



UNIVERSITY
OF MANITOBA

University of Manitoba
BIOL2380/AGRI2180/ENVR2180
Introduction to Toxicology

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COURSE DETAILS

Course Title & Number: BIOL2380/ENVR2180/AGRI2180: Introduction to Toxicology

Number of Credit Hours: 3 Credit Hours

Class Times & Days of Week: Tuesdays and Thursdays 2:30 PM to 3:45 PM

Lecture location: Zoom* – link will be provided prior to the first class. You must register the first time you sign in for class. Lectures will be recorded and made available until the next exam.

**With the current pandemic situation, the University followed public health guidance and asked courses to be delivered remotely where possible. The University continues to monitor the developments of the latest pandemic situation and will provide an update as to whether in-person activities can be safely offered as per public health guidelines after February 26, 2022. Like all other University-wide announcements, we anticipate that the activity plans (be they remote or in-person) for after February 26 will be made by email as well as posted on the University website. Please keep an eye on these two sources for the*

announcement over the next few weeks as well as direction from your course instructor.

Pre-Requisites: (Undergraduate level BIOL 1030 Minimum Grade of C or Undergraduate level BIOL 1031 Minimum Grade of C or BIOL 1030 - PQ Substitution 060 or Undergraduate level 071 125 Minimum Grade of C) and (Undergraduate level CHEM 1310 Minimum Grade of C or Undergraduate level CHEM 1311 Minimum Grade of C or Undergraduate level 002 131 Minimum Grade of C or CHEM 1310 - PQ Substitution 060 or Undergraduate level CHEM 1320 Minimum Grade of C or Undergraduate level 002 132 Minimum Grade of C or CHEM 1320 - PQ Substitution 060)

Instructor Contact Information

Instructor Name: Dr. Ken Jeffries

Preferred Form of Address: You can call me Ken.

Office Location: Duff Roblin W477 (I am rarely in my office while working remotely – email me instead).

Office Hours or Availability: The official office hours will be immediately following lectures or from 4:00 to 5:00pm Tuesdays and Thursdays by appointment. You can talk to me immediately after class or can make an appointment by email.

The Responsibilities of Academic Staff in Regards to Students – [ROASS](#)- requires that instructors/professors must be available to students for consultation out of class or laboratory hours.

Office Phone No. 204-474-6429 (I am rarely in my office while working remotely – email me instead).

Email: Ken.Jeffries@umanitoba.ca

Contact: You must use your official University of Manitoba email address to get a hold of me and I will try to get back to you as soon as I can. Please indicate in the email your name, student number and the course to avoid confusion.

All e-mail communication must conform to the [Communicating with Students](#) university policy.

- **Check this syllabus or course notes first.** If you are asking about course or exam information, the answers might already be in the syllabus or notes.
- **Use a detailed subject line.** There is a good chance I will want to find your email again and I get a lot of emails.
- Use full, **properly structured sentences.** The overall structure of your email should be professional.
- Use a **proper salutation.** “Hey prof” is too casual and not appropriate.
- **Always include your name.** If I don’t know who you are, I will not respond.

Course Description

A survey of general principles underlying the effects of toxic substances on biological systems, including consideration of the history, scope and applications of toxicology, the mechanisms of toxic action, some major types of toxicants, and effects in the environment.

Using Copyrighted Material

Please respect copyright. We will use copyrighted content in this course. I have ensured that the content I use is appropriately acknowledged and is copied in accordance with copyright laws and University guidelines. Copyrighted works, including those created by me, are made available for private study and research, and must not be distributed in any format without permission. Do not upload copyrighted works to a learning management system (such as UM Learn), or any website, unless an exception to the *Copyright Act* applies or written permission has been confirmed. For more information, see the University’s Copyright Office website at <http://umanitoba.ca/copyright/> or contact um_copyright@umanitoba.ca.

Recording Class Lectures

The student is expected to take notes during lectures and course materials, provided online, are for the participant’s private study and research. Dr. Jeffries and the University of Manitoba hold copyright over the course materials, presentations and lectures which form part of this course. No audio or video recording of lectures or presentations is allowed in any format, openly or surreptitiously, in whole or in part without permission from Dr. Jeffries.

