

BIO 391-0003 / 511, Insect Ecology

Instructors

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Meeting Time and Place

Tuesdays and Thursdays, 9:30 – 11:00 AM via Zoom.

Course Objectives

The overall goal of this class is to provide students with an understanding of intricate interactions between insects and their environment. More specifically, the students completing this course are expected to

- Describe the impacts of biotic and abiotic factors on insect biology
- Explain the mechanisms of population regulation
- Rationalize the concept of energy flow through trophic levels in an ecosystem
- Place ecological interactions in their evolutionary context
- Show appreciation of insect contribution to maintaining diversity of life on Earth

General Course Description

The course covers fundamental concepts in ecology as they apply to insects on population, community, and ecosystem levels. Materials are presented in the form of lectures, discussions of primary scientific literature, and hands-on exercises.

Textbook

There is no textbook for this course.

Assigned readings

Reading may be assigned when a given topic is presented. Students are expected to read **all** assigned materials. We do not necessarily intend to talk at length about material that is presented clearly in the assigned readings. If something remains unclear after reading a particular publication, please ask the instructor for clarification.

Attendance

Students are expected to attend **all** class sessions. Unexcused absence from tests will result in a **zero grade**. Make-up examinations will be allowed only by previous arrangement. If you are too ill to take a test, please contact instructor by phone or e-mail before the test and arrange to have a doctor's note confirming your illness. Lecture sessions will start on time. Late entry into the classroom is distracting to other students and the instructor.

If you have a question during the lecture, ask it. It is highly likely that other students may have the same question or a similar question. If something remains unclear after the instructor has lectured on a topic, please ask him or her for clarification.

Late submission

The assignments have to be turned in on the due date at the beginning of the class session. Failure to do so will result in a 20% grade reduction for each consecutive day after the deadline. Turning in the assignment on the due date any time after the beginning of the class session will result in a 15% grade reduction.

Grading

Material covered in lectures, assigned readings, and discussions will be the same for students taking BIO 411 and BIO 511. However, examinations and homework will be different for the two courses. Also, students taking BIO 511 will be expected to lead discussions of primary literature and to evaluate discussions led by others, while students taking BIO 411 will write synopses. Grade points will be assigned as follows:

BIO 411

Examinations (two @ 25 points ea.).....	50
Homework assignments (six @ 5 points ea.).....	25
Paper and discussion synopses (eight @ 2.5 points ea.)..	16
Total points.....	100

BIO 511

Examinations (two @ 25 points ea.).....	50
Homework assignments (five @ 5 points ea.).....	25
Discussion evaluations (eight @ 2 points ea.).....	16
Leading a discussion.....	9
Total points.....	100

A+ not assigned	A 93-100	A- 90-92
B+ 87-89	B 83-86	B- 80-82
C+ 77-79	C 73-76	C- 70-72
D+ 67-69	D 63-66	D- 60-62
F Below 60		

Please remember that examinations are based on material given **in lectures, assigned readings, homework, and discussions.**

Date Lecture

January

- 19 Introduction to Insect Ecology
- 21 Insect Evolution and Paleoecology
- 26 Discussion
- 28 Size and Scaling

February

- 2 Climate and Physiological Ecology

- 4 Dormancy and Diapause
- 9 Movement, Migration, and Dispersal
- 11 Spatial Patterns and Sampling Insects
- 16 Population Dynamics
- 18 Insect-Plant Interactions
- 23 Chemical Ecology
- 25 Discussion

March

- 2 Predator-Prey Interactions
- 4 Parasite and Parasitoid Ecology

- 9 Midterm Exam
- 11 Tri-Trophic Interactions
- 16 NO CLASS – Spring Break
- 18 NO CLASS – Spring Break
- 23 Ecology of Poisons
- 25 Resistance
- 30 Discussion

April

- 1 Insect as Vectors
- 6 Aquatic Insects
- 8 Invasive Insects and Biocontrol
- 13 Insect Conservation
- 15 Social Insects
- 20 Pollination
- 22 Discussion
- 27 Insects in Ecosystems
- 29 Ecological Insect Management

TBA **Final Exam**

General Disclaimer

This syllabus is a working document and may need to be changed as semester progresses. Changes will be discussed in class and an updated version will be posted on BrightSpace.

