

Medical and Veterinary Entomology 4660

Medical and Veterinary Entomology Laboratory 4660L

Fall 2007 Syllabus

Instructor: Dr. Phil Kaufman, pkaufman@ufl.edu Tel: 352-392-1901, ext. 159

Meeting time and place:

Lecture: 2nd Period Mon/Wed (8:30 – 9:20 AM), 1031 Entomology Nematology Building

Lab: 2nd – 4th Period Friday (8:30 – 11:30 AM), 3118 Entomology Nematology Building

Course description:

Medical and Veterinary Entomology is a 2-credit class that presents current information on the pests that have and continue to plague humans and animals. This course will explore the arthropods of importance in human health and those that impact livestock production, companion animals and wildlife through direct attack and disease transmission. It will include information on their biology, ecology, potential for disease transmission and management. Students will learn to identify the common pests and the principles of epidemiology and pest management.

The factors involved in the epidemiology of vector-borne diseases, host, parasite, vector and reservoir, will be stressed, as this is the recurrent theme in medical entomology. Students will be encouraged to share their own experiences throughout the course.

Medical and Veterinary Entomology Laboratory is a 1-credit class that provides students the opportunity to observe and handle the specimens discussed in the companion lecture of this course. Laboratory exercises are designed to reinforce concepts introduced during the companion lecture and provide hands-on viewing of arthropods for future identification. Some students may be making pest management decisions in the future, it is therefore essential that they be able to properly identify the pest that they are attempting to manage. This is increasingly important as the ecological and social pressures increase for control of non-specific arthropod pests with minimal effects on human health and the environment. Students will be given the opportunity to learn about evolving relationships that many of the species have developed in order to survive as an ectoparasite and/or serve as an efficient vector. Several evaluation methods including laboratory quizzes, laboratory exams and a collection will be administered so that students can demonstrate their knowledge of arthropod identification, pest importance to human and animal health and effective management tactics. We will take several trips to local sites during the laboratory session where students will have the opportunity to examine issues on site and to obtain specimens for their collections. Transportation will be provided.

Learning Objectives: Students who have completed this course will be able to:

1. Define and compare the primary vectors of medical entomology.
2. Identify the major pests of veterinary entomology and provide pest management solutions.
3. Explain the reasons underlying the major diseases outbreaks in human history, and relate to why these outbreaks occasionally occur in today's modern world.
4. Explain and support the principles of Integrated Pest Management in livestock systems.
5. Compare and contrast the life-history strategies used by major vector and pest species of medical and veterinary importance.
6. Discuss the principles of vector-borne epidemiology
7. Assess the likelihood of new approaches in solving humanities vector-borne pathogen challenges.

Textbook:

Required: Mullen, G. and L. Durden, (eds), *Medical and Veterinary Entomology*, Academic Press, London. This text will be held in reserve at the Marston Science Library

Suggested: (for those highly interested in Medical Entomology) Eldridge, B.F. and J.D. Edman, *Medical Entomology: A textbook on public health and veterinary problems caused by arthropods*, Kluwer Press, Boston may be useful for those students for whom this field is a career choice.

The Eldridge and Edman text will be held in reserve at the Marston Science Library.

Lab manual:

Required - Furman, D.P and E. P. Catts. *Manual of medical entomology*. 4th edition. Cambridge University Press, London. Available at Orange and Blue Textbooks in Gainesville.

Office Hours: Dr. Kaufman will be available to students on Monday's from 3-5:00 PM and on Wednesday's from 10-11:00 AM in Room 3213. Additional meeting times are available upon request. pkaufman@ufl.edu Tel: 392-1901 x 159.

Grading: Grading criteria are specific for each course listing. However, the grading scale is as follows:

Grading scale (%):

90-100	A
88-89	B+
80-87	B
78-79	C+
70-77	C
60-69	D
<60	E

ENY 4660	Point Value	Total
Lecture Exams (2)	100 each	200
Final Exam	100	100
Announced Lecture Quizzes (2)	10	20

Specific Lecture Evaluations: Your grade on the lecture course (ENY 4660) will be based on a possible 300 points and determined by the percentage breakdown presented previously (Grading Scale). Announced lecture quizzes are your opportunity to pick up points missed on exams. To participate in the quizzes you must attend class on the day they are given! No make-up quiz will be provided. The final examination covers the final portion of the course and is not comprehensive.