Textbook, Readings, Materials

There are no required textbooks for this course. However, there are toxicology textbooks available for free through the University of Manitoba library. The following are recommended for general background for some topics and can be used for supplementary reading:

Casarett & Doull's *Essentials of toxicology*, 3rd ed., McGraw-Hill Education LLC, 2015. (most of the first third of the course follows this textbook).

Casarett & Doull's *Toxicology: The Basic Science of Poisons*. Ninth edition., McGraw-Hill Education / Medical, 2019.

Supplementary readings may be provided through UMLearn over the semester.

Course Technology

It is the general University of Manitoba policy that all technology resources are to be used in a responsible, efficient, ethical and legal manner. The student can use all technology in classroom setting only for educational purposes approved by instructor and/or the University of Manitoba Disability Services. Student should not participate in personal direct electronic messaging/posting activities (e-mail, texting, video or voice chat, wikis, blogs, social networking (e.g. Facebook) online and offline "gaming" during scheduled class time. If student is on call (emergency) the student should switch his/her cell phone on vibrate mode and leave the lecture before using it (@[S Kondrashov](#). Used with permission).

Class Communication

The University requires all students to activate an official University email account. For full details of the Electronic Communication with Students please visit:

[http://umanitoba.ca/admin/governance/media/Electronic Communication with Students Policy - 2014 06 05.pdf](http://umanitoba.ca/admin/governance/media/Electronic_Communication_with_Students_Policy_-_2014_06_05.pdf)

Please note that all communication between myself and you as a student must comply with the electronic communication with student policy

([http://umanitoba.ca/admin/governance/governing_documents/community/electronic communication with students policy.html](http://umanitoba.ca/admin/governance/governing_documents/community/electronic_communication_with_students_policy.html)). You are required to obtain and use your U of M email account for all communication between yourself and the university.

All communications will primarily be made through the announcements tool on UM Learn.

Expectations: I Expect You To...

- ATTEND CLASS. The concepts of our lectures build on each other throughout the course, and it is crucial to attend all classes to learn the material. ALSO: We will cover material in class that is *not* going to be in the notes, so be there to learn it!!

- ASK QUESTIONS. The whole goal of science is to ask questions, and asking questions if you are not completely clear on the material is normal and encouraged. You can ask questions in class, but if you are uncomfortable doing this send me an email and I will try to provide an answer for everyone on UM Learn. I may cover it before lecture in the next class. If enough people indicate that they did not understand a concept, I will go over it again.
- SEEK HELP if you are experiencing difficulty, the earlier the better!
- Use cellphones and laptops in lecture *only if you are following along with the lecture slides*. Doing other things on your electronic devices is very distracting to your learning *and* to those around you. Studies have shown that a student using their laptop distracts those around them to the point that their final grade is reduced.
- BE RESPECTFUL to me and your peers at all times.

Expectations: You Can Expect Me To...

- BE AVAILABLE after class for questions.
- BE AVAILABLE for you to ask questions if you make an appointment during office hours or by booking a time via email.
- HAVE LECTURE SLIDES POSTED to UMLearn before lecture at the latest.
- ANSWER YOUR EMAILS as quickly as I can. If it gets lost in the deluge of emails, send me another email after 48 hours to remind me.
- PROVIDE you with test grades within one week.

Students Accessibility Services

If you are a student with a disability, please contact Student Accessibility Services (SAS) for academic accommodation supports and services such as note-taking, interpreting, assistive technology and exam accommodations. Students who have, or think they may have, a disability (e.g., mental illness, learning, medical, hearing, injury-related, visual) are invited to contact SAS to arrange a confidential consultation.

<http://umanitoba.ca/student/saa/accessibility/>

520 University Centre

(204) 474-7423

Student_accessibility@umanitoba.ca

Class Schedule

This schedule is subject to change at the discretion of the instructor and/or based on the learning needs of the students but such changes are subject to Section 2.8 of the – [ROASS-Procedure](#)).

