites).

At the end of this course students will be able to:

- Compare and contrast different microbial diseases, including the mechanisms of how they cause disease.
- Summarize the role (both positive and negative) of the host in infectious disease, including natural barriers to infection, innate and acquired immune responses to infection, and inflammation.
- Understand the modern approaches that are used to study microbes through readings from the primary literature.
- Compare and contrast therapeutic treatments for microbial infections, and distinguish when a vaccine, antibiotic, or other therapy is likely to be the most appropriate response.
- Understand the genetics behind how microbes “resist” host responses and how antimicrobial resistance evolves.

**Textbook**

**Required:** The textbook for this course is *Medical Microbiology*, 6<sup>th</sup> edition. Edited by Murray, Rosenthal and Tenover (2009).

**Reserve Materials**

The textbook is on reserve in Langley Library.

**CourseWeb**

I will be using CourseWeb to post a portion of the course materials. The syllabus, readings outside of the textbook associated with the lectures, and announcements will be available at <http://courseweb.pitt.edu>. Log in on the main page. You will then have access to your “My CourseWeb” page, which has links to all of the classes for which you have registered that are using CourseWeb. If you need help, contact the computer help desk at 412-624-HELP.

**E-mail**

Although e-mail will not be used routinely in this class for communication, occasionally I may send out an e-mail notice using the addresses available

through CourseWeb (your pitt.edu address). Such notices are also posted as Announcements on CourseWeb.

**IMPORTANT:** IF YOU WRITE ME A DIRECT EMAIL OR POST A MESSAGE TO ME VIA COURSEWEB, I MAY TAKE UP TO 48 HOURS TO GET BACK TO YOU, SO TAKE THAT INTO CONSIDERATION. **EQUALLY IMPORTANT:** PLEASE MAKE SURE TO PUT YOUR NAME IN THE EMAIL AS WELL AS THE COURSE NUMBER IN THE SUBJECT LINE.

### Email communication policy

Each student is issued a University email address ([username@pitt.edu](mailto:username@pitt.edu)) upon admittance. This email address may be used by the University for official communication with students. Students are expected to read email sent to this account on a regular basis. Failure to read and react to University communications in a timely manner does not absolve the student from knowing and complying with the content of the communications. The University provides an email forwarding service that allows students to read their email via other service providers (e, g., Hotmail, AOL, Yahoo). Students that choose to forward their email from their pitt.edu address 'to another address do so at their own risk. If email is lost as a result of forwarding, it does not absolve the student from responding to official communications sent to their University email address. To forward email sent to your University account, go to <http://accounts.pitt.edu>, click "logintoyouraccount" and click on "Edit Forwarding Addresses", and follow the instructions on the page. Be sure to log out of your account when you have finished.

### Lecture and Exam Schedule

The lecture schedule for this course is attached. Please note the dates of the exams (including the final) to avoid any future scheduling conflicts. Mid-terms will be given during the regular class meetings. **The final exam will be on Wednesday, December 12, 2012 from 12:00 p.m. to 1:50 p.m. in Langley A214.**

Three mid-term exams are scheduled, worth 100 points each. Note: the dates of the exams *may* change, in particular if we get behind or miss lectures. That will be at my discretion but I will make sure to give you adequate lead time.

Please be aware that there will be **no make-up mid-term exams**. You will be allowed to drop your *lowest* midterm (**NOT** the final). **All** students are required to take the final exam in order to pass the course, which will include questions covering the last section of the course (Parasites) as well as comprehensive questions. Please see the information below on missed exams.

### "News and Views" Assignment

Based on an original research article, you will be required to write a "News and Views" style report during the semester, to present your "News" and your "Views" to the class in the form of an oral presentation, and be a "discussant" for 2 presentations by your peers.

**Signing up for a presentation date:** The oral presentations will be during 6 class periods throughout the term (see class schedule for details). You will need to sign up for one of these presentation periods on courseweb.

**Signing up for a research paper:** You will choose an article from a list provided in class and on courseweb. Please submit your first, second and third choices on courseweb.

**Being a discussant:** Each student will act as a "discussant" for two papers presented throughout the semester, and will be required to 1) submit at least 3 questions to me 2 calendar days before the presentation and 2) ask at least one of these questions to the presenter after the oral presentation. These questions should be analytical in nature, **and will require the discussant to have read the paper in depth**. You will sign up to be a discussant for 2 papers on courseweb.

