Arthropod Vector Identification

**ENY 4932 UNDERGRADUATE LEVEL COURSE**

**SEMESTER:** Fall, 3 CREDIT HOURS  
**ONLINE ONLY**

**INSTRUCTOR:**

Dr. Estelle Martin  
Office: 3206, Steinmetz Hall  
1881 Natural Area Drive Box 110620  
Gainesville, FL 32611  
Phone: 352-294-6935  
E-mail: estellemartin@ufl.edu

**OFFICE HOURS:**

Every Monday from 4:30PM to 6:30PM on Zoom:  
https://ufl.zoom.us/j/96863844060?pwd=RFNRMTRZQ1ZnS0xYeXlkbFFJNn45Zz09

**COURSE COMMUNICATIONS:** Please post course related questions on the discussion board and send private questions related to the course or grades to estellemartin@ufl.edu

In addition, students are encouraged to reach out to me at estellemartin@ufl.edu or to TA: charlotte.addae@ufl.edu to arrange a time to meet with subject line: **Fall2022 – ENY4932 meeting request.** All meetings will occur via Zoom. Please allow for a 48h response time.

**COURSE WEBSITE:** https://ufl.instructure.com/courses/462093  
You will need internet access to the UF Canvas eLearning site to see the course contents and complete assessments.

**COURSE DESCRIPTION:** Insects and other arthropods play critical roles in the environment. In this course we will focus on the role of arthropods as vectors of disease and learn how to identify to the species level the major arthropod vectors of human diseases.
COURSE GOALS: By the end of this course, students will develop the necessary skill to identify major arthropod vectors

LEARNING OBJECTIVES:
By the end of the course, students will be able to:
1. Define a vector and compare, and contrast the different types of disease transmission
2. Discuss insects external and internal structure that are essential for arthropod identification
3. Identify the major arthropods that transmit pathogens causing disease to humans
4. Create a mosquito surveillance tool
5. Conduct surveillance study along the course of the semester
6. Create a digital collection of specimens collected
7. Employ databases to find relevant journal articles related to insects and vector-borne diseases
8. Judge and critique scientific literature related to insects and human health
9. Create, judge and critique pptx presentations on insect-vectored diseases

INSTRUCTIONAL METHODS: The class will be conducted entirely online using Canvas. You are responsible for the course content in Canvas as well as assigned textbook readings. You should view the lectures on the course website and read the text in the order shown in the class outline in the syllabus. You should also view the video clips, which serve to illustrate the items discussed.

PREREQUISITE KNOWLEDGE AND SKILLS: As a prerequisite, you must have completed ENY3005L or BSC2005L or equivalent.

REQUIRED TEXT: No required textbook. All reading materials are provided by the instructor via the eLearning site.

List of journal article covered in the course:


**REQUIRED MATERIALS TO BE PURCHASED BY THE END OF THE FIRST WEEK:** you may have all of this at home but if not, you will need to purchase the following to create your own tick drag.

**Tick drag:**
- **Dowel**
  - Item #19386
  - Model #436513
- **Cord (Length: to preference of person dragging, need to be at least 5 ft):** [https://www.amazon.com/Extremus-Paracord-Military-Breaking-](https://www.amazon.com/Extremus-Paracord-Military-Breaking-).
## LECTURE OUTLINE:

