Valdosta State University
BIOL 3860/5860 Emerging Infectious Diseases
Summer IV 2020

Instructor: Dr. Eric W. Chambers
Lectures posted: 9:00 am MTWRF
Office Hours: 11:00 – 12:00 MWF Via Zoom
Optional Zoom Discussions: TBD
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Text:
(1) Emerging Infectious Diseases: A Guide to Diseases, Causative Agents, and Surveillance by Lisa A. Beltz, Jossey-Bass ISBN: 0470398035. Available on line at **Ebook Central Academic Complete - GALILEO**

(2) Primary literature dealing with emerging infectious diseases. These will be available to students through Blazeview.

Course Description: This course will explore issues associated with emerging infectious diseases (EID). Currently, we find ourselves impacted by the first truly dangerous global pandemic in the last 100 years, the SARS-CoV-2 pathogen, the causative agent of COVID19. We should not be surprised by the rapid emergence of this lethal virus. Over the past 50 years we have seen the ongoing emergence of a variety of viral, bacterial, and parasitic pathogens that have caused dangerous levels of morbidity and mortality on a global scale. During this summer term we will investigate newly emerging diseases including HIV-AIDS, the novel coronaviruses (SARS, MERS, and COVID19), Ebola virus disease (EVD), Nipah virus (NiV) and Zika virus. In addition, we will explore the old foes of humanity, including influenza, and vector borne diseases such as Lyme disease malaria, West Nile virus, dengue virus, Chagas disease and Leishmaniasis; all which are re-emerging with a vengeance globally.

Course goals: The purpose of this course is to provide you with a broad introduction to infectious disease agents. Upon completion of this course you will be familiar with major global emerging infectious diseases. You will become familiar with the causative agents of each disease as well as with their associated vectors. The manifestation of disease symptoms will be addressed including the molecular basis of infection. You will be introduced to the symptoms associated with each disease and you will learn how the human immune system responds to infection. You will also become acquainted with the diagnosis, treatment, and prevention of the diseases covered in the course. You will learn the factors associated with transmission of these diseases and the important role of disease surveillance. Finally, you will be familiar with those agents that could be employed as agents of bioterrorism.

This course will serve as an excellent introductory course in infectious diseases for students who will be pursuing future graduate studies in biology as well as for those who will be pursuing careers in medicine and public health.

Educational outcomes: Listed at the end of syllabus

Attendance: This is a 3-week online course. Each morning I will post video lectures on the assigned topic. I will also post the PowerPoint presentation for you to review. In order to be successful in this course you will need to do the following:

1. Review assigned chapters from the textbook and or papers the day before lectures will be posted.

2. View the record presentations each day. I would recommend you view them during the morning hours. Do not put off viewing the lectures. It will be difficult to benefit from them if you try to watch a week's worth of lectures in one day.

3. Complete any assigned homework projects in a timely fashion.

4. Attend any optional virtual discussion groups held. These are not required but I highly recommend that you attend any scheduled discussion groups to have an opportunity to interact with me (the instructor) as well as your fellow students.

The key to success is in this course is to NOT procrastinate! (That means keeping up with the daily assigned work!)

Dropping the course: The last day to drop the course is July 8, 2020 @ 11:59 PM

Withdrawing from the course: The last day to withdraw from the course (you will receive a W) is Friday, July 17, 2020. If you don't officially withdraw, and instead just stop coming to class, you will receive an F for the course.

Academic conduct: Cheating and plagiarism will not be tolerated and may result in a failing grade for the assignment, exam, or the class. The Department of Biology has a plagiarism policy, which will be handed out during the first lab period.

TurnItIn: By taking this course, you agree that all required course work may be subject to submission for textual similarity review to Turnitin, a tool within BlazeVIEW. For more information on the use of Turnitin at VSU see Turnitin for Students

Student identification: Students should have in their possession at all times their VSU student identification card. In order to verify the identification of students officially enrolled in the course, it is the instructor's prerogative to request official

student photo identification cards at any time during lecture. During examinations, students will routinely be asked to display their VSU student identification cards visibly on the desktop and to make them available for inspection by their instructor and/or assistants.

Privacy Act (FERPA): The Family Educational Rights and Privacy Act (FERPA) prohibits the public posting of grades by social security number or in any manner personally identifiable to the individual student. No grades can be given over the telephone or over email because positive identification can't be made.

Students with disabilities: Students requiring special accommodations because of disability should discuss their needs with me as soon as possible. Those needing accommodations that are not registered with the Special Services Program must contact the Access Office for Students with Disabilities located in Farber Hall. The phone numbers are 245-2498 (voice) and 219-1348 (tty).

Procedure for exams:

- **All exams will be open book**
- **You are permitted to use any resources available to you (both online and hard copy)**
- **You are NOT permitted to consult with other students in the class**

Grade Assessment: Your final grade will be based on your performance on homework, lecture examinations and written assignments

1. Unit Exams (60%). There will two exams in this course. The first will be administered at mid-term and the second at the end of the semester. Each exam will cover the material for a specific unit and will consist of free response questions. These responses may be in the form of short or long-form written responses or could be based upon solving and interpreting epidemiological data associated with a disease outbreak. There will be NO multiple-choice questions.

