



ENVS*3020 Pesticides in the Environment Winter 2021

Credit Weight: 0.50

Course Details

Calendar Description

This course examines the role and use of pesticides by various facets of society and the effect of these pesticides on biological activities in the environment. Preparation of a research proposal is required for the course.

Pre-Requisite(s): [BIOL*1040 or (2 of BIOL*1500, BIOL*1070, BIOL*1080, BIOL*1090)], CHEM*1040

Equate(s): ENVS*3020

Method of Delivery: In class

Location: Zoom

Join Zoom Meeting

<https://us02web.zoom.us/j/89043687206?pwd=Y1JNalFaWDVwYVdGK0h2akZHK0s5dz09>

Meeting ID: 890 4368 7206

Passcode: 654538

One tap mobile

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Canada

Dial by your location

+1 647 558 0588 Canada

+1 778 907 2071 Canada

+1 204 272 7920 Canada

+1 438 809 7799 Canada

+1 587 328 1099 Canada

+1 647 374 4685 Canada

+1 669 900 6833 US (San Jose)

+1 929 436 2866 US (New York)

+1 253 215 8782 US (Tacoma)

+1 301 715 8592 US (Washington D.C)

+1 312 626 6799 US (Chicago)

+1 346 248 7799 US (Houston)

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Find your local number:

<https://us02web.zoom.us/j/89043687206?pwd=Y1JNalFaWDVwYVdGK0h2akZHK0s5dz09>

Time: Monday, Wednesday, Friday 1:30 pm to 2:20 pm

Final Exam

Time:

Available on Courselink on **Friday, April 16th at 12:00 am** & due by **Monday, April 19th at 11:59 pm**

Location:

The final exam will be a take-home exam that will cover the material from the entire semester. You will have 4 days to complete the take-home exam.

Instructional Support

Instructor

Dr. Ryan Prosser

Email: prosserr@uoguelph.ca

Telephone: (519) 824-4120 Ext. 52190 or Ext. 54374

Office: The Edmund C. Bovey Administration Building (ECBA), Room 2226 or Lab 2229

Dr. Prosser completed his PhD at the University of Guelph in the School of Environmental Sciences. Before returning to Canada to do his PhD, Ryan was a high school chemistry teacher in Kuwait for six years. Following his PhD, he was a post-doctoral fellow for the Aquatic Contaminants Research Division of Environment and Climate Change Canada. To learn more about Dr. Prosser's research, visit his website (www.wisdomofthemoose.com) or his Google Scholar site (<https://scholar.google.ca/citations?user=EI5v7zAAAAAJ&hl=en>)

Teaching Assistant(s)

Name: Taylor Vanderyagt

Email: tvandery@uoguelph.ca

Learning Resources

Suggested Textbook and Readings

Not mandatory

Pesticides and the Environment by Stephenson and Solomon

Week of Jan 11	Stephenson and Solomon, Chapter 1, page 1 to 11
Week of Jan 18	Stephenson and Solomon, Chapter 2 & 3, page 13 to 55
Week of Feb 1	Stephenson and Solomon, Chapter 4, page 57 to 80

Week of Feb 8	Stephenson and Solomon, Chapter 6, page 81 to 150
Week of Feb 15 – WINTER BREAK	Stephenson and Solomon, Chapter 9, page 179 to 190
Week of Feb 22	Stephenson and Solomon, Chapter 10, page 191 to 209
Week of Mar 1	Stephenson and Solomon, Chapter 7, page 155 to 161
Week of Mar 8	Stephenson and Solomon, Chapter 12, page 229 to 253
Week of Mar 15	Stephenson and Solomon, Chapter 13, page 261 to 273
Week of Mar 22	Stephenson and Solomon, Chapter 14, page 277 to 288
Week of Mar 29	Stephenson and Solomon, Chapter 16, page 307 to 322
Week of April 5	Stephenson and Solomon, Chapter 17, page 325 to 334
Week of April 12	Stephenson and Solomon, Chapter 15, page 291 to 305

Course Website

[CourseLink](#) (powered by D2L's Brightspace) is the course website and will act as your classroom. It is recommended that you log in to your course website every day to check for announcements, access course materials, and review the weekly schedule and assignment requirements.

<https://courselink.uoguelph.ca/shared/login/login.html>

Learning Outcomes

Course Learning Outcomes

By the end of this course, you should be able to:

- 1) To gain a perspective of the historical and current applications of pesticides and the benefits and drawbacks of their use.
- 2) To be able to describe methods of classifying pesticides based on characteristics including use and mode of action.
- 3) To be able to understand important chemical, physical and biological properties of pesticides that are important for predicting their fate and impact in the environment.
- 4) To gain experience in formulating objective research questions to address current pesticide-related topics.

- 5) To gain an understanding of the role of risk assessment in monitoring and managing existing and emerging concerns with pesticides.
 - 6) To be aware of regulations governing the use of pesticides locally and internationally.
 - 7) To be able to extrapolate from the principles learned in this course to a broader range of environmental issues.
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Assessment

The grade determination for this course is indicated in the following table. A brief description of each assessment is provided below. In Courselink, select **Content** on the navbar to review further details of each assessment. Due dates can be found under the Schedule heading of this outline.

