

New and Emerging Diseases

(BIOL 10310)

Instructor: Sofia Windstam

Email: swindstam@ithaca.edu

Office/Phone: CNS 280 274-5141

Fall 2009

Class time & place: Textor Hall 101

M/W/F: 11:00-11:50

Office Hours: Via scheduled appointment

Required readings

1. News stories, research and feature articles, chapters from other books, weblinks, podcasts, and streaming video clips that will be made available on the course website
2. Lesson power points will also be made available on the course website

Personal response system/clickers

You are required to purchase an Interwrite personal response system (PRS) for use in this class unless you already own one.

Course Website

You are expected to use the BIOL 10310 Blackboard CE 6 website for all course related material.

According to ITS, this is absolutely imperative in order for you to use all of Blackboards functions properly: 1. You must run the script before you enter the course site (choose "Run" for the little window that shows up when you first login to BB). 2. You must disable pop-up blockers. 3. You must install (and keep updating when asked) your java at www.java.sun.com. If you do not, you will have issues with your quizzes. 4. Have the latest Adobe acrobat reader for pdf files, which you can get at <http://www.adobe.com/products/reader/>. 5. If problems still persists - contact ITS at 274-1000 between 8-5 or see them at 102 Muller Hall. They will be more likely to help you troubleshoot once they have the specifics of your situation.

For more information on Blackboard for students read the ITS document at http://www.ithaca.edu/computing/quickguides/pdfs/blackboard_students.pdf

Discussion board

I encourage you to post questions on the Blackboard discussion board if they are of general interest (relating to course material and assignments) to everyone in the class. I will post answers on the board for everyone to see.

Course Description

In this course we will be exploring the mindboggling world of disease. We will be delving into history and the relationship between disease and historical events relevant to society. Following history there will be a closer look at the science of disease where we will cover topics that relate to what causes disease, how we measure patterns of disease and some ideas on why we get sick, and how disease is diagnosed and treated. Subsequently we will examine how we relate to disease, disease funding, and we will take a closer look at both new and old diseases that plague humankind. Finally, we will be placing diseases in a social, economical, and political context and study some of the societal factors and forces that influence disease emergence and spread.

Learning Objectives

At the end of BIOL 10310, you should be able to:

1. Understand diseases in a historical context and, using examples, explain how diseases have changed the world
2. Distinguish between disease causing organisms (virus, bacteria, fungi, protozoa, worms) and outline their main features
3. Explain how disease patterns are described and quantified
4. Describe the underlying principles of disease diagnostic tools (ELISA and PCR)
5. Explain ideas pertaining to why we get sick
6. Evaluate and analyze the diagnostic detective work depicted in "House M.D."
7. Understand what drives our perceptions of disease and disease funding streams
8. Explain what social factors are important factors that influence disease distribution and how they impact disease
9. Reflect on your service learning experience and how it impacted you as well as what impact you had

Attendance Policy and Participation Grade

You are expected to attend each class and to prepare for class discussion by reading the assigned reading as we will discuss readings every time the class meets. I will post questions in class that you can answer using your Interwrite PRS clicker. Your responses will be recorded and by answering *all* the questions you will automatically earn 5 participation points. You will receive 1 additional point for answering a question correctly, unless the question is open ended (i.e. no right or wrong answer). We will use clickers from the onset of this class, but scores will not be kept until September 2. Each student will automatically receive +20 p at the beginning of the semester that can be used toward missed classes or forgotten clickers. I wish to foster a safe class room environment that is open for inquiries and where all parties are treated with equal respect. You are welcome and encouraged to ask questions during class time.

Reading Quizzes

Before each class there is a 2-3 question quiz on the readings that you need to do before coming to class (due at 10 am the day of class). Failure to do the quiz prior to class results in you automatically losing credit for that quiz. You are allowed to drop two of these short quizzes without it affecting your grade. If you take all the quizzes then I will drop the two quizzes with the lowest score. The lecture quizzes will start on September 2.

Civic engagement duties

The class will collaborate with the Village at Ithaca (<http://www.villageatithaca.org/>) where each individual (instructor and students) will donate 10 hrs of service to the Village and its partner organizations. The Village advocates excellence and equity for all students within the Ithaca Public School system and we will help support this mission. At the beginning of the semester I will release a list of available volunteer activities and what is required to meet the civic engagement requirements for each activity. You will keep a time sheet and each activity that you perform will require the signature from the responsible community liaison. If you sign up for an activity and you are unable to make your appointment you are responsible for notifying the community liaison and me as soon as possible. If you chose an activity that is done weekly then it is your responsibility to switch spots with a fellow student. Failure to complete the full CED will result in a 0 for this assignment. Your civic engagement duty forms the experiential foundation for the reflective writing assignment and without it you will be unable to complete your reflective writing assignment.

