PHS 801 EPIDEMIOLOGY OF INFECTIOUS DISEASES (3 credits)

COURSE DESCRIPTION AND LEARNING OBJECTIVES

This is a graduate-level course that introduces basic methods to studying the epidemiology of infectious diseases and reviews infectious diseases of major public health importance. This course covers the basics of microbiology, immunology, and laboratory-based methods and the principles of disease surveillance, outbreak investigation, mathematical models of disease transmission, and prevention strategies. The etiology, epidemiology, prevention, and treatment of ancient, modern, and emerging infectious diseases will also be examined. At the end of this course, you will be able to:

- Describe epidemiologic characteristics of major infectious diseases.
- Apply the steps of outbreak investigation to examine the source of an epidemic.
- Understand how factors related to the host, organism, and environment interrelate to cause the spread infectious diseases.
- Describe how epidemiologic characteristics of infectious diseases are utilized to prevent and control their spread.
- Explore how deterministic models are used to examine the dynamics of spread of infectious diseases in populations.
- Critically evaluate whether an infectious agent is a cause of a given disease.
- Appraise the application of epidemiological methods to study infectious diseases.
- Describe the causes and distribution of current epidemics including newly emerging and reemerging infectious diseases.
- Characterize the impact of infectious diseases on populations and communities locally and globally.

COURSE ORGANIZATION

Course Director: Ajay K. Sethi, PhD, MHS
Associate Professor, Department of Population Health Sciences
601 WARF
608-263-1756; aksethi@wisc.edu

Office Hours: Please email for an appointment

Pre-requisites: PHS/SOC 797, or permission from the course instructor

Instructional Mode: This course is a face-to-face class administered via Canvas on Learn@UW.

Canvas website: https://canvas.wisc.edu/courses/86719

Course time and place: January 23 – May 3, 2018
Tuesdays and Thursdays, 2:30 – 3:45 PM
Health Sciences Learning Center, Room 1345
Readings and Handouts
Given the number of Internet-based resources freely available, you are not required to purchase a textbook for this course. Should you want to expand your growing library of textbooks, consider the following, which is also in the Reserves at Ebling Library:


Please note that there are many textbooks and references on infectious disease and infectious epidemiology. Feel free to access and/or purchase texts that suit your needs.

Reading may be assigned for specific lectures. These will be listed on the course website. Please complete any reading prior to lecture to maximize your learning in class and to promote a didactic learning environment. Copies of all readings and links to websites are available on Canvas. Handouts for individual lectures may or may not be available online prior to class.

How Credit Hours are met by the Course
PHS 801 is a 3-credit course. To fulfill this credit level, this class meets for three 50-minute class period each week over the spring semester and carries the expectation that you will work on course learning activities (e.g., reading, writing, problem sets, studying, etc.) for about 2 hours out of classroom for every class period. The syllabus includes additional information about meeting times and expectations for your work in the class.

Student Evaluation
You will be evaluated on completion of and performance on four in-class exercise(s) and two exams, which will comprise your total grade for the course based on the following breakdown: 40% for in-class exercises, 30% for Exam 1, and 30% for Exam 2.

Attendance will not be taken, but out of respect to the many lecturers who are contributing their time and expertise and because the lectures are an essential component of the class, all students are expected to attend class.

Your final course grade will be calculated using the following 100-point scale:
- A 93-100
- AB 88-92
- B 83-87
- BC 78-82
- C 70-77
- D <70
Nondiscrimination Policy. The UW Madison is committed to creating a dynamic, diverse and welcoming learning environment for all students and has a nondiscrimination policy that reflects this philosophy. Disrespectful behaviors or comments addressed towards any group or individual, regardless of race/ethnicity, sexuality, gender, religion, ability, or any other difference is deemed unacceptable in this class, and will be addressed publicly by the professor.

Disability Reasonable Accommodation Policy. If you qualify for accommodations because of a disability, please submit a letter to the course director that outlines your request in a manner that is timely and consistent with established university policies for making such request so that your needs may be addressed. Policies for accommodating disabilities are available through the McBurney Disability Resource Center, 903 University Ave., 608-263-2741(phone), 263-6393 (TTY), 265-2998 (Fax), mcburney@uwmadmail.services.wisc.edu. For additional information, please see http://www.mcburney.wisc.edu/

Religious Reasonable Accommodation Policy. Every effort shall be made to reasonably and fairly accommodate all students who, because of religious obligations, have conflicts with scheduled exams, assignments, or required attendance, provided advance notification of the conflict is given. Whenever possible, students should give at least one week advance notice to request special accommodation.

Student Honesty and Rules of Conduct. Academic honesty requires that the course work (e.g., quizzes, papers, exams) a student presents to an instructor honestly and accurately indicates the student's own academic efforts. These policies are available at http://www.studentaffairs.wisc.edu/. UWS 14 is the chapter of the University of Wisconsin System Administrative code that regulates academic misconduct. UW-Madison implements the rules defined in UWS 14 through our own "Student Academic Misconduct Campus Procedures." UWS 14.03 defines academic misconduct as follows: "Academic misconduct is an act in which a student: seeks to claim credit for the work or efforts of another without authorization or citation; uses unauthorized materials or fabricated data in any academic exercise; forges or falsifies academic documents or records; intentionally impedes or damages the academic work of others; engages in conduct aimed at making false representation of a student's academic performance; assists other students in any of these acts."