<table>
<thead>
<tr>
<th>Week</th>
<th>Course topic</th>
<th>Assessment</th>
<th>Due dates</th>
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</table>
| 0 (Aug 22-Aug 28) | Course introduction | Syllabus quiz (5 points)  
Introduction Discussion board (5 points)  
Assess your knowledge pre course quiz (10 points)  
Semester project: Order all the material (5 points) | Aug 29 |
| 1 (Aug 29-Sept 4) | Semester projects | Module 1 Quiz (10 points)  
Module 1 Discussion board (20 points)  
Module 1 Assignment (25 points)  
Semester project: All materials should be received by now (5 points)  
Semester project: iNaturalist Username (5 points) | Sept 6 |
| 2 (Sept 5-Sept 11) | Ticks | Module 2 Quiz (10 points)  
Response to Module 1 Discussion board (10 points)  
Module 2 Assignment: No assignment  
Semester project: Build collection tool (15 points)  
Semester project: Identify collection sites (15 points) | Sept 12 |
| 3 (Sept 12-Sept 18) | Ticks Species of interest | Module 3 Quiz (10 points)  
Module 3 Discussion board (20 points)  
Module 3 Assignment: Tick-borne diseases (25 points)  
Semester project: Go tick drag! | Sept 19 |
| 4 (Sept 19-Sept 25) | Adult Mosquito | Module 4 Quiz (10 points)  
Response to Module 3 Discussion board (10 points)  
Module 4 Assignment: No assignment  
Semester project: Go tick drag! | Sept 26 |
| 5 (Sept 26-Oct 2) | Mosquito larvae | Module 5 Quiz (10 points)  
Module 5 Discussion board (20 points)  
Module 5 Assignment: Mosquito-borne diseases (25 points)  
Semester project: Go tick drag! | Oct 3 |
| 6 (Oct 3-Oct 9) | Mosquito Species of interest | Module 6 Quiz (10 points)  
Response to Module 5 Discussion board (10 points)  
Module 6 Assignment: No assignment  
Mid-course evaluation (10 pts extra credit)**  
Semester project: Go tick drag!  
Semester project: iNaturalist posting (module 3-5) (15 points) | Oct 10 |
| 7 (Oct 10-Oct 16) | Black flies | Module 7 Quiz (10 points)  
Module 7 Discussion board (20 points)  
Module 7 Assignment: Vecto-borne disease in your State (25 points)  
First half course exam (130 points)  
Semester project: Go tick drag! | Oct 17 |
| 8 (Oct 17-Oct 23) | Tsetse Flies | Module 8 Quiz (10 points)  
Response to Module 7 Discussion board (10 points)  
Module 8 Assignment: No assignment  
Semester project: Go tick drag!  
Semester project: iNaturalist posting (module 6-7) (15 points) | Oct 24 |
| 9 (Oct 24-Oct 30) | Kissing bugs | Module 9 Quiz (10 points)  
Module 9 Discussion board (20 points)  
Module 9 Assignment: Misidentification! (25 points)  
Semester project: Go tick drag! | Oct 31 |
| 10 (Oct 31-Nov 6) | Fleas | Module 10 Quiz (10 points)  
Response to Module 9 Discussion board (10 points)  
Module 10 Assignment: no assignment  
Semester project: Go tick drag!  
Semester project: iNaturalist posting (module 8-9) (15 points) | Nov 7 |
<table>
<thead>
<tr>
<th>Date</th>
<th>Module</th>
<th>Topic</th>
<th>Assignments</th>
<th>Due Date</th>
</tr>
</thead>
</table>
| 11 Nov 7 - Nov 13 | 11     | Cockroaches                  | Module 11 Quiz (10 points)  
|             |        |                              | Module 11 Discussion board (20 points)  
|             |        |                              | Module 11 Assignment: no assignment  | Nov 14  |
| 12 Nov 14 - Nov 20 | 12     | Arthropods and disease transmission | Module 12 Quiz (10 points)  
|             |        |                              | Response to Module 11 Discussion board (10 points)  
|             |        |                              | End-of course evaluation (10 pts extra credit)**  
|             |        |                              | Module 12 Assignment: no assignment  
|             |        |                              | Semester project: Excel data entry file (30 points)  
|             |        |                              | Semester project: Written report (150 points)  | Nov 21  |
| 13 Nov 21 - Nov 27 | 13     | Thanksgiving                 | Module 13 Quiz: No Quiz  
|             |        |                              | Module 13 Discussion: No Discussion  
|             |        |                              | Module 13 Assignment: No assignment  | Nov 30  |
| 14 Nov 28 - Dec 4 | 14     | Surveillance and control Insecticides, Sanitation and Alternatives | Module 14 Quiz (10 points)  
|             |        |                              | Module 14 Discussion: No Discussion  
|             |        |                              | Module 14 Assignment: No assignment  
|             |        |                              | Assess your knowledge post course quiz (10 points)  | Dec 5   |
| 15 Dec 5 - Dec 7 | 15     | End of course                | Second half course exam (135 points)  | -       |

