



**ENTO 497c/597c LECTURE:
Controlled Environment Agriculture IPM
3 Credits
Spring 2021
Live Online and icourse**

Day/Time: For Live-Online students, Thursdays 2:30-5:20pm (Zoom)
For icourse students, access the course weekly at their convenience.

Description of Course

Integrated pest management principles, methods, and practices commonly used in controlled environment agriculture operations. Course includes prevention, monitoring, pest and disease identification and damage, biological control, organic pest management, conventional pesticides, pesticide regulations and worker safety, and resistance management.

Graduate-level requirements include a 15-20 page research paper on some aspect of greenhouse pest management, pre-approved by the instructor, or a Greenhouse Pest and Disease Guide (guidelines given later). If a research paper is chosen, the Graduate student must also give a 10 minute presentation* to the class summarizing the research conducted

Course Cross-listings:

ENTO/AGTM/BE 497c; ENTO/AGTM/BE 597c; EIS 597c

Course Prerequisites or Co-requisites

Advanced Standing, Junior or Senior status. Major or minor: BE, AGTM, ENTO, SPS, or PLS, or approval of instructor.

Instructor and Contact Information

Name	Dr. Stacy Tollefson
Office Location	CEA Building Room 103
Telephone number	520-626-9953
E-mail address	stollefson@arizona.edu
Office Hours/"Open Door Policy"	By appointment
Web information:	Current semester info available through D2L.

Course Format and Teaching Methods

During the Spring 2021 semester, this course will combine the "Live-Online" and "icourse" sections of the course. Material and course requirements are the same for both classes and the two

classes will be combined in one D2L site. The only difference will be that the “Live-Online” students will have some live lectures, with those being recorded for icourse students, and Live-Online students, to view afterwards. The course readings, videos, quizzes, and assignments will all be accessible in D2L, with graded work turned in to D2L. The midterm and final exams will be taken through D2L.

Course Objectives

The objective of this course is to introduce students the principles of integrated pest management, pest identification and management specific to controlled environment agriculture.

Expected Learning Outcomes

The expected learning outcomes are for students to be able to:

1. Demonstrate an understanding of integrated pest management principles and practices.
2. Identify common pests/diseases and pest damage found in controlled environments from pictures.
3. Demonstrate an understanding mechanical, biological, and chemical control approaches, how they work to control pest populations, and advantages and disadvantages to using each.
4. Become knowledgeable of the laws and regulations governing pesticide use and application, worker protection, and safety in greenhouse settings.

Additional Course Objective for Graduate Students:

1. Demonstrate advanced knowledge/expertise concerning a specific aspect of pest management through research and a written paper

Or

2. Demonstrate the ability to translate pest management research and information into a comprehensive pest management guidebook

This course fulfills partial requirements for the **Undergraduate Certificate in Entomology and Insect Science**. For full certificate requirements, please see:

<https://academicadmin.arizona.edu/sites/default/files/Undegraduate%20Certificate%20in%20Entomology%20and%20Insect%20Science%20proposal.pdf>

For inquiries, please contact: Goggy Davidowitz, goggy@arizona.edu

This course aligns to four of the Student Learning Outcomes for the Sustainable Plant Sciences Major:

This course will provide the students with opportunities to:

- 1) Integrate and apply the general principles of Sustainable Plant Systems to specific plant production systems
- 2) Demonstrate an understanding of the history, current conditions, and future challenges associated with plant sciences and production systems on a local and global scale.
- 3) Think critically as demonstrated by evaluating information from multiple perspectives, drawing reasonable conclusions, and defending them rationally.
- 4) Communicate effectively principles and technical terms associated with plant production systems both orally and in writing.

This course aligns to two of the Student Learning Outcomes for the Agriculture Technology Management Major:

- 1) Fulfills knowledge for topic area of Controlled Environment Agriculture

- 2) Students will be able to identify and select tools and equipment to perform specific operations.

This course aligns to two of the Student Learning Outcomes for the Biosystems Engineering Major:

- 1) Has a knowledge of relevant contemporary issues.
- 2) Can communicate effectively.

Absence and Class Participation Policy

We will be meeting on-line via Zoom on Thursday at 2:30pm – 5:20pm if you are taking it as LIVE ONLINE. Those lectures will be recorded and made available to all students, including those who are taking the icourse so they can access them on their own time.

Students are expected to access D2L on a timely basis to access all course materials. All graded work will be turned in through D2L.

If you become ill and unable to complete coursework and assignments, contact me right away so we can work out delayed due dates and/or for you to take an incomplete.

Dropping the course once it has begun:

If you decide to drop the class once it has begun (once you have been assigned a rep of plants, i.e., after the first class meeting), please notify the instructor.

Please see University withdrawal procedures:

<http://catalog.arizona.edu/policy/grades-and-grading-system#Withdrawal>

Makeup Policy for Students Who Register Late

Students who register after the first class meeting must make up all assignments and online discussions within 3 days of first day of attendance, or time agreed upon by instructor.

