

Course Information

Course Number: **ENTO 681**
Course Title: **Seminar – Control of Disease Vectors**
Section: **600**
Time: **1:35pm to 2:25pm**
Location: **HPCT 210 and Zoom**
Credit Hours: **1 hour**

Instructor Details

Instructor: **Gabriel Hamer**
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Office Hours: **By appointment**

Course Description

This seminar will address contemporary arthropod vector control tools, study designs to evaluate interventions, and human dimensions of vector control.

Course Prerequisites

Graduate student status.

Course Learning Outcomes

At the end of this course, you should be able to:

- *Explain different approaches to organized vector control;*
- *Describe social and political factors that influence vector control activities;*
- *Distinguish different vector intervention tools and how to evaluate them;*
- *Develop critical thinking skills while reading primary papers and review articles*

Textbook and/or Resource Materials

Peer reviewed publications and other available resources

Grading Policy

<i>Attendance</i>	<i>24 points</i>
<i>Participation</i>	<i>24 points</i>
<i>Discussion Lead</i>	<i>52 points</i>
<i>Total of</i>	<i>100 points</i>

Final Grade: A=100%-90%; B= 89.9%-80%; C= 79.9%-70%; D= 69.9%-60%; F= less than 60%.

Attendance (24 points) – Two points of attendance per class period (12 class periods).

Participation (24 points) – Two points of participation per class period (12 class periods). Full participation credit will be given when the student reads the assigned reading and contributes actively to the class discussion.

Discussion Lead (20 points) – Students will individually pick a topic to lead during a class session. The list of candidate topics are below but related topics are eligible pending discussion with the instructor. The assignment requires the student to explore the literature on a given topic and assign a representative publication to share with the students about 3 days in advance of the class period (e.g. share paper in Canvas on Tuesday for class discussion on Friday). The day the student presents will start off with a 30min powerpoint presentation providing an overview of the topic. Additional resources will be used to prepare the overview slides. Then 20min will be spent discussing the focal paper that all the students will have read. By ‘vector’ this class will consider all arthropods that are either a nuisance to humans and animals or those that transmit agents of disease to humans or animals. Many of the topics are most relevant to mosquitoes given the higher focus and funding available for this group of arthropods, but examples and discussions should consider more than just mosquitoes. The 30 min oral presentations will be graded per Entomological Society of America Oral Presentation Evaluation Forms.

Topic ideas

1. Politics of organized vector control

Organized vector control comes in many shapes and sizes. Across the United States, different neighborhoods, cities, counties, and states conduct vector control very differently. Some counties have no organized vector control programs and other counties have annual budgets of >\$20 million. This heterogeneity has many downstream consequences on the control of nuisance and vector species of mosquitoes, ticks, etc.

2. Bottom-up versus top-down vector control

Historically, federal governments approached the problem of mosquitoes with a heavy hand and top-down approach to vector control. Some of these worked and some didn't. More recently bottom-up approaches ('grass roots' campaigns) have become integrated into control approaches. There are pros and cons to both of these approaches.

3. How to evaluate vector control efficacy

The most fundamental and often neglected aspect of integrative mosquito management (and integrated vector management) is the evaluation step to determine evidence for successful control or not. There are many approaches used to evaluate vector control interventions.

4. How to design a randomized controlled trial

In an ideal world and with plenty of funding, randomized controlled trials are an increasingly utilized tool for evaluating vector control tools. They are also considered the 'gold standard' for vector control evaluations. Discuss the various designs and approaches to conducting randomized trials.

5. Evaluations of operational vector control activities

Operational vector control programs are public health agencies mandated to protect public health. Accordingly, randomly conducting interventions in communities is almost never an option. Accordingly, evaluations of vector control activities require different designs to evaluate them (e.g. observational, etc.).

6. Intervention outcome variables

All vector control interventions require some quantitative measure to use as an outcome variable to determine success. These include entomological outcome variables (e.g. mosquito abundance) or epidemiological variables (human exposure to pathogens). A suite of innovative outcome variables have been developed more recently.

7. Innovative vector control tools (insecticides)

Many contemporary approaches to vector control are using insecticides in more creative or targeted ways. Targeted indoor residual spraying, autodissemination stations, and eave tubes are examples of these.

8. Innovative vector control tools (alternatives)

Many contemporary approaches to vector control are developing alternative tools other than insecticides. These include Wolbachia, gene drive and lethal traps.

9. Precision vector control (Next Generation Integrated Vector Management)

Frustration is mounting that despite a century of progress on vector control, we still have very few effective tools and success stories. There is growing desire to improve the sophistication and precision of vector control to allow a more efficient use of resources to achieve reduced risk of vector-borne disease transmission.

10. Social feasibility of different vector control tools

Regardless of how effective some control tools are, communities might not support the utilization of those tools in their neighborhoods. Many studies have assessed household and community support for different vector controls tools

11. Vector control success stories and failures

What works and what doesn't? Any patterns to these case studies?

12. International perspectives on vector control

Resources devoted to vector control and the structure of organized vector control varies tremendously among countries. How does this variation impact disease burden, intervention tools, and intervention success?

Course Schedule

Week	Date	Subject	Reading Assignment
1	1/22	Introduction	-
2	1/29	No Class (topic selection)	-
3	2/5	No Class (research topics)	To be announced
4	2/12	Topic 3	To be announced
5	2/19	Canceled week	To be announced
6	2/26	Topic 4	To be announced
7	3/5	Topic 5	To be announced
8	3/12	Topic 7a	To be announced
9	3/17	Topic 7b (Redefined day)	-
10	3/26	Topic 8	To be announced
11	4/2	No class (Reading day)	-
12	4/9	Topic 9	To be announced
13	4/16	Topic 10	To be announced
14	4/23	Topic 11	To be announced
15	4/28	No Class	To be announced

University Policies

Attendance Policy

The university views class attendance and participation as an individual student responsibility. Students are expected to attend class, participate, and lead a discussion.

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.

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](#).)

Under health or other circumstances that are deemed appropriate by the instructor, makeup or late work will be accepted as a full grade or partial grade after discussion between the student and the instructor.

Academic Integrity Statement and Policy

"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.

Americans with Disabilities Act (ADA) Policy

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. 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.

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.

Except for 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, you 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.

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.

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.