**COURSE GRADING:**

Students are responsible for the content of the lectures. The points assigned for each evaluation is listed in the “assessment” column of the lecture outline table (see above). The final grade, based on accumulation of points, will be assigned as:

- Discussion, 185 pts each (18.5% of total points)
- Quizzes, 155 pts (15.5% of total points)
- Assignments, 125 pts (12.5% of total points)
- Undergraduate exams, 265 pts (26.5% of total points)
- Semester project, 270 (27% of total points)
  - Order Materials (1.85% of total points)
  - Receive Materials (1.85% of total points)
  - iNaturalist Username (1.85% of total points)
  - Build trap (5.55% of total points)
  - Identify Collection sites (5.55% of total points)
  - iNaturalist Postings (16.66% of total points)
  - Xls Data entry file (11.11% of total points)
  - Written Report (55.55 % of total points)

**Total of 1000 pts (100%)**

**GRADING SCALE:**

The final grade, based on accumulation of points, will be assigned as:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points</th>
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<tbody>
<tr>
<td>A</td>
<td>93–100</td>
</tr>
<tr>
<td>A-</td>
<td>90–92.9</td>
</tr>
<tr>
<td>B+</td>
<td>87–89.9</td>
</tr>
<tr>
<td>B</td>
<td>83–86.9</td>
</tr>
<tr>
<td>B-</td>
<td>80–82.9</td>
</tr>
</tbody>
</table>
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

Grade point equivalencies for grades are found at: https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/

COURSE FORMAT AND ASSESSMENTS:
This course is offered as narrated power point lectures delivered by the eLearning course management system Canvas. Slides are available as PDF as well as transcripts should you care to print them.

Graded quizzes:

- “syllabus quiz”
- “Assess your knowledge pre course quiz” and “Assess your knowledge post course quiz” “End of the Module Quizzes” are multiple choice tests and must be taken via Canvas on the dates listed in Canvas unless other arrangements are made in advance

Ungraded quizzes:

- “Practice quizzes” are not graded and it is for your use only as a study aid. If you can answer these questions successfully you are acquiring adequate knowledge about the relationship of insects and their relatives that will allow you to be successful for each of the “end of the module quizzes”

Extra credit opportunities:

- Two “course assessment quizzes” (midway and end of course for extra credit). For these, full grade will be given to all student if 80% of the class takes the survey in canvas
- Among the assignments, some are designed as presentations of journal articles, (1-2 page summaries that may be accompanied by the production of a short video) or creation of a narrated power point on selected topics.
**Semester project:**
Undergraduate students and will perform weekly mosquito surveillance over the course of the semester. First students will construct the mosquito oviposition cups. Students will go to an area of their choice where they recall being bitten or know about arthropod activity and will set up the traps (help with areas can be provided by the instructor). The mosquito ovitrap will be checked the following week. Once chosen, you will keep the same locality for your bi-weekly or monthly collections. After each collection, eggs will be hatched in water, the immature fed and the adult specimens will be killed by placing the arthropod in the freezer. Pictures of each specimen will be taken and characteristic features highlighted for species identification. A narrated PowerPoint of the semester project, a written report and a data entry file will be submitted at the end of the semester.

**Important note about illegal insect collecting:**
Note that it is illegal to collect plants or animals in State and National Parks without a permit. Do not put out traps or collect insects or other arthropods in these areas. Specimens collected illegally will not receive credit, and you may receive a fine or other sanctions from the park service.