Course Communications

All course communications will be done through email and D2L. You may email me anytime at stollefson@arizona.edu. DO NOT use the D2L email. I don't get those emails!

Required Texts or Readings

There is no required textbook. All course materials will be provided to you on D2L.

Required or Special Materials

Students will need a computer with Internet access. Students may need to scan in completed assignments to upload to D2L. Check out the free Adobe Scan mobile app to scan and make pdf files which you can then email to yourself.

Assignments and Examinations: Schedule/Due Dates

All readings, videos, Powerpoints, quizzes, and assignments will be posted to D2L under each module along with due dates. Assignment due dates will be listed when assigned, and must be uploaded to D2L by 11:59pm on the due date. Quizzes must be completed and uploaded by 11:59pm on the Thursday after being assigned.

Both exams will cover readings, videos, quiz material, and lecture material. The Midterm Exam will cover material in the modules before that exam. The Final Exam will not be comprehensive. It will cover material from the modules after the Midterm. **The Midterm Exam must be taken on March 11,**

2021 and the Final Exam on May 10, 2021. These exams will be posted on the exam day and students can take it at any time that day. However, once you start taking the test you will have 2 hours to complete the exam from the time you started. The exams must be completed by 11:59pm on the exam day.

***Discussions**

There will be a general discussion forum for any questions or thoughts you have about the course. This may be questions about assignments, or questions or thoughts about topics or extensions of topics. This can be used to interact with me but also get thoughts from your peers. Sometimes I will post discussion questions or things to think about. These discussions are not required, but they will enhance your learning experience. Discussions are an opportunity for extra credit. Each time you post something to a discussion, you will earn a point toward your final grade (as long as it is a question or comment pertinent to the class!). You may receive up to 10 extra points throughout the semester. If you post more than 10 times, that's great but you are capped at a maximum of 10 points.

Final Examination

The Final exam will cover readings, videos, quiz material, and lecture material from the modules after the Midterm. The Final Exam will be on May 10. The exam can be taken at anytime that day but once you start it, you must complete it within 2 hours from the start time. The exam must be completed by 11:59pm that day.

Grading Scale and Policies

Undergraduates

FINAL GRADE = 398 pts Total

Graduate Students

FINAL GRADE = 398 pts Total

LECTURE GRADE	Pts
Quizzes (7@14pts each)	98
Assignments (4@25 pts each)	100
Midterm Exam	100
Final Exam	100
Discussions (extra credit <=10pts)	10
TOTAL	398
LECTURE GRADE	Pts
Quizzes (7@14pts each)	98
Assignments (4@25 pts each)	100
Midterm Exam	100
Final Exam	100
Graduate Project	200
Discussions (extra credit <=10pts)	10
TOTAL	598

Grading Scale

A = 357 - 398 pts
B = 317 - 356 pts
C = 277 - 316 pts
D = 237 - 276pts
F < 237 pts

Grading Scale

A = 536 - 598 pts
B = 476 - 535 pts
C = 416 - 475 pts
D = 356 - 415pts
F < 356pts

Late work policy: Assignments must be turned in to D2L by 11:59pm on the date due. A grade of “0” will be assigned if the work is turned in after the due date/time, unless otherwise agreed upon by the instructor.

Testing policy: All tests will cover readings, videos, quiz material, and lecture material. The Midterm Exam will be taken on March 11 and the Final Exam on May 10. See above for exam information.

Requests for incomplete (I) or withdrawal (W): Must be made in accordance with University policies, which are available at <http://catalog.arizona.edu/policy/grades-and-grading-system#incomplete> and <http://catalog.arizona.edu/policy/grades-and-grading-system#Withdrawal> respectively. Incomplete grades must be verified with a written agreement between the instructor and student. This agreement will specify the work to be done and a timetable of completion.

Classroom Behavior Policy - Nettiquitte

Nettiquette = manner rules for the digital age.

Important! These rules apply whether you are communicating with your professor or another student!

Communication: Maintain the same standard of behavior and ethics that you would follow in a professional, face-to-face context.

Tone: Treat others with respect. Be mindful of your tone and how that is conveyed in your writing style. DO NOT USE ALL CAPS. It is considered shouting and not appropriate in a classroom. Avoid sarcasm and irony as it is easily misinterpreted in an online environment.

Clarity and Content: Be succinct. Write, reread, and then post. Carefully consider what you have written. Does it make sense? Is it free from errors? Is it substantive? Is it unnecessarily confrontational or offensive?

Contribute: Share your knowledge and insight. Be an active contributor to the learning community.

Be forgiving: If someone makes a mistake or does something inappropriate, address it privately and politely. Reach out to that person first. If that does not address the situation, let your instructor know.

