

University of Guelph
TOX*4000 - Medical Toxicology
FALL 2016 COURSE OUTLINE

Class Time: Monday, Wednesday, Friday: 9:30 a.m. to 10:20 a.m.

Class Location: Animal Science & Nutrition (ANNU) Building, Room 156

Instructor: Dr. Craig Bailey

Office: Ontario Veterinary College (OVC) Main Building, Room 2602

E-mail: baileyc@uoguelph.ca

Telephone: 519-824-4120 extension 54954

Office Hours: Monday 1-2 pm and Wednesday 2-3 pm

Teaching Assistant: Frances Simbulan

E-mail: fsimbula@uoguelph.ca

E-mail Policy: We will strive to respond to emails within two business days.

Recommended Textbook: Casarett & Doull's Toxicology: The Basic Science of Poisons, 8th ed.

Physical and electronic copies of the textbook are on reserve at the library.

Final Exam: Saturday December 10, 2016, from 2:30 pm to 4:30 pm. Location to be determined.

Additional Lecturers:

Dr. Bettina Kalisch, Department of Biomedical Sciences, Ontario Veterinary College

Dr. Niel Karrow, Department of Animal Biosciences, Ontario Agricultural College

Objective (from the undergraduate calendar): This course will focus on the toxicology of mammalian body systems with emphasis on dose-response, mechanisms and the sites of action of major groups of chemical toxicants and biological toxins. The course is designed for students majoring in Bio-Medical Science, Biomedical Toxicology and Toxicology.

Prerequisite: BIOM*3090 - Principles of Pharmacology

Course Summary: The goal of this course is to provide students with a detailed understanding of the effects that toxicants may have on mammalian body systems. The initial series of classes will focus on toxicological principles including toxicokinetics and cellular mechanisms of toxicity. The remainder of the classes will focus on the toxicology of major non-organ and organ systems, including the heart, brain, lungs, skin and immune system. Detailed discussion of toxicological mechanisms and prototypical example toxicants will be explored. Information will be provided in lecture format for a short series of lectures, followed by a Practical Application class that will be led by groups of students. The objective of the Practical Application group presentation is for students to present a media report that highlights a "real-world" application of a toxicological topic, in addition to primary research literature related to this same topic.

Evaluation: The final grade in this course will be determined by five main components:

(1) Practical Application Group Presentations (20% of final grade)

Students will form groups of 3-4 people and deliver a “Practical Application” presentation within class on their assigned topic and day. There will be two group presentation per assigned day. Presentation will be related to the corresponding (preceding) series of lectures. Presentations should be no longer than 15 minutes total, followed by 5 minutes of questions, answers and discussion involving the whole class. The format for the presentation is as follows:

(i) Media Report

Groups will present one media report from the past five years (2011-2016) that can be taken from a newspaper, magazine, or reputable website. The purpose of this presentation is to show a ‘real-world’ application of a medical toxicology topic. The report will be related to the corresponding (preceding) lecture series topic(s), and can be related to the lectures in any way. As a guide, aim to have this part of the presentation take no longer than 5 minutes.

Example media reports could include discussion on: the regulation of new e-cigarettes, the recall of a drug from the marketplace because of adverse effects, or effects of pollution smog on human respiratory systems.

The format for the media report should include:

- Introduction / background information
- Description of the story that is being reported
- Significance to people (why does this story matter to us?)

(ii) Primary Literature Report

Groups will present one piece of primary literature that has been published as a research paper in a scientific journal. These can describe either basic (lab bench / laboratory) or clinical (human / animal) studies, so long as they have been published in reputable journals. The paper can be related to the Media Report in any way, but the more closely they relate to the story in the report, the better. As a guide, aim to have this part of the presentation take no longer than 10 minutes. It can be a challenge to present a research paper in 10 minutes, so pay attention to your timing.

The format for each literature report should include:

- Introduction / background information
- Research methods employed
- Results
- Conclusion / discussion (including relevance to the media report)

You may insert figures/data from the primary research papers, or from other research papers, into your presentation. Each group will be evaluated for their ability to initiate and continue a discussion with the class at the end of the presentation, so it will be good to have a few questions and discussion topics ready at the end of the slide show.