If you are accused of misconduct, you may have questions and concerns about the process. If so, you should feel free to call Student Advocacy & Judicial Affairs (SAJA) in the Offices of the Dean of Students at (608) 263-5700 or send an email to dos@bascom.wisc.edu.

Civility Policy. Members of the University of Wisconsin-Madison community are expected to deal with each other with respect and consideration. The civility policy for this course promotes mutual respect, civility and orderly conduct among the faculty, teaching assistants, and students. We do not intend this policy to deprive any person of his or her right to freedom of expression. Rather, we seek to maintain a safe, harassment-free workplace for the students, faculty, and teaching assistants. Positive communication is encouraged and volatile, hostile, or aggressive actions and language will not be tolerated. If the civility policy for this course is violated, the individual is subject to removal from the class and possibly the course altogether. In addition, the proper authorities at the UW Departmental, School, and University levels will be notified of such behavior accordingly and further action may be taken if necessary.
## COURSE SCHEDULE

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<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Lecturer</th>
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<tr>
<td>Jan 23</td>
<td>Lecture: Introduction and classification of infectious diseases</td>
<td>Sethi</td>
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<tr>
<td>Jan 25</td>
<td>Lecture: Host susceptibility and response to infectious diseases</td>
<td>Sethi</td>
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<tr>
<td>Jan 30</td>
<td>Lecture: The human microbiome</td>
<td>Sethi</td>
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<td>Feb 1</td>
<td>Lecture: Zoonotic disease</td>
<td>Kazmierczak</td>
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<td>Feb 6</td>
<td>Lecture: Surveillance</td>
<td>Muganda</td>
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<td>Feb 8</td>
<td>Lecture: Laboratory methods in the study of infectious diseases</td>
<td>Warshauer</td>
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<td>Feb 13</td>
<td>Lecture: Statistical methods in surveillance</td>
<td>Gangnon</td>
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<td>Feb 15</td>
<td>Lecture: Outbreak investigation</td>
<td>Klos</td>
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<td>Feb 20</td>
<td>Exercise 1</td>
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<td>Feb 22</td>
<td>Exercise 1 discussion</td>
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<td>Feb 27</td>
<td>Lecture: Models to study infectious diseases</td>
<td>Sethi</td>
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<tr>
<td>Mar 1</td>
<td>Exercise 2</td>
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<td>Mar 6</td>
<td>Lecture: Applied mathematical models for health and disease</td>
<td>Döpfer</td>
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<td>Mar 8</td>
<td>Lecture: Vectors</td>
<td>Bartholomay</td>
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<td>Mar 13</td>
<td>Exam 1</td>
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<td>Mar 15</td>
<td>Lecture: Determining if a disease is caused by an infectious agent</td>
<td>Sethi</td>
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<td>Mar 20</td>
<td>Lecture: Evidence for an infectious cause of Crohn’s disease</td>
<td>Collins</td>
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<td>Mar 22</td>
<td>Lecture: Establishing Zika virus as a cause for microcephaly</td>
<td>Bautista</td>
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<td>Spring Break March 24 – April 1</td>
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<td>Apr 3</td>
<td>Lecture: Vaccine preventable diseases</td>
<td>Conway</td>
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<td>Apr 5</td>
<td>Lecture: Influenza vaccination</td>
<td>Belongia</td>
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<td>Apr 10</td>
<td>Lecture: Hepatitis</td>
<td>Striker</td>
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<td>Apr 12</td>
<td>Lecture: Intersection Between the Opioid and Hepatitis C Virus</td>
<td>Watts</td>
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<td>Apr 17</td>
<td>Lecture: Zika Virus Disease</td>
<td>Aliota</td>
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<td>Apr 19</td>
<td>Lecture: West Nile Virus</td>
<td>Goldberg</td>
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<td>Apr 24</td>
<td>Lecture: HIV/AIDS</td>
<td>Sethi</td>
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<td>Apr 26</td>
<td>Lecture: Malaria</td>
<td>Paskewitz</td>
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<td>May 1</td>
<td>Lecture: Infection Control</td>
<td>Safdar</td>
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<td>May 3</td>
<td>Exam 2</td>
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GENERAL RESOURCES

Websites of interest

Centers for Disease Control and Prevention (http://www.cdc.gov/)

World Health Organization (http://www.who.int/en/)

National Institute of Allergy and Infectious Diseases (http://www3.niaid.nih.gov/)

Journals

The Journal of Infectious Diseases (http://www.journals.uchicago.edu/JID/home.html)

Clinical Infectious Diseases (http://www.journals.uchicago.edu/CID/home.html)

Emerging Infectious Diseases (http://www.cdc.gov/ncidod/eid/)

Infection Control & Hospital Epidemiology (http://www.sheaonline.org/JournalNews/ICHEJournal.aspx)

Morbidity & Mortality Weekly Report (http://www.cdc.gov/mmwr/)

Books


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