

BIOL2380/ENVR2180/AGRI2180 A01

Introductory Toxicology



The University of Manitoba campuses and research spaces are located on original lands of Anishinaabeg, Ininiwak, Anisininewuk, Dakota Oyate, Dene and Inuit, and on the National Homeland of the Red River Métis.

UM recognizes that the Treaties signed on these lands are a lifelong, enduring relationship, and we are dedicated to upholding their spirit and intent. We acknowledge the harms and mistakes of the past and the present. With this understanding, we commit to supporting Indigenous excellence through active Reconciliation, meaningful change, and the creation of an environment where everyone can thrive. Our collaboration with Indigenous communities is grounded in respect and reciprocity and this guides how we move forward as an institution.

COURSE INSTRUCTOR	KEN M. JEFFRIES (he/him/his) Associate Professor W477 Duff Roblin Building ken.jeffries@umanitoba.ca Office hours: Monday, Tuesday and Thursday 4-5pm.
COMMITMENT TO EQUITY AND INCLUSION	I acknowledge the opportunities privileges granted to me during my academic career and I am keenly aware that not everyone has had or will have the same opportunities. I am committed to equity, diversity, inclusion, and anti-racism in and out of my classroom. I respect the identities of all students and strive to take action to remove barriers and ensure that all students are supported in their endeavours.
LECTURE TIME	2:30 PM – 3:45 PM
LOCATION	TR
PRE-REQUISITES	Section A01 Robert B. Schultz Lecture Theatre 172 [one of BIOL 1030, BIOL 1031, or HEAL 1502]; and [(CHEM 1100 or CHEM 1101) or (the former CHEM 1300 or the former CHEM 1301)] and [(one of CHEM 1110, CHEM 1111, CHEM 1120, CHEM 1121, CHEM 1126, or CHEM 1130) or (one of the former CHEM 1310, the former CHEM 1311, or the former CHEM 1320)]. May not be held with BIOL 2381, the former BIOL 2382, ENVR 2180, ENVR 2190, AGRI 2180 or AGRI 2190.
COURSE OBJECTIVE	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, and some major types of toxicants. This course is also taught in Environmental Science as ENVR 2180 and in Agriculture as AGRI 2180.
COURSE SYLLABI	This syllabus is your map to what exactly is expected of you this course. It's a good read, you should totally check it out! Also, you are expected to read it. Being unaware of any of the information included herein is not a valid excuse for missing any term work.
UM LEARN	This course relies heavily on UM Learn to provide you information about the lecture. All announcements will be made, notes will be posted and quizzes will be on UM Learn. It is expected that you check these pages frequently.
REQUIRED MATERIALS	All the <u>required</u> material will be posted on UM Learn. Please note that provided lecture notes cover some material in more detail than necessary (it is so if you miss a class you can figure out the material). Many topics are from the primary scientific

	literature and not covered in textbooks. You are responsible for lecture material and any other posted material. UM Learn: https://universityofmanitoba.desire2learn.com/d2l/login There are no required textbooks for this course. However, there are toxicology textbooks available for <u>free</u> 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 <i>Essentials of toxicology</i>, 3rd ed., McGraw-Hill Education LLC, 2015. (most of the first third of the course follows this textbook). Casarett & Doull's <i>Toxicology: The Basic Science of Poisons</i>. Ninth edition., McGraw-Hill Education / Medical, 2019. Supplementary readings may be provided through UM Learn over the semester.														
EMAIL POLICY	All email communication must conform to the Communicating with Students university policy. Emails are for making appointments <u>during office hours only</u>. I will not answer questions about lecture material that require complex answers via email. I am always willing to answer any of your questions, but this should be done in person. Please make sure you do the following prior to emailing me or any course instructor: • Check this Syllabus first. If you are asking about course or exam information, chances are the answers are already in this syllabus. • 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 in a signature. If I don't know who you are, I will not respond. I make every effort to respond to all properly structured emails within 24-72 hours except for weekends, holidays, or exam days. Emails sent on Fridays may not get a response until the following Monday. If you do not get a response in this timeframe, your original email may have been improperly structured, and you should have a look and reformat if necessary. Or it may be lost in my inbox, if you do not get a response within 72 hours, please send a properly structured follow up email.														
OTHER IMPORTANT DATES	<table> <tr> <td>Classes begin:</td> <td>January 6</td> </tr> <tr> <td>Last day to drop a course:</td> <td>January 19</td> </tr> <tr> <td>Last day to add a course:</td> <td>January 20</td> </tr> <tr> <td>Winter Term break:</td> <td>February 16 – 20</td> </tr> <tr> <td>VW deadline:</td> <td>March 19</td> </tr> <tr> <td>Classes end:</td> <td>April 9</td> </tr> <tr> <td>Exam Period:</td> <td>April 11 – 25</td> </tr> </table> You MUST be available for the entire exam period until the schedule is finalized.	Classes begin:	January 6	Last day to drop a course:	January 19	Last day to add a course:	January 20	Winter Term break:	February 16 – 20	VW deadline:	March 19	Classes end:	April 9	Exam Period:	April 11 – 25
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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 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 <i>Copyright Act</i> 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**

No audio, video, or photographic recording of lectures presentations is allowed in any format, openly or surreptitiously, in whole or in part without written permission of Dr. Jeffries. Course materials (both paper and digital) are solely for the participant's private study and may not be used for any other purpose including posting to a note-sharing website.

