Course Overview and Summary

Time: Thursdays, 1 PM-3:50 PM

Location: Drachman Hall, Room 122

Instructor: Kacey C. Ernst, Associate Professor, Drachman Hall. (kernst@email.arizona.edu), Room A246

Office Hours: by appointment

Course Description: Introduction to Infectious Disease Epidemiology. The emphasis in this course is on the key concepts and methods of infectious disease epidemiology as used in public health practice and in epidemiologic research.

Course Prerequisites: EPID 573A; P or concurrent registration; EPID 573 B; EPID 576A

Course Learning Objectives: Upon completion of this course, students should be able to identify and apply the following to epidemiologic and public health practice:

1—basic concepts of Infectious Disease Epidemiology
2—basic methods of Infectious Disease Epidemiology
3—host factors, infectious agents, transmission factors
4—basic approaches to control and prevention
5—internet-based infectious disease epidemiologic materials for control, prevention, and policy
6—develop appropriate local public health policy based on the components of infectious disease epidemiology

Competencies Addressed:

Domain 1: General Knowledge
Describes major national and international public health problems
Describes risk factors for well-established health problems and the evidence in support of these factors
Understands basic research designs used in health issues

Domain 2: Problem Identification / Planning
Defines a research or health problem by identifying gaps in the knowledge of a health issue
Identifies determinants of health and illness, factors contributing to health promotion and disease prevention, and factors influencing the use of health services

Domain 3: Information Skills
Retrieves and organizes literature from valid sources of the evidence base
Judges, critiques, and interprets research findings

Domain 6: Professional Conduct
Interacts competently, respectfully, and professionally with persons from diverse backgrounds

Domain 8: Study Design
Formulates an appropriate research question
Selects an appropriate study design for testing hypotheses in specific populations
Selects and defines measures and variables relevant to defined health problems
Identifies potential sources of bias and implements strategies to control bias

Domain 10: Data Management & Quality Assurance
Develops and maintains an electronic database
Develops and implements a plan for monitoring data as it is collected, and implements appropriate corrective actions to ensure data quality

Domain 11: Data Analysis
Determines appropriate uses and limitations of data

Domain 12: Data Interpretation
Evaluates the integrity, comparability of data, and limitations of data
Identifies areas of further research

Course Materials and Notes: Course materials, notes and required readings will be posted on D2L. Materials include: syllabus, schedule, readings, and exercises. In addition, lecture PowerPoint notes and other materials will be provided online at D2L before each session.

Required Texts: There are two required texts for this course.

   And one highly recommended text
3. Modern Infectious Disease Epidemiology: Concepts, Methods, Mathematical Models, and Public Health (Statistics for Biology and Health) Kramer; 2010

Course Requirements: Exercises, Class participation, Mid-term, and Final. See Homework Sheets.

Grading/Student Evaluation:
Exercises (5) 6 points: 30 points
Class Participation: 20 points
Mid-term: 20 points
Final: 30 points

Standard grading will be used to assign letter grades (90% and above) A, (80 – 89.9%) B, (70 – 79.9%) C, 60 – 69.9% D, below 60% F.

**Exercises:** There are 5 assignments over the course of the term. Each is worth 6 points.

**Class Attendance/Participation:** Class attendance and participation is required. Participation will be graded based on preparation to act as the discussion leader for the article/outbreak case-study during the weeks assigned (2.5 points each) and 1 point for questions (at least 2 from the article and 2 from the outbreak investigation) submitted by noon the day before each class session to be used in the discussion. Each discussion leader report should have a review of the STROBE criteria for the article discussed as well as a summary of additional important observations.

The noon cutoff will be strictly observed to allow the discussion leaders an opportunity to assimilate and organize questions. Discussion leaders should submit a short one page summary of key points discussed during the discussion and turn it in to obtain the 2.5 points credit as discussion leader.

Any student with more than 2 unexcused absences will lose a point for each subsequent absence i.e. for 3 unexcused absences you lose 1 point, for 4 you lose 2 points total etc. All holidays or special events observed by organized religions will be honored for those students who show affiliation with that particular religion. Absences pre-approved by the UA Dean of Students (or Dean’s designee) will be honored.

**Mid-term and Final:** A mid-term and final will administered during the course to evaluate key concepts learned in class. If you will be absent for the date of the mid-term or final you must arrange ahead of time to take the exam before the scheduled exam date. Make-up exams will be made only in the event of illness or unforeseen circumstances.

**Late policy:** A hardcopy of each assigned exercise is due during class time on its due date. Each day that the homework assignment is late will result in a 1 point deduction from the homework grade. Students are allowed one (1) week long extension on a homework assignment during the course. This extension must be requested prior to the due date of the homework assignment except in cases of emergency. If the extended homework is not submitted within the seven day period a 1 point deduction will be made for every day past the 7 day extension.

