

PEPS 421: Foundations of Pest Management

Lectures: MW 10:30 – 11:45 am

Lab: W 1:30 – 4:20 pm

Location: Gilmore 306

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Student Learning Outcomes

In this course, students will develop an understanding of the basic theory of integrated pest management, gain basic knowledge of pests of major cropping systems and urban environments, and develop the ability to analyze and propose management approaches for a selected pest system.

The course addresses all or part of each of the student-learning outcomes (SLO) of PEPS and TPSS.

The instructional program in PEPS is structured to achieve the following:

1. Students will demonstrate understanding of the biology, ecology, and impact of pest and beneficial organisms.
2. Students will demonstrate an understanding of the environment as a complex and changing system.
3. Students will be able to diagnose problems in environmental systems and develop management plans.
4. Students will be able to communicate (oral, written) effectively about plant and environmental protection.
5. Students will demonstrate the ability to collect, manage, present, and critically interpret data and information in an ethical way.

The instructional program in TPSS is structured to achieve the following:

1. Demonstrate understanding of the science of agriculture and its interaction with the environment from molecules to ecosystems.
2. Demonstrate the ability to critically evaluate scientific evidence, knowledge and issues associated with agriculture in a dynamic world.
3. Demonstrate the ability to identify problems associated with agroecosystems and apply the scientific method to develop solutions.
4. Demonstrate proficiency in oral and written communication for professional and lay audiences.

Week (Instructor)	Lecture	Day	Topic
1 (Shikano)	1	1-13	The concept of integrated pest management
	2	1-15	Economic and ecological aspects of pest management
		LAB	Calculations for sampling and economic decisions
2 (Shikano)		1-20	Martin Luther King Jr. Day (no class)
	3	1-22	Cultural practices and plant resistance
		LAB	Sampling decisions
3 (Shikano)	4	1-27	Biological control and sterile insect release
	5	1-29	Chemical control and insect behavior modification
		LAB	Impacts of GMOs and evolution for IPM
4 (Shikano)	6	2-3	Review
	7	2-5	Exam #1
		LAB	Pesticide labels
5 (Cheng)	8	2-10	Introduction to turfgrass IPM
	9	2-12	Turfgrass IPM: selection, establishment, and cultural management
		LAB	Field trip: a turfgrass sod farm in Mililani (cultural management)
6 (Cheng)		2-17	President's Day (no class)
	10	2-19	Key turfgrass insect pests in Hawaii and their management
		LAB	Field trip: a golf course (turfgrass and landscape insects, weeds, and diseases)
7 (Cheng)	11	2-24	Guest lecture (Dr. DeFrank): Key turfgrass weeds in Hawaii and their management
	12	2-26	Key turfgrass nematodes and their management
		LAB	Turfgrass soil sampling, and analysis of nematodes in samples
8 (Cheng)	13	3-3	Key turfgrass fungal pathogens in Hawaii and their management
	14	3-5	Introduction to landscape pest management, and management of some key landscape insect pests in Hawaii
		3-5	Exam #2
9 (Tay)	15	3-10	Introduction to urban IPM
	16	3-12	Termites in Hawaii and their management
		LAB	Urban Ento Lab visit: Insect rearing techniques
10			Spring Recess
			Spring Recess
			Spring Recess
11 (Tay)	17	3-24	Cockroaches in Hawaii and their management
		3-26	Kuhio Day (no class)
		3-26	Kuhio Day (no class)
12 (Tay)	18	3-31	Mosquitoes and their management; History of insecticide usage
	19	4-2	Termite biology
		4-2	Household ants and pesticides
13 (Tay)	20	4-7	Bed bug and their management
	21	4-9	Challenges and future perspective in urban IPM
		LAB	Lab exercise: Pest ID and discussion on their pest management

			strategies
		4-9	Exam #3
14 (Wright)	22	4-14	Introduction to crop IPM; overview of basic concepts
	23	4-16	Macadamia nut insect IPM
		LAB	Visit fruit crop orchards; sample & ID pests
15 (Wright)	24	4-21	Banana and papaya pest IPM
	25	4-23	Vegetable crop IPM: tomatoes; cucurbits
		LAB	Visit coffee farm, sampling plan development
16 (Wright)	26	4-28	Use of mixed cropping in crop IPM
	27	4-30	Overview of non-Hawaii crop IPM, examples from US mainland
		LAB	Visit APHIS PIS or HDOA PQ
17 (Wright)	28	5-5	Effective and ineffective biological control in cropping systems
	29	5-7	Insect vectored plant pathogens
		LAB	Visit to CDFA faculty to observe mass production of sterile fruit flies for SIT
		5-12	Exam #4

Suggested textbooks:

Radcliffe and Hutchison. 2009. Integrated Pest Management: Concepts, Tactics, Strategies and Case Studies.

Pedigo and Rice. Entomology and pest management. Sixth Edition.

Assessment:

The exams will include material addressed during lecture and lab sessions. **The assessments for Attendance, Participation, and/or Lab Reports will vary depending on the instructor.**

Instructors	Weight
Shikano	25% (Participation 5% , Exam #1 20%)
Cheng	25% (Attendance/Participation/Lab reports 5%, Exam #2 20%)
Tay	25% (Attendance/Participation/Lab reports 5%, Exam #3 20%)
Wright	25% (Attendance/Participation/Lab reports 5%, Exam #4 20%)

Grading Scale

As recommended by the University of Hawaii at Manoa the +/- grading scale will be used.

- A 93-100
- A- 90-92.99
- B+ 87-89.99
- B 83-86.99
- B- 80-82.99
- C+ 77-79.99
- C 73-76.99
- C- 70-72.99
- D+ 67-69.99
- D 63-66.99
- D- 60-62.99
- F 0-59.99