Reflective writing assignments

Note that you must complete your civic engagement duty in order to do this assignment. This assignment is semester long and you will be required to turn in portions of the assignment throughout the semester. See detailed instructions on the reflective writing assignment in the "Course Documents" folder in the BB course site.

Grading

Participation	15%
Lecture Quizzes	15%
Laboratory Experience and “House MD” analysis	15%
Civic engagement duty	10%
Reflective writing assignment	25%
Prelim 1, 2, and Final Exam	20%

Note that there will be no extra credit assignment available in this class.

Grading scale

Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
Percent	≥93%	90-92%	87-89%	83-86%	80-82%	77-79%	73-76%	70-72%	67-69%	63-66%	60-62%	<60%

Study guides

I will not hand out study guides in this class. The reading quizzes, in class questions, discussions, labs, and homework serve as the foundation for the exams and provide you with ample opportunities to engage with the course material. In the “Course Documents” folder in the course BB site you can find documents called “Historyguide”, “Scienceguide”, “Diseasesguide” and “Socialguide”. Printing these out and filling them out while in class or reading will allow you to create a scaffold of the course information and ideas and will help guide you as you study for exams.

Analysis of diagnostics in “House M.D.”

The goal of this assignment is to evaluate and analyze how diseases are diagnosed using an episode of “House M.D.” as an example. You will select an episode from a list of available episodes and actively take notes as you watch the show. You will then write up an analysis of the disease diagnostic procedure in the episode according to instructions that can be found in the “Course Document” folder of BB.

Laboratory Experience

A lab report for each lab must be submitted as indicated in the schedule. Lab report forms are available on the BB website in the “Course Documentation” folder.

Lab 1. *Diagnosis and Detection of Viral Pathogens*

This lab contains a virtual lab exercise that will expose you to the principles behind immunological detection of viruses using ELISA. The virtual lab portion is created by the Howard Hughes Medical Institute (<http://www.hhmi.org/biointeractive/vlabs/>). Upon completing the lab you should feel comfortable performing an ELISA test, be able to describe how immunological detection works, as well as provide ideas on how to curb spread of viral infection.

Lab 2. *Virtual Diagnosis of Bacterial Causal Agent*

This exercise is meant to expose you to using a molecular identification tool for determining the identity of bacteria using a virtual laboratory created by the Howard Hughes Medical Institute (<http://www.hhmi.org/biointeractive/vlabs/>). You will extract DNA from several patient samples, selectively amplify the bacterial 16S ribosomal DNA gene, purify the PCR products, sequence the product, and perform BLAST searches with the NCBI database to find which bacterial species match the sequence obtained. At the end of the exercise you should be able to explain the principles behind identification using sequencing as well as describe the basis for PCR.

Guest lecturers

Dr Eric Cheyfitz, Cornell University, Ernest I. White Professor of American Studies and Humane Letters, Director, American Indian Program, Faculty Coordinator, Mellon Mays Undergraduate Fellowship Program

Cal Walker, Cornell University and the Village at Ithaca, Outreach Liaison to the Ithaca City School District, Office of Government & Community Relations

Dr Alicia Swords, Ithaca College, Assistant Professor in the Department of Sociology

Exams

Both prelim 1 and 2 have been scheduled during class hours whereas the final exam will be offered on Tuesday December 15 at 4.30-7 pm in 101 Textor Hall. The exams will be a combination of multiple choice, short answer, and essay questions. The exams will cover the following material;

Exam	Date	Material covered	Review session
Prelim 1	October 5	August 28-September 28	October 2 TBA
Prelim 2	November 6	September 30 – November 2	November 4 TBA
Final exam	December 15	November 4 – December 11	December 13 TBA

Review sessions will be based on your questions.

Make-up policy

I will only allow make-ups for assignments and the exams if;

- You have provided notification **prior** to assignment being due and as soon as you have knowledge of missing a deadline
- You have a conflict with another exam (only valid for the final exam)
- You are seriously ill or injured (must provide doctors note or e-mail from the dean's office)
- If there is serious illness or death in your family
- You have a conflict with college or course sanctioned events (must provide note from faculty member, coach etc)
- You have a conflict with a religious holiday (must notify instructor at the beginning of the semester)

Note that there will be no make ups for missed reading quizzes or participation point deductions due to forgotten clickers or missed classes.

