

Biology 105: Parasites, Pathogens, and Pandemics: Infectious Disease and Society
3 credits
The University of Tennessee, Spring 2018

Lecture: TR, 12:40-1:55, EPS 302

Lecture Instructor: Dr. Crystal McAlvin (cmcalvin@utk.edu OR cbickley@utk.edu)
Office Hours (241 D Strong Hall): TR 2:30 pm-3:30pm
Other meetings by appointment

Course Description: Explores the nature of human infectious disease, including diseases such as bubonic plague, tuberculosis, malaria, AIDS, influenza, and ebola, and non-human diseases and zoonoses. How diseases emerge and spread, how they can be controlled, and what diseases may shape future life on the planet (zombie apocalypse?) will also be discussed.

Satisfies General Education Requirement: (NS)

What you should learn in this course

This course will address the following Natural Sciences (NS) Outcomes:

1. *Students will demonstrate ability to use the basic vocabulary of the course's discipline.*
2. *Students will demonstrate knowledge of fundamental principles, experimental techniques or chief discoveries of the course's discipline.*
3. *Students will demonstrate understanding of basic experimental techniques used by the course's disciplines.*

By the end of the course, you should be proficient in the following topic areas:

1. **The Basics:** History of infectious diseases, basic concepts of disease dynamics, pathogen/parasite diversity, evolution and ecology of infectious diseases.
2. **Emergence of disease:** Zoonoses, human/wildlife interface, climate change, hot zones.
3. **Spread of diseases:** Transmission types (droplets, vectors, sex), superspreading, nosocomial infection, manipulation of behavior.
4. **Control of diseases:** Drug resistance, vaccination and the immune system, herd immunity, quarantines, antibiotics, antivirals, ethical challenges.
5. **Disease type:** Microbial diseases of the skin and wounds, the nervous system and eyes, the cardiovascular system and systemic infections, the respiratory system, the digestive system, and urinary and reproductive system.
6. **Future of infectious diseases:** Evolution of virulence, emergence of drug resistance, eradication of diseases, medicine and evolution.

Support for learning

REQUIRED Materials:

- TurningPoint response "clicker" ("ResponseCard" - Instructions for registration and use are found on the lecture Blackboard site). *At the UT Bookstore*
- Access and registration to the TurningPoint Cloud
- Clicker "tests" will begin January 16-18 and will count towards the grade beginning on January 23rd.

Course website: Go to "Online@UT" to login to Canvas. Readings, videos, homework, and grades for this course will be posted on the Canvas site; some readings will be web articles on scientific reports or popular press articles to emphasize the application of this material to everyday life.

Study Areas: 2nd floor Strong Hall has many tables and quiet spaces to study for non-majors in Biology.

Lecture Schedule (Readings and homework will be posted on Canvas)	Readings and Assignments (Complete readings and assignments prior to class)
Jan. 11 Course Overview and Introduction	None
Jan. 16 BASICS: History of infectious diseases	Early History of Infectious Disease reading and Question set (10 pts)
Jan. 18 BASICS: Pathogen/parasite diversity: bacteria	Prokaryotes reading
Jan. 23 BASICS: Pathogen/parasite diversity: bacteria	
Jan. 25 BASICS: Pathogen/parasite diversity: viruses	Viruses and Prions reading
Jan. 30 BASICS: Pathogen/parasite diversity: HIV infection/resistance	HIV and AIDS reading
Feb. 1 BASICS: Pathogen/parasite diversity: prions	Prion paper reading and Summary (10pts)
Feb. 6 BASICS: Pathogen/parasite diversity: fungi/protists/helminths	Fungi and Protists reading
Feb. 8 BASICS: Pathogen/parasite diversity: fungi/protists/helminths	
Feb. 13 Review	
Feb. 15 EXAM I	
Feb. 20 BASICS/SPREAD: Basic concepts of disease dynamics and spread	Disease Dynamics reading
Feb. 22 EMERGENCE: Evolution of antibiotic resistance and antigenic shift and drift	Emerging Diseases_Antibiotic resistance_Antigenic Shift and Drift reading
Feb. 27 EMERGENCE: Evolution of antibiotic resistance and antigenic shift and drift	
Mar. 1 SPREAD: Superspreading and Superflu video	
Mar. 6 EMERGENCE: Coevolution of host and pathogen/parasite	
Mar. 8 EMERGENCE: Coevolution of host and pathogen/parasite	
Mar. 20 CONTROL: Immunity and Vaccinations	Immune System
Mar. 22 CONTROL: Immunity and Vaccinations	Immunization and Vaccination
Mar. 27 Review	
Mar. 29 EXAM 2	
Apr. 3 DISEASE: Microbial cardiovascular and systemic diseases	
Apr. 5 DISEASE: Microbial diseases of the respiratory system	
Apr. 10 DISEASE: Microbial diseases of the digestive system	
Apr. 12 DISEASE: Microbial diseases of the urinary and reproductive systems	

