

Evolution of Epidemics: Biol 804

Course Syllabus – Fall 2022

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Office hours: MWF 1:30 – 2:30 CST or by appointment

Course Description

Plagues have caused suffering and death for humans for hundreds of years. These events have destroyed economies, ended wars, and changed the course of civilizations. Plagues have been the focus of fables, nightmares, art, and scientific breakthroughs. Attempts to combat the unseen lethal agents have ranged from the superstitious to the latest in scientific advancement. In this course, the history of plagues will be introduced, discussion on the pathogens that cause them and how those pathogens are evolving, and their possible future.

This class has implications in the present world. In the past few decades, there have been several completely new disease organisms that are responsible for epidemics and changes in “old” infectious agents that are now capable of causing epidemics. Humans have also contributed to changes in infectious disease due to wars, natural disasters, reliance on high-density animal production, failures in public health, and greater population density. We will discuss this human contribution and how we might also reduce the appearance of epidemics...or even if this is possible.

Course Objectives: Following completion of this course, students should be able to:

1. Understand the historical background of plague-causing organisms and their effects on humans.
2. Gain knowledge of the origin and evolution of plague organisms.
3. Understand the role of humans on pathogen evolution.

Required Materials

Text: Twelve Diseases that Changed Our World

Author: Irwin W. Sherman

ASM Press, 2007

Required Materials

Computer and Software:

Access to a computer with internet access, Microsoft Word and PowerPoint. Software can be purchased through UNK bookstore at a discount. We will have video presentations that require the use of a webcam. These can be found through Walmart or Amazon starting around \$10.

Communication

The best way to reach me is through email. I will respond to email fairly quickly and if you need to talk to me please email me and we can set up a time to talk further. You should frequently check your UNK email and Canvas for course assignments or announcements. PowerPoints will

be posted on Canvas but you will still be required to watch lectures as additional information provided during lectures will be pertinent.

Grading

Discussion (5pts each)	50
Quizzes (10pts each)	140
Group Project	30
Short Presentation	30
1 Exam (50pts each)	50
<u>Research Paper</u>	<u>30</u>
Total	330

Grades will be assigned using the Department of Biology standard grading scale: follows: A (93-100%), A- (90-92%), B+ (88-89%), B (83-87%), B- (80-82%), C+ (78-79%), C (73-77%), C- (70-72%), D+ (68-69%), D (63-67%), D- (60-62%), and F (below 60%).

Discussion

I will post questions on Canvas on Tuesdays and you will have until the following Monday to participate (unless directions specify differently). To receive full credit, students must have significant contributions weekly on each discussion topic. Your responses must contribute something new to the discussion and not simply restate what was mentioned in the previous response. References will be required to support your statement. Please be considerate of your classmates' responses, abusive comments or attacking other student's comments will not receive credit as comments should be constructive even if you strongly disagree with another student.

Exams/Quizzes

There will be one comprehensive exam at the end of the semester made up of short answer, multiple choice, matching, and true/false questions. There will be weekly quizzes that are due on Monday of each week. These will consist of material from lectures and assigned readings. Lockdown Browser will be used for the exams/quizzes, and they are closed note/closed book.

Group Project

Public health strategies are designed to educate members of the public; however, "othering" and stigmatization continue to occur in these campaigns. Find an example of one of these campaigns and discuss why it is problematic. As a group, create a public awareness poster that educates the public without using "othering" or stigmatizing marginalized groups. Discuss any advantages and limitations of your public awareness poster.

Research Paper

Many emerging diseases are zoonotic in nature and have the potential to cause an epidemic. Identify a wildlife/livestock disease that currently doesn't infect humans. Discuss the disease in terms of transmission, pathogenesis, severity, ease of managing the disease, and environmental factors influencing the disease, likelihood of spilling over into other species (including humans). This should be approximately 2 pages single-spaced and be sure to use a minimum of 5 peer-reviewed primary literature articles.

Short Presentations

We will have questions that require further research to answer. Answer these questions with references and create a short presentation (4-7 min). You will post your video to the discussion board by **November 18th at 11:59pm CST**. You will be responsible for viewing and commenting on three presentations by November 18th. Final discussion on these topics will finish on April 21st.