Academic Integrity

Ithaca College has strict rules regarding academic misconduct and any cases of suspected cheating and plagiarism will be thoroughly investigated and legally pursued. Plagiarism includes verbatim copying of phrases, sentences, or paragraphs from available literature. Additionally, changing a word here or there as well as paraphrasing also constitutes plagiarism. You must use your own words when turning in work! It is also plagiarism to copy your friend's answers on assignments and turn it in as your own when the assignment is meant to be done and turned in as your own work. More information is available in the "Ithaca College Policy Manual" http://www.ithaca.edu/attorney/policies/vol7/Volume_7-70104.htm

Students with Disabilities

In compliance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act, reasonable accommodation will be provided to students with documented disabilities on a case by case basis. Students must register

with the Office of Academic Support Services (OASS) and provide appropriate documentation to the college before any academic adjustment will be provided. In addition, you will need to schedule a meeting with me at the beginning of the semester or as your disability is documented with the OASS to make sure that proper support can be made available.

Semester schedule

Topics may be changed or reordered during the course of the semester

Date	Topic	Reading	Assignment due
August			
26	Course introduction	Syllabus	
A HISTORY OF DISEASE			
28	Thinking about science, writing and disease	"The origin of disease" "The hot zone camp"	
31	Guest lecture by Dr. Eric Cheyfitz	"Balancing the Earth"	
September			
2	Infectious disease history	"Infectious history"	Learner agreement
4	In the time of cholera	"Cholera"	
7	Labor Day – no classes		
9	The flu pandemic of 1918	"Common viruses that kill" "The Great Pandemic" at http://1918.pandemicflu.gov/index.htm	
11	Black water fever	"Malaria"	Reflective writing assignment – part 1
14	Guest lecture by Cal Walker	Video – "Vanessa Northington-Gamble"	
16	White death	"Tuberculosis: the People's Plague" p 104-124	
18	The great Irish famine	"Fungi as pathogens of food crops"	
21	From the Salem witch trials to LSD	"Ergot of grain crops"	
THE SCIENCE OF DISEASE			
23	Virus – the living dead?	"Virus" "MSNBC – understanding viruses" at http://www.msnbc.msn.com/id/6747497/ns/health-infectious_diseases	
25	Bacteria	"Bacteria" "Firestorm"	
28	Eukaryotic pathogens	"Parasites that kill" "A task in the yard turns lethal"	
30	Epidemiology	"Infectious disease epidemiology"	
October			
2	Diagnosis, prognosis, and treatment	"Chapter 8, The Great Influenza" "Magic bullet"	
5	PRELIM 1		
7	Evolution and the never ending arms race	"An arms race without end"	
9	Darwinian medicine	"The mystery of disease" "Evolution by natural selection"	Lab 1
PERCEIVED THREATS AND REAL KILLERS			
12	Perceived threats, real killers part 1	"Perceived threats, real killers" "Some neglected diseases are more neglected than others"	
14	Perceived threats, real killers part 2	"Germs, science, and the stranger"	Lab 2
16	Fall break – no class		
19	Coming soon to a place near you?	"Pandemic flu – the inside story" www.who.int for real-time updates, recent news clips	
21	Bleeding fevers	"Machupo"	
23	The globetrotting virus	"SARS"	
26	Of mice and men	"A spring to die for: Hantavirus"	
28	Those darn mosquitoes	"A virus from the Nile"	
30	Of deer, mice, and men	"Of old growth and arthritis: Lyme disease"	Analysis of "House"
November			
2	I want to be one less	"High hopes and dilemmas"	
4	Consumption	"The white death" p 69-79 "Trench warfare in a battle with TB"	
6	PRELIM 2		
9	Jungle fever	"Blackwater fever"	
11	And the band played on, part 1	"A chimp called Amandine: HIV/AIDS" "Just another day"	
13	And the band played on, part 2	"Hatar: Vinidogodogo (Danger: a very little thing)" or "The exotic and the mundane"	Reflective writing assignment – part 2
16	The bugs are fighting back	"The bacteria fight back"	
DISEASES AS BIOLOGICAL EXPRESSIONS OF SOCIAL INEQUALITIES			
18	Guest lecture by Dr Alicia Swords		
20	Neglected tropical diseases and poverty	"Devastating global impact" "Neglected infections of poverty in the United States of America"	
23	Thanksgiving break – no class		
25	Thanksgiving break – no class		
27	Thanksgiving break – no class		
30	An anthropologic view on disease	"Rethinking "Emerging Infectious Diseases""	
December			
2	Social inequality	"The persistent plagues"	
4	Class and gender	"Invisible women"	
7	Culture and poverty	"Culture, poverty and HIV transmission"	
9	The cost of prevention and treatment – a story of HIV in Haiti	Video "Paul Farmer"	Reflective writing assignment - final
11	Conclusion and disease jeopardy		