Academic Honesty

Academic honesty is very important. It is dishonest to cheat on exams, to copy term papers, to submit papers written by another person, to fake experimental results, or to copy or reword parts of books or articles into your own papers without appropriately citing the source (including submitting Top Hat answers under the guise of another student). Students committing or aiding

in any of these violations may be given failing grades for an assignment or for an entire course, at the discretion of the instructor. In addition to any academic action taken by an instructor, these violations are also subject to action under the University of Maine Student Conduct Code. The maximum possible sanction under the student conduct code is dismissal from the University.

Students Accessibility Services

If you have a disability for which you may be requesting an accommodation, please contact Student Accessibility Services, 121 East Annex, 581.2319, as early as possible in the term. Students who have already been approved for accommodations by SAS and have a current accommodation letter should meet with me (the instructor of the course) privately as soon as possible.

Course Schedule Disclaimer (Disruption Clause)

In the event of an extended disruption of normal classroom activities (due to COVID-19 or other long-term disruptions), the format for this course may be modified to enable its completion within its programmed time frame. In that event, you will be provided an addendum to the syllabus that will supersede this version.

Observance of Religious Holidays/Events

The University of Maine recognizes that when students are observing significant religious holidays, some may be unable to attend classes or labs, study, take tests, or work on other assignments. If they provide adequate notice (at least one week and longer if at all possible), these students are allowed to make up course requirements as long as this effort does not create an unreasonable burden upon the instructor, department or University. At the discretion of the instructor, such coursework could be due before or after the examination or assignment. No adverse or prejudicial effects shall result to a student's grade for the examination, study, or course requirement on the day of religious observance. The student shall not be marked absent from the class due to observing a significant religious holiday. In the case of an internship or clinical, students should refer to the applicable policy in place by the employer or site.

Sexual Discrimination Reporting

The University of Maine is committed to making campus a safe place for students. Because of this commitment, if you tell any of your teachers about sexual discrimination involving members of the campus, **your teacher is required to report** this information to the campus Office of Sexual Assault & Violence Prevention or the Office of Equal Opportunity.

Behaviors that can be "sexual discrimination" include sexual assault, sexual harassment, stalking, relationship abuse (dating violence and domestic violence), sexual misconduct, and gender discrimination. Therefore, all of these behaviors must be reported.

Why do teachers have to report sexual discrimination?

The university can better support students in trouble if we know about what is happening. Reporting also helps us to identify patterns that might arise – for example, if more than one victim reports having been assaulted or harassed by the same individual.

What will happen to a student if a teacher reports?

An employee from the Office of Sexual Assault & Violence Prevention or the Office of Equal Opportunity will reach out to you and offer support, resources, and information. You will be invited to meet with the employee to discuss the situation and the various options available to you.

If you have requested confidentiality, the University will weigh your request that no action be taken against the institution's obligation to provide a safe, nondiscriminatory environment for all students. If the University determines that it can maintain confidentiality, you must understand that the institution's ability to meaningfully investigate the incident and pursue disciplinary action, if warranted, may be limited. There are times when the University may not be able to honor a request for confidentiality because doing so would pose a risk to its ability to provide a safe, nondiscriminatory environment for everyone. If the University determines that it cannot maintain confidentiality, the University will advise you, prior to starting an investigation and, to the extent possible, will share information only with those responsible for handling the institution's response

The University is committed to the well-being of all students and will take steps to protect all involved from retaliation or harm.

If you want to talk in confidence to someone about an experience of sexual discrimination, please contact these resources:

For *confidential resources on campus*: **Counseling Center: 207-581-1392** or **Cutler Health Center: at 207-581-4000**.

For *confidential resources off campus*: **Rape Response Services: 1-800-871-7741** or **Partners for Peace: 1-800-863-9909**.

Other resources: The resources listed below can offer support but may have to report the incident to others who can help:

For *support services on campus*: **Office of Sexual Assault & Violence Prevention: 207-581-1406**, **Office of Community Standards: 207-581-1409**, **University of Maine Police: 207-581-4040 or 911**. Or see the OSAVP website for a complete list of services at <http://www.umaine.edu/osavp/>

University of Maine COVID-19 Syllabus Statement

COVID-19 is an infectious disease caused by the coronavirus SARS-CoV-2. The virus is transmitted person-to-person through respiratory droplets that are expelled when breathing, talking, eating, coughing, or sneezing. Additionally, the virus is stable on surfaces and can be transmitted when someone touches a contaminated surface and transfers the virus to their nose or mouth. When someone becomes infected with COVID-19 they may either have no symptoms or symptoms that range from mild to severe and can even be fatal. During this global pandemic, it is imperative that all students, faculty, and staff abide by the safety protocols and guidelines set forth by the University to ensure the safety of our campus. All students are encouraged to make the Black Bear Cares Pact to protect the health of themselves, the health of others, and the College of Our Hearts Always.

