Undergraduate Course Outline Form

# Course Outline Form: Winter 2018, Summer 2018

## General Information

**Course Code: ENVS 4100**

**Course Title: Integrated Management of Invasive Insect Species**

**Course Description:**

|  |  |
| --- | --- |
| This course explores the concept of integrated pest management as it applies to the mitigation of invasive insect pests associated with agricultural and forest ecosystems. | |
| **Prerequisite(s):** | 1 of [CROP\*3300](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c12/c12crop.shtml#CROP3300), [CROP\*3310](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c12/c12crop.shtml#CROP3310), [ENVB\*2040](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/includes/discontinued.shtml), [ENVB\*3090](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/includes/discontinued.shtml), [ENVS\*2040](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c12/c12envs.shtml#ENVS2040), [ENVS\*3090](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c12/c12envs.shtml#ENVS3090), [HORT\*3280](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c12/c12hort.shtml#HORT3280), [HORT\*3350](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/includes/discontinued.shtml), [HORT\*3510](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c12/c12hort.shtml#HORT3510) |
| **Equate(s):** | [ENVB\*4100](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/includes/discontinued.shtml) |

**Credit Weight: 0.5**

**Academic Department (or campus): SES**

**Campus: Main**

**Semester Offering: Winter 2018**

**Class Schedule and Location:**

**Lectures**: Monday, Wednesday & Friday, 9:30 – 10:20; Graham Hall (GRHM) Rm 3308

**Lab**: Friday, 2:30-5:20PM; Graham Hall Rm 3309

## Instructor Information

Instructor Name: Dr. Cynthia Scott-Dupree

Instructor Email: cscottdu@uoguelph.ca

Instructor Phone and Extension: 519 824 4120 ext. 52477

Office location and office hours: RM 2110 Bovey Building; By appointment. Please contact your Instructor by email to arrange an appointment.

## GTA Information

GTA Name: Graham Ansell

GTA Email: gansell@uoguelph.ca

GTA office location and office hours: Rm 1110 Bovey Building; By appointment. Please contact your TA by email to arrange an appointment.

## Course Content

### Specific Learning Outcomes:

1. **Global Understanding:** *Global Understanding, Sense of Historical Development*
2. **Critical and Creative Thinking:** *Inquiry and Analysis, Problem Solving, Depth and Breadth of Understanding*
3. **Literacy:** *Information Literacy, Quantitative Literacy*
4. **Communicating:** *Oral Communication, Written Communication, Reading Comprehension*
5. **Professional and Ethical Behaviour:** *Teamwork, Leadership, Personal Organization and Time Management*

The Learning Outcomes for this course are:

1. Understand the concept of integrated pest management and the strategies/tactics that are required to ensure an economical, effective and environmentally sustainable method of pest mitigation;
2. Understand the importance of integrated pest management on a regional, national and international scale;
3. Identify insect pests based on taxonomic, systematic and DNA barcoding techniques;
4. Prepare an informational briefing paper on a insect pest of concern in Ontario utilizing the concepts and information obtained in class and lab;
5. Conduct an group experiment, collect and analyze data and individually prepare a final lab report;
6. Develop literacy, communication and professional skills through participation in lab experiments, in-class discussions, statistical data analysis and essay writing - requiring library and web-based research.