**LECTURE
SCHEDULE**

This *tentative* lecture 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. If a topic goes longer than during one lecture time slot, we will pick it up where we left off in the next lecture.

<u>Date</u>	<u>Topic</u>
Jan. 6	1 - Introduction to Toxicology
Jan. 8	No Class
Jan. 13 & 15	2 - Dose-Response Curves and Bioassays
Jan. 20	3 - Factors Influencing Toxicity
Jan. 22 & 27	4 - Disposition: Absorption, Distribution, Biotransformation, Elimination
Jan. 29	5 - Cellular and Tissue Targets of Toxicity
Feb. 3 & 10	6 - Metals
Feb. 5	Midterm #1 (Lecture topics 1-5)
Feb. 12 & 24	7 - Persistent Organic Pollutants
Feb. 17 & 19	Winter Term Break
Feb. 26 & Mar. 3	8 - PAHs, Oil Spills and Fracking
Mar. 5 & 10	9 - Pesticides and Herbicides
Mar. 12	10 - Causality in Ecotoxicology (Dr. Mark Hanson, U of M)
Mar. 17	11 - Air Pollution
Mar. 19	Midterm #2 (Lecture topics 6-11)
Mar. 24	12 - Solvents and Volatile Organic Compounds
Mar. 26	13 - Wastewater Effluent in Freshwater Ecosystems
Mar. 31	14 - Food Toxicology
Apr. 2	15 - Toxicogenomics
Apr. 7	16 - Toxicology in the Arctic
Apr. 9	17 - Tentative: Guest speaker or wrap up things

COURSE EVALUATION	TESTS/EXAMS: a. There will be two non-cumulative midterm exams (Feb. 5th, Mar. 19th) and a cumulative final exam that is scheduled by the University. The exams will consist of multiple choice and potentially true or false questions. The two midterm exams will be closed book, in person and 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 section of the lectures not covered on the midterms, and the other part will be comprised of questions that cover content from the entire course. b. If you miss one of the midterms, you <u>must fill out and submit a self declaration form</u> using the Power App (link is provided in schedule A posted on UM Learn) <u>prior to the exam time</u>. You may write a deferred exam (will occur during offices hours the following week) only if you notify me that you will miss the exam <u>before</u> the exam. There will only be one opportunity to write a deferred exam. Failure to write a deferred exam will result in the weight of the exam being added to the final exam. c. You <u>must</u> write the final exam to pass the course. d. If you miss the final exam, you must apply to your <u>home faculty</u> to qualify to write a deferred final exam. QUIZZES/ASSIGNMENTS: a. There will be 5 short quizzes this semester that will be based off an assigned paper and material from the lecture notes. The quizzes will be on UM Learn and be made available for a period of time after the scheduled lecture that day. You will need to use the Respondus Lockdown Browser function while writing the quiz. You will have up to 2 attempts to complete the quiz (if you want, and it will be different) and the average score will be your grade for the quiz. b. You <u>must</u> complete and submit the quiz to receive a grade. c. Failure to write the deferred quiz will result in the weight being added to the final exam. <table><tr><th>Date:</th><th>Assessment Tool</th><th>Value</th></tr><tr><td>Jan. 22, 2025</td><td>Quiz #1 (on an assigned paper and dose-response curves lecture notes)</td><td>2%</td></tr><tr><td>Feb. 5th, 2025</td><td>Midterm #1</td><td>30%</td></tr><tr><td>Feb. 10, 2025</td><td>Quiz #2 (on an assigned paper & metals lecture notes)</td><td>2%</td></tr><tr><td>Mar. 5, 2025</td><td>Quiz #3 (on an assigned paper and POPs lecture notes)</td><td>2%</td></tr><tr><td>Mar. 19th, 2025</td><td>Midterm #2</td><td>30%</td></tr><tr><td>Mar. 31, 2025</td><td>Quiz #4 (on an assigned paper & pesticide/herbicides lecture notes)</td><td>2%</td></tr><tr><td>Apr. 7, 2025</td><td>Quiz #5 (on an assigned paper & toxicogenomics lecture notes)</td><td>2%</td></tr><tr><td>TBD</td><td>Final exam</td><td>30%</td></tr></table>	Date:	Assessment Tool	Value	Jan. 22, 2025	Quiz #1 (on an assigned paper and dose-response curves lecture notes)	2%	Feb. 5th, 2025	Midterm #1	30%	Feb. 10, 2025	Quiz #2 (on an assigned paper & metals lecture notes)	2%	Mar. 5, 2025	Quiz #3 (on an assigned paper and POPs lecture notes)	2%	Mar. 19th, 2025	Midterm #2	30%	Mar. 31, 2025	Quiz #4 (on an assigned paper & pesticide/herbicides lecture notes)	2%	Apr. 7, 2025	Quiz #5 (on an assigned paper & toxicogenomics lecture notes)	2%	TBD	Final exam	30%
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ALLOWABLE RESOURCES FOR ASSESSMENTS	You are free to discuss the questions I pose in class with your neighbours. My hope is that you benefit from the social learning aspect of these discussions. UM Learn quizzes and assignments are open book but you can consult ONLY your lecture notes and relevant material during the assessments. You must submit your own quiz or assignment to get a mark. All in-person tests will be closed book. Do not post answers to any assignment in any format. Doing so makes you accomplice to plagiarism and you can be disciplined for it. When discussing assignments with others, ask questions, give advice, but never give your work to another student.																											

