
ENTO 618

Medical and Veterinary Entomology

Course Description:

Taxonomy, biology and epidemiological role of insects and other arthropods that directly and/or indirectly affect the health and well-being of humans and animals. This course will focus on medical and veterinary entomology as it applies to the biology of the arthropods and pathosystems, understanding transmission of vectorborne diseases, and methods of control to protect public and animal health. We will provide the material within the One Health framework which emphasizes the multiple disciplines necessary to understand and management arthropods and agents of disease which often bridge human, wildlife, and domestic animals. Current and emerging knowledge of these topics will be aided by contemporary primary literature which will be reviewed and analyzed. Laboratory sessions will aid in the ability to identify medically important arthropods.

Prerequisites: Graduate classification or approval of instructor.

Learning Outcomes:

- Identify, classify, and describe medically important arthropods;
- Recognize diseases that can be caused by agents transmitted by each arthropod group and their association with the fields of clinical and preventative public health;
- Describe the roles of arthropods in the transmission and maintenance of vector-borne disease pathogens;
- Demonstrate comprehension of vector biology as applied to the development of methods to control vectors and vector borne diseases;
- Interpret recent literature and explain how modern techniques may be used to disrupt the vector-borne disease cycle;

Fall 2019; 3 credit hours

Lecture: Mon and Wed
11:30am – 12:20pm; HPCT 205

Lab: Friday

12:40pm-3:30pm; HPCT 108

Co-Instructors:

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Materials

Required Text: *Medical and Veterinary Entomology*, Eds. G. Mullen and L. Durden, Academic Press, NY. 3rd edition. 2019. PDFs of entire book available via <https://library.tamu.edu/>

Readings: Selected readings from the primary literature posted to eCampus.

Lab Manual: Medical Entomology ENTO 423 Laboratory Manual. Available at MSC Bookstore or Texas Textbook Solutions.

- Review medical entomology scientific literature and conduct a quantitative synthesis to fill a knowledge gap in the field.

Literature Review Course Project

A group project will be conducted which involves a systematic literature review and quantitative synthesis. This project aims to identify a gap in knowledge or research question on a contemporary topic related medical and veterinary entomology that the students will identify and complete. The culmination of this project which will occur throughout the semester is an oral presentation and written manuscript which outlines the review of the literature and results of the synthesis of data. Further details can be found within the project assignment on eCampus.

Laboratory

The primary purpose for the laboratory sessions will be to view arthropods relevant to medical entomology and learn how to recognize them to species and utilize dichotomous keys as necessary. Our laboratory and teaching collection is the same as the undergraduate-level Veterinary Entomology and Medical Entomology labs so please be respectful of the specimens which are difficult to replace.

Guest Lectures

Guest lectures are planned to feature different professionals who focus in vector-borne diseases. Invited speakers may include medical entomologists or zoonosis control veterinarians from the state health department, military entomologists, academic researchers with expertise in particular disease systems, or others. Each guest speaker will show the real-world application of the concepts learned in class, and asked to share their educational background and career path.

Evaluation: A=90–100%; B=80–89%; C=70–79%; D=60–69%; F=<60%

ENTO 618: A total of 275 points are available

- **Attendance and participation in class discussions (25 pts).** Students will receive 1 point for participating in each lecture and completing the review of a primary article related to each lecture. We will have an estimated 25 lectures with articles assigned.
- **Three lecture exams (50 pts each)**
- **Literature review project (50 pts for written portion and 50pts for oral portion)**

Late Policy: Late assignments will have a 10% deduction in points for up to 1 week, after which no credit will be issued, except in the case of a University excused absence.

Attendance

Both the university and instructors view class attendance as an individual student responsibility. Your grade will be based in part by attendance and participation. After four unexcused absences for lectures or labs, students will have five points deducted from the attendance points for each additional unexcused absence. Make-up experiences/ assignments for class activities that occur outside the scheduled meeting times will be available in the event of a University approved excuse. No Makeup work is accepted without a University approved excuse. Absences will be excused as per TAMU Student Rule #7 (<http://student-rules.tamu.edu/rule07>).

ADA Policy Statement

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit <http://disability.tamu.edu>.