Each group will choose its media report and its primary research paper for presentation. These should all be forwarded to the instructor for approval no later than one week before your presentation. Other notes for the presentations:

- Each group is responsible for managing its timing. The presentation must be completed within 15 minutes and marks will be deducted if it is too short or too long by more than 2 minutes. The instructor will moderate timing for the discussions.
- The presentation slides should be made using PowerPoint. You may run your slides off of your own computer or from a USB drive plugged into the classroom computer.
- The division of labour will be decided among group members, however all group members must speak during the presentation.
- Each member of the group will receive an equal grade. If there are significant issues with the contribution of an individual group member, this must be brought to the instructor's attention before the presentation date.
- Presentations will be evaluated for content, style, timing and teamwork, in addition to the effort made to foster good class discussion.

(2) Peer Evaluations of Group Presentations (5% of final grade)

Students will each (individually) prepare and submit written evaluations/critiques for two Practical Application group presentations. You can choose which presentations to critique but cannot critique your own group's presentation. One critique is required for the first half of the semester (before the midterm examination) and one critique is required for the second half of the semester (after the midterm examination). Critiques are to be submitted by Dropbox on the CourseLink website, within one week of the presentation being evaluated. The penalty for submitting critiques after that date will be 10% per day deducted from the grade for this assignment. Each evaluation is worth 2.5% of your final grade and will be graded as pass/fail so long as the requirements below are all met.

Each critique should include:

- A brief summary of the presentation in approximately 3-5 sentences.
- One aspect of the presentation that you liked, and explain why you liked it.
- One piece of constructive criticism for the group.
- Once question that you would pose to the group.

Peer evaluations will be forwarded to the presenting group anonymously (without your name).

(3) Written Evaluation of a Published Research Manuscript (20% of final grade)

Students will each (individually) prepare and submit a written evaluation/critique of a published research manuscript that is related to any topic in this course. The selected manuscript can describe either a basic (lab bench / laboratory) or clinical (human / animal) study, so long as it has been published in a reputable journal. This report should be no longer than 4 double-spaced pages and is to be submitted electronically using Dropbox on the CourseLink website by 11:59 p.m. on Friday, November 25. You cannot select a manuscript that has been presented in a Practical Application group presentation. Your selected manuscript should be emailed to the instructor for approval by Friday, November 4, and you will receive a reply email within one week of your email.

Each written evaluation of a research manuscript should be written in your own words and should include a description of the following sections of the paper, along with your critique:

- Introduction / background information
- Methods employed
- Results
- Conclusion / discussion
- Your critique: Provide your impression of the research study and manuscript, making sure to include: (i) two things that you liked about the research study and why you liked them; and (ii) two aspects of the study/experiments that you feel could be improved, along with your suggestions for improvement.

The penalty for submitting written evaluations after the deadline will be 10% per day deducted from the grade for this assignment. Figures and references may be included in this report, and do not count in the 4 page of maximum writing; these should be placed after your main text.

(4) Midterm Examination (20% of final grade)

A midterm examination will be held in class on Friday, October 21. This examination will cover material presented in all lectures and in all student group presentations up to and including Friday, October 14.

(5) Final Examination (35% of final grade)

A final examination will be held from 2:30 p.m. to 4:30 p.m. on Saturday, December 10, 2016. The location will be announced on the News board of the CourseLink website for this course once it is available. This examination will be non-cumulative, so it will cover all material not included in the midterm examination, i.e., from class on Monday, October 17 onward. Material from lectures and student group presentations will be tested in this examination.

Grading Scheme:

Grades in the course will be determined according to the following format:

20%	Practical Application group presentations
5%	Two peer evaluations of group presentations
20%	Written evaluation of a research manuscript
20%	Midterm examination
35%	Final examination
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100%	Final Grade

Summary of Important Dates:

Sept 9 (in class during the first class)	Introduction and overview of class format; How to sign-up for group presentation dates
Oct 21 (in class)	Midterm Examination
Nov 4	40 th Class day
Nov 25 (via dropbox by 11:59 p.m.)	Written evaluation of a research manuscript due
Dec 10 (location TBD)	Final Examination

PLEASE NOTE AND READ CAREFULLY THE FOLLOWING 8 COMMUNICATIONS - THEY ARE ABOUT VERY IMPORTANT UNIVERSITY REGULATIONS:

(1) E-mail Communication

As per university regulations, all students are required to check their <mail.uoguelph.ca> e-mail account regularly: e-mail is the official route of communication between the University and its students. If you email me directly, I will strive to reply within two business days (weekdays).

