

CPSC 270/NRES 270/IB 220: Applied Entomology

Credit: 3 hours

Lecture (all sections): 9:00-9:50 AM Monday and Wednesday W109 Turner Hall

Laboratory-Section AB2: 2:00-3:50 PM Monday W9 Turner Hall

Laboratory-Section AB3: 9:00-10:50 AM Tuesday W9 Turner Hall

Contact Hours: 57 total (29 lectures [1 h] + 14 laboratory sessions [2 h])

Course material and lecture exercises available at <https://canvas.illinois.edu>

Instructor:

Dr. Nick Seiter

nseiter@illinois.edu | 217-300-7199

Office: 380 National Soybean Research Center

Office hours: Monday 10:00 AM-12:00 PM and
by appointment

Teaching Assistant:

L. Brodie Dunn

lbdunn2@illinois.edu

Prerequisites: none

Course description: Lectures and laboratory cover the biology of insects and the recognition and management of insect pests of agricultural and urban ecosystems. Covers insect structure and physiology, classification, identification, life histories, behavior, and pest management.

Student Learning Objectives:

Upon successful completion of this course, students will:

- Understand the basic anatomy, physiology, development, and ecology of insects
- Be able to identify common orders of insects and understand their natural history from a broad perspective
- Understand the concept of integrated pest management (IPM) and be able to place specific pest control tactics within an IPM framework
- Know the biology, damage potential, and appropriate management strategies for major insect pests of agronomic and horticultural crops, urban environments, and human health, with an emphasis on the systems most relevant to Illinois and the surrounding region
- Be able to identify major insect pests of Illinois and the surrounding region by sight, and be able to apply the process of insect identification to previously un-encountered specimens

Expectations: Students are expected to be present and on time for each laboratory and lecture session. Students are responsible for any material/assignments that they miss due to an absence. **Because the course material is drawn from multiple sources, much of the material is not readily available in a print format and will only be delivered through lecture.** Students must make prior arrangements with the instructor to make up any material they will miss due to an absence for reasons other than illness or emergency. Students are expected to notify the instructor of any absence due to an illness or other unforeseen emergency as soon as possible via email or phone, but no later than 48 hours after the absence.

Useful Texts (Not required to purchase)

Stephen A. Marshall, *Insects: Their Natural History and Diversity*, 2nd edition. (ISBN: 978-1-77085-962-3). Firefly Books (U.S.), Inc., Buffalo, NY.

L. P. Pedigo and M. E. Rice, *Entomology and Pest Management, Sixth Edition*. ISBN: 1478622857
Waveland Press, Inc. Long Grove, IL.

(The middle section of the class is based heavily on this text, so it may be useful for students who wish to study from the original text).

Eric R. Eaton and Kenn Kaufman, *Kaufman Field Guide to Insects of North America* (ISBN: 0-618-15310-1
Houghton Mifflin Co., New York, NY

(This or another insect field guide can be useful; in my experience this one is the easiest to use)

Useful equipment

Your instructor will provide equipment for collecting and curating insect specimens as appropriate. A digital camera (cell phone or otherwise) will be useful, but is not required.

Assessments/Projects:

Insect Collection; due **Tuesday, November 16 at 5:00 PM**

- Full description provided during first laboratory session, available on Compass

Lab exercises: 9 exercises will be conducted during the laboratory sessions (worth 25 points each). These will emphasize practical skills in applied entomology such as insect identification and sprayer calibration. At the end of the semester, the lab exercise with the lowest score will be dropped for each individual student.

Lecture exercises: 12 exercises will be given via Illinois Canvas (<https://canvas.illinois.edu>). An exercise will be due each Friday at 4:30 PM, except during the weeks of the two lecture exams and the final week of classes (worth 10 points each). These exercises will emphasize lecture topics and are designed to prepare students for the lecture and final exams in terms of both content and structure of questions. At the end of the semester, the two lecture exercise with the lowest scores will be dropped for each individual student.