**The oral presentation:** Presentations will be 10 minutes in length, with 2 minutes

for questions. Because of time constraints I will warn you at 9 minutes and stop you at 10 minutes to allow time for the discussants to ask questions. **NOTE: you will lose points if you go over time. So rehearse!**

**The News and Views report:** The “News and Views” report should be 3 pages, double spaced, and include a basic figure similar to “News and Views” articles from Science and Nature. See courseweb for some examples. Your written report will be due on the same day that you give your oral presentation.

**Final Grade**

Your final grade will be determined as follows:

Criterion	Total Possible
Top two mid-term exam scores	200 points
News and Views Presentation	75 points
News and Views Discussion	15 points each for a total of 30
News and Views Paper	45 points
Cumulative final exam	150 points
<b>Total</b>	<b>500 points</b>

**Your final grade is based on your percent of total points for the semester (no curve), using the following scale:**

A+: ≥ 100%	A-: 90-92.9%	B+: 88-89.9%
A: 93-99.9%	B-: 80-82.9%	C+: 78-79.9%
B: 83-87.9%	C-: 70-72.9%	D+: 68-69.9%
C: 73-77.9%	D-: 60-62.9%	F: <59.9%

**Missed Exams**

**THERE ARE NO MAKE-UP MID-TERM EXAMS OR EXTRA CREDIT OPPORTUNITIES IN THIS COURSE.** If you miss more than one mid-term exam you should discuss the options available to you with your advisor or the SAS Dean’s Office. Students who miss the final exam due to an emergency should pursue the G grade option as detailed below. Please note that you are expected to show up to each exam on time. Late arrivals will be given the exam during the time that remains for the designated examination period. **Transportation problems and weather issues are not considered an adequate excuse.** If you have to travel to reach campus, please allow sufficient time to ensure that you arrive by the time the exam begins.

**Exam Regrades**

You may request a regrade of any portion of an exam by submitting your request in writing and explaining why you think the grading was in error. This request must be submitted to me within one week after the date that the graded exams are returned to the class. Unless the regrade request is simply due to an addition error, please be aware that your entire exam may be evaluated and any question that was graded incorrectly (in your favor) may also be regraded resulting in points deducted from your total.

**G Grades**

If you wish to petition for a G grade, you must submit a request for this grade change in writing, and you must document your reason(s). You will be required to make arrangements for the specific tasks that you must complete to remove the G grade. Remember that G grades, according to SAS guidelines, are to be given only when students who have been attending a course and have been making regular progress are prevented by circumstances beyond their control from completing the course after it is too late to withdraw. If you miss the final exam, you may receive a G grade if the above conditions are

**Academic Integrity  
Policy**

met.

Cheating/plagiarism will not be tolerated. Students suspected of violating the University of Pittsburgh Policy on Academic Integrity, noted below, will be required to participate in the outlined procedural process as initiated by the instructor. A minimum sanction of a zero score for the quiz, exam or paper will be imposed.

Students in this course are expected to comply with the University of Pittsburgh School of Arts and Sciences Academic Integrity Code (<http://www.as.pitt.edu/fac/policies/academic-integrity>). Any student suspected of failing to meet the student obligations of the code for any reason during the semester will be required to participate in the procedures for adjudication, initiated at the instructor level. This may include, but is not limited to, the confiscation of the examination or homework paper of any individual suspected of violating the code.

**You may not use unauthorized materials during an exam, including notes, dictionaries, calculators, pagers, telephones, PDAs, and any device that can connect to the internet.**

**You must submit for grading only material that is written exclusively in your own words and written or drawn in your own handwriting.**

Violation of the Academic Integrity Code requires the instructor to submit an Academic Integrity Violation Report to the Dean.

**Special  
Accommodations**

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and the Office of Disability Resources and Services, 216 William Pitt Union, 412648-7890/4123837355 (FTY), as early as possible in the term. Disability Resources and Services will verify your disability and determine reasonable accommodations for this course.