(2) 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. [See the undergraduate calendar for information on regulations and procedures for Academic Consideration.](#)

(3) Drop Date

The last date to drop one-semester courses, without academic penalty, is **Friday, November 6**. For [regulations and procedures for Dropping Courses, see the Undergraduate Calendar.](#)

(4) 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.

(5) 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 Centre for Students with Disabilities as soon as possible.

For more information, contact CSD at 519-824-4120 ext. 56208 or email csd@uoguelph.ca or see the website: <http://www.uoguelph.ca/csd/>

(6) 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.

[The Academic Misconduct Policy is detailed in the Undergraduate Calendar.](#)

(7) Recording of Materials

Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the 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.

(8) Resources

The [Academic Calendars](#) are the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs.

Class schedule

(1) Class days for Practical Application group presentations are shaded in grey

(2) The last class is Friday, December 2

Class	Date	Day	Topic	Instructor
1	Sept 9	F	Introduction and Course Overview	Bailey
2	Sept 12	M	Toxicology Principles and Risk Assessment	Bailey
3	Sept 14	W	Toxicokinetics: ADME	Bailey
4	Sept 16	F	Biotransformation: Phase 1 Reactions	Bailey
5	Sept 19	M	Biotransformation: Phase 2 Reactions	Bailey
6	Sept 21	W	Toxicodynamics: Mechanisms of Toxicity	Bailey
7	Sept 23	F	Dermal Toxicology	Karrow
8	Sept 26	M	Dermal Toxicology	Karrow
9	Sept 28	W	Dermal Toxicology	Karrow
10	Sept 30	F	Dermal Toxicology Student Presentations	Bailey
11	Oct 3	M	Principles/ADME/Mechanisms Student Presentations	Bailey
12	Oct 5	W	Respiratory System Toxicology	Bailey
13	Oct 7	F	Respiratory System Toxicology Student Presentations	Bailey
	Oct 10	M	Thanksgiving - No Class	
14	Oct 12	W	Gastrointestinal Toxicology	Bailey
15	Oct 14	F	Gastrointestinal Toxicology Student Presentations	Bailey
16	Oct 17	M	Cardiac Toxicology	Bailey
17	Oct 19	W	Vascular and Blood Toxicology	Bailey
18	Oct 21	F	Midterm Examination (in-class)	
19	Oct 24	M	Cardiovascular/Blood Toxicology Student Presentations	Bailey
20	Oct 26	W	Hepatic Toxicology	Bailey
21	Oct 28	F	Hepatic Toxicology Student Presentations	Bailey
22	Oct 31	M	Nephrological Toxicology	Bailey
23	Nov 2	W	Nephrological Toxicology Student Presentations	Bailey
24	Nov 4	F	Immune System Toxicology	Bailey
25	Nov 7	M	Immune System Toxicology	Bailey
26	Nov 9	W	Immune System Toxicology Student Presentations	Bailey
27	Nov 11	F	Genetic Toxicology and Carcinogenesis	Bailey
28	Nov 14	M	Genetic Toxicology / Carcinogenesis Student Presentations	Bailey
29	Nov 16	W	Neurotoxicology	Kalisch
30	Nov 18	F	Neurotoxicology	Kalisch
31	Nov 21	M	Neurotoxicology	Kalisch
32	Nov 23	W	Neurotoxicology Student Presentations	Bailey
33	Nov 25	F	Reproductive & Developmental Toxicology	Bailey
34	Nov 28	M	Reproductive & Developmental Toxicology	Bailey
35	Nov 30	W	Reproductive & Developmental Toxicology	Bailey
36	Dec 2	F	Reproductive & Developmental Tox. Student Presentations	Bailey
EXAM	Dec 10	S	Final Exam 2:30 pm to 4:30 pm	Bailey