Grading Policy: Lecture exams will consist of multiple choice, short answer and essay questions. Make-up exams must be approved by the instructor, scheduled **prior to the exam** and are given only under special circumstances. To be fair to all students, extra credit opportunities are not allowed.

ENY 4660L	Point Value	Total
Lab Practical	50	50
Take Home Practical	50	50
Collection	50	50
Lab weekly quizzes (9) *	10 each	100

* 9th quiz is cumulative and worth 20 pts.

Specific Laboratory Evaluations: Identification of arthropods of medical and veterinary entomology is paramount to their successful management. Therefore, students are provided a variety of opportunities to demonstrate their capabilities in specimen identification. **Students in the laboratory component of this class are evaluated through four measures.** Total points for this course are 250. Your grade is determined according to the scale provided earlier.

1. Insect Collection. The collection consists of 50 specimens of medical and veterinary importance and is required of all students in ENY 4660. An initial description is provided below and additional instruction is provided in a separate handout provided in laboratory. Collections are due at Noon on November 16, 2007.
2. Standard Laboratory Practical. This exam will consist of a time-monitored, sight identification test of each student's skills and will be administered on October 12, 2007. Due to the difficulty in setting up this exam, a make-up exam **must** be approved by the instructor, must be scheduled **prior to the exam** and are given only under special circumstances.
3. Take Home Practical. Each student will be provided a series of unknown specimens for which they are responsible for providing identifications and a Microsoft Excel sheet to insert their answers (also provided). A printed version of the provided MS Excel document must be turned in to receive full credit. This "Take Home Practical" is due on November 30, 2007 and students are responsible for returning the specimens and the Excel spreadsheet at

this time. Students are encouraged to bring their “take home” collection to the appropriate laboratories to aid in their completion.

4. **Weekly Quizzes.** Nine (9) weekly laboratory quizzes will be administered. Unlike the lecture quizzes (ENY 4660), all laboratory quizzes directly impact the student’s grade and are NOT bonus points.

Collection Requirements: Students in ENY 4660 are required to develop and submit an insect collection containing at least 50 different species of medical or veterinary importance. No more than 10 specimens can be Hymenoptera. No more than 10 species from a single insect family (i.e. 10 different mosquitoes). The collection must contain at least 10, but no more than 15 immature specimens. Students must be prepared to defend the inclusion of the specimens and are encouraged to provide a listing of all specimens and their importance. Collections are due no later than **NOON** of the laboratory section on November 16, 2007. Additional instructions will be provided in laboratory. For each business day that collections are late, 10 points will be deducted from the possible score. Late collections, with penalty, must be delivered to room 3213 or 3237 and handed to Dr. Kaufman before 5:00 PM.

Attendance: Students are expected to attend each class period and stay for the entire period. The laboratory is several periods long and students are allowed to leave at their leisure. Considerable material is provided in the laboratory session and students who do the best in this course are those that utilize this unique opportunity to study specimens in depth. Additionally, students that do stay for the entire period are welcome to examine specimens outside of the laboratory periods in Dr. Kaufman’s laboratory (provided certain limitations discussed in class).

