

Epidemiology and Control of Infectious Diseases

*Public Health 253B (CCN: 76211)
UC Berkeley School of Public Health
Spring 2009, Modified 2009-05-10
<http://www.idready.org>*

Instructor

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Course description

This is a one semester advanced introduction to the epidemiology and control of infectious diseases. The course is taught from the perspective public health communicable disease control officers: frontline practitioners that detect, investigate, control, and prevent infectious diseases in communities. The lectures are given by public health communicable disease and academic experts that practice, teach, investigate, or conduct research in their specific areas. The course will emphasize (1) core concepts in infectious disease transmission mechanisms, dynamics, and containment; (2) evidence-based approaches to designing and implementing infectious disease control and prevention measures; and (3) epidemiologic methods for investigating infectious diseases.

Target audience

This course targets graduate and undergraduate public health students; public health practitioners, including health officers, deputy health officers, medical epidemiologists, epidemiologists, public health nurses, communicable disease control investigators, bioterrorism coordinators, health educators, microbiologists, environmental health inspectors, etc.

Course prerequisites

1. Introductory course in epidemiology and biostatistics is required.
2. Course in human biology and/or physiology is highly recommended.

Course objectives

Upon completion of this course, participants will be able to:

1. Describe the core epidemiologic transmission concepts for the control of infectious diseases;
2. Describe how to design and analyze a vaccine efficacy and effectiveness study;
3. Describe core concepts used in the mathematical modeling of infectious diseases, and how models are used to guide control and prevention measures;
4. Describe core concepts for public health surveillance, detection, and monitoring;

5. Describe the epidemiology and control of high priority sexually transmitted infections;
6. Describe the epidemiology and control of selected vaccine-prevented diseases including influenza A;
7. Describe how to prepare and respond to intentional microbial threats (e.g., bioterrorism);
8. Describe the epidemiology and control of high priority vector-borne infectious diseases;
9. Describe the epidemiology and control of tuberculosis;
10. Describe the concepts underlying public health infection control, community mitigation measures;
11. Describe the epidemiology and control of malaria;
12. Describe the steps and epidemiologic methods for conducting an outbreak investigation;
13. Describe the epidemiology and control of HIV transmission.

Course format & web site

Lecture, discussion, exercises, term project, and final exam.

Course sites: <http://bspace.berkeley.edu> (roster, emails, drop box) and <http://www.medepi.com> (readings and materials)

Course enrollment and fee

UC Berkeley students should register for Public Health 253B, CCN 76211. Non-registered students who want to receive academic credit will need to register and pay the UC Extension fee (see <http://www.unex.berkeley.edu/info/concur.php>). For all others: to enroll in this course, follow instructions posted on our website at <http://www.idready.org>, or show up to the first day of class.

CIDER follows the UC Berkeley academic calendar. For the complete Academic Calendar, go to <http://opa.berkeley.edu/AcademicCalendar/>.

Course credit/Grading

Units: 3; Grading: Grade or S/U (Satisfactory [S] or Passed [P] is at a minimum level of B.)

Evaluation: Registered students are expected to **attend class** (10%), present **Student MMWR** (10%), complete a CD Epidemiology & Control **Quick Reference Guide** (30%), submit **homeworks** (10%), and take **final exam quiz** (50%).

Final exam will be based on the following:

- Assigned readings
- Lectures and lecture slides
- Any assigned homework

Course location, schedule, and office hours

Day and time: Mondays, 10:00am-1:00pm

Location: Center for Infectious Disease Preparedness, 1918 University Ave., 4th Floor. We are located 2.5 blocks west of the UC Berkeley campus.

Transportation: We are 3 blocks away from the Downtown Berkeley BART station. For traveling information visit <http://www.berkeley.edu/visitors/traveling.html>.

Parking: Nearest parking to CIDP is at City of Berkeley Center Street Garage, 2025 Center Street between Shattuck and Milvia Street.

Office hours: Mondays, 1pm-3pm, and by appointment

CD Student Morbidity and Mortality Weekly Report (MMWR)

Each week two students will present an infectious disease Student Morbidity and Mortality Weekly Report (MMWR) to the class, and lead a discussion.

- Monitor current events for emerging infectious disease issues (e.g., outbreaks, novel agents, methods)
- Select and distribute short article or report on topic by Monday class time of prior week
- Introduce yourself, your affiliation, and CD interests
- Present and summarize article or issue in class
- Emphasize selected concepts learned in class
- Elicit students participation and encourage discussion
- Time: 10 min for each student

Course project: Quick Reference Guide

Students who are taking this course for credit are required to develop and share a Quick Reference Guide on one of the following types of topics:

- Communicable disease investigation protocol (e.g., contact tracing using social networks)
- Communicable disease prevention or control protocol (e.g., post-disaster water disinfection)
- Infectious disease epidemiology field methods
- Infectious disease epidemiology research methods

The QRG should have an actual or intended public health audience that will derive benefit from your work. It should be 2 to 4 pages single spaced, following by references and appendixes.

