Insect Epidemiology

Entomology 7008 - Fall 2014 Syllabus

INSTRUCTORS

Dr. Kristen Healy, khealy@agcenter.lsu.edu, 225-578-7386

MEETING LOCATION

The class will be meeting in Life Sciences Annex room A561

Lecture: Mondays 1:00 pm to 3:50 pm

COURSE DESCRIPTION

In this course, we will discuss concepts and methodologies of epidemiology and their uses in understanding trends and outbreaks of insect vectored plant, forest, human, and animal pathogens. We will also discuss methods of evaluating and understanding insect disease, such as those affecting honey bees and threatened or endangered species.   A major focus of this course will be to understand available methods in surveillance, prevention, and control of diseases, especially those of plants, humans, and animals. Topics will include terms and concepts used in epidemiology, tools and techniques, such as GIS, modelling, and statistical analyses, and predicting and controlling outbreaks of disease.

COURSE OBJECTIVES

1. To be able to communicate and understand epidemiological terminology
2. To be able to critically interpret trends and data analysis
3. To be able to incorporate epidemiological techniques into your area of research

TEXTBOOKS

There is no requirement to purchase a text book for this course. There are several text books that are available to view online through the library system. All of the readings will be available in some type of online format. The majority of the readings will be coming from online readings or print outs from class. Since there are so many excellent text books, I will pull from many e-books from the LSU library system throughout the semester.

OBLIGATORY STATEMENT ABOUT CHEATING

LSU's Code of Student Conduct may be found by accessing this site: http://saa.lsu.edu/code-student-conduct. Familiarize yourself with what constitutes cheating, especially plagiarism. If you cheat, you will be penalized a letter grade and be given an opportunity to meet the Dean of Students.

COURSE REQUIREMENTS

Students are required to attend all lectures. Student's understanding of the material will be assessed during in-class discussions, a mid-term lecture exam, and a final take-home lecture exam. Therefore, missing class will greatly affect your grade. Class readings, handouts, and other materials will be provided on Moodle. Throughout the semester, I will also provide "**bonus**" questions on Moodle, relating to relevant material and readings. Therefore, you should check the Moodle website weekly.

In class discussions will constitute a third of your grade. This will include discussions of the weekly paper posted on Moodle, as well as exercises throughout each lecture.

GRADING POLICY

Final grade will be based on performance on two written exams (mid-term and final) and in-class discussions. Each exam will be worth 1/3 of the final grade.   There will be occasional opportunities for bonus points throughout the semester, and students should check Moodle weekly for Bonus point opportunities.

90-100%	A	Midterm Exam	100	(33%)
80-89	B	Final exam (cumulative)	100	(33%)
70-79	C	In-class discussions	100	(33%)
60-69	D		300	(100%)
<60	F			

Bonus points will also be available on Moodle

EXAMS

There will be two exams in this course. The first Midterm exam will consist of a traditional exam including multiple choice, fill-ins, short answer, and essays. This will be worth a third of your grade. The Final exam will be a cumulative take-home exam. The exam will be primarily essay-based, and can be done on a computer. Students should work independently on their exams. Any inference of copying another student's exam will be investigated.

TENTATIVE LECTURE SCHEDULE

	Date	Topic	Paper discussion readings
1	August 25th	What is epidemiology? Understanding populations and risk factors for disease. Types of disease trends and study designs.	No reading this week
2	Sept 1st	No class (Labor day holiday)	No reading this week
3	Sept 8th	Natural history of diseases and the disease triad, herd immunity. Dynamics of disease transmission, infectivity, pathogenicity, virulence, vector competence, vectorial capacity, Survival analysis	"Epidemiological study of the prevalence of allergic reactions to Hymenoptera in a rural population in the Mediterranean area."
4	Sept 15th	Passive and active surveillance strategies, temporal and spatial data collection, hypothesis testing, confidence intervals, sensitivity and specificity, sample size and power	"Epidemiological concordance of Japenese encephalitis virus infection among mosquito vectors, amplifying hosts and humans in India."
5	Sept 22nd	Measures of disease frequency in a population. Understanding disease trends, morbidity, mortality, and fecundity.	"Detection probability of arbovirus infection in mosquito populations."
6	Sept 29th	Measures of disease association, measures of effect, types of associations and causes, Hill's postulates, Outbreak investigation group exercise	"Tick exposure and red meat allergies"
7	Oct 6th	In-class midterm exam	No readings this week
8	Oct 13th	Epidemiological study designs (Case-control, cohort studies, cross-sectional, correlational, and randomized control)	"Malaria incidence and prevalence among children living in peri-urban area on the coast of Benin, West Africa, a Longitudinal study."
9	Oct 20th	Understanding sources of error and bias, methods of randomization	TBA
10	Oct 27th	Temporal and Spatial aspects of diseases. The use of GIS in epidemiology	TBA
11	Nov 3rd	Epidemiology and environmental health, toxicology and public health	"Pesticide exposure and amyotrophic lateral sclerosis"
12	Nov 10th	The Epidemiology of insect vectored human pathogens	TBA
13	Nov 17th	The Epidemiology of insect vectored animal pathogens	TBA
14	Nov 24th	Epidemiology and its use in Colony collapse disorder	TBA
15	Dec 1st	The Epidemiology of insect vectored plant pathogens	TBA
16	TBA	Final Take home exam due	