

ORIGINAL COURSE IMPLEMENTATION DATE: REVISED COURSE IMPLEMENTATION DATE: COURSE TO BE REVIEWED (six years after UEC approval): Course outline form version: 09/08/2021

## **OFFICIAL UNDERGRADUATE COURSE OUTLINE FORM**

Note: The University reserves the right to amend course outlines as needed without notice.

Course Code and Number: AGRI 163	Number of Credits: 3 Course credit policy (105)								
Course Full Title: Pest Biology and Identification									
Course Short Title: Pest Biology & Identification									
Faculty: Faculty of Science		Department (or program if no department): Agriculture Technology							
Calendar Description:									
An overview of the general biology of key groups of plant/livestock pests, including arthropods, weeds, and pathogens. Emphasis will be on identification using key features for each group of pests, life history strategies within each group, and the ecology of each group of pests. The role of agricultural practices in contributing to the build up of pest populations will be examined. Lab sessions and hands-on activities in the greenhouse, outdoor classroom or barns will be incorporated into weekly class meetings.									
Prerequisites (or NONE):	None.	None.							
Corequisites (if applicable, or NONE):									
Pre/corequisites (if applicable, or NONE):			-						
Antirequisite Courses (Cannot be taken for additional credit.)			Course Details						
Former course code/number: AGRI 166/AGRI 167			Special	Special Topics course: <b>No</b>					
Cross-listed with:			(If yes, the course will be offered under different letter designations representing different topics )						
Equivalent course(s):			Directed Study course: No						
(If offered in the previous five years, antirequisite course(s) will be				(See <u>policy 207</u> for more information.)					
for the antirequisite course(s) cannot take this course for further credit.)			Grading System: Letter grades						
			Delivery Mode: Face-to-face only						
Typical Structure of Instructional Hours			Expecte	ed frequency: Fall only					
Lecture/seminar		20	Maximu	Maximum enrolment (for information only): 32					
Supervised laboratory hours (science lab)		15	<b>Brier</b> L	oorning Accordment and	Pagagnition (PLAP)				
Experiential (field trip)		10			Recognition (PLAR)				
				s available for this course.					
			Examin	ation(s); exam and pest for	10				
Total hours 45			Transfer Credit (See <u>bctransferguide.ca</u> .)						
Scheduled Laboratory Hours			Transfe	er credit already exists: Yes					
Labs to be scheduled independent of lecture hours:				Submit outline for (re)articulation: <b>Yes</b> ( <i>If yes, fill in <u>transfer credit form</u>.)</i>					
Department approval				Date of meeting:	June 2022				
Faculty Council approval				Date of meeting:	September 9, 2022				
Undergraduate Education Committee (UEC) approval				Date of meeting:	February 24, 2023				

Learning Outcomes (These should contribute to students' ability to meet program outcomes and thus Institutional Learning Outcomes.)

Upon successful completion of this course, students will be able to:

- 1. Describe how knowledge of pest biology is the fundamental first step in subsequent management.
- 2. Explain the sequence of steps leading to pesticide resistance (applicable to all categories of pest).
- 3. Link the concept of exponential growth of the pest population with pest problems in agriculture (applicable to all categories of pests in any agricultural context).
- 4. Identify key groups of pests (arthropods, weeds, and pathogens) using a set of features and dichotomous keys.
- 5. Differentiate between life history strategies used by arthropods, weeds, and pathogens.
- 6. Connect ecological processes trophic relationships, competition, host-parasite and parasite-vector-host interactions with agricultural pest problems.
- Differentiate between native and introduced (naturalized versus invasive) pest species. When applicable, for native pest differentiate between the role of the organism in traditional and contemporary Stó:lo foodways versus role of the organism in a commercial agricultural context.
- 8. Evaluate various sources of information for scientific rigour and bias.
- 9. Conduct research to prepare a (written, poster, or oral) report with accurate secondary source citation.
- 10. Collect and prepare pests for identification and quantification.

Recommended Evaluation Methods and Weighting (Evaluation should align to learning outcomes.)								
Quizzes/tests:	35%	Final exam:	20%	Assignments:	45%			

Details:

Lecture, lab, greenhouse, barn and outdoor classroom used for hands-on activities.

NOTE: The following sections may vary by instructor. Please see course syllabus available from the instructor.

**Texts and Resource Materials** (Include online resources and Indigenous knowledge sources. <u>Open Educational Resources</u> (OER) should be included whenever possible. If more space is required, use the <u>Supplemental Texts and Resource Materials form</u>.)

	Туре	Author or description	Title and publication/access details	Year
1.	Online resource	Gillot	Entomology	2005
2.	Online resource	Williams	Veterinary Entomology	2010
3.	Online resource	Burchett, Burchett	Plant Pathology	2017
4.	Online resource	Merck & Co.	Merck Vet Manual	2022
5.	Online resource	Min of Agriculture, Food & Rural Affairs	Ontario Weeds	2016

Required Additional Supplies and Materials (Software, hardware, tools, specialized clothing, etc.)

Calculator; appropriate, safe clothing for field trips; transportation for field trips.

## **Course Content and Topics**

The course is divided into 3 modules: Identification, Life History, and Ecology. Within each module Arthropods, Weeds and Pathogens are explored. Hands on-examples are provided each week using pest examples from both horticulture (ornamental, fruit or berry) or livestock commodities. Each module concludes with an exploration of commonalities in the process of identification, or the life history strategies (sexual vs. asexual), or the ecology of the different groups of pests. Within the Ecology module students conduct small experiments or surveys.

- Overview, pest impacts and the role of context in determining pest status
- Identification: arthropods
- Arthropod orders
- Weed families
- Pathogen ID
- Arthropod life history
- Weed life history
- Pathogen life history
- Ecology exponential growth
- Arthropod ecology
- Weed ecology
- Pathogen ecology
- Ecology concluded; introduction to IPM
- Vertebrates as pests in agriculture
- Invasive species