**Communications:** You are responsible for reading emails sent to your UA account from your professor and the announcements that are placed on the course web site. Information about readings, news events, your grades, assignments and other course related topics will be communicated to you with these electronic methods. The official policy can be found at: [http://www.registrar.arizona.edu/emailpolicy.htm](http://www.registrar.arizona.edu/emailpolicy.htm)

**Disability Accommodation:** If you anticipate issues related to the format or requirements of this course, please meet with me. I would like us to discuss ways to ensure your full participation in the course. If you determine that formal, disability-related accommodations are necessary, it is very important that you be registered with
Disability Resources (621-3268; drc.arizona.edu) and notify me of your eligibility for reasonable accommodations. We can then plan how best to coordinate your accommodations. The official policy can be found at: http://catalog.arizona.edu/2013%2D14/policies/disability.htm

**Academic Integrity:** All UA students are responsible for upholding the University of Arizona Code of Academic Integrity, available through the office of the Dean of Students and online: The official policy found at: http://deanofstudents.arizona.edu/codeofacademicintegrity

**Classroom Behavior:** (Statement of expected behavior and respectful exchange of ideas)
The Dean of Students has set up expected standards for student behaviors and has defined and identified what is disruptive and threatening behavior. This information is available at: http://deanofstudents.arizona.edu/disruptiveandthreateningstudentguidelines

Students are expected to be familiar with the UA Policy on Disruptive and Threatening Student Behavior in an Instructional Setting found at: http://policy.arizona.edu/disruptive-behavior-instructional and the Policy on Threatening Behavior by Students found at: http://deanofstudents.arizona.edu/sites/deanofstudents.arizona.edu/files/Disruptive_threat_bklt_2012.pdf

**Grievance Policy:** Should a student feel he or she has been treated unfairly, there are a number of resources available. With few exceptions, students should first attempt to resolve difficulties informally by bringing those concerns directly to the person responsible for the action, or with the student's graduate advisor, Assistant Dean for Student and Alumni Affairs, department head, or the immediate supervisor of the person responsible for the action. If the problem cannot be resolved informally, the student may file a formal grievance using the Graduate College Grievance Policy found at: http://grad.arizona.edu/academics/policies/academic-policies/grievance-policy

**Grade Appeal Policy:** http://catalog.arizona.edu/2013-14/policies/gradappeal.htm

**Syllabus Changes:** Information contained in the course syllabus, other than the grade and absence policies, may be subject to change with reasonable advance notice, as deemed appropriate.
Schedule

Week 1: January 14th - Introduction to class
Lecture (Ernst): History of Infectious Disease Epidemiology and Introductory Concepts
Video: RX for Survival
Readings: WHO Report (Ch. 2) Kramer Ch. 1,2 and 4.

Week 2: January 21st
Lecture: Key Concepts cont. and Study Design
Readings: Kotolff et al., Kramer Ch. 5

Week 3: January 28th
Lecture: “Chronic” diseases and infection
Guest Lecture: Usha Menon
Readings: Mesher et. al., Ngugi et al., He et al., (posted) Kramer Ch. 23

Week 4: February 4th
Lecture: Infectious Disease Surveillance Systems
Guest lecturer: Mariana Casal – Border Infectious Disease Surveillance System
Readings: Dworkin Ch. 4, Feiken et al., Tambo et al. (posted) Kramer Ch. 8
Due: Homework: Zika and Microcephaly

Week 5: February 11th
Lecture: Zoonotic Diseases
Guest: TBA
Readings: Dworkin Ch. 17, Tenzin, et al. (posted)

Week 6: February 18th
Lecture: Immunology Basics
Guest lecturer: Friedman – Pertussis immunity
Readings: Dworkin Ch. 7, Tran et al. (posted) Kramer Ch. 7 and 13 and 22
Due: Homework Surveillance

Week 7: February 25th
Lecture: HIV/AIDS Epidemiology (Dr. Gunn)
Guest Lecture:
Readings: Dworkin Ch. 6, Worobey et. al., Romero-Severson et al. & Thomas et al. (posted) Kramer Ch. 18

Week 8: March 3rd
Mid-term Exam

Week 9: March 10th
Lecture: Geographic Information Systems in Infectious Disease Research
Guest Lecturer: Meredith Abrams - PCHD
Readings: Curtis et al. & Zhou et al. (posted) Kramer Ch. 10
Week 10: March 24th
Lecture: Outbreak Investigations
Guest Lecture: Kristen Pogreba-Brown: EIS outbreak exercise
Readings: Dworkin Ch. 1. Doherty et al. (posted) and Kramer Ch. 9,

Week 11: March 31st
Lecture: Vectorborne Transmission
Guest Lecture: Dr. Kent Campbell
Readings: Dworkin Ch. 19, Katsuragawa et al. (posted) Kramer Ch. 21
Due: Homework Oswego

Week 12: April 7th
Lecture: Vaccine Preventable Diseases
Guest Lecture: Anissa Taylor - PCHD
Readings: Dworkin Ch. 20, Collard et al., Owusu et al. (posted) Kramer Ch. 14

Week 13: April 14th
Lecture: Emerging Infections and Environmental Change and Infectious Disease Transmission
Guest Lecture: Mona Arora
Readings: Atkinson et al., Jones et al., Moo-llanes et al. (posted) Kramer Ch. 3
Due: Homework: Eradication

Week 14: April 21st
Lecture: Fecal – Oral Transmission
Guest Lecture: Marc Verhougstraete
Readings: Dworkin Ch. 3, Ivers et al. (posted) Kramer Ch. 17

Week 15: April 28th
Lecture: Sexual Transmission
Guest Lecture: PCHD CDI: Tracing Sexual Networks
Readings: Dworkin Ch. 15, Bazzi et al. (posted) Kramer Ch. 19 & 20,
Due: Homework Texarkana