

MEDICAL ENTOMOLOGY-ENT/ZOOL 371
Fall 2006
3 credits

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GENERAL COURSE INFORMATION

Prerequisites: Undergraduate and graduate students interested in medically - important arthropods and their roles in disease transmission.

Student performance objectives:

1. Understand the Global Health Impact of insect transmitted diseases.
2. Appreciate the diversity of human pathogens and their insect vectors. Be able to identify the major types of insects that transmit diseases to people and animals.
3. Understand the biology of specific vector-pathogen interactions and of the disease in humans. For example: what happens after a tick attaches to a mouse infected with Lyme Disease? How does malaria make people sick?
4. Understand the methods used to control the vectors and the diseases and what the barriers are to effective control of many insect-transmitted diseases,
5. Learn about insect transmitted diseases that are important in Wisconsin and the United States.
6. Examine current issues in Medical Entomology, including the introduction of exotic vectors and pathogens and the future of genetic technology for vector control.

Meetings: Fall semester, lecture-TTH at 9:55 in 150 Russell Labs, Laboratory-W at 1:20-4:20 147 Russell Labs.

Required text: None.

Course requirements: Students will be expected to complete reading assignments as instructed and be prepared to discuss material in class. Students are required to attend all laboratories.

If you anticipate missing any exam because of a religious holiday, please let me know immediately (within the first 2 weeks of class) so that we can schedule a make-up time. No make-up will be scheduled if you forget to notify me now.

Grades: Grades will be assigned on the basis of two lecture exams (15% each = 30%), a comprehensive final (20%) and the laboratory (50%). Lab grades will be based on quizzes (20%) and written reports (20%) and attendance (10%).

Academic honesty: University policies regarding cheating and plagiarizing are upheld in this classroom. This includes penalties up to and including expulsion from the University, but at the least it means you receive an F for the course. If you are unsure whether something constitutes plagiarism, come see me. Cheating means copying from someone else's paper or your own notes during tests or turning in a paper you did not write. Since you all know this is wrong, no second chances.

Schedule of Lecture & Lab Topics
Medical Entomology (Ent 371, Zool 371)
Fall 2006

Date	Topic
Sept 5 (T)	Introduction to the course: Insect transmitted diseases have changed the course of human history.
Sept 6 (W)	LABORATORY 1. Introduction to the Insects. External morphology.
Sept 7 (Th)	Overview of the Class Insecta. What are insects? A guide to taxonomy.
Sept 12 (T)	Insect/parasite interactions. Structure and function of the internal organs.
Sept 13 (W)	LABORATORY 2. Basic Insect Biology. Internal anatomy and metamorphosis.
Sept 14 (Th)	Epidemiological concepts.
Sept 19 (T)	Mosquitoes and Malaria. I. Biology of the parasites in mosquitoes and humans
Sept 20 (W)	LABORATORY 3. Quiz 1. Basic mosquito biology. External anatomy, mouthparts, feeding
Sept 21 (Th)	Malaria: The disease. How to deploy limited resources. Vaccine development.
Sept 26 (T)	Malaria: The disease. Pathology, chemotherapy, genetic antimalarials.
Sept 27 (W)	LABORATORY 4. Basic mosquito biology. Internal anatomy.
Sept 28 (Th)	Mosquitoes and Malaria. II. Anopheline mosquito biology. Vector traits that affect disease epidemiology. How behavior affects control strategies
Oct 3 (T)	Malaria: Eradication and control programs based on mosquito biology.
Oct 4 (W)	LABORATORY 5. Quiz 2. Mosquito behavior.
Oct 5 (Th)	Current Issues in Medical Entomology related to malaria.
Oct 10 (T)	Case Histories. Review for First exam.
Oct 11 (W)	LABORATORY 6. Mosquito Control. Write up required. Due next week.
Oct 12 (Th)	First Lecture Exam.

- Oct 17 (T) Mosquitoes and Filariasis. I. Biology of the parasites. Diagnosis, symptoms and treatment of the disease.
- Oct 18 (W) **LABORATORY 7. Mosquitoes and parasites. Write up from last week due.**
- Oct 19 (Th) Mosquitoes and Filariasis. II. Biology of the vectors. Culicine mosquito biology (larval feeding behavior), behavior and control. The Elimination Program.
- Oct 24 (T) Mosquitoes and Arboviruses: yellow fever. Biology of the pathogens, diagnosis, symptoms and treatment. Vector biology and disease control.
- Oct 25 (W) **LABORATORY 8. Biology of larval mosquitoes.**
- Oct 26 (Th) Mosquitoes and arboviruses: Encephalitides II.
- Oct 31 (T) Mosquitoes and arboviruses: Encephalitides I.
- Nov 1 (W) **LABORATORY 9. Quiz 3. Encephalitides.**
- Nov 2 (Th) Mosquitoes and arboviruses: Dengue and dengue hemorrhagic fever.
- Nov 7 (T) Black flies and River blindness. Biology of the Parasite. Diagnosis, symptoms and treatment of the disease. Biology of the black fly vector. The West African Onchocerciasis Control Programme.
- Nov 8 (W) **LABORATORY 10. Blackflies and sandflies. Leishmaniasis epidemiology.**
- Nov 9 (Th) Phlebotomine sandflies and leishmaniasis. Biology of *Leishmania*. Diagnosis, symptoms and treatment of the disease. Vector biology and control
- Nov 14 (T) Tse-tse flies and African trypanosomiasis. Biology of the pathogen. Diagnosis, symptoms and treatment of sleeping sickness. Vector biology and control.
- Nov 15 (W) **LABORATORY 11. Tsetse flies and other higher diptera. Myiasis.**
- Nov 16 (Th) **Second lecture exam**
- Nov 21 (T) Chagas I. Biology of the pathogen and disease
- Nov 22 (W) **LABORATORY 12. Quiz 4. The minor orders. Kissing bugs and bedbugs and others.**
- Nov 23 (Th) Thanksgiving

Nov 28 (T) Chagas II. Vector biology and control.

Nov 29 (W) **LABORATORY 13. Ectoparasites I. Fleas and Lice.**

Nov 30 (Th) Fleas and lice

Dec 5 (T) Ticks.

Dec 6 (W) **LABORATORY 14. The ectoparasites. II. Mites and ticks.**

Dec 7 (Th) Ticks and tick-borne diseases.

Dec 12 (T) Mites and mite borne diseases.

Dec 13 (W) **Laboratory 15. Final quiz.**

Dec 14 (Th) Summary of medical entomology: 2006.

FINAL LECTURE EXAM: TIME & DATE TO BE ANNOUNCED