Course Assessment

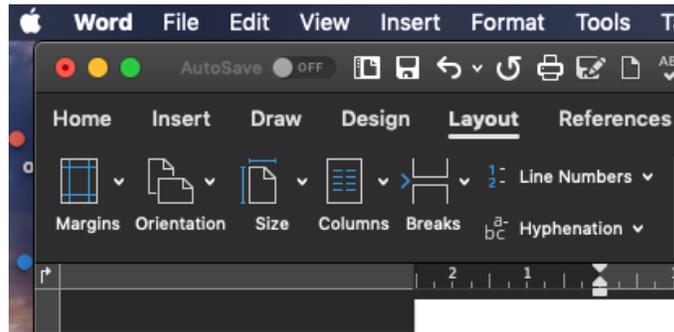
Assessment Item	Weight	Due Date
Annotated Bibliography	15%	Dropbox by Friday, Feb. 5, 11:59 pm
Midterm Examination (Take home)	20%	Released Friday, Feb. 26 at 12:00 am Dropbox by Sunday, Feb. 28 at 11:59 pm
Research Proposal – Part I	15%	Dropbox by Friday, Mar. 12, 11:59 pm
Research Proposal – Part II	20%	Dropbox by Friday, Apr. 9, 11:59 pm
Final Examination (Take home)	30%	Released Friday, Apr. 16 at 12:00 am Dropbox by Monday, Apr. 19 at 11:59 pm
Total	100%	

Assessment Descriptions

The objectives of the three writing assignments are for you to experience, as much as possible, the role of the environmental scientist who will attempt to obtain funding and carry out research on an environmental problem involving pesticides. This will provide you with an opportunity to independently expand your understanding of selected issues in Pesticides and the Environment.

For all written assignments please use the following parameters, 12-point font Times New Roman, 2.5-cm margins, your name in the header of assignments, page numbers included, and topic and research question at the top of the first page of all assignments. All assignments needs to include

continuous line numbering. For continuous line numbering, in Word, go to the **Layout** tab and choose the **Line Numbers** drop-down menu, and choose **Continuous** (see screen shot below).



The topic of your research proposal should be focused on a particular research question(s) related to the effects of pesticides on a component of the environment (e.g., single species, a community of species, or an entire ecosystem). See examples below.

Example A:

Topic: Pyrethroid insecticides and zooplankton communities

Research Question:

At what concentration does permethrin begin to have an adverse effect on freshwater zooplankton communities?

Example B:

Topic: Fungicides and soil microbial community function

Research Question:

Do environmentally relevant concentration of azoxystrobin and propiconazole have an adverse effect on the soil microbial communities ability to assimilate carbon?

You should choose a topic that is of interest to you. If you are having trouble identifying a topic, please have a chat with Dr. Prosser. He will help you to focus your interests on a particular topic and research question. The overall goal of the research proposal is that you are going to outline a study that will answer an important research question related to the potential effects of pesticides on the environment that a funding group is going to want to fund. **Your research proposal topic and research question are due by Friday, January 22nd at 11:59 pm. Your topic and research question should be emailed to Dr. Prosser by the due date.** Dr. Prosser will be providing feedback on each topic and research question. We are using a "first come first serve" system. If two students have a similar topic and research question, the student who posted later will be asked to make a change to their topic and research question.

Annotated Bibliography

The annotated bibliography is an exercise in exploring the literature that would be useful in preparing your research proposal. You need to find journal articles and/or books that will provide important information that will help you write the Introduction, Justification, Methodology, and Outcomes section of your research proposal. Your annotated bibliography needs to contain **at least 15 journal articles**. Each journal article needs to

have 2 to 3 sentence summary describing how it is useful to your research proposal preparation. See the example below:

Topic: freshwater snails and herbicide surfactants

Research question:

Do herbicide surfactants have an adverse effect on freshwater snail reproduction?

Reference:

Prosser RS, Rodriguez-Gil JL, Solomon KR, Sibley PK, Poirier D (2017) Effects of the herbicide surfactant, MON 0818, on oviposition and viability of eggs of the ramshorn snail, *Planorbella pilsbryi*. *Environ Toxicol Chem*, 36:522- 531.

Summary:

Prosser et al. (2017) reported how the surfactant MON 0818 effected reproduction of a ramshorn snail species. They reported that adverse effects were not reported an environmentally concentrations, but only have significantly higher concentrations. This information could be used in the Introduction and Methodology sections of my research proposal.

Please use reference style outlined by the journal Environmental Toxicology and Chemistry (outline available on Courselink).

