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# ENTO 618

## Medical and Veterinary Entomology

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### 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:** Grad 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;
- Review medical entomology scientific literature and conduct a quantitative synthesis to fill a knowledge gap in the field.

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**Fall 2022; 3 credit hours**

Lecture: Tue and Thurs  
3:55pm – 5:10pm; HPCT 210

Lab: Friday 12:40pm – 3:30pm;  
HPCT 108

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### Instructor:

**Gabriel L. Hamer, PhD**

Professor

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Dept. Entomology

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### Materials

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

**Readings:** Selected readings from the primary literature posted to Canvas.

**Lab Manual:** Medical Entomology ENTO 423 Laboratory Manual. Available at MSC Bookstore.

**Lectures:** In person with all lectures recorded and posted to Canvas.

## 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 195 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.
- **Four lecture exams (30 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.

## University Policies

### Statement on Mental Health and Wellness

Texas A&M University recognizes that mental health and wellness are critical factors that influence a student's academic success and overall wellbeing. Students are encouraged to engage in proper self-care by utilizing the resources and services available from Counseling & Psychological Services (CAPS). Students who need someone to talk to can call the TAMU Helpline (979-845-2700) from 4:00 p.m. to 8:00 a.m. weekdays and 24 hours on weekends. 24-hour emergency help is also available through the National Suicide Prevention Hotline (800-273-8255) or at [suicidepreventionlifeline.org](http://suicidepreventionlifeline.org).

### Attendance Policy

The university views class attendance and participation as an individual student responsibility. Students are expected to attend class and to complete all assignments.

Please refer to [Student Rule 7](#) in its entirety for information about excused absences, including definitions, and related documentation and timelines.

### Makeup Work Policy

Students will be excused from attending class on the day of a graded activity or when attendance contributes to a student's grade, for the reasons stated in Student Rule 7, or other reason deemed appropriate by the instructor.

## 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

Texas A&M University is committed to providing equitable access to learning opportunities for all students. If you experience barriers to your education due to a disability or think you may have a disability, please contact Disability Resources in the Student Services Building or at (979) 845-1637 or visit [disability.tamu.edu](http://disability.tamu.edu). Disabilities may include, but are not limited to attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability related needs with Disability Resources and their instructors as soon as possible.

## Academic Integrity Statement

An Aggie does not lie, cheat or steal, or tolerate those who do. Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor request it, may be sufficient grounds to initiate an academic misconduct case ([Section 20.1.2.3, Student Rule 20](#)).

You can learn more about the Aggie Honor System Office Rules and Procedures, academic integrity, and your rights and responsibilities at [aggiehonor.tamu.edu](http://aggiehonor.tamu.edu).

Please refer to [Student Rule 7](#) in its entirety for information about makeup work, including definitions, and related documentation and timelines.

Absences related to Title IX of the Education Amendments of 1972 may necessitate a period of more than 30 days for make-up work, and the timeframe for make-up work should be agreed upon by the student and instructor” ([Student Rule 7, Section 7.4.1](#)).

“The instructor is under no obligation to provide an opportunity for the student to make up work missed because of an unexcused absence” ([Student Rule 7, Section 7.4.2](#)).

Students who request an excused absence are expected to uphold the Aggie Honor Code and Student Conduct Code. (See [Student Rule 24](#).)

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*Disability Resources is located in the Student Services Building or at (979) 845-1637 or visit [disability.tamu.edu](http://disability.tamu.edu).*

### **Title IX and Statement on Limits to Confidentiality**

Texas A&M University is committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws prohibit gender-based discrimination and sexual harassment, including sexual assault, sexual exploitation, domestic violence, dating violence, and stalking.

With the exception of some medical and mental health providers, all university employees (including full and part-time faculty, staff, paid graduate assistants, student workers, etc.) are Mandatory Reporters and must report to the Title IX Office if the employee experiences, observes, or becomes aware of an incident that meets the following conditions (see [University Rule 08.01.01.M1](#)):

- The incident is reasonably believed to be discrimination or harassment.
- The incident is alleged to have been committed by or against a person who, at the time of the incident, was (1) a student enrolled at the University or (2) an employee of the University.

Mandatory Reporters must file a report regardless of how the information comes to their attention – including but not limited to face-to-face conversations, a written class assignment or paper, class discussion, email, text, or social media post. Although Mandatory Reporters must file a report, in most instances, a person who is subjected to the alleged conduct will be able to control how the report is handled, including whether or not to pursue a formal investigation. The University’s goal is to make sure you are aware of the range of options available to you and to ensure access to the resources you need.

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*Students wishing to discuss concerns in a confidential setting are encouraged to make an appointment with [Counseling and Psychological Services \(CAPS\)](#).*

*Students can learn more about filing a report, accessing supportive resources, and navigating the Title IX investigation and resolution process on the University’s [Title IX webpage](#).*

### **Campus-Specific Policies**

Texas A&M University is committed to engaged student participation in all of its programs and courses and provides an accessible academic environment for all students. This means that our classrooms, our virtual spaces, our practices and our interactions are as inclusive as possible and we work to provide a welcoming instructional climate and equal learning opportunities for everyone. If you have an instructional need, please notify me as soon as possible.