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**Figure 1: Semester project workflow**

- **Week 0:** Order material, Scout for potential field sites
- **Week 1:** Receive material + Create iNaturalist username
- **Week 2:** Build collection tool + ID field site
- **Week 3:** Go Collect Ticks!
- **Weeks 4-9:** Continue collection for semester project
- **Week 10:** Last week of collection from semester project!
- **Week 12:** Semester report + data entry file

- At least 1 positive collection each month
- **Total of 7 positive collections throughout the semester**
- Each time:
  - Collected samples are “kill freeze”
  - Take a group picture
  - Specimen identification
  - Take pictures of one representative specimen per species and sex (or developmental stage) and submit to iNaturalist
COURSE POLICIES:

ATTENDANCE POLICY:
There is no attendance policy, but it will be difficult to pass the course unless you carefully listen to the lectures. Students are encouraged to work on this class weekly since All writing assignments are due by the date posted and must be submitted using Canvas.

QUIZ/EXAM POLICY:
You have only one chance to take each test (are tests, quizzes or exams? - use same terminology), so prepare in advance. Please take tests using a reliable computer and connections. All assignments are due on the Monday of the following week and the whole content of the course will be available to student as they start the course. To earn points, quizzes, discussion posts and assignments, must be completed and submitted before the Monday of the following course week. There will be no late submission for quizzes, assignments and discussion posts. All late submissions will be docked 10 points on the individual component grade for each 24 hrs after each deadline Contact me in advance (minimum of two weeks) if there will be a problem with the dates of the scheduled tests.

NETIQUETTE: COMMUNICATION COURTESY:
All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats.

UF POLICIES:

Grades and Grade Points
For information on current UF policies for assigning grade points, see https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/.

Attendance and Make-Up Work
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/.

COVID Response Statements
For face to face courses a statement informing students of COVID related practices such as: We will have face-to-face instructional sessions to accomplish the student learning objectives of this course. In response to COVID-19, the following policies and requirements are in place to maintain your learning environment and to enhance the safety of our in-classroom interactions.
• You are required to wear approved face coverings at all times during class and within buildings. Following and enforcing these policies and requirements are all of our responsibility. Failure to do so will lead to a report to the Office of Student Conduct and Conflict Resolution.

• This course has been assigned a physical classroom with enough capacity to maintain physical distancing (6 feet between individuals) requirements. Please utilize designated seats and maintain appropriate spacing between students. Please do not move desks or stations.

• Sanitizing supplies are available in the classroom if you wish to wipe down your desks prior to sitting down and at the end of the class.

• Follow your instructor’s guidance on how to enter and exit the classroom. Practice physical distancing to the extent possible when entering and exiting the classroom.

• If you are experiencing COVID-19 symptoms (Click here for guidance from the CDC on symptoms of coronavirus), please use the UF Health screening system and follow the instructions on whether you are able to attend class. Click here for UF Health guidance on what to do if you have been exposed to or are experiencing Covid-19 symptoms.

• Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work. Find more information in the university attendance policies.

Student privacy in Online courses:
Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor. A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that
form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session. Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

**Online Course Evaluation Process:**
Student assessment of instruction is an important part of efforts to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. 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/. Summaries of course evaluation results are available to students at: https://gatorevals.aa.ufl.edu/public-results/.

**Academic Honesty:**
As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.” You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit 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."
It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). 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.

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.

Services for 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, https://disability.ufl.edu/

Campus Helping Resources:
Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university’s counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, www.counseling.ufl.edu
  Counseling Services Groups and Workshops Outreach and Consultation Self-Help
  Library Wellness Coaching
- U Matter We Care, www.umatter.ufl.edu/
- Career Connections Center, First Floor JWRU, 392-1601, https://career.ufl.edu/
- Student Success Initiative, http://studentsuccess.ufl.edu
- Student Complaints:
  - Residential Course: https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/
  - Online Course: https://distance.ufl.edu/getting-help/