Lecture exam 1: administered during lecture on **September 29** (worth 100 points)

Lecture exam 2: administered during lecture on **November 3** (worth 100 points)

Order ID exam: a practical exam on insect identification will be administered in lab on **October 18/19** (worth 100 points)

Final exam: administered during finals week (worth 100 points)

Assessment	Date Due/Taken	Points
Lecture Exercises (Canvas)	12 during semester (record best 10)	100 total
Lecture Exam 1	September 29 (during lecture)	100
Lecture Exam 2	November 3 (during lecture)	100
Laboratory Exercises	9 during semester (record best 8)	200
Insect Collection	November 16	100
Laboratory Practical	October 18/19 (in lab)	100
Final Exam (Semi-cumulative)	TBA, Finals week	100
Total		800

Grading

Grades will be calculated based on the simple percentage of total points (rounded to the nearest whole point) earned during the course as follows:

Letter Grade	Percentage	Number of Points
A+	≥ 98	≥ 780
A	92 - 97	732-779
A-	90- 91	716-731
B+	88 - 89	700-715
B	82 - 87	652-699
B-	80 - 81	636-651
C+	78 - 79	620-635
C	72 - 77	572-619
C-	70 - 71	556-571
D+	68 - 69	540-555
D	62 - 67	492-539
D-	60 - 61	476-491
F	≤ 59	≤ 475

Lecture Schedule

Week	Date		Lecture Topic
1	M	August 23	Introduction, characteristics of insects and relatives
	W	August 25	Insect classification overview
2	M	August 30	Insect integument, growth, and development
	W	September 1	Insect appendages and movement
3	M	September 6	Labor Day; no classes
	W	September 8	Insect sensory structures and nervous system
4	M	September 13	Insect mouthparts, feeding, digestion
	W	September 15	Insect circulation and respiration
5	M	September 20	Insect reproduction
	W	September 22	Natural history of insect orders
6	M	September 27	Insect ecology
	W	September 29	Lecture Exam 1
7	M	October 4	IPM, pest management theory, sampling
	W	October 6	Economic decision-making
8	M	October 11	Biological control
	W	October 13	Cultural practices and host plant resistance
9	M	October 18	Biotechnology and pest management
	W	October 20	insecticides-formulations, modes of action
10	M	October 25	Insecticide modes of action, use
	W	October 27	Insecticide calibration, safety, environmental fate
11	M	November 1	ecological backlash
	W	November 3	Lecture Exam 2
12	M	November 8	Insect resistance
	W	November 10	Insect resistance management
13	M	November 15	IPM of corn
	W	November 17	IPM of soybean
		Nov. 20-28	Thanksgiving Holiday
14	M	November 29	Insect pollination (guest lecture: Marissa Chase)
	W	December 1	Invasive species
15	M	December 6	Household pest management
	W	December 8	Medical IPM
	Th.	December 9	Reading day
	W.	TBD -Th. Dec. 16	Final Exam (Thursday, December 16 at 1:30 PM, W109 Turner)

Laboratory Schedule

Date	Lab	Topic
23/24 Aug	1	Collection assignment
30/31 Aug	2	Internal anatomy exercise (grasshopper dissection)
6/7 Sep		Labor Day; no lab
13/14 Sep	3	Insect collecting trip, ABE Farm
20/21 Sep	4	External anatomy/insect curation exercise
27/28 Sep	5	Orders group 1 exercise
4/5 Oct	6	Orders group 2 exercise
11/12 Oct	7	Orders group 3 exercise
18/19 Oct	8	Order ID exam
25/26 Oct	9	Insecticide application exercise
1/2 Nov	10	Insect behavior exercise
8/9 Nov	11	Open lab, collection assistance
15/16 Nov	12	Insect collections due
22/23 Nov		Thanksgiving Holiday; no lab
29/30 Nov	13	Urban/household insects exercise
6/7 Dec	14	IPM exercise

Campus Policies

Ongoing COVID-19 Pandemic: Following University policy, all students are required to engage in appropriate behavior to protect the health and safety of the community. Students are also required to follow the campus COVID-19 protocols.