Black Bears Care Pact: <https://umaine.edu/return/black-bears-care/>

Symptom checking: The symptoms of COVID-19 can range from mild to severe, and even people with mild symptoms may transmit the virus to others. Students are encouraged to use the symptom checking app each day before attending class or moving about campus and follow the recommendation prompted within the app. Students should monitor for the following symptoms daily: fever (temperature >100.4F/38.0C) or chills, new cough, loss of taste or smell, shortness of breath/difficult breathing, sore throat, diarrhea, nausea, or vomiting, or the onset of new, otherwise unexplained symptoms such as headache, muscle or body aches, fatigue, or congestion/runny nose.

Physical distancing: Students need to make every effort to maintain physical distancing (6 feet or more) indoors and outdoors including within classrooms. The University classrooms and physical spaces have been arranged to maximize physical distancing. Follow the traffic patterns outlined in each building and outdoor space to avoid crowding. If students are in an academic setting (i.e. clinical or lab class) that requires them to reduce physical distancing, they should follow the instructor's guidelines.

Face coverings: Students must wear appropriate face coverings in the classroom. Face coverings must be worn in indoor and outdoor spaces on campus unless people are alone in a room with a door closed or when they are properly physically distanced and do not expect someone to approach them. When face coverings are removed people are placing themselves and those surrounding them at increased risk for COVID-19.

Eating and drinking in classrooms: Students may not eat or drink in the classrooms and are encouraged to take their food or drink into areas designated for these purposes where they can maintain 6 feet physical distance from others.

Hand hygiene: Proper hand hygiene is an effective measure to prevent the spread of COVID-19. Students should wash their hands often with soap and water or use a hand sanitizer with at least 60% alcohol, especially after using the bathroom, before eating or drinking, and before and after going to class or university spaces such as the recreation center, library, or dining halls.

Contingency plans: Classes will be held in various formats to offer flexibility, compassion, and empathy during these unprecedented times. Under certain circumstances, students or instructors may need to miss classes or in-person classes may be disrupted. Students are expected to notify their instructor if they are unable to attend an in-person or online class but will not be penalized for missing class due to illness or the need to care for a family member affected by COVID-19. If a disruption occurs, your instructor will provide communication and contingency plans.

What to do if you have or suspect you have COVID-19: If you have symptoms of COVID-19 or have been possibly exposed to someone with COVID-19, you should stay home, not interact with others, and contact your health care provider immediately to be tested for COVID-19. You may not attend in-person classes and should suspend interactions with others until you are tested.

Prior to receiving test results you should quarantine in your living area according to the Maine CDC guidelines below. Please follow the guidance of your health care professional regarding testing, quarantine, and isolation during the testing process and potential illness period.

What to do if someone you know has or may have COVID-19: If someone you know or that you have had close contact with (defined by the ME CDC as 15 mins or more within 6 feet or less) has tested positive for COVID-19, you should stay home and quarantine according to the guidance of the ME CDC, contact your health care provider, and continue to monitor for symptoms. You may be required to quarantine and/or be tested for COVID-19 under these circumstances. You may also have been exposed to COVID-19 by someone you do not know, and it is possible that you could be contacted through contact tracing to determine if you were exposed. Everyone should respond to these confidential questions to ensure the safety of themselves and those around them.

Maine CDC guidelines: <https://www.maine.gov/dhhs/mecdc/infectious-disease/epi/airborne/coronavirus/general-information.shtml>

If you have questions or would like additional information related to the University of Maine COVID-19-specific policies or procedures please use the following sources:

University Webpages: umaine.edu/return and [together.maine.edu](https://umaine.edu/together)

COVID-19 Information line: 207.581.2681

Emergency Operations Center Email Contact: umaine.alerts@maine.edu