

Epidemiology and Control of Infectious Diseases

*Public Health 253B (CCN: 76241)
UC Berkeley School of Public Health
Spring 2008, Modified 2008-01-31
<http://www.idready.org>*

Instructor

Tomás Aragón, MD, DrPH
Director and Medical Epidemiologist
Center for Infectious Disease Preparedness
UC Berkeley School of Public Health
1918 University Avenue, 4th Floor
Berkeley, CA 94704-7350

Tel: 510-643-4935
Fax: 510-643-4926
Email: aragon@berkeley.edu
<http://www.idready.org/>

Course description

This is a one semester intensive 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 experts that practice, teach, investigate, and 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 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 high priority waterborne infectious diseases;
7. Describe the epidemiology and control of seasonal, avian, and pandemic influenza;
8. Describe how to prepare and respond to intentional microbial threats (e.g., bioterrorism);
9. Describe the epidemiology and control of high priority vector-borne infectious diseases;
10. Describe the epidemiology and control of tuberculosis;
11. Describe the concepts underlying public health infection control, community mitigation measures;
12. Describe the epidemiology and control of malaria;
13. Describe the steps and epidemiologic methods for conducting a food-borne outbreak investigation;

Course format

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

Course enrollment and fee

UC Berkeley students should register for Public Health 253B, CCN 76241. 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.

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

Course credit/Grading

Units: 3;

Grading: Grade or S/U

Evaluation: Registered students are expected to attend class (10%), complete term paper (40%), and take a final exam (50%)

Final exam will be based on the following:

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

Course location and schedule

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.

CD Morbidity and Mortality Weekly Report (MMWR)

Each week two students will present an infectious disease 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)
- Select and distribute short article or report on topic by Wednesday of prior week
- Introduce yourself, your affiliation, and CD interests
- Present and summarize article in class
- Emphasize selected concepts learned in class
- Elicit students participation and encourage discussion
- Max time: 15min for each student

Course term paper

Students who are taking this course for credit are required to complete term papers with the following requirements:

1. Page length = 8 to 10 double-spaced pages (does not include References, Figures, Tables, and Appendixes)
2. Font = 10 to 12 pt serif fonts (e.g, Times Roman)
3. Possible topic areas:
 - a) In collaboration with a local or state health department, critically review and update an infectious disease control protocol.
 - b) Systematically review an infectious disease control strategy.
 - c) Comparatively review a specific control strategy across a set of infectious diseases
 - d) Critically review a section of a public health infectious disease guideline or plan (for example, the California state draft Pandemic Influenza Preparedness and Response Plan available at <http://www.dhs.ca.gov/ps/dcdc/dcdcindex.htm>)

Papers should have an actual or intended public health audience that will derive benefit from your work.

Papers will be graded on the following:

- Originality and clarity
- Use of concepts and methods from course
- Review of primary literature to support arguments
- Practical use or (potential practical use) by a defined public health audience

PH 253B: Epidemiology and Control of Infectious Diseases

Lecture/Workshop Schedule

*Location: Center for Infectious Disease Preparedness
1918 University Avenue, 4th Floor*

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

Wk	Date	Topic
	01/21	<i>Academic and administrative holiday (Martin Luther King Day)</i>
1	01/28	Epidemiologic Concepts for the Control and Prevention of Infectious Diseases (10:15a-12:45p) Tomas Aragon, MD, DrPH, UC Berkeley School of Public Health
2	02/04	Designing epidemiologic studies to assess vaccine efficacy and effectiveness (10:15a-12:15p) Tomas Aragon, MD, DrPH & Wayne Enanoria, PhD, MPH,, UC Berkeley School of Public Health
3	02/11	Mathematical Modeling of Infectious Diseases: Concepts and Applications (10:15a-12:15p) Travis Porco, PhD, MPH, UC San Francisco
	02/18	<i>Academic and administrative holiday (Presidents' Day)</i>
4	02/25	Public Health Surveillance: Detection and Monitoring (10:15a-12:15p) Michael Samuel, DrPH, California Department of Public Health, STD Control
5	03/03	Epidemiology and Control of Tuberculosis (10:15a-12:15p) Jennifer Flood, MD, MPH, California Department of Public Health, Tuberculosis Control
6	03/10	Epidemiologic Methods for Investigating Foodborne Outbreaks (10:15a-12:15p) Janet Mohle-Boetani, MD, MPH, California Department of Public Health, Infectious Disease Branch
7	03/17	Epidemiology and Control of Selected Vector-borne Infectious Diseases (10:15a-12:15p) Curtis Fritz, DVM, PhD, MPVM & Anne Kjemtrup, DVM, PhD, MPVM, California Department of Public Health, Vectorborne Diseases Branch
	03/24	SPRING RECESS
8	03/31	Epidemiology and Control of Sexually Transmitted Infections (10:15a-12:45p) Gail Bolan, MD, California Department of Public Health, STD Control
9	04/07	Human Pandemic Influenza: Emergence, Surveillance, and Containment (10:15a-12:15p) Howard Backer, MD, MPH, California Department of Public Health, Immunization Branch
10	04/14	Biology, Epidemiology, and Control of Malaria (10:15a-12:15p) Phil Rosenthal, MD, & Grant Dorsey, MD, PhD, UC San Francisco Infectious Diseases
11	04/21	Intentional Microbial Threats: Detection, Investigation, and Response (10:15a-12:15p) Debra Gillis, MD, MPH, California Department of Public Health, Infectious Diseases Branch
12	04/28	Epidemiology and Control of Waterborne Infectious Diseases (10:15a-12:15p) Jack Colford, MD, PhD, UC Berkeley School of Public Health, Division of Epidemiology
13	05/05	Epidemiology and prevention of human immunodeficiency virus (HIV) infection (10:15a-12:15p) Grant Colfax, MD & Willi McFarlan, MD, PhD, San Francisco Department of Public Health
14	05/12	Final Exam & submit term paper