

BIOL2380/ENVR2180/AGRI2180 A01

Introductory Toxicology



University
of Manitoba

faculty of SCIENCE
discover the unknown + invent the future

The University of Manitoba campuses are located on original lands of the Anishinaabeg, Cree, Ojibwe-Cree, Dakota, and Dene peoples, and on the homeland of the Red River Métis. We respect the Treaties that were made on these territories, we acknowledge the harms and mistakes of the past, and we dedicate ourselves to move forward in partnership with Indigenous communities in a spirit of Reconciliation and collaboration.

COURSE INSTRUCTOR	KEN M. JEFFRIES (he/him/his) Associate Professor W477 Duff Roblin Building ken.jeffries@umanitoba.ca Please use email to schedule an appointment to meet.
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 TR Section A01
LOCATION	Robert B. Schultz Lecture Theatre 172
PRE-REQUISITES	[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)].
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.
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 totally check it out. Being unaware of any of the information included herein is not a valid excuse for missing any term work.
UMLEARN	This course relies heavily on UM Learn to provide you information about the lecture AND labs. Note that you will have two separate pages for each. 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. 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).

	<p>Casarett & Doull's <i>Toxicology: The Basic Science of Poisons</i>. Ninth edition., McGraw-Hill Education / Medical, 2019.</p> <p>Supplementary readings may be provided through UM Learn over the semester.</p>														
EMAIL POLICY	<p>All email communication must conform to the Communicating with Students university policy.</p> <p>Emails are for making appointments only. 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:</p> <ul style="list-style-type: none"> • 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 and not textese. 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. <p>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.</p>														
OTHER IMPORTANT DATES	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 35%;">Classes begin:</td> <td>January 8th</td> </tr> <tr> <td>Last day to drop a course:</td> <td>January 19th</td> </tr> <tr> <td>Last day to add a course:</td> <td>January 22nd</td> </tr> <tr> <td>Winter Term break:</td> <td>February 19th – 23rd</td> </tr> <tr> <td>VW deadline:</td> <td>March 20th</td> </tr> <tr> <td>Classes end:</td> <td>April 10th</td> </tr> <tr> <td>Exam Period:</td> <td>April 12th – 26th</td> </tr> </table> <p>You MUST be available for the entire exam period until the schedule is finalized.</p>	Classes begin:	January 8 th	Last day to drop a course:	January 19 th	Last day to add a course:	January 22 nd	Winter Term break:	February 19 th – 23 rd	VW deadline:	March 20 th	Classes end:	April 10 th	Exam Period:	April 12 th – 26 th
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USING COPYRIGHTED MATERIAL	<p>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.</p>														
RECORDING CLASS LECTURES	<p>No audio, video, or photographic recording of lectures or laboratory 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.</p>														

**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. 9	1 - Introduction to Toxicology
Jan. 11 & 16	2 - Dose-Response Curves and Bioassays
Jan. 18	3 - Factors Influencing Toxicity
Jan. 23 & 25	4 - Disposition: Absorption, Distribution, Biotransformation, Elimination
Jan. 30	5 - Cellular and tissue targets of toxicity
Feb. 1 & 8	6 - Metals
Feb. 6	Midterm #1 (Lecture topics 1-5)
Feb. 13 & 15 & 27	7 - Persistent Organic Pollutants
Feb. 20 & 22	Winter Term Break
Feb. 29	8 - Wastewater effluent and surface run-off in freshwater (Dr. Analisa Lazaro-Côté, U of M)
Mar. 5 & 7	9 - Air Pollution
Mar. 12	10 - Causality in Ecotoxicology (Dr. Mark Hanson, U of M)
Mar. 14	Midterm #2 (Lecture topics 6-9)
Mar. 19	11 - Pesticides
Mar. 21	12 - Solvents and Volatile Organic Compounds
Mar. 26	13 - Food
Mar. 28	14 - Toxicogenomics
Apr. 2	15 – Field Experimentation in Ecotoxicology (Dr. Jose Luis Rodriguez Gil, IISD-ELA)
Apr. 4	16 - Oil Spills and Fracking
Apr. 9	17 - Toxicology in the Arctic

