

## **Pharmacology 4660a: Human Toxicology**

### **Fall Term 2017**

Human Toxicology is the science dedicated to the interactions between xenobiotics (foreign chemicals) and the human body, leading to acute or chronic adverse events. Adverse responses to drugs and chemicals are a major source of morbidity and mortality in today's society. Humans, by contaminating the environment, by consuming drugs and by working with potent toxins, are exposed to major health risks. Yet, despite the major effects of drugs and chemicals on human health, very few universities teach this field in a focused and systematic fashion. A substantial proportion of graduating students in science will head to careers in government health departments and the pharmaceutical and health industries. Many of them are ill prepared to deal with various aspects of human toxicology and drug safety. This course in Human Toxicology aims at diminishing this gap.

#### **Lectures:**

Mondays 2:30 - 4:30p.m. North Campus Building Room 113

#### **Requisites:**

Prerequisite(s): Pharmacology 3620 or permission of the Department.

#### **Senate regulation regarding the student's responsibility regarding requisites:**

Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

#### **Accessibility Statement**

*Please contact the course instructor if you require material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x 82147 for any specific question regarding an accommodation.*

#### **Instructor Information**

Dr. Brad Urquhart (Course Manager)

E-mail: [Brad.Urquhart@schulich.uwo.ca](mailto:Brad.Urquhart@schulich.uwo.ca)

Office: Dental Sciences Building Room 2011

Meetings by appointment please e-mail: [Brad.Urquhart@schulich.uwo.ca](mailto:Brad.Urquhart@schulich.uwo.ca)

Dr. Doreen Matsui ([Doreen.Matsui@lhsc.on.ca](mailto:Doreen.Matsui@lhsc.on.ca))

Dr. Ute Schwarz ([Ute.Schwarz@lhsc.on.ca](mailto:Ute.Schwarz@lhsc.on.ca))

Dr. Connie Mackenzie ([Constance.Mackenzie@sjhc.london.on.ca](mailto:Constance.Mackenzie@sjhc.london.on.ca))

## **OWL:**

Students with OWL issues should contact ITS Support Centre at 519 661-3800 or visit <http://www.uwo.ca/its/helpdesk/>

## **Course Syllabus**

### **Course Objectives:**

- Review of pharmacological and toxicological principles of adverse human effects of xenobiotics.
- Review of principles of organ and non-organ directed toxicity.
- Review of principles of management of human poisoning.
- Review of principles of drug safety in humans.

### **Learning Outcomes**

After completion of this course, successful students will be able to:

1. Identify and explain the toxicokinetics, mechanism of toxicity and develop a treatment plan for any assigned toxic compound.
2. Analyze and interpret data from literature publications in toxicology and explain the methods used to generate the data.
3. Write a succinct, clear and grammatically correct report on an assigned toxicant.

### **Course Topics and Lecture Schedule:**

Week 1: September 11<sup>th</sup>, 2017: Dr. Brad Urquhart

**Principles of Toxicology, Toxicokinetics, and Risk Assessment**

Week 2: September 18<sup>th</sup>, 2017: Dr. Brad Urquhart

**Toxic Responses of the Liver: Hepatotoxicology**

Week 3: September 25<sup>th</sup>, 2017: Dr. Brad Urquhart

**Toxic Responses of the Kidney: Renal Toxicology**

Week 4: October 2<sup>nd</sup>, 2017: Dr. Brad Urquhart

**Toxic Responses of the Heart: Cardiovascular Toxicology**

Week 5: October 9<sup>th</sup>, 2017: **Fall Study Break – NO CLASS**

Week 6: October 16<sup>th</sup>, 2017: Dr. Ute Schwarz

**Endocrine Toxicology**

Week 7: October 23<sup>rd</sup>, 2017: **MIDTERM TEST**

- Covers material up to and including October 16<sup>th</sup>.

- Worth 40% of final course grade.

Week 8: October 30<sup>th</sup>, 2017: Dr. Ute Schwarz

**Pharmacogenetics and Toxicology**

Week 9: November 6<sup>th</sup>, 2017: Dr. Ute Schwarz

**Adverse Drug Reactions: Mechanisms and Examples**

Week 10: November 13<sup>th</sup>, 2016: Dr. Doreen Matsui

**Maternal-Fetal Toxicology**

Week 11: November 20<sup>th</sup>, 2017: Dr. Brad Urquhart

**Forensic Toxicology**

Week 12: November 27<sup>th</sup>, 2017: Dr. Brad Urquhart

**Environmental Toxicology**

Week 13: December 4<sup>th</sup>, 2017: Dr. Connie Mackenzie

**The Toxicology of Poisoning**

**Course Materials**

**Textbook:** There is no textbook for this course. Readings will be provided in the form of articles each week via OWL.

**Evaluations:**

<b>Component</b>	<b>Date</b>	<b>% of Final Mark</b>
Toxicology Report	October 2, 2017 @ 2:30PM	15%
Midterm test	October 23, 2017	40%
Final exam	TBA (Dec 2017)	45%

The examination format will consist of fill in the blank and both short and long answer questions. Questions will be derived from the lecture slides, lecture content described or assigned in class and from the assigned reading. The final examination will be minimally cumulative.

In accordance with the policies of Western, at least 15% of your final grade will be available to you at least three days prior to the drop deadline. This is contingent on you completing assignments by their due date and writing tests and exams as scheduled.

[https://www.uwo.ca/univsec/pdf/academic\\_policies/exam/evaluation\\_undergrad.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/exam/evaluation_undergrad.pdf)

**Toxicology Report (15% of final grade)**

Each student will be required to write a toxicology report. Students will be able to sign up for the topic of this report on OWL by going to the "Wiki" tool on the left side of the OWL page. The report should be no longer than two typewritten, single spaced pages with 12-point font and 2 cm margins. One additional page should be added for figure(s) (generated

by the student or from the literature) that are relevant to the report. You should have at least one figure that summarizes your toxicology report. An unlimited number of pages may be added to the end for references. The report should contain information on: mechanism of toxicity, toxicokinetics, stages/signs/symptoms of toxicity, treatment plan and/or antidote (if appropriate). The report will be evaluated based on succinct, clear, concise and grammatically correct English in addition content presented. Late assignments will be penalized 10% of the assignment grade per day. Turnitin service will be used to confirm the originality of all reports against literature sources and peer reports. It is your responsibility to check your turnitin report and make sure that the similarity report is "blue or green". Similarity reports showing yellow, red or orange will be deemed plagiarism and will be investigated and subjected to a penalty, most often a grade of zero.

## **Additional Information/Statements**

### **Policy on Rounding and Bumping of Grades**

Across the Basic Medical Sciences Undergraduate Education programs and within the department of ***Physiology and Pharmacology*** we strive to maintain high standards that reflect the effort that both students and faculty put into the teaching and learning experience during this course. All students will be treated equally and evaluated based only on their actual achievement. **Final grades** in this course, irrespective of the number of decimal places used in marking individual assignments and tests, will be calculated to one decimal place and rounded to the nearest integer, e.g., 74.4 becomes 74, and 74.5 becomes 75. Marks WILL NOT be bumped to the next grade or GPA, e.g. a 79 will NOT be bumped up to an 80, an 84 WILL NOT be bumped up to an 85, etc. The mark attained is the mark you achieved and the mark assigned; requests for mark "bumping" will be denied.

### **Policy on Plagiarism**

The Department of Physiology and Pharmacology strongly condemns plagiarism. Plagiarism is the "act or instance of copying or stealing another's words or ideas and attributing them as ones own." (Excerpted from Black's Law Dictionary, West Group, 1999, 7<sup>th</sup> ed. Pg 1170 and the definition used by Western's Scholastic Discipline document). Plagiarism can be intentional or unintentional and regardless of intent, is a scholastic offence. It should be noted that self-plagiarism, plagiarizing ones own words for multiple assignments is subjected to the same penalty as plagiarizing another. Courses in Physiology and Pharmacology use turnitin, a similarity checking software embedded within OWL. We encourage all students to run their assignments through turnitin prior to submitting their reports for grading. Any report flagged as yellow (25-49% matching text), orange (50-74% matching text) or red 75-100% matching text) will be considered plagiarism (pending investigation by the instructor). It should be noted that a document could be plagiarized yet still pass the similarity check on turnitin.

The **minimum** penalty for a first time plagiarism offence of any kind is a grade of zero on the assignment. In addition, details of the offence will be forwarded to Dean's office and stored. A second offence will carry a much stricter penalty in line with Western's Scholastic Discipline policies <http://www.westerncalendar.uwo.ca/2017/pg113.html>

### **Statement on Use of Electronic Devices**

All electronic devices including but not limited to computers, tablets, phones or watches (with connectivity) are absolutely prohibited during all tests and exam. All electronic devices should not be present during tests or exams. Electronic devices may not be left in pockets or within the vicinity of your desk during a test or exam.

### **Statement on Academic Offences**

“Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following website: <http://www.westerncalendar.uwo.ca/2017/pg113.html>

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (<http://www.turnitin.com> ).”

### **Absence from course commitments**

#### **A. Absence for medical illness:**

Students must familiarize themselves with the Policy on Accommodation for Medical Illness:

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/accommodation\\_illness.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_illness.pdf)

#### **Statement from the Dean's Office, Faculty of Science**

If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or other supporting documentation to the Dean's office as soon as possible and contact your instructor immediately. It is the student's responsibility to make alternative arrangements with their instructor once the accommodation has been approved and the instructor has been informed. In the event of a missed final exam, a "Recommendation of Special Examination" form must be obtained from the Dean's Office immediately. For further information please see:

<http://www.westerncalendar.uwo.ca/2017/pg132.html>

A student requiring academic accommodation due to illness, should use the Student Medical Certificate when visiting an off-campus medical facility or request a Record's Release Form (located in the Dean's Office) for visits to Student Health Services.

The form can be found at:

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/medicalform\\_15JUN.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform_15JUN.pdf)

Students who are in emotional/mental distress should refer to Mental Health@Western <http://www.uwo.ca/uwocom/mentalhealth/> for a complete list of options about how to obtain help.

## **B. Absence for non-medical reasons:**

For **non-medical absences** from midterms, tutorials, laboratory experiments, or late essays or assignments, documentation is required, such documentation must be submitted by the student directly to the appropriate Faculty Dean's Office and **not** to the instructor. It will subsequently be the Dean's Office that will determine if accommodation is warranted.

## **C. Special Examinations**

A Special Examination is any examination other than the regular final examination, and it may be offered only with the permission of the Dean/Academic Counselling Office of the Faculty in which the student is registered, in consultation with the instructor and Department Chair. Permission to write a Special Examination may be given on the basis of compassionate or medical grounds with appropriate supporting documents.

A Special Examination must be written at the University or an Affiliated University College no later than 30 days after the end of the examination period involved. To accommodate unusual circumstances, a date later than this may be arranged at the time permission is first given by the Dean/Academic Counselling Office of the Faculty. The Dean/Academic Counselling Office will consult with the instructor and Department Chair and, if a later date is arranged, will communicate this to the Office of the Registrar.

If a student fails to write a scheduled Special Examination, permission to write another Special Examination will be granted only with the permission of the Dean/Academic Counselling Office in exceptional circumstances and with appropriate supporting documents. In such a case, the date of this Special Examination normally will be the scheduled date for the final exam the next time the course is offered.

When a grade of Special (SPC) or Incomplete (INC) appears on a student's record, the notations will be removed and replaced by a substantive grade as soon as the grade is available.

A student that is unable to attend a scheduled special examination (e.g. makeup test/exam) may be tested using an alternate format (e.g. oral test/exam).

### **Support Services:**

Registrarial Services: <http://www.registrar.uwo.ca>

Academic Counselling (Science and Basic Medical Sciences):

[http