The Aggie Core values of respect, excellence, leadership, loyalty, integrity and selfless service in addition to civility, and the ability to listen and to observe others are the foundation of a welcoming instructional climate. Active, thoughtful and respectful participation in all aspects of the course supports a more inclusive classroom environment as well as [our mutual](#) responsibilities to the campus community.

Statement on the Family Educational Rights and Privacy Act (FERPA)

FERPA is a federal law designed to protect the privacy of educational records by limiting access to these records, to establish the right of students to inspect and review their educational records and to provide guidelines for the correction of inaccurate and misleading data through informal and formal hearings. Currently enrolled students wishing to withhold any or all directory information items may do so by going to [howdy.tamu.edu](http://howdy.tamu.edu) and clicking on the "Directory Hold Information" link in the Student Records channel on the MyRecord tab. The complete [FERPA Notice to Students](#) and the student records policy is available on the Office of the Registrar webpage.

Items that can never be identified as public information are a student’s social security number, citizenship, gender, grades, GPR or class schedule. All efforts will be made in this class to protect your privacy and to ensure confidential treatment of information associated with or generated by your participation in the class.

Directory items include name, UIN, local address, permanent address, email address, local telephone number, permanent telephone number, dates of attendance, program of study (college, major, campus), classification, previous institutions attended, degrees honors and awards received, participation in officially recognized activities and sports, medical residence location and medical residence specialization.

## Lecture Schedule

<u>Week</u>	<u>Day</u>	<u>Topic</u>	<u>Textbook Chapter</u>	<u>Assessment</u>
Week 1	Aug 20	Syllabus Review, Course Introduction		
	Aug 22	Direct Effects of Arthropods	Chapter 1	
Week 2	Aug 27	Parasitic Arthropod Morphology and Biology	Chapter 2	
	Aug 29	Disease Epidemiology-Part 1	Chapter 4	
Week 3	Sept 3	<b>Holiday- No Class</b>		
	Sept 5	Disease Epidemiology-Part 2		
Week 4	Sept 10	Vector-Host Interactions		
	Sept 12	<b>Lecture Exam 1</b>		<b>Lecture Exam 1</b>
Week 5	Sept 17	Arthropod Toxins and Venom	Chapter 3	
	Sept 19	Tick Taxonomy	Chapter 27	
Week 6	Sept 24	Tick Biology		
	Sept 26	Tick-borne Diseases		
Week 7	Oct 1	Tick-borne Diseases		
	Oct 3	Mites and Mite-borne Diseases	Chapter 26	
Week 8	Oct 8	<b>Fall Break – No Class</b>		
	Oct 10	<b>Lecture Exam 2</b>		<b>Lecture Exam 2</b>
Week 9	Oct 15	Mosquito Taxonomy	Chapter 15	
	Oct 17	Mosquito Biology		
Week 10	Oct 22	Mosquito-borne Diseases		
	Oct 24	Mosquito-borne Diseases		
Week 11	Oct 29	Other Flies and Diseases	Chapters 12, 14	
	Oct 31	<b>Lecture Exam 3</b>		<b>Lecture Exam 3</b>
Week 12	Nov 5	Myiasis	Chapter 5, Chapter 19	
	Nov 7	Fleas and Flea-borne Diseases	Chapter 10	
Week 13	Nov 12	Lice and Louse-borne Diseases	Chapter 7	
	Nov 14	Kissing Bugs and Chagas	Chapter 8	
Week 14	Nov 19	Vector Monitoring and Integrated Pest Management		
	Nov 21	<b>Lecture Exam 4</b>		<b>Lecture Exam 4</b>
Week 15	Nov 26	<b>Group project – No Class</b>		
	Nov 28	<b>Holiday- No Class</b>		
Week 16	Dec 3	<b>Presentations</b>		
	Dec 5	<b>No Class</b>		

## Laboratory Schedule

<u>Week</u>	<u>Week of</u>	<u>Topic (ENTO 427)</u>	<u>ENTO 618 Topic</u>
<i>Week 1</i>	Aug 23	<b>No Lab</b>	
<i>Week 2</i>	Aug 30	Syllabus Review, Lab Introduction	<b>Lab Lecture:</b> Systematic Literature Review
<i>Week 3</i>	Sept 6	<b>No Lab</b>	
<i>Week 4</i>	Sept 13	Arthropod Internal and External Anatomy	<b>Lab Lecture:</b> Vector Competence
<i>Week 5</i>	Sept 20	Mite Identification	
<i>Week 6</i>	Sept 27		
<i>Week 7</i>	Oct 4	Tick Identification	<b>Lab Lecture:</b> Tick surveillance
<i>Week 8</i>	Oct 11	Mosquito Larvae Identification	
<i>Week 9</i>	Oct 18		<b>Lab Lecture:</b> Tsetse fly and sleeping sickness
<i>Week 10</i>	Oct 25	Adult Mosquito Identification	<b>Lab Lecture:</b> Mosquito surveillance
<i>Week 11</i>	Nov 1		
<i>Week 12</i>	Nov 8	Other Adult Fly Identification	<b>Lab Lecture:</b> Arthropod containment
<i>Week 13</i>	Nov 15	Fly Maggot Identification	
<i>Week 14</i>	Nov 22	Identification of Hemiptera, Lice, Fleas	
<i>Week 15</i>	Nov 29	<b>No Lab</b>	
<i>Week 16</i>	Dec 6		<b>Presentations</b>