Apr. 17	DISEASE: Microbial disease of nervous system and eyes	
Apr. 19	DISEASE: Microbial diseases of skin and wounds	
Apr. 24	FUTURE: Eradication of diseases, future human diseases/are zombies possible?	
Apr. 26	REVIEW	Disease Paper due (100pts); Extra credit video due (up to 10 pts)
<p>Final Exam (Exam 3): 12:30-2:30 pm, Wednesday May 2nd. <i>As per the registrar's website: "Final exams must be given during the final exam period at the scheduled time, although alternative uses of the scheduled exam period may be designated by the instructor. Students are not required to take more than two written exams on any day. The instructor(s) of the last non-departmental exam(s) on that day must reschedule the student's exam during the exam period. It is the obligation of students with such conflicts to make appropriate arrangements with the instructor at least two weeks prior to the end of classes."</i></p>		

****This schedule is tentative and subject to change!****

Jan 19 - Last day to drop without a "W"; Apr. 3 - Last Day to Drop with a "W" (WP/WF);

Apr. 27 - Last Day for a University Withdrawal

Assessment of your learning

Assessment (quizzes, exams, assignments) is very important to the learning process. It lets you and I know what you understand and what you do not. I assess often because it encourages you to keep up with your studying and helps you learn – every time you have to re-process information you learn more.

The exams will all be a mixture of multiple choice and short answer. I include written responses and assignments because this type of assessment encourages you to deepen your understanding.

Lecture: (800 points total)

Exams	450 points
3 Exams (150 pts each)	
Quizzes and Assignments (total points will be scaled to 350 regardless of actual total)	350 points
Homework, Clicker Points, and In and Out-of-class Assignments	

Exams / Quiz / Assignment Policies:

- NO make-up clicker points or in-class assignments will be given; there will be "extra" points built into the course to allow for missing classes, forgetting your clicker, etc.
- NO make-up exams will be given without a valid excuse (e.g., family emergency, medical emergency, etc). The excuse MUST be documented.
 - **VERY IMPORTANT:** If you are going to miss an exam, you MUST contact me prior to the start of the exam. Send me an e-mail, call, leave a note on my door – whatever – and make sure you include your e-mail AND a phone number where I can contact you.
 - Make-up exams may be short answer, fill-in-the-blank, or essay and will be scheduled at the instructor's convenience and by their permission only.
- All work should be done independently (unless group work is permitted, and then you may ONLY work within your group on the assignment); plagiarism software will be used to check written assignments for copying from classmates or other sources. **Plagiarism will result in stiff penalties – please see section below. **Using a classmates' clicker to give them points is plagiarism!!**

Final letter grades will be determined by the total percentage of 800 points accumulated as follows:

A	93 – 100%	C	73 – 76%
A-	90 – 92%	C-	70 – 72%
B+	87 – 89%	D+	67 – 69%
B	83 – 86%	D	63 – 66%
B-	80 – 82%	D-	60 – 62%
C+	77 – 79%	F	<60%

Academic integrity:

Academic dishonesty of any sort will not be tolerated. Plagiarism includes the copying of phrases, portions of sentences or the main ideas from ANYONE (including a classmate) on ANY work submitted for a grade (exams, assignments, quizzes, etc). Academic dishonesty also includes assisting other students on quizzes or exams.