COURSE EVALUATION	<p>TESTS/EXAMS:</p> <p>a. There will be two non-cumulative midterm exams (Feb. 6th, Mar. 14th) and a final exam that is scheduled by the University. The exams will consist of multiple choice and 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.</p> <p>b. If you miss one of the midterms, you <u>must fill out and submit a self declaration form</u> to me. You may write a deferred exam (date to be announced, but will occur during offices hours the following week) only if you notify me that you will miss the exam before or on the day of the exam. Failure to write a deferred exam will result in the weight of the exam being added to the final exam.</p> <p>c. You <u>must</u> write the final exam to pass the course.</p> <p>d. If you miss the final exam, you must apply to your <u>home faculty</u> to qualify to write a deferred final exam.</p> <p>QUIZZES/ASSIGNMENTS:</p> <p>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 have up to 2 attempts to complete the quiz (if you want) and the average score will be your grade for the quiz.</p> <p>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.</p> <p>c. You <u>must</u> complete and submit the quiz or assignment to receive a grade.</p> <p>d. If you miss one of the quizzes or assignments, you <u>must fill out and submit a self declaration form</u> to me. If you make arrangements with me ahead of time, you may write a deferred quiz or assignment (date to be announced). Failure to write the deferred quiz or assignment will result in the weight being added to the final exam.</p> <table border="1"> <thead> <tr> <th>Date:</th> <th>Assessment Tool</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>Jan. 25th, 2024</td> <td>Assignment #1 (dose-response curves)</td> <td>2%</td> </tr> <tr> <td>Feb. 6th, 2024</td> <td>Midterm #1</td> <td>27%</td> </tr> <tr> <td>Feb. 15, 2024</td> <td>Quiz #1 (on an assigned paper & metals topic)</td> <td>3%</td> </tr> <tr> <td>Mar. 5, 2024</td> <td>Assignment #2 (POPs)</td> <td>2%</td> </tr> <tr> <td>Mar. 14th, 2024</td> <td>Midterm #2</td> <td>27%</td> </tr> <tr> <td>Mar. 26, 2024</td> <td>Assignment #3 (pesticide risk assessments)</td> <td>2%</td> </tr> <tr> <td>Apr. 4, 2024</td> <td>Quiz #2 (on an assigned paper & toxicogenomics topic)</td> <td>3%</td> </tr> <tr> <td>TBD</td> <td>Final exam</td> <td>34%</td> </tr> </tbody> </table>	Date:	Assessment Tool	Value	Jan. 25th, 2024	Assignment #1 (dose-response curves)	2%	Feb. 6th, 2024	Midterm #1	27%	Feb. 15, 2024	Quiz #1 (on an assigned paper & metals topic)	3%	Mar. 5, 2024	Assignment #2 (POPs)	2%	Mar. 14th, 2024	Midterm #2	27%	Mar. 26, 2024	Assignment #3 (pesticide risk assessments)	2%	Apr. 4, 2024	Quiz #2 (on an assigned paper & toxicogenomics topic)	3%	TBD	Final exam	34%
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ALLOWABLE RESOURCES FOR ASSESSMENTS	<p>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.</p> <p>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.</p> <p>All in-person tests will be closed book.</p> <p>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.</p>																											

<p>GRADING</p>	<p>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.</p> <table border="1"> <thead> <tr> <th>Letter Grade</th> <th>Percentage out of 100</th> <th>Final Grade Point</th> </tr> </thead> <tbody> <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> </tbody> </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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<p>EXPECTATIONS YOU CAN EXPECT ME TO...</p>	<ul style="list-style-type: none"> • <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. 																											
<p>EXPECTATIONS I WILL EXPECT YOU TO...</p>	<ul style="list-style-type: none"> • <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>. 																											
<p>STUDENT ACCESSIBILITY SERVICES</p>	<p>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.</p> <p>Student Accessibility Services https://umanitoba.ca/student/accessibility/about-us.html 520 University Centre 204 474 7423</p> <ul style="list-style-type: none"> • Student_accessibility@umanitoba.ca 																											

OTHER STUDENT RESOURCES

A list of University governing documents pertaining to students can be found at: http://umanitoba.ca/admin/governance/governing_documents/students/index.html

Academic Recourses

Various academic resources are available to students including the Science and Technology Library, which can be accessed at: <https://umanitoba.ca/libraries/sciences-technology-libraries>

Health & Mental Health Resources

Students with Health and/or Mental Health issues may seek advice and/or help from the Student Counselling Centre: <http://umanitoba.ca/student/counselling/>
Student Accessibility Services: <https://umanitoba.ca/student/accessibility/about-us.html>
and/or University Health Services: <http://umanitoba.ca/student/health/>

Sexual Violence Resource Centre

The Sexual Violence Resource Centre, located at 537 UMSU University Centre on the Fort Garry campus, provides support, resources, information and referral services for any student, faculty or staff member who has been affected by sexual violence. <https://umanitoba.ca/student-supports/sexual-violence-support-and-education>

Copyright and Intellectual Property Resources

Copyrights and intellectual property must be respected by all students. For more information, please refer to the copyright office: <http://umanitoba.ca/copyright/>

Respectful Behaviour Resources

Students are expected to act in a respectful manner. Policies regarding respectful work and learning environment and sexual assault can be found at: http://umanitoba.ca/admin/governance/governing_documents/community/230.html

Final Examinations, Grades and Grade Appeals Resources

Final examination and grades policies can be found at: http://umanitoba.ca/admin/governance/governing_documents/academic/1299.html
Additional resources regarding examinations can be found at: <http://umanitoba.ca/faculties/science/undergrad/resources/Academic%20Resources%20index.html>
Students wishing to appeal their term work grade can do so through the Registrar's office. A fee is charged for each appeal. More information can be found at: <http://umanitoba.ca/student/records/grades/690.html>
Final exam material will not be returned to you but arrangements can be made to see it. To view your final examination, please check with the department offering the course for policies. More information can be found at: <http://umanitoba.ca/faculties/science/undergrad/resources/895.html>
To appeal your final grade, you can initiate the process at the Registrar's office. A fee will be charged for each appeal. See the Registrar's office for more information: <http://umanitoba.ca/student/records/>

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:

<https://umanitoba.ca/student-supports/academic-supports/academic-integrity>

Information from the Faculty of Science regarding Cheating and Plagiarism can be found at

<https://www.sci.umanitoba.ca/students/undergraduate-students/academic-resources/academic-integrity-2/>

All Faculty members (and their teaching assistants) have been instructed to be vigilant and report all incidents of academic dishonesty to the Head of the Department.