### Lecture Content:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Lecture #** | **Date** | **Topic** | **Due dates/other info** | **Lecturer** |
| 1 | Jan 8 M | Course introduction |  | **CSD** |
| 2 | Jan 10 W | Insects as pests |  | **CSD** |
| 3 | Jan 12 F | Insect ecology |  | **CSD** |
| 4 | Jan 15 M | Insect behaviour |  | **CSD** |
| 5 | Jan 17 W | Insect taxonomy -­‐ Barcode |  | **Andrew Frewin** |
| 6 | Jan 19 F | IPM - Historical |  | **CSD** |
| 7 | Jan 22 M | Pest Management Theory – Strategies, Pest Types |  | **CSD** |
| 8 | Jan 24 W | Bioeconomics |  | **CSD** |
| 9 | Jan 26 F | Sampling/Monitoring |  | **CSD** |
|  | Jan 29 M | **Flex Lecture - Catch Up** |  | **CSD** |
| 10 | Jan 31 W | Cultural and Physical Controls |  | **CSD** |
| 11 | Feb 2 F | Genetic Controls | 1st case study | **CSD** |
| 12 | Feb 5 M | Pesticides |  | **CSD** |
| 13 | Feb 7 W | Biopesticides |  | **CSD** |
| 14 | Feb 9 F | Pesticide Resistance |  | **CSD** |
|  | Feb 12 M | Toxicology and Risk Assessment/ Bee Health |  | **A Gradish** |
| 15 | Feb 14 W | **QUIZ 1** |  | **CSD** |
| 16 | Feb 16 F | Lab in Lecture – Part 2 Barcode Lab |  | **CSD/A. Frewin** |
| 17 | Feb 19-23 | **READING BREAK** |  |  |
| 18 | Feb 26 M | CANCELLED – Study for lab exam |  |  |
| 19 | Feb 28 W | Biocontrol |  | **Rose Buitenhuis/CSD** |
| 20 | Mar 2 F | Biocontrol | Lab Exam | **Rose Buitenhuis/CSD** |
| 21 | Mar 5 M | Biocontrol | 2nd case study | **Tara Gariepy/CSD** |
| 22 | Mar 7 W | Biocontrol |  | **Tara Gariepy/CSD** |
| 23 | Mar 9 F | Importance of *Aphidius colemani* in Greenhouse Biocontrol |  | **S Jandricic/CSD** |
|  | Mar 12 M | Data Assessment for *Aphidius* Lab during lecture |  | **CSD** |
| 24 | Mar 14 W | Holland Marsh IPM Program |  | **Zach Telfer** |
| 25 | Mar 16 F | Invasive Insect Species – New Arrivals in Ontario |  | **Hannah Fraser** |
| 26 | Mar 19 M | Spotted Winged Drosophila |  | **Hannah Fraser** |
| 27 | Mar 21 W | IPM – Pepper Weevil |  | **Rose Labbé** |
| 28 | Mar 23 F | Lecture TBA – Grad Student | 3rd case study  Aphidius lab report | **CSD** |
| 29 | Mar 26 M | LECTURE TBA – Grad Student | SWD lab questions due | **CSD** |
| 30 | Mar 28 W | LECTURE TBA – Grad Student |  | **CSD** |
|  | MAR 30 F | GOOD FRIDAY Cancelled |  |  |
| 31 | Apr 2 M | LECTURE TBA – Grad Student |  | **CSD** |
| 32 | Apr 4 W | LECTURE TBA – Grad Student |  | **CSD** |
| 33 | Apr 6 F | **QUIZ 2** | Briefing paper | **CSD** |

### Labs:

|  |  |  |  |
| --- | --- | --- | --- |
| **Lab #** | **Date** | **Lab Topic** | **Due dates/info** |
| 1 | Jan 12 F | General Entomology I |  |
| 2 | Jan 19 F | General Entomology II |  |
| 3 | Jan 27 F | General Entomology III |  |
| 4 | Feb 2 F | Briefing Paper Tutorial – Sarah Gibbons and Denise Beaton (BP testimonial) | Finalize briefing paper topics |
| 5 | Feb 9 F | Barcode Lab 1 – A. Frewin  Tour of Insect Collection and BioDIv Inst |  |
|  | Feb 16 F | **Lab in Lecture Period** –  Barcode Lab 2 | Lab in lecture period – 9:30-10:20 |
| 6 | Feb 23 F | NO LAB – READING BREAK |  |
| 7 | Mar 2 F | Lab Mid-Term | Lab Period |
| 8 | Mar 9 F | *Aphidius colemani* Experiment set-up – MacDonald and Ansell  1st Half of the lab groups – set up and 1st assessment | 72 hr data collection on Mar 12 (Mon) during lecture period; Set up again Mar 13 (Tues) 72 hr data collection Mar 16 (Fri); data to TA |
| 9 | Mar 16 F | 2nd Half of lab groups – set up and 2nd assessments; data pooled and analyzed |  |
|  | Mar 23 W | Spotted Wing Drosophila Lab | *Aphidius* exp lab  report due Mar 23; SWD lab due Mar 26 |
|  | Mar 30 | Good Friday – NO LAB |  |
| 10 | Apr 6 F | NO LAB |  |

### Seminars:

Not applicable.

### Course Assignments and Tests:

Evaluation in this course is based entirely on individual work. However, the *Aphidius* Lab Experiment will be conducted in groups but reports will be submitted individually.

|  |  |  |  |
| --- | --- | --- | --- |
| Assignment/Quiz | Value (%) | Due Date | Learning Outcomes |
| Individual (100%) |  |  |  |
| Quiz 1 (in class) | 15 | Feb 14(Wed) | 1,2,3,4 & 5 |
| Quiz 2 (in class) | 15 | April 6 (Fri) | 1,2,3,4 & 5 |
| Case Studies\* | 15 | Feb 2, Mar 5 & 23 | 1,2,4 & 5 |
| Lab Mid-Term (lab period) | 20 | Mar 2 (Fri) | 1,2 & 5 |
| *Aphidius* Lab Exp and Report | 15 | Mar 23 (Fri) | 1,2,3,4 & 5 |
| Spotted Wing Drosophila Lab Questions | 5 | Mar 26 (Mon) | 1,4 & 5 |
| Briefing Paper | 15 | Apr 6 (Fri) | 1,4 & 5 |
| Total | 100 |  |  |

Additional Notes (if required):

\*You will chose 3 of 5 case studies to complete; each is worth 5%.

* Students are expected to attend and actively engage in all lectures and labs.
* Students will conduct a laboratory study in groups but will report on the study individually.
* Quiz questions will be drawn from lectures (Scott-Dupree, guest and grad student lecturers).
* Quizzes will cover all lectures up to the lecture prior to the scheduled quiz.
* Lab-midterm will cover all lab material up to the lab prior to the scheduled exam.
* Where indicated, assignments will be submitted to Courselink at established deadlines.

### Final examination date and time:

No final exam.

### Final exam weighting:

Not applicable.

## Course Resources

### Required Texts:

*Integrated Pest Management: Concepts, Tactics, Strategies and Case Studies.* (2009). E.B. Radcliffe, W.D. Hutchison amd R.E. Cancelado. Cambridge University Press. ISBN: 978-0-521-69931-0 (Paperback).

### Recommended Texts:

*Entomology and Pest Management, 6th Edition*. (2009). L.P. Pedigo and M.E. Rice. Prentice Hall. ISBN: 978-0-13-513295-1

NOTE: This book is presently out of print – therefore the UofG bookstore is unable to order this text. A copy will be held on reserve in the library. You can also purchase an e-book Kindle version (Kindle app free) from Amazon Books for $45 US. It appears they also have some hard and soft cover copies available. This is an amazing book especially if you have limited background in entomology.

### Lab Manual:

A copy of each textbook mentioned above will be on reserve at the Library for short term loan.

### Other Resources:

* **D2L CourseLink** will be used to post class announcements, hand-outs, lectures, class readings, grades, and links etc. that are relevant to this course. Please check Courselink often during the semester. *If it’s on there and you are unaware – that is your problem.*
* All assigned readings are considered required readings, unless the Instructor explicitly indicates otherwise.

### Field Trips:

None

### Additional Costs:

None

## Course Policies

### Grading Policies:

Late assignments will be penalized 10% per day and will no longer be accepted a week after the due date. If you cannot meet a course requirement, let Cynthia Scott-Dupree (cscottdu@uoguelph.ca) know as soon as possible, and preferably before the due date.

* Extensions will only be granted for medical reasons, documented by a Doctor’s note; or for documented compassionated reasons, at the discretion of the Instructor.

Rubrics for all assignments will be posted on Courselink in advance of the due dates.

### Course Policy on Group Work:

* Group work is required in the laboratory experiment all lab group members are expected to participate and contribute equally to setting up, conducting and collecting data associated with the study. All group members are expected to behave professionally and ethically in all group activities.

### Course Policy regarding use of electronic devices and recording of lectures:

Electronic recording of classes is expressly forbidden without consent of the instructor. When recordings are permitted they are solely for the use of the authorized student and may not be reproduced, or transmitted to others, without the express written consent of the instructor.

## University Policies

### Academic Consideration:

The University of Guelph is committed to supporting students in their learning experiences and responding to their individual needs and is aware that a variety of situations or events beyond the student's control may affect academic performance. Support is provided to accommodate academic needs in the face of personal difficulties or unforeseen events in the form of Academic Consideration.

Information on regulations and procedures for Academic Consideration, Appeals and Petitions, including categories, grounds, timelines and appeals can be found in [Section VIII (Undergraduate Degree Regulations and Procedures) of the Undergraduate Calendar](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml).

### Academic Misconduct:

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community, faculty, staff, and students to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring.

University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection. Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

Detailed information regarding the Academic Misconduct policy is available in [Section VIII (Undergraduate Degree Regulations and Procedures) of the Undergraduate Calendar](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml).

### Accessibility:

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact the Student Accessibility Services (SAS), formerly Centre for Students with Disabilities (CSD), as soon as possible.

For more information, contact SAS at 519-824-4120 ext. 56208 or email sas@uoguelph.ca or visit the [Student Accessibility Services website (http://www.uoguelph.ca/csd/)](http://www.uoguelph.ca/csd/).

### Course Evaluation Information:

End of semester course and instructor evaluations provide students the opportunity to have their comments and opinions used as an important component in the Faculty Tenure and Promotion process, and as valuable feedback to help instructors enhance the quality of their teaching effectiveness and course delivery.

While many course evaluations are conducted in class others are now conducted online. Please refer to the [Course and Instructor Evaluation Website](https://courseeval.uoguelph.ca/) **for more information.**

### Drop period:

The drop period for single semester courses starts at the beginning of the add period and extends to the Fortieth (40th) class day of the current semester (the last date to drop a single semester courses without academic penalty) which is listed in [Section III (Schedule of Dates) of the Undergraduate Calendar](https://www.uoguelph.ca/registrar/calendars/).

The drop period for two semester courses starts at the beginning of the add period in the first semester and extends to the last day of the add period in the second semester.

Information about Dropping Courses can be found in [Section VIII (Undergraduate Degree Regulations and Procedures) of the Undergraduate Calendar](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml).

## Additional Course Information

Course evaluations for ENVS 4100 will done on-line in-class on March 28, 2018. The School of Environmental Sciences takes student feedback seriously. The SES Director sees all student feedback and may discuss this feedback (all done in confidence) with the faculty where appropriate. Faculty members are not able to access their own teaching evaluations until after their final grades are submitted to the registrar. Comments made by students will have names removed.