Lecture calendar:

Lecture	Date	Topic
1	Aug. 27	Introduction. Impact of arthropods on human/animal health
2	Aug. 29	History of Med/Vet Entomology / Epidemiology
3	Sept. 3	Labor Day – No Class
4	Sept. 5	Vector-borne pathogens
5	Sept. 10	Control, economic damage and eradication
6	Sept 12	Spiders, Scorpions and Hymenoptera
7	Sept. 17	Cockroaches, Beetles and minor orders
8	Sept. 19	True bugs – Chagas Disease
9	Sept. 24	Lice – Livestock and Poultry
10	Sept. 26	Exam 1 (Lecture’s 1 - 8)
11	Oct. 1	Lice – A human problem as well!!!
12	Oct. 3	Fleas – Plague Pandemics
13	Oct. 8	Black Flies, Sand flies and Midges (Leishmania)
14	Oct. 10	Mosquitoes –Importance and Ecology.
15	Oct. 15	Mosquitoes – Malaria and Dengue
16	Oct. 17	Mosquitoes –Yellow Fever and Filariasis
17	Oct. 22	Horse flies, Deer Flies, Soldier Flies
18	Oct. 24	Mosquitoes and the US disease situation – West Nile virus, other Encephalitides virus’ and disease developmental models. Guest Lecturer: Dr. Jonathan Day
19	Oct. 29	Muscoid Flies–Importance, Ecology & Role in foodborne illness (E. coli, Salmonella, Campylobacter)
20	Oct. 31	Exam 2 (Lecture’s 9-18)
21	Nov. 5	Muscoid Flies – Confined livestock systems.
22	Nov. 7	Forensic Entomology. Guest Lecturer: Dr. Jason Byrd
23	Nov. 12	Veteran’s Day – No class
24	Nov. 14	Muscoid Flies – Pasture and Urban systems.
25	Nov. 19	Muscoid flies – Myiasis, bot flies, tsetse and others
26	Nov. 21	Mites and Ticks - QUIZ 1
	Nov. 26	Mites, Ticks and Disease
27	Nov. 28	Ticks and Humans. Guest Lecturer: Dr. Sandy Allan
28	Dec. 03	Ticks and Livestock
29	Dec. 05	Current issues in medical and veterinary entomology – QUIZ 2
Final	Dec. 14	Final Exam (Lecture’s 19 -29)

Laboratory calendar:

Laboratory	Date	Topic
1	Aug. 24	Arthropod morphology, taxonomy, insect orders, mouthparts, fly feeding
2	Aug. 31	Dichotomous keys, collection instructions, collection materials, Insect identification to Order (Quiz 1)
3	Sept. 7	ID Hemiptera, lice, spiders, Hymenoptera, cockroaches & others. (Quiz 2)
4	Sept. 14	Identification of fleas, Nematocera and Brachycera (Quiz 3)
5	Sept. 21	Field trip – surveillance and sampling mosquitoes
6	Sept 28	Identification of mosquitoes (Quiz 4)
7	Oct. 5	Field trip to livestock facilities
8	Oct. 12	Lab Practical 1 Forensic Entomology
9	Oct. 19	Muscoid Flies and Myiasis. (Quiz 5)
10	Oct. 26	Biological Control Intro - identification of ticks and mites (Quiz 6)
11	Nov. 2	Homecoming – No Class
12	Nov. 9	Identification of ticks and mites Molecular Techniques I (Quiz 7)
13	Nov. 16	Molecular Techniques II Fly/Lice Video Collections due (Quiz 8)
14	Nov. 23	Thanksgiving, No class.
15	Nov. 30	Biological control II (Quiz 9 – cumulative = 20 pts.) Take Home Practical Due

Additional General Information: The following information applies to all courses at the University of Florida.

We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standard of honesty and integrity.

Academic Honesty: As a result of completing the registration form at the University of Florida, every student has signed the following statement: "I understand that the University of Florida expects its students to be honest in all their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the University."

Copyrighted Materials and Software Use: All students are required and expected to obey the laws and legal agreements governing copyrighted material and software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate.

Accommodations for Students with Disabilities: Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

University Counseling Services: Resources are available on-campus for students having personal problems or lacking clear career and academic goals which interfere with their academic performance. These resources include:

1. University Counseling Center, 301 Peabody Hall, 392-1575, personal and career counseling;
2. Student Mental Health, Student Health Care Center, 392-1171, personal counseling;
3. Sexual Assault Recovery Services (SARS), Student Health Care Center, 392-1161, sexual counseling; and
4. Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling.