

# **BITE ME? INSECTS AS DISEASE VECTORS**

## **IDS 2935**

### **3 CREDITS**

### **SPRING 2024**

#### **INSTRUCTOR INFORMATION**

##### **Instructor**

**Dr. Tolulope Agunbiade**

##### **Contact Information & Hours**

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##### **Teaching Assistant**

**Nich Martin**

##### **Contact Information & Hours**

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#### **GENERAL INFORMATION**

##### **Course Description**

Arthropod-borne diseases represent some of the most dangerous and major challenges facing human health. They have shaped the course of history and remain a threat to human well-being. Everyone has, at one point or another, been exposed to the nuisance and bites of arthropods and, therefore, potentially to the diseases they may carry. The effects of these arthropod-borne diseases on human health are increasing and spreading. Factors such as the development of resistant parasite strains to the currently available drugs, and the evolution of insecticide resistance to currently available insecticides account for this increase and spread. Other factors such as constantly changing climate, trade, unplanned urbanization, changes in agricultural practices, and human travel also aid the establishment of these diseases thereby intensifying disease transmission or causing disease emergence in areas where they were previously unknown. This is a multidisciplinary course that covers concepts and topics from the fields of entomology, medicine, public health, biology, parasitology, microbiology, and veterinary medicine. The course will address the interactions of arthropods to humans and the environment. It will present pressing issues relating to the impact of arthropods in public health and will also explore challenging questions such as “what are the emerging issues in vector biology and

disease epidemiology”? and “what can be done to manage or prevent the occurrence of arthropod-borne diseases”?

### **Course Delivery**

This course will explore content through lectures, article discussions and reviews, and interactions with scientists actively working in the field of arthropod-borne disease research. The discussions will allow students to ask questions and discuss meaningful and thought-provoking topics about arthropods and human health. The interactions with scientists will allow the students to better understand the research on arthropod-vector-borne pathogens that are of major concern to the United States and the rest of the world.

### **Course Objectives**

**By the end of this course, you will be able to:**

1. Describe the pathogenesis of arthropod-borne diseases in humans.
2. Describe the historical and contemporary significance of insect-host interactions.
3. Explain the global health impact of arthropod-borne diseases on human health.
4. Evaluate the drivers of disease transmission from a global perspective.
5. Demonstrate knowledge of disease control strategies and their inherent challenges.
6. Describe emergent arthropod-borne infectious diseases and strategies for their control.
7. Formulate and develop a plan for research into the impact and control of arthropod-borne diseases.
8. Communicate research on arthropod-borne diseases using oral and/or written skills.
9. Interact with scientists in the field of arthropod-borne disease research.
10. Relate knowledge gained in the classroom to real-world arthropod-borne disease issues.

### **Course Requirements**

#### ***Required Textbook***

There are no required textbooks for this course.

#### ***Prerequisites***

There are no prerequisites for this course.

#### ***Minimum Technology Requirements***

The University of Florida expects students entering an online program to acquire computer hardware and software appropriate to their degree program. Most computers can meet the following general requirements. A student’s computer configuration should include:

- Webcam
- Microphone
- Broadband connection to the internet and related equipment (cable/DSL modem)
- Microsoft Office Suite installed (provided by the university)

Individual colleges may have additional requirements or recommendations, which students should review before starting their program.

### ***Minimum Technical Skills***

To complete your tasks in this course, you will need a basic understanding of operating a computer and using word processing software.

### ***Materials/Supply Fees***

There is no supply fee for this course.

### ***Honorlock***

Honorlock is an online proctoring service that allows students to take exams on-demand 24/7. There are no scheduling requirements or fees. You will need a laptop or desktop computer with a webcam, a microphone, and a photo ID. The webcam and microphone can be either integrated or external USB devices. Honorlock requires that you use the Google Chrome browser and that you must add the Honorlock extension to Chrome. For further information, FAQs, and technical support, please visit Honorlock.

### ***Zoom***

Zoom is an easy-to-use video conferencing service available to all UF students, faculty, and staff that allows for meetings of up to 100 participants. You can find resources and help using Zoom at the University of Florida's Zoom website.

## **ASSIGNED READINGS**

There are no required textbooks for this course. However, a list of required readings and videos intended to aid the student's understanding of the topics will be made available to the students through Canvas.

## **STUDENT ASSESSMENT**

Student assessments will be based on performance in quizzes, exams, article reviews and discussions, and submission of a self-reflection report.

### **Examinations**

There will be four exams throughout the semester (50 points each). The exams will test the student's understanding of the literature and concepts taught in the course. The exams will include 25 multiple-choice, mix-and-match, and true/false questions. Each exam will be available and accessible through Canvas each Wednesday of the exam week. The exam will be proctored using Honorlock. The first exam will cover materials taught from Modules 1 to 4, the second exam will cover materials taught from Modules 5 to 8, and the third exam will cover materials taught from Modules 9 to 12. The final comprehensive exam will cover all the materials taught in the class, including Modules 13 to 15. Once you begin the exam, you will have 60 minutes to complete it in a single session. So, do not open the exam until you are ready to complete it.

## Quizzes

There will be 14 quizzes throughout the semester (10 points each). Students are required to download and read the assigned readings every week. There will be quiz questions from the readings, and the lecture materials. The quizzes will include 4 multiple-choice, mix-and-match, and true/false questions. The quizzes will be made available and accessible through Canvas from 8:00 am EST on Wednesdays till 11:59 pm EST on Sundays. Once you begin the quiz, you will have 7 minutes to complete it in a single session. So, do not open the quiz until you are ready to complete it. There are 14 quizzes throughout the semester but your two lowest quiz scores for the semester will be dropped, and your grade for the quiz component will be based on the best 12 of 14 quizzes.

## Article Reviews and Discussions

The discussions will be hosted in Perusall and Canvas.

### *Discussion in Perusall*

Each module will have a selected reading for students to annotate and discuss with each other. Each Perusall discussion will be worth 10 points.

### *Discussion in Canvas*

Students will also be grouped randomly into groups of about 10 to discuss on the article and module topic in Canvas. Each student in each group is required to share at least one peer-reviewed article or news article that addresses the same topic as the article and module topic with other students for discussions. Students are also required to respond to at least two of their peers' submissions. Each Canvas discussion will be worth 10 points.

## Experiential Learning and Reflection Report

Students are required to interact with a scientist that is actively working on arthropod-borne disease(s). The scientist can be working in academia, government, or industry. This will allow the students to learn more about arthropod-vector-borne diseases that are of major concern to the United States and the rest of the world.

Prior to completing this assignment, students are to provide preliminary details on the scientists they will be interviewing (10 points). A "Chat with a Scientist" application form will be provided for the students in Canvas. The interview can be conducted face-to-face or via Zoom/FaceTime/etc. After interacting with the scientists, students must submit a "Self-Reflection Report" (40 points) reflecting on their experiences and interactions with the scientists. They are to reflect on what they have learned, and how the interactions with the scientists are relevant to their intellectual and personal development. For example, if given the opportunity, the kind of arthropod vector research they would like to do and how the outcome of their proposed research will reflect on public health issues in Florida, the United States, and the rest of the world.

To complete this assignment, students must:

- Submit a filled "Chat with a Scientist" application form in Canvas (10 points).

- Respond to the questions in the Self-Reflection Report Template regarding your experience with the scientists, then submit the document in Canvas.
- Send a mail to the instructor and the TA with the scientist copied with a summary of the meeting or interaction. Failure to do so will result in "zero" points.

### Participation

Students will receive participation points for watching lecture videos in PlayPosit. Make sure that you watch these videos until the very end to receive points. Each Module's PlayPosit value is worth 5 points, totaling 70 points.

### Assignment Make-Up Policy

Make-up for an assignment will be allowed only for illness, emergencies, or prescheduled reasons. In the event of a missed assignment, you must provide the necessary written documentation, such as a note from a doctor in case of severe illness or a funeral notice/obituary in case of the death of a close relative. Any other kind of conflicting commitment should be communicated to the instructor at least a week in advance. Requests to take an assignment late WITHOUT one of the reasons listed above will be considered but will automatically result in 5% of the points being deducted from the assignment score.

## COURSE SCHEDULE

Module	Topic/Activity	Assessments
1	Historical Aspects of Vector-Borne Diseases Course orientation	<ul style="list-style-type: none"> <li>• Orientation Quiz</li> <li>• Introduce Yourself!</li> <li>• Quiz 1</li> <li>• Discussion 1 (Perusall and Canvas)</li> </ul>
2	Impact of Arthropods on Human Health	<ul style="list-style-type: none"> <li>• Quiz 2</li> <li>• Discussion 2 (Perusall and Canvas)</li> </ul>
3	Arthropod Transmission of Pathogens	<ul style="list-style-type: none"> <li>• Quiz 3</li> <li>• Discussion 3 (Perusall and Canvas)</li> </ul>
4	Mosquito-Borne Diseases	<ul style="list-style-type: none"> <li>• Quiz 4</li> <li>• Discussion 4 (Perusall and Canvas)</li> </ul>
5	Tick-Borne Diseases	<ul style="list-style-type: none"> <li>• Quiz 5</li> <li>• Discussion 5 (Perusall and Canvas)</li> <li>• Exam 1</li> <li>• Chat with a Scientist form</li> </ul>
6	Flea-Borne Diseases	<ul style="list-style-type: none"> <li>• Quiz 6</li> <li>• Discussion 6 (Perusall and Canvas)</li> </ul>
7	Sandfly-Transmitted Diseases and Other Important Vector-Borne Diseases	<ul style="list-style-type: none"> <li>• Quiz 7</li> <li>• Discussion 7 (Perusall and Canvas)</li> </ul>
8	Arthropods, Diseases, and the Military	<ul style="list-style-type: none"> <li>• Quiz 8</li> <li>• Discussion 8 (Perusall and Canvas)</li> </ul>

		<ul style="list-style-type: none"> <li>• Exam 2</li> </ul>
9	Surveillance and Management of Arthropod-Borne Diseases	<ul style="list-style-type: none"> <li>• Quiz 9</li> <li>• Discussion 9 (Perusall and Canvas)</li> </ul>
10	Insecticides and Public Health	<ul style="list-style-type: none"> <li>• Quiz 10</li> <li>• Discussion 10 (Perusall and Canvas)</li> </ul>
11	Vaccines Against Arthropod-Borne Diseases	<ul style="list-style-type: none"> <li>• Quiz 11</li> <li>• Discussion 11 (Perusall and Canvas)</li> </ul>
12	GMOs in Public Health and Disease Control	<ul style="list-style-type: none"> <li>• Quiz 12</li> <li>• Discussion 12 (Perusall and Canvas)</li> <li>• Exam 3</li> </ul>
13	Drivers of the emergence of arthropod-borne diseases	<ul style="list-style-type: none"> <li>• Quiz 13</li> <li>• Discussion 13 (Perusall and Canvas)</li> <li>• Experiential Learning Self-Reflection Report</li> </ul>
14	Invasive Species and Emerging Arthropod-Borne Diseases	<ul style="list-style-type: none"> <li>• Quiz 14</li> <li>• Discussion 14 (Perusall and Canvas)</li> <li>• Final Comprehensive Exam</li> </ul>

## COURSE GRADING POLICY

Assignments will be graded, and scores posted within one week after the due date. However, this may change, and in this case, announcements will be made by the instructor or the TA.

Course requirements		Point value	Total points
Participation		5 each	70
Orientation module assignments		10 each	20
Exams		50 each	200
Quizzes		10 each	120
Perusall Annotation		10 each	140
Discussions in Canvas		10 each	140
Experiential learning	Submission of "Chat with a Scientist" form	10	10
	Self-reflection report	40	40
<b>Total</b>			<b>740</b>

### Grading Scale

Grade	Percentages
A	93 - 100
A-	90 - 92.9
B+	87 - 89.9
B	83 - 86.9
B-	80 - 82.9

C+	77 - 79.9
C	73 - 76.9
C-	70 - 72.9
D+	67 - 69.9
D	63 - 66.9
D-	60 - 62.9
E	<59.9 and below

## UNIVERSITY OF FLORIDA POLICIES AND ASSISTANCE

**Grades and Grade Points** - A minimum grade of C is required for Gen Ed credit. For information on current University of Florida policies for assigning grade points, see <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

### **Attendance and Make-Up Work**

Students are expected to attend classes. Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at: <https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/>

### **Online Course Evaluation Process**

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>.

### **University Policy on Academic Conduct**

UF students are bound by The Honor Pledge, which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity by abiding by the Honor Code." On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The [Student Honor Code and Student Conduct Code](#) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TA in this class.

Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at

the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action.

For more information regarding the Student Honor Code, please see:

<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code>

### ***Plagiarism***

The [Student Honor Code and Student Conduct Code](#) states that:

"A Student must not represent as the student's own work all or any portion of the work of another. Plagiarism includes but is not limited to:

- Stealing, misquoting, insufficiently paraphrasing, or patch-writing.
- Self-plagiarism, which is the reuse of the student's own submitted work, or the simultaneous submission of the student's own work, without the full and clear acknowledgment and permission of the faculty to whom it is submitted.
- Submitting materials from any source without proper attribution.
- Submitting a document, assignment, or material that, in whole or in part, is identical or substantially identical to a document or assignment the student did not author."

It is to be assumed that all work will be completed independently unless the assignment is defined as a group project, in writing by the professor. This policy will always be vigorously upheld in this course.

### ***Software Use***

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing 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.

### ***University Policy on Accommodating Students with Disabilities***

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services, and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation 0001 Reid Hall, 352-392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/)

### ***Campus Helping Resources***

Students experiencing crises or personal problems that interfere with their general wellbeing are encouraged to utilize the university's counseling resources. The Counseling Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal or lacking clear career and academic goals, which interfere with their academic performance.

- *Health and Wellness*



- U Matter, We Care: If you or someone you know is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu), 352-392-1575, or visit U Matter, We Care website to refer or report a concern and a team member will reach out to the student in distress.
  - Counseling and Wellness Center: Visit the Counseling and Wellness Center website or call 352-392-1575 for information on crisis services as well as non-crisis services.
  - Student Health Care Center: Call 352-392-1161 for 24/7 information to help you find the care you need or visit the Student Health Care Center website.
  - University Police Department: Visit UF Police Department website or call 352-392-1111 (or 9-1-1 for emergencies).
  - UF Health Shands Emergency Room/Trauma Center: For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; Visit the UF Health Emergency Room and Trauma Center website.
- *Academic and Student Support*
    - E-learning technical support: Contact the UF Computing Help Desk at 352-392-4357 or via e-mail at [helpdesk@ufl.edu](mailto:helpdesk@ufl.edu).
    - Career Connections Center: Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.
    - Library Support: Various ways to receive assistance with respect to using the libraries or finding resources.
    - Teaching Center: Broward Hall, 352-392-2010 or to make an appointment 352-392-6420. General study skills and tutoring.
    - Writing Studio: 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.
    - Student Complaints On-Campus: Visit the Student Honor Code and Student Conduct Code webpage for more information.
    - On-Line Students Complaints: View the Distance Learning Student Complaint Process.

### ***Course Evaluations***

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available on the GatorEvals [Providing Constructive Feedback](#) FAQ page.

Students will be notified when the evaluation period opens and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via the [GatorEvals](#) website. Summaries of course evaluation results are available to students at the [GatorEvals Public Results](#) page.

More information about UF's course evaluation system can be found at the [GatorEvals Faculty Evaluations](#) website.