GRADING	Grades are assigned at the end of the year by converting your cumulative percentage mark into a letter grade, using the following table (values rounded to the nearest decimal place). Slight modifications may be made to compensate for a class average judged to be too low or too high. <table><tr><th>Letter Grade</th><th>Percentage out of 100</th><th>Final Grade Point</th></tr><tr><td>A+</td><td>90-100</td><td>4.5</td></tr><tr><td>A</td><td>80-89</td><td>4.0</td></tr><tr><td>B+</td><td>74-79</td><td>3.5</td></tr><tr><td>B</td><td>68-73</td><td>3.0</td></tr><tr><td>C+</td><td>62-67</td><td>2.5</td></tr><tr><td>C</td><td>56-61</td><td>2.0</td></tr><tr><td>D</td><td>50-55</td><td>1.0</td></tr><tr><td>F</td><td>Less than 50</td><td>0</td></tr></table>	Letter Grade	Percentage out of 100	Final Grade Point	A+	90-100	4.5	A	80-89	4.0	B+	74-79	3.5	B	68-73	3.0	C+	62-67	2.5	C	56-61	2.0	D	50-55	1.0	F	Less than 50	0
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EXPECTATIONS YOU CAN EXPECT ME TO...	• <u>BE AVAILABLE</u> after class for questions. • <u>BE AVAILABLE</u> for you to ask questions if you come to office hours or by booking an appointment time via email. • <u>HAVE LECTURE SLIDES POSTED</u> to UM Learn before lecture at the latest. • <u>ANSWER YOUR EMAILS</u> as quickly as I can. If it gets lost in the many emails I get, send me another email <u>after 72 hours</u> to follow up.																											
EXPECTATIONS I WILL EXPECT YOU TO...	• <u>ATTEND CLASS.</u> 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 may cover material in class that is <i>not</i> going to be in the notes, so be there to learn it!! • <u>ASK QUESTIONS.</u> 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, please come talk to me after class or during office hours. 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. • <u>SEEK HELP</u> if you are experiencing difficulty, the earlier the better! • Use <u>cellphones and laptops in lecture</u> <i>only if you are following along with the lecture slides</i>. Doing other things on your electronic devices is very distracting to your learning <i>and</i> to those around you. • <u>BE RESPECTFUL</u> to everyone involved with the course and your peers <u>at all times</u>.																											
STUDENT 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. Student Accessibility Services https://umanitoba.ca/student/accessibility/about-us.html 520 University Centre 204 474 7423 • Student_accessibility@umanitoba.ca																											

ACADEMIC INTEGRITY:	The Faculty of Science and The University of Manitoba regard acts of academic dishonesty in quizzes, tests, examinations, laboratory reports or assignments as serious offences and may assess a variety of penalties depending on the nature of the offence. Acts of academic dishonesty include, but are not limited to, bringing unauthorized materials into a test or exam, copying from another individual, using answers provided by tutors, plagiarism, and examination personation. It is YOUR responsibility to know about Academic Integrity. Penalties that may apply, as provided for under the University of Manitoba's Student Discipline By-Law, range from a grade of zero for the assignment or examination, failure in the course, to expulsion from the University. The Student Discipline By-Law may be accessed at: http://umanitoba.ca/admin/governance/governing_documents/students/student_discipline.html Information regarding academic integrity from the University of Manitoba can be found at: http://umanitoba.ca/academicintegrity/ The Faculty of Science also has a site which contains information about regulations, processes and penalties regarding cheating, plagiarism and other forms of academic dishonesty. Please see: https://umanitoba.ca/science/student-experience/academic-integrity All Faculty members have been instructed to be vigilant and report all incidents of academic dishonesty to the Head of the Department. Please refer to the UM's stance on AI at the following link. https://umanitoba.ca/centre-advancement-teaching-learning/integrity/artificial-intelligence
OTHER STUDENT RESOURCES	See schedule A that has been posted on UM Learn for useful resources and policies.