Academic Integrity Statement

The Texas A&M University Honor Code, based on the long-standing affirmation that "An Aggie does not lie, cheat, or steal or tolerate those who do" is fundamental to the value of the A&M learning experience and requires that Aggies will not involve themselves in any form of academic dishonesty. According to the Office of the Aggie Honor System, academic dishonesty consists of cheating, fabrication, falsification, multiple submission, plagiarism, and multiplicity. Clarification of each of actions may be found at the Aggie Honor System website at <https://aggiehonor.tamu.edu/>. This list, however, is not exclusive of any other acts that may reasonably be termed academic dishonesty. The penalty for a violation of academic dishonesty in this class shall be an "F" in the course and filing of an Honor Code

SCHEDULE IS SUBJECT TO CHANGE

Week	Lecture/Lab Topics	Associated assignments
Aug 26	<ul style="list-style-type: none"> • Introductions (Slotman and Hamer) • Course overview 	
Aug 28	<ul style="list-style-type: none"> • Biology of blood feeding (Slotman) 	Chapter 1 Introduction
Aug 30	Lab: Group project overviews (Hamer)	
Sept 2	<ul style="list-style-type: none"> • Evolution of infectious disease (Slotman) 	Chapter 2 Morphological Adaptations
Sept 4	<ul style="list-style-type: none"> • Dynamics of disease transmission (Slotman) 	Chapter 4 Epidemiology of Vectorborne Diseases
Sept 6	Lab: Mites	
Sept 9	<ul style="list-style-type: none"> • Direct effects of arthropods (Slotman) 	Chapter 3 Arthropod toxins and venom
Sept 11	<ul style="list-style-type: none"> • <i>Culicoides</i> (Hamer) 	Chapter 15 Biting Midges
Sept 13	Lab: Ticks	
Sept 16	<ul style="list-style-type: none"> • Mosquito - <i>Anopheles</i> and malaria (Slotman) 	Chapter 11 Diptera
Sept 18	<ul style="list-style-type: none"> • Mosquito - <i>Culex</i> and encephalitis (Hamer) 	Chapter 15 Mosquitoes
Sept 20	Lab: Guest Lecture: Transgenic vector control Zach Adelman, PhD Professor Department of Entomology Texas A&M University	
Sept 23	<ul style="list-style-type: none"> • Mosquito - <i>Aedes aegypti</i> and arboviruses (Slotman) 	
Sept 25	<ul style="list-style-type: none"> • Mosquito – filariasis (Slotman) 	
Sept 27	Lab: Mosquito Larvae	
Sept 30	<ul style="list-style-type: none"> • Lecture Exam 1 	
Oct 2	<ul style="list-style-type: none"> • Black flies (Slotman) 	Chapter 14 Black Flies

Oct 4	Lab: Adult Mosquitoes	
Oct 7	<ul style="list-style-type: none"> • Myiasis (Slotman) 	Chapter 19 Myiasis
Oct 9	<ul style="list-style-type: none"> • Kissing bugs (Hamer) 	Chapter 8 True Bugs
Oct 11	Lab: Guest Lecture: State arbovirus entomology lab Bethany Bolling MS, PhD Texas Department of State Health Services Laboratory Services Section	

	Arbovirus-Entomology Laboratory	
Oct 14	<ul style="list-style-type: none"> Sandflies (Slotman) 	Chapter 12 Sand Flies
Oct 16	<ul style="list-style-type: none"> Mites (Hamer) 	Chapter 26 Mites
Oct 18	Lab: Adult Flies	
Oct 21	<ul style="list-style-type: none"> Tick intro (Hamer) 	Chapter 27 Ticks
Oct 23	<ul style="list-style-type: none"> Tsetse fly and sleeping sickness (Slotman) 	Chapter 18 Tsetse Flies
Oct 25	Lab: Fly Maggots	
Oct 28	<ul style="list-style-type: none"> Lecture Exam 2 	
Oct 30	<ul style="list-style-type: none"> Fleas and lice (Slotman) 	Chapter 10 Fleas Chapter 7 Lice
Nov 1	Lab: Guest Lecture: Mosquito and arbovirus surveillance and control in Brazos County Mr. Kurt Johnson Environmental Health Specialist Brazos County Health District	
Nov 4	<ul style="list-style-type: none"> Tick-borne disease 1 (Hamer) 	
Nov 6	<ul style="list-style-type: none"> Tick-borne disease 2 (Hamer) 	
Nov 8	Lab: Fleas, Lice, True Bugs	
Nov 11	<ul style="list-style-type: none"> Vector competence (Hamer) 	
Nov 13	Vector control 1 (Hamer)	
Nov 15	Lab: Class project work time	
Nov 18	<ul style="list-style-type: none"> Vector control 2 (Hamer) 	
Nov 20	<ul style="list-style-type: none"> No lecture (Class project work time) 	
Nov 22	Lab: Class project work time	
Nov 25	<ul style="list-style-type: none"> Arthropod containment (Hamer) 	
Nov 27	No Classes (Thanksgiving Break)	
Nov 29	No Classes (Thanksgiving Break)	
Dec 2	Lab: Final Presentations	
Dec 4	<ul style="list-style-type: none"> Lecture Exam 3 	

****There will be NO FINAL EXAM during finals week for ENTO 618****