Your annotated bibliography needs to be submitted to dropbox on Courselink by **Friday, February 5th, 11:59 pm.**

Research Proposal – Part I

The first part of your research proposal will contain two sections, Introduction and Justification. The first part of your research proposal should be no longer than two pages in length (not including your list of references). Please see formatting parameters on assignments above. In the Introduction, you should provide a short background on the topic of your research proposal and a summary of what research has already been done. Remember that individuals evaluating research proposals may not be accomplished scientists in the specialized areas of your proposal topic. Evaluators could be government bureaucrats or scientists, non-governmental organization employees, or members of a community group. Consequently, you want to provide the reader with the background about your topic and a summary of the research that has already been completed in the literature. The background information and literature summary should lead the reader to your research question and the objective(s) of your project. An objective is a clear action that will contribute to answering your research question. See example below:

Topic: freshwater snails and herbicide surfactants

Research question:

Can herbicide surfactants have an adverse effect on freshwater snail reproduction?

Objectives:

- 1) Perform acute and chronic toxicity tests with the surfactant POEA on the freshwater snail *Lymnaea stagnalis* (juvenile and adult snails).

- 2) Perform a hazard assessment of POEA to *Lymnaea stagnalis* by comparing the effect concentrations (e.g., LC50s, EC50s) determined from the tests in Objective 1) to concentrations reported in the environment.

The first part of your research proposal also needs to contain a Justification section. It will be shorter than your Introduction section. In your Justification section, you will outline general and specific reasons that your proposed research is important, and therefore, should be funded. You want to focus on formulating a strong argument/justification with support from the literature or other citable documents. These are two important questions: Has this research been conducted before? Why should it matter if this research is conducted? People who are making funding decisions in Canada want to see clearly how the research is going to benefit the Canadian environment and Canadians.

The first part of your research proposal needs to be submitted to Dropbox on Courselink by **Friday, March 12th , 11:59 pm.**

Research Proposal – Part II

The second part of your research proposal will contain one section, Methodology. The second part of your research proposal should be no longer than two pages in length (not including your list of references). Please see formatting parameters on assignments above.

Your Methodology section should clearly outline the experiments, experimental design, and data analysis that will be used to achieve your objectives and answer your research question. If a particular procedure in your methodology has been describe by other authors, you can cite the authors' journal article and provide a short summary, as opposed to a long detailed description. The detail in your Methodology needs to be sufficient so that a reviewer can confidently conclude that the proposed research question could be answered if the study was funded and performed as described by you.

The second part of your research proposal needs to be submitted to Dropbox on Courselink by **Friday, April 9th , 11:59 pm.** Please combine the first and second part of your research proposal before submission to Dropbox.

Late Policies

If you choose to submit your individual assignments to the **dropbox** tool late, the full allocated mark will be reduced by 5% per day after the deadline for the submission of the assignment to a limit of 10 days at which time access to the **dropbox** folder will be closed. Saturday and Sunday are included in the number of days after the deadline for the submission of the assignment. Extensions will be considered for medical reasons or other extenuating circumstances. If you require an extension, discuss this with the instructor as soon as possible and well before the due date. Barring exceptional circumstances, extensions will not be granted once the due date has passed. These rules are not designed to be arbitrary, nor are they inflexible. They are designed to keep you organized, to ensure that all students have the same amount of time to work on assignments, and to help to return marked materials to you in the shortest possible time.

Midterm Examination

The midterm examination will be a take-home exam. The exam will be released on Courselink on **Friday, February 26th from 12:00 am**. The exam will be due to Dropbox by **Sunday, February 28th at 11:59 pm**. The midterm examination will cover all material (including guest lectures) up to and including the lecture on Friday, February 12th.

Final Examination

The final examination will be a take-home exam. The exam will be released on Courselink on **Friday, April 16th at 12:00 am**. The exam will be due to Dropbox by **Monday, April 19th at 11:59 pm**. The final examination will cover all material presented in the course.

University Statement

Email Communication

As per university regulations, all students are required to check their e-mail account regularly: e-mail is the official route of communication between the University and its students.

When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The grounds for Academic Consideration are detailed in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Academic Consideration and Appeals

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Graduate Calendar - Grounds for Academic Consideration

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

Drop Date

The regulations and procedures for course registration are available in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

Graduate Calendar - Registration Changes

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-reg-regchg.shtml>

Copies of Out-of-class Assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student. When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway. Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability. Use of the SAS Exam Centre requires students to book their exams at least 7 days in advance and not later than the 40th Class Day. More information can be found on the SAS website <https://www.uoguelph.ca/sas>

Academic Integrity

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 encourages academic integrity. 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.

Undergraduate Calendar - Academic Misconduct

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

Graduate Calendar - Academic Misconduct

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

Plagiarism Detection Software

Students should be aware that faculty have the right to use software to aid in the detection of plagiarism or copying and to examine students orally on submitted work. For students found guilty

of academic misconduct, serious penalties, up to and including suspension or expulsion from the University can be imposed.

The University of Guelph Learning Commons provides a guide to Plagiarism and Academic Integrity and tips for avoiding plagiarism.

<https://guides.lib.uoguelph.ca/AcademicIntegrity>

Recording of Materials

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

Resources

The Academic Calendars are the source of information about the University of Guelph's procedures, policies, and regulations that apply to undergraduate, graduate, and diploma programs. Academic Calendars <https://www.uoguelph.ca/academics/calendars>
