# Course Outline Form: Winter 2016

## General Information

**Course Title:** ENVS\*4100 Integrated Management of Invasive Insect Pests

**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.

During this course students will develop a basic understanding of insect pests as it relates to classification, insect structure and life cycle, ecology and behavior so that IPM strategies (e.g., ecological/cultural management, biological control, chemical, behavioural modification, insect-host relationship) can be initiated that will effectively mitigate the problem.

**Credit Weight:** 0.50

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

**Campus:** University of Guelph – Guelph

**Semester Offering:** Winter 2016

**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](mailto:cscottdu@uoguelph.ca)

Office location and office hours: Rm 2110 Bovey Bldg. – by appointment.

## GTA Information

GTA Name: Zach Telfer

GTA Email: [ztelfer@uoguelph.ca](mailto:ztelfer@uoguelph.ca)

GTA office location and office hours: Rm 2108 Bovey Bldg. – by appointment

## Course Content

### Specific Learning Outcomes:

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 taxanomic, systematic and DNA barcoding techniques;
4. Research an insect pest and write an insect profile highlighting life history, economic impact potential and possible IPM strategies untilizing 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 11 M | Course introduction |  | **CSD** |
| 2 | Jan 13 W | Insects as pests |  | **CSD** |
| 3 | Jan 15 F | Insect taxonomy -­‐ Barcode |  | **Andrew Frewin** |
| 4 | Jan 18 M | Insect ecology |  | **CSD** |
| 5 | Jan 20 W | Insect behaviour |  | **CSD** |
| 6 | Jan 22 F | Invasiveness |  | **CSD** |
| 7 | Jan 25 M | Basic principles of IPM | 1st Case Study | **CSD** |
| 8 | Jan 27 W | Historical IPM |  | **CSD** |
| 9 | Jan 29 F | Bioeconomics |  | **CSD** |
|  | Feb 1 M | **QUIZ 1** |  | **CSD** |
| 10 | Feb 3 W | Sampling/Monitoring |  | **CSD** |
| 11 | Feb 5 F | Management Strategies/Pest Types |  | **CSD** |
| 12 | Feb 8 M | Pesticides |  | **CSD** |
| 13 | Feb 10 W | Biopesticides | 2nd Case Study | **CSD** |
| 14 | Feb 12 F | Lab in Lecture Period; No Lecture |  | **CSD** |
|  | Feb 15-19 | **READING BREAK** |  |  |
| 15 | Feb 22 M | Pesticide Resistance |  | **CSD** |
| 16 | Feb 24 W | Toxicology and Risk Assessment/ Bee Health |  | **CSD** |
| 17 | Feb 26 F | Cultural and Physical Controls | Lab Mid-Term during lab period | **CSD** |
| 18 | Feb 29 M | Biocontrol |  | **Tara Gariepy** |
| 19 | Mar 2 W | Biocontrol | 3rd Case Study | **Tara Gariepy** |
| 20 | Mar 4 F | Biocontrol |  | **Tara Gariepy** |
| 21 | Mar 7 M | Biocontrol |  | **Rose Buitenhuis** |
| 22 | Mar 9 W | Biocontrol |  | **Rose Buitenhuis** |
| 23 | Mar 11 F | Biocontrol |  | **Rose Buitenhuis** |
|  | Mar 14 M | **QUIZ 2** |  | **CSD** |
| 24 | Mar 16 W | Entomopathogenic Nematodes |  | **CSD** |
| 25 | Mar 18 F | Invasive Insect Species – New Arrivals in Ontario | Orius Exp Lab Report Due | **Hannah Fraser** |
| 26 | Mar 21 M | Swede Midge – Invasive Species |  | **Rebecca Hallett** |
| 27 | Mar 23 W | Brown Marmorated Stink Bug |  | **Kaelyn Hunter** (Grad Student) |
|  | Mar 25 W | NO CLASSES – GOOD FRIDAY |  |  |
| 28 | Mar 28 M | GMOs; in class course evaluation |  | **CSD** |
| 29 | Mar 30 W | LECTURE TBA – Grad Student |  | **Yasmine Farhan** |
| 30 | Apr 1 F | LECTURE TBA – Grad Student |  | **Hailey Ashbee** |
| 31 | Apr 4 M | LECTURE TBA – Grad Student |  | **Rachel England** |
| 34 | Apr 6 W | LECTURE – TBA – Grad Student |  | **Dana Elsolh** |
| 35 | Apr 8 F | **QUIZ 3** | Final essay due | **CSD** |

### Labs:

|  |  |  |  |
| --- | --- | --- | --- |
| **Lab #** | **Date** | **Lab Topic** | **Due dates/other info** |
| 1 | Jan 15 F | General Entomology I |  |
| 2 | Jan 22 F | General Entomology II |  |
| 3 | Jan 29 F | General Entomology III |  |
| 4 | Feb 5 F | Barcode Lab 1 | Tour |
| 5 | Feb 12 F | **Lab in Lecture Period** –  Barcode Lab 2 | Lab in lecture period – 9:30-10:20 |
|  | Feb 19 F | NO LAB – READING BREAK |  |
| 6 | Feb 26 F | Lab Mid-Term | Lab Period |
| 7 | Mar 4 F | Orius Experiment set-up | 24 hr data collection on Mar 5 (Sat); 48 hr data collection Mar 6 (Sun); data to TA |
| 8 | Mar 11 F | Orius Experiment Stats Analysis |  |
| 9 | Mar 18 F | Entomophathogenic Nematode – CSI Lab | Orius exp lab  report due; Nematode Lab Questions due Mar 21 (Mon) |
|  | Mar 25 W | NO LAB – GOOD FRIDAY |  |
| 30 | Apr 1 F | Spotted Wing Drosophila | SWD Lab Questions due Apr 4 (Mon) |

### Seminars: Not applicable.

### Course Assignments and Tests:

|  |  |  |  |
| --- | --- | --- | --- |
| Assignment/Quiz | Value (%) | Due Date | Learning Outcomes |
| Individual (100%) |  |  |  |
| Quiz 1 (in class) | 10 | Feb 1 (Mon) | 1,2,3,4 & 5 |
| Quiz 2 (in class) | 10 | Mar 14 (Mon) | 1,2,3,4 & 5 |
| Quiz 3 (in class) | 10 | Apr 8 (Fri) | 1,2,3,4 & 5 |
| Case Studies\* | 15 | Jan 25, Feb 10, Mar 2 | 1,2,4 & 5 |
| Lab Mid-Term (in lab) | 15 | Feb 26 (Fri) | 1,2 & 5 |
| Orius Lab Exp and Report | 10 | Mar 18 (Fri) | 1,2,3,4 & 5 |
| Nematode Lab Questions | 5 | Mar 21 (Mon) | 1,4 & 5 |
| Spotted Wing Drosophila Lab Questions | 5 | Apr 4 (Mon) | 1,4 & 5 |
| Final Essay | 20 | Apr 8 (Fri), 23:59 | 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. Instead we have 3 quizzes during the semester.

### 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: **None**

### Other Resources:

* **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:

Grading is indicate in Assignment table

**Policy on Late Assignments:**

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.

### 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:

Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the written permission of the presenter, whether the instructor, a classmate or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

## 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/).

## Additional Course Information

None