The exams are open book. You may consult a variety of sources including the textbook, the PowerPoint lectures, homework assignments, assigned scientific papers, etc. You are also permitted to use reference databases such as PUBMED and Google Scholar. You are **NOT** allowed to consult with your classmates.

You should be as complete as possible in your responses. I am going to ask you to stretch yourselves in your responses. **DO NOT** copy verbatim (that means word-for-word) from the textbook or some other scientific paper. Summarize the information from other sources and then put your response in your own words.

2. Journal Article Critique (30%): You are required to write a 3-page critical review of a scientific paper. You will select a recent primary research paper

(not a review article) focusing on an emerging disease pathogen or an emerging disease. **All paper topics will need to be approved by me. This means you will need to email me a pdf copy of the paper.**

The paper will be double-spaced (12-point Times Roman font). Your goal is to help the reader understand the paper without having to read the original study. You will need to summarize the study in your paper but in addition you are to ***analyze*** and ***evaluate*** the study. In order to fully complete this assignment you should address the following questions in your critique:

1) What was the purpose of this study?
2) What was known about the subject prior to the study (background)?
3) What questions did the researchers seek to answer?
4) What was the experimental design and methods? Were they novel or unique? Was the methodology appropriate for the study?
5) What were the results of the study? Summarize all the key findings.
6) Do the results justify the author's conclusions? Do you agree with the conclusions that the authors reached?
7) What might be some follow-up experiments that the researchers could perform?

Spelling and grammar will count!! **There will be a 10% reduction in grade for each day the assignment is late.**

3. Homework assignments (10%): There will be a limited number of online assignments and or problem sets that will assist you in understanding the epidemiology of disease pathogens.

Grade Scale: For Biology majors, a grade of C or higher is required for this course.

A 90-100%
B 80-89%
C 70-79%
D 60-69%
F < 60%

BIOL 5860 Students: There are two differences in the graduate course

1. You will complete two literature critiques one due at midterm and one due at the end of the semester. The first paper can be on any topic of your choosing. The second paper must be related to COVID19.
2. Some of your exam questions will be more challenging than those of the undergraduates

Summer 2020 TENTATIVE LECTURE SCHEDULE

Unit 1 – Introduction to Human Disease, Pandemics and spillover	
Course Intro Brief History of Infectious Disease How Humans and pathogens interact	Syllabus Chapter 1 Chapter 2
HIV and AIDS	Chapter 16
Ebola Virus Disease (EVD)	Jacob et al., 2020 Alexander et al., 2015 Mwangi et. al., 2016
Henipaviruses (Nipah and Hendra)	Wang and Anderson, 2019 Pillai et al., 2020
SARS and MERS	Chapter 21
SARS-CoV2 (COVID19)	TBD
Epidemic and Pandemic Influenza	Chapter 19 Bisset and Hoyne, 2020
Exam #1	**July 16, 2020**
UNIT 2 – Vectorborne diseases and Bioweapons	
Lyme Disease	Chapter 3
Dengue and Yellow Fever virus	Chapter 15
Malaria	Chapter 24 Amir et al., 2018
Chagas Disease	Chapter 27
West Nile, Chikungunya, and Zika viruses	Chapter 22 Musso and Gubler 2019 Silva and Desmody, 2017
Small Pox and Monkey Pox	Chapter 23
Bioterror Agents – Plague and Anthrax	Narayanan et al., 2018 Weiner and Glomski 2012; Hinnebusch et al., 2016
EXAM #2	**July 29, 2020**
Screening and discussion of the film Contagion	**July 30, 2020 @ 9:00 am**

VALDOSTA STATE UNIVERSITY GENERAL EDUCATIONAL OUTCOMES (GEO)

4. Students will express themselves clearly, logically and precisely in writing and in speaking, and they will demonstrate competence in reading and listening. They will display the ability to write coherently in standard English; to speak well; to read, to understand, and to interpret the content of written materials in various disciplines; and to listen effectively and to understand different modes of communication.

7. Students will demonstrate the ability to analyze, to evaluate, and to make inferences from oral, written and visual materials. They will be skilled in inquiry, logical reasoning, and critical analysis. They will be able to acquire and evaluate relevant information, analyze arguments, synthesize facts and information, and offer logical arguments leading to creative solutions to problems.

9. Students will demonstrate understanding of the physical universe and the nature of science, and they will use scientific methods and/or mathematical reasoning and concepts to solve problems.

DEPARTMENT OF BIOLOGY EDUCATIONAL OUTCOMES (BEO)

1. Develop and test hypotheses, collect and analyze data, and present the results and conclusions in both written and oral format used in peer-reviewed journals and at scientific meetings.

2. Describe the evolutionary process responsible for biological diversity, explain the phylogenetic relationships among the other taxa of life, and provide illustrative examples.

3. Demonstrate an understanding of the cellular basis of life.

4. Relate the structure and function of DNA/RNA to the development of form and function of the organism and to heredity

5. Interpret ecological data pertaining to the behavior of the individual organism in its natural environment; to the structure and function of populations, communities, and ecosystems; and to human impacts on these systems and the environment.