Class recordings, Powerpoint Lectures Use

For lecture recordings and Powerpoint lectures, which are used at the discretion of the instructor, students must access content in D2L only. Students may not modify content or re-use content for any purpose other than personal educational reasons. All recordings are subject to government and university regulations. Therefore, students accessing unauthorized recordings or using them in a manner inconsistent with UArizona values and educational policies are subject to suspension or civil action.

Threatening Behavior Policy

The UA Threatening Behavior by Students Policy prohibits threats of physical harm to any member of the University community, including to oneself. See <http://policy.arizona.edu/education-and-student-affairs/threatening-behavior-students>.

Accessibility and Accommodations

Our goal in this classroom is that learning experiences be as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, please let me know immediately so that we can discuss options. You are also welcome to contact the Disability Resource Center (520-621-3268) to establish reasonable accommodations. For additional information on the Disability Resource Center and reasonable accommodations, please visit <http://drc.arizona.edu>.

Code of Academic Integrity

Students are encouraged to share intellectual views and discuss freely the principles and applications of course materials. However, graded work/exercises must be the product of independent effort unless otherwise instructed. Students are expected to adhere to the UA Code of Academic Integrity as described in the UA General Catalog. See:

<http://deanofstudents.arizona.edu/academic-integrity/students/academic-integrity>.

Selling class notes and/or other course materials to other students or to a third party for resale is not permitted without the instructor's express written consent. Violations to this and other course rules are subject to the Code of Academic Integrity and may result in course sanctions. Additionally, students who use D2L or UA e-mail to sell or buy these copyrighted materials are subject to Code of Conduct Violations for misuse of student e-mail addresses. This conduct may also constitute copyright infringement.

UA Nondiscrimination and Anti-harassment Policy

The University is committed to creating and maintaining an environment free of discrimination; see <http://policy.arizona.edu/human-resources/nondiscrimination-and-anti-harassment-policy>

Our classroom is a place where everyone is encouraged to express well-formed opinions and their reasons for those opinions. We also want to create a tolerant and open environment where such opinions can be expressed without resorting to bullying or discrimination of others.

Additional Resources for Students

Academic advising: If you have questions about your academic progress this semester, or your chosen degree program, please note that advisors at the Advising Resource Center can guide you toward university resources to help you succeed. UA Academic policies and procedures are available at <http://catalog.arizona.edu/policies>

Student Assistance and Advocacy information is available at <http://deanofstudents.arizona.edu/student-assistance/students/student-assistance>

Life challenges: If you are experiencing unexpected barriers to your success in your courses, please note the Dean of Students Office is a central support resource for all students and may be helpful. The Dean of Students Office can be reached at 520-621-2057 or DOS-deanofstudents@email.arizona.edu.

Physical and mental-health challenges: If you are facing physical or mental health challenges this semester, please note that Campus Health provides quality medical and mental health care. For medical appointments, call (520-621-9202. For After Hours care, call (520) 570-7898. For the Counseling & Psych Services (CAPS) 24/7 hotline, call (520) 621-3334.

Confidentiality of Student Records

<http://www.registrar.arizona.edu/personal-information/family-educational-rights-and-privacy-act-1974-ferpa?topic=ferpa>

Subject to Change Statement

Information contained in the course syllabus, other than the grade and absence policy, may be subject to change with advance notice, as deemed appropriate by the instructor.

ENTO 497c/597c: Controlled Environment Agriculture IPM COURSE SCHEDULE SPRING 2021

INSTRUCTOR: Dr. Tollefson

(Schedule subject to change)

Dates	Module	Assignments Due
January 14	Introductory Module, Go over syllabus.	
January 21	Module 1: History of Pest Management and Development of IPM	
January 28	Module 2: Integrated Pest Management	
February 4	Module 2: Integrated Pest Management Cont'd	HW 1
February 11	Module 3: Arthropod Pests: Common Characteristics Module 4: Mites: Spider mites, russet mites, broad mites	Quiz 1: on Modules 1,2
February 18	Module 5: Whiteflies, Aphids, Thrips, Fungus Gnats, Shoreflies, and more	Quiz 2: on Modules 3,4
February 25	Reading day – NO CLASS	HW2
March 4	Module 6: Pest Control Approaches: Physical, Biological	Quiz 3: on Module 5

March 11	MIDTERM EXAM	
March 18	Module 6: Pest Control Approaches: Biological Cont'd Module 7: Pest Control Approaches: Chemical	
March 25	Module 8: Pesticide Law and Modes of Action	Quiz 4: on Modules 6,7
April 1	Module 9 Pesticide Formulations, Application, & Worker Safety	HW 3
April 8	Module 10: Pesticide Applicant & Advisor Certification, Pesticide-free Certifications	Quiz 5: on Modules 8,9
April 15	Module 11: Organic Pest Management	HW 4
April 22	Module 12: Plant Diseases and Viruses	Quiz 6: on Modules 10, 11
April 29	Module 13: Wrap up of Common Pest and Controls	Quiz 7: on Modules 12
Monday May 10	FINAL EXAM	