Lecture	Date	Topic
1	Jan 25	Introduction to toxicology
2	Jan 27	Dose response curves
3	Feb 1	Dose response curves & bioassays
4	Feb 3	Factors influencing toxicity
5	Feb 8	Disposition: Absorption and distribution (Assignment #1)
6	Feb 10	Disposition: Biotransformation and elimination
7	Feb 15	Cellular and tissue targets of toxicity
8	Feb 17	Metals (Quiz #1)
	Feb 22	Winter Break!
	Feb 24	Winter Break!
9	Mar 1	Metals
	Mar 3	Exam I (Covering lectures 1-7)
10	Mar 8	Solvents and VOCs
11	Mar 10	Air pollution
12	Mar 15	Bioaccumulation and biomagnification (Assignment #2)
13	Mar 17	Pesticides
14	Mar 22	Pesticides (Assignment #3)
15	Mar 24	Food Toxicology (we sometimes drop this one because we run out of time)
16	Mar 29	Wastewater effluent and surface run-off in freshwater

17	Mar 31	CO ₂ in aquatic systems – Guest Speaker (Tentative)
	Apr 5	Exam II (Covering lectures 8-14)
18	Apr 7	Toxicogenomics
19	Apr 12	Toxicology of invasive sea lamprey control (Quiz #2)
20	Apr 14	Ecotoxicology in the Arctic – Guest Speaker (Tentative)
21	Apr 19	Oil spills and Fracking
22	Apr 21	Finish any remaining topics

Course Evaluation Methods

TESTS/EXAMS:

- a. There will be two non-cumulative midterm exams (**Mar. 3rd, Apr. 5th**) and a final exam that is scheduled by the University. The exams may consist of multiple choice, multi-select and true or false questions. The two midterm exams will be online through UM Learn during the normal scheduled class time. The final exam (date and time to be announced) will be comprised of two parts – one part covering material specific to the last third of the lectures, and the other part will be comprised of questions that cover content from the entire course.
- b. If you are going to miss one of the midterms for a valid reason (i.e, sick, family emergency), you may write a deferred exam (date to be announced). If you need to notify me **BEFORE** the exam. Failure to write the exam without prior arrangements with me, will result in a grade of zero for the exam.
- c. You must write the final exam to pass the course.
- d. If you miss the final exam, you must apply and provide other documentation to your home faculty to qualify to write a deferred final exam.

QUIZZES/ASSIGNMENTS:

- a. There will be 2 short quizzes this semester that will be based off an assigned paper and/or material from the lecture notes. The quizzes will be made available for a period of time after the scheduled lecture that day. You will only have 1 attempt to complete the quiz.
- b. There will be 3 assignments that will require you applying some of the knowledge you have gained in the course. These will be available for multiple days. On some assignments, you will be given the chance to redo the assignment and have the average of your attempts as your grade for the assignment.
- c. You must complete and submit the quiz or assignment to receive a grade.

Date:	Assessment Tool	Value of Final Grade*
March 3, 2022	Exam I	25%
April 5, 2022	Exam II	25%
Feb 8, 2022	Assignment #1	3%
Feb 17, 2022	Quiz #1 (on an assigned paper & lecture 8)	6%
March 15, 2022	Assignment #2 (POPs)	3%
March 22, 2022	Assignment #3 (pesticide risk assessments)	2%
April 12, 2022	Quiz #2 (on an assigned paper & lecture 18)	6%
TBD	Final exam	30%

Grading

Letter grade calculations for this course follow the standard Department of Biological Sciences scale:

Letter Grade	Percentage out of 100	Grade Point Range	Final Grade Point
A+	90-100	4.25-4.5	4.5
A	80-90	3.75-4.24	4.0
B+	74-79	3.25-3.74	3.5
B	68-73	2.75-3.24	3.0
C+	62-67	2.25-2.74	2.5
C	56-61	2.0-2.24	2.0
D	50-55	Less than 2.0	1.0
F	Less than 50		0