QRGs will be graded on the following:

- Originality, clarity, and ease of use
- Use of concepts and methods from course
- Citation of authoritative literature support QRG
- Practical use or (potential practical use) by an actual or intended public health or community audience

Final exam quiz

In class final exam will be open book and cover the following materials:

- All readings associated with Dr. Aragon's lectures
- All guest lectures, readings, and slide presentations
- All homework assignments

PH 253B: Epidemiology and Control of Infectious Diseases

Lecture/Workshop Schedule

Location: CIDER, 1918 University Avenue, 4th Floor

Lectures/workshops that end at 12:15pm will be followed by 2 or 3 Student MMWRs

Wk	Date	Topic
	01-19	<i>Monday: Academic and administrative holiday (Martin Luther King Day)</i>
	01-20	<i>Tuesday: University instruction begins</i>
1	01-26	1. Concepts for the Control and Prevention of Infectious Diseases (10:15a-11:45a) 2. Review of the epidemiologic approach for public health action (11:45a-12:45p) Tomás Aragón, MD, DrPH, UC Berkeley School of Public Health
2	02-02	3. Designing epidemiologic studies to assess vaccine effects (10:15a-11:45p) Tomás Aragón, MD, DrPH & Wayne Enanoria, PhD, MPH, UC Berkeley School of Public Health
3	02-09	4. Public Health Surveillance: Detection and Monitoring (10:15a-12:15p) Michael Samuel, DrPH, California Department of Public Health, STD Control (michael.samuel@cdph.ca.gov) 5. Surveillance for Healthcare-Associated Infections (HAIs) (11:45a-12:15p) Tomás Aragón, MD, DrPH, UC Berkeley School of Public Health
	02-16	<i>Academic and administrative holiday (Presidents' Day)</i>
4	02-23	6. Mathematical Modeling of Infectious Diseases: Concepts and Applications (10:15a-12:15p) Travis Porco, PhD, MPH, UC San Francisco (travis.porco@ucsf.edu)
5	03-02	7. Epidemiology and Control of Tuberculosis (10:15a-12:15p) Jennifer Flood, MD, MPH, California Department of Public Health, TB Control (jennifer.flood@cdph.ca.gov)
6	03-09	8. Conducting an Outbreak Investigation in 7 steps (or less) (10:15a-12:15p) Tomás Aragón, MD, DrPH, UC Berkeley School of Public Health (confirmed)
7	03-16	9. Epidemiology and Control of Selected Vector-borne Infectious Diseases: Plague, Hantavirus, West Nile Virus, and Lyme Disease (10:15a-12:15p) Curtis Fritz, DVM, PhD, MPVM & Anne Kjemtrup, DVM, PhD, MPVM, California Department of Public Health, Vectorborne Diseases Branch (curtis.fritz@cdph.ca.gov, anne.kjemtrup@cdph.ca.gov)
	03-23	<i>Monday – Friday: SPRING RECESS</i>
8	03-30	10. Epidemiology and Control of Sexually Transmitted Infections (10:15a-12:45p) Gail Bolan, MD, California Department of Public Health, STD Control (Gail.Bolan@cdph.ca.gov)
9	04-06	11. Selected topics in vaccine-preventable infectious diseases: Pandemic Influenza Preparedness & Community Infection Control (10:15a-12:15p): Harvey Kayman, MD & Kathleen Harriman, RN, PhD, Ca Dept of Public Health, Immunization Branch (harvey.kayman@cdph.ca.gov, kathleen.harriman@cdph.ca.gov)
10	04-13	12. Biology, Epidemiology, and Control of Malaria (10:15a-12:15p): Phil Rosenthal, MD & Grant Dorsey, MD, PhD, UCSF Infectious Diseases (prosenthal@medsfgh.ucsf.edu, gdorsey@medsfgh.ucsf.edu)
11	04-20	13. Intentional Microbial Threats: Detection, Investigation, and Response (10:15a-12:15p) Debra Gillis, MD, MPH, California Department of Public Health, Infectious Diseases Branch (debra.gilliss@cdph.ca.gov)
12	04-27	14. Community-associated Methicillin-resistant Staphylococcus Aureus (10:15a-11:15a) Erica Pan, MD, MPH, Director, Bioterrorism & ID Emergency Unit, SFDPH (erica.pan@sfdph.org) Antimicrobial Resistance in the Hospital Setting (11:15a-12:15p) Lisa Winston, MD, Hospital Epidemiologist, SF General Hospital (lisa.winston@ucsf.edu)
13	05-04	15. Epidemiology & Prevention of Human Immunodeficiency Virus (HIV) transmission (10:15a-12:15p) Grant Colfax, MD & Henry Fisher Raymond, MPH, SF Department of Public Health (grant.colfax@sfdph.org, hfisher.raymond@sfdph.org)
14	05-11	Final Exam Quiz & submit Quick Reference Guide

Wk	Date	PH253B: Spring 2009, Student MMWR Presentations
	01-19	<i>Monday: Academic and administrative holiday (Martin Luther King Day)</i>
	01-20	<i>Tuesday: University instruction begins</i>
15	01-26	NO PRESENTIONS
16	02-02	Eddy Segura (X) – --
17	02-09	Mary Hardy (X) Scott Baker – rescheduled Angel Wang (X)
	02-16	<i>Academic and administrative holiday (Presidents' Day)</i>
18	02-23	Stephanie Trammell (X) Courtney Zecher (X) Rachel Koontz
19	03-02	Jennifer Hunter (X) Katherine Hung (X) Olivia Chang (X) – started 3/2
20	03-09	Olivia Chang (X) – completed 3/9 Anja Takla (X) Katherine Theiss-Nyland (X)
21	03-16	Heather Zornetzer – rescheduled from 3/9 Samuel Gavi – rescheduled to 4/6 Liana Chan (X)
	03-23	<i>Monday – Friday: SPRING RECESS</i>
22	03-30	NO PRESENTIONS (Gail Bolan)
23	04-06	Marc Pollock (X) – rescheduled from 4/20 Wendy Verret (X) Samuel Gavi (X) – rescheduled from 3/16
24	04-13	Agnes Chidanyika (X) – rescheduled from 3/13 VACANT
25	04-20	Kanwar Supreet Jolly (X) – rescheduled from 4/13 Scott Baker (X) Michelle Chang (X)
26	04-27	Sujit Rathod (X) Rui Liu (X)
27	05-04	Omoniyi Omotoso (X) – rescheduled from 4/27