Academic Dishonesty

Plagiarism will not be tolerated, please refer to the student handbook or ask me for more clarification on the subject if unsure what constitutes plagiarism. It is expected students work independently on assignments unless otherwise stated by the instructor. Group work where not specified will be considered cheating and students will receive a zero for that assignment. Multiple offenses will result in the student(s) receiving a failing grade for the course and possible removal from the program.

Withdraw (W) and Incomplete (I)

In unusual circumstances beyond the student's control, an incomplete (I) may be issued. The (I) is issued as a final grade with the student having 12 months to complete the necessary work. If the coursework is not completed in this time the (I) will be converted to a failing grade (F) on the student's transcript. Students may withdraw from the course before 9 weeks have been completed and a (W) will appear on the transcript. Students are responsible for filling out the necessary paperwork to complete this process. Instructors are not able to withdraw students. If the student drops the class, the (W) will not contribute to the student's overall GPA.

Student Accommodations

Students with Disabilities

It is the policy of the University of Nebraska at Kearney to provide flexible and individualized reasonable accommodation to students with documented disabilities. To receive accommodation services for a disability, students must be registered with the UNK Disabilities Services for Students (DSS) office, 175 Memorial Student Affairs Building, 308-865-8214 or by email unkdso@unk.edu

UNK Statement of Diversity & Inclusion:

UNK stands in solidarity and unity with our students of color, our Latinx and international students, our LGBTQIA+ students and students from other marginalized groups in opposition to racism and prejudice in any form, wherever it may exist. It is the job of institutions of higher education, indeed their duty, to provide a haven for the safe and meaningful exchange of ideas and to support peaceful disagreement and discussion. In our classes, we strive to maintain a positive learning environment based upon open communication and mutual respect. UNK does not discriminate on the basis of race, color, national origin, age, religion, sex, gender, sexual orientation, disability or political affiliation. Respect for the diversity of our backgrounds and varied life experiences is essential to learning from our similarities as well as our differences. The following link provides resources and other information regarding D&I: <https://www.unk.edu/about/equity-access-diversity.php>

Students Who are Pregnant

It is the policy of the University of Nebraska at Kearney to provide flexible and individualized reasonable accommodation to students who are pregnant. To receive accommodation services due to pregnancy, students must contact the Student Health office at 308.865.8218. The

following links provide information for students and faculty regarding pregnancy rights. <https://thepregnantscholar.org/title-ix-basics/>

<https://nwlc.org/resource/faq-pregnant-and-parenting-college-graduate-students-rights/>

Reporting Student Sexual Harassment, Sexual Violence or Sexual Assault

Reporting allegations of rape, domestic violence, dating violence, sexual assault, sexual harassment, and stalking enables the University to promptly provide support to the impacted student(s), and to take appropriate action to prevent a recurrence of such sexual misconduct and protect the campus community. Confidentiality will be respected to the greatest degree possible. Any student who believes she or he may be the victim of sexual misconduct is encouraged to report to one or more of the following resources:

- **Local Domestic Violence, Sexual Assault Advocacy Agency** 308-237-2599
- **Campus Police (or Security)** 308-865-8911
- **Title IX Coordinator** 308-865-8655

Retaliation against the student making the report, whether by students or University employees, will not be tolerated.

Week	Schedule
Aug 22 – Aug 29	Basic Concepts in Evolution of Epidemics
Aug 30 – Sep 5	Basic Principles in Virology
Sep 6 – Sep 12	Basic Principles in Immunology
Sep 13 – Sep 19	Social Evolution of Epidemics
Sep 20 – Sep 26	Intro to Epidemiology
Sep 27 – Oct 3	One Health
Oct 4 – Oct 10	Tuberculosis
Oct 11 – Oct 17	Plague, Research Paper
Oct 18 – Oct 24	Cholera
Oct 25 – Oct 31	Malaria
Nov 1 – Nov 7	HIV
Nov 8 – Nov 14	Syphilis
Nov 15 – Nov 21	Yellow Fever
Nov 22 – Nov 28	Thanksgiving Break
Nov 29 – Dec 5	Influenza
Dec 6 – Dec 12	COVID-19, Monkeypox, and Other Emerging Infectious Diseases
Finals Week	Final Exam