You are expected to abide by The University of Tennessee honor statement in Biology and in all of your university activities as pledged in the honor code:

“An essential feature of the University of Tennessee, Knoxville, is a commitment to maintaining an atmosphere of intellectual integrity and academic honesty. As a student of the University, I pledge that I will neither knowingly give nor receive any inappropriate assistance in academic work, thus affirming my own personal commitment to honor and integrity.”

(2014-2015 Undergraduate Catalog)

Depending on the offence, penalties for academic dishonesty range from a minimum of a zero for the assignment, to an F for the course, to the filing of formal academic dishonesty charges seeking dismissal from The University of Tennessee. These choices are at the discretion of the instructor, and can occur in either the lecture or the discussion portion of the class.

You should be familiar with the requisites of academic honesty and what constitutes academic dishonesty as outlined in the UT Undergraduate Catalog (<http://catalog.utk.edu/>).

Conduct and Communication:

Technology: While in class, keep all electronic devices (especially smartphones) out of sight. The use of laptops in class will be discussed the first week of class. Anyone caught using multiple clickers will have ALL of their clicker points deleted for the semester. **During exams and quizzes, any electronic device seen on your desk or within sight will result in a grade of zero.**

Communications:

- You need to regularly check your [utk e-mail account](#) for weekly announcements related to this course. If you are not receiving those e-mails, there is something wrong with your account!
- If you need to meet and can't make office hours, please use your UTK e-mail (spam filters may exclude other addresses) to schedule a meeting.

- I am happy to answer your e-mail questions, but allow up to 24 hours for a response. Also, once I leave the office I may not check my e-mail until the following workday, or the first day back after a weekend.

Other information

Disability Services: If you need course adaptations or accommodations because of a documented disability, please contact me privately to discuss your needs. If you have questions or concerns about disabilities or emergency information to share, please contact Disability Services: 2227 Dunford Hall; 974-6807; Email: ods@utk.edu; Website: <http://ods.utk.edu/>).

Academic Assistance:

Tutoring: The Division of Biology does not offer tutoring services. Contact the Student Success Center and the Academic Support Unit of The Office of Minority Student Affairs for information about tutoring opportunities.

- **Student Success Center:** The comprehensive source for information, services, and resources to assist your success at UT: <http://studentsuccess.utk.edu>
 - 812 Volunteer Boulevard, Greve Hall, room 324
 - 865 974-6641, Email: studentsuccess@utk.edu

Technical Assistance:

Canvas, clickers, or general information technology assistance:

- Help Desk: 865 974 9900 (M – F, 8:00 – 5:00)
- OIT Walk-In Help Desk: Commons, 2nd floor Hodges Library
- Turning Technologies (clickers): 866 746 3015

Counseling Center: <http://counselingcenter.utk.edu/>
1800 Volunteer Boulevard
865 974-2196, Email: counselingcenter@utk.edu

OTHER RESOURCES FOR STUDENTS:

- One Stop: <http://onestop.utk.edu> (start here for any question you have)
- Undergraduate Catalogs: <http://catalog.utk.edu> (Listing of academic programs, courses, and policies)
- Hilltopics: <http://dos.utk.edu/hilltopics> (Campus and academic policies, procedures and standards of conduct)
- Course Timetable: https://bannersb.utk.edu/kbanpr/bwckschd.p_disp_dyn_sched (Schedule of classes)
- Academic Planning: <http://www.utk.edu/advising> (Advising resources, course requirements, and major guides)
- Library: <http://www.lib.utk.edu> (Access to library resources, databases, course reserves, and services)
- Career Services: <http://career.utk.edu> (Career counseling and resources; HIRE-A-VOL job search system)