Students who feel ill must not come to class. In addition, students who test positive for COVID-19 or have had an exposure that requires testing and/or quarantine must not attend class. The University will provide information to the instructor, in a manner that complies with privacy laws, about students in these latter categories. These students are judged to have excused absences for the class period and should contact the instructor via email about making up the work.

Students who fail to abide by these rules will first be asked to comply; if they refuse, they will be required to leave the classroom immediately. If a student is asked to leave the classroom, the non-compliant student will be judged to have an unexcused absence and reported to the Office for Student Conflict Resolution for disciplinary action. Accumulation of non-compliance complaints against a student may result in dismissal from the University.

All students, faculty, staff, and visitors are required to wear face coverings in classrooms and university spaces. This is in accordance with CDC guidance and University policy and expected in this class.

Please refer to the University of Illinois Urbana-Champaign's COVID-19 website for further information on face coverings. Thank you for respecting all of our well-being so we can learn and interact together productively.

In order to implement COVID-19-related guidelines and policies affecting university operations, instructional faculty members may ask students in the classroom to show their Building Access Status in the Safer Illinois app or the Boarding Pass. Staff members may ask students in university offices to show their Building Access Status in the Safer Illinois app or the Boarding Pass. If the Building Access Status says "Granted," that means the individual is compliant with the university's COVID-19 policies—either with a university-approved COVID-19 vaccine or with the on-campus COVID-19 testing program for unvaccinated students.

Students are required to show only the Building Access Screen, which shows compliance without specifying whether it was through COVID-19 vaccination or regular on-campus testing. To protect personal health information, this screen does not say if a person is vaccinated or not. Students are not required to show anyone the screen that displays their vaccination status. No university official, including faculty members, may ask students why they are not vaccinated or any other questions seeking personal health information.

Academic Integrity: The University of Illinois at Urbana-Champaign Student Code should also be considered as a part of this syllabus. Students should pay particular attention to Article 1, Part 4: Academic Integrity. Read the Code at the following URL: <http://studentcode.illinois.edu/>.

Academic dishonesty may result in a failing grade. Every student is expected to review and abide by the Academic Integrity Policy: <http://studentcode.illinois.edu/>. Ignorance is not an excuse for any academic dishonesty. It is your responsibility to read this policy to avoid any misunderstanding. Do not hesitate to

ask the instructor(s) if you are ever in doubt about what constitutes plagiarism, cheating, or any other breach of academic integrity.

Students with Disabilities: To obtain disability-related academic adjustments and/or auxiliary aids, students with disabilities must contact the course instructor and the Disability Resources and Educational Services (DRES) as soon as possible. To contact DRES, you may visit 1207 S. Oak St., Champaign, call 333-4603 (V/TDD), or e-mail a message to disability@uiuc.edu.
<http://www.disability.illinois.edu/>

Emergency Response Recommendations. Emergency response recommendations can be found at the following website: <http://police.illinois.edu/emergency-preparedness/>. I encourage you to review this website and the campus building floor plans website within the first 10 days of class.
<http://police.illinois.edu/emergency-preparedness/building-emergency-action-plans/>

Family Educational Rights and Privacy Act (FERPA). Any student who has suppressed their directory information pursuant to Family Educational Rights and Privacy Act (FERPA) should self-identify to the instructor to ensure protection of the privacy of their attendance in this course. See <https://registrar.illinois.edu/academic-records/ferpa/> for more information on FERPA

Sexual Misconduct Policy and Reporting. The University of Illinois is committed to combating sexual misconduct. Faculty and staff members are required to report any instances of sexual misconduct to the University's Title IX and Disability Office. In turn, an individual with the Title IX and Disability Office will provide information about rights and options, including accommodations, support services, the campus disciplinary process, and law enforcement options.

A list of the designated University employees who, as counselors, confidential advisors, and medical professionals, do not have this reporting responsibility and can maintain confidentiality, can be found here: <https://wecare.illinois.edu/resources/students/#confidential>.

Other information about resources and reporting is available here: <https://wecare.illinois.edu>