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DATE	Title	Readings	Other information
8/27/2012	Course introduction, key concepts		
8/29/2012	Introduction to Infectious Diseases and "normal" microbial flora	Ch. 1, 7	
8/31/2012	Introduction to Infectious Diseases and "normal" microbial flora	Ch. 1, 7	
9/3/2012	<b>Labor Day--No Classes</b>		<b>Labor Day--No Classes</b>
9/5/2012	Host and Pathogen: The biology of infection, disease and toxicity	Ch. 2, 3, 18	
9/7/2012	Host and Pathogen: The biology of infection, disease and toxicity	Ch. 2, 3, 18	Add/Drop Deadline
9/10/2012	Host immunity to infectious agents: Innate and Adaptive Immunity	Ch. 9, 10, 11, 12	
9/12/2012	Host immunity to infectious agents: Innate and Adaptive Immunity	Ch. 9, 10, 11, 12	
9/14/2012	Host immunity to infectious agents: Innate and Adaptive Immunity	Ch. 9, 10, 11, 12	
9/17/2012	Fighting back with anti-microbial therapies: Mechanisms of action and resistance	Ch. 13, 20	
9/19/2012	Fighting back with anti-microbial therapies: Mechanisms of action and resistance	Ch. 13, 20	
9/21/2012	Fighting back with anti-microbial therapies: Mechanisms of action and resistance	Ch. 13, 21	
9/24/2012	<b>Guest Lecture--Dr. Alice Tarun: Host-pathogen Interactions in the malaria parasite</b>	<b>PDF (see courseweb)</b>	
9/26/2012	<b>Guest Lecture--Dr. Carolyn Coyne: Host-pathogen interactions of enteroviruses</b>	Ch. 64	
9/28/2012	Modern outbreaks of infectious disease	<b>PDFs (see courseweb)</b>	
10/1/2012	<b>EXAM 1</b>		
10/3/2012	Enteric gram negative pathogens: Cholera, Salmonella, Shigella, E. coli	Ch. 30, 31	
10/5/2012	Enteric gram negative pathogens: Cholera, Salmonella, Shigella, E. coli	Ch. 30, 31	
10/8/2012	<b>No classes today. Fall break.</b>		This class meets on Tuesday.
10/9/2012	Enteric gram negative pathogens: Cholera, Salmonella, Shigella, E. coli	Ch. 30, 31	Tuesday, but Monday Classes.
10/10/2012	<b>"News and Views" Presentations, Group 1. "News and Views" paper due for Group 1.</b>		
10/12/2012	<b>"News and Views" Presentations, Group 2. "News and Views" paper due for Group 2.</b>		

10/15/2012	<b>"News and Views" Presentations, Group 3. "News and Views" paper due for Group 3.</b>		
10/17/2012	Enteric gram positive pathogens: Staphylococcus, Streptococcus, Enterococcus	Ch. 21, 22, 23	
10/19/2012	Enteric gram positive pathogens: Staphylococcus, Streptococcus, Enterococcus	Ch. 21, 22, 23	
10/22/2012	Intracellular bacterial pathogens: Legionella, Mycobacterium, Listeria	Ch. 25, 28, 37, 44, 46	
10/24/2012	Intracellular bacterial pathogens: Legionella, Mycobacterium, Listeria	Ch. 25, 28, 37	
10/26/2012	Intracellular bacterial pathogens: Legionella, Mycobacterium, Listeria	Ch. 25, 28, 37	
10/29/2012	Obligate intracellular pathogens: Chlamydia and Rickettsia	Ch. 44, 46	
10/31/2012	<b>EXAM 2</b>		
11/2/2012	Viruses: Basic principles, replication and anti-viral therapies	Ch. 48, 49, 67	
11/5/2012	<b>"News and Views" Presentations, Group 4. "News and Views" paper due for Group 4.</b>		
11/7/2012	<b>"News and Views" Presentations, Group 5. "News and Views" paper due for Group 5.</b>		
11/9/2012	<b>"News and Views" Presentations, Group 6. "News and Views" paper due for Group 6.</b>		
11/12/2012	DNA viruses: Hepatitis B	Ch. 65	
11/14/2012	DNA viruses: Poxviruses	Ch. 54	
11/16/2012	Single stranded positive strand RNA viruses (retroviruses): HIV	Ch. 64	
11/19/2012	Single stranded negative strand RNA viruses: The hemorrhagic RNA viruses Ebola and Marburg	Ch. 60	
11/21/2012	Thanksgiving Break		Thanksgiving Break
11/23/2012	Thanksgiving Break		Thanksgiving Break
11/26/2012	Influenza, prions	Ch. 59, 66	
11/28/2012	<b>EXAM 3</b>		
11/30/2012	Parasites: Pathogenesis and Global Health	Ch. 78, 80	
12/3/2012	Parasites: Malaria and Toxoplasma	Ch. 82	
12/5/2012	Parasites: Leishmania, Trypanosoma	Ch. 82	
12/7/2012	Parasites: Roundworms and Flatworms	Ch. 83, 84, 85	Last Day of Classes
12/12/2012	<b>Final Exam: Covers the parasite section and has a comprehensive component: Wednesday, December 12, 2012 from 12:00 p.m. to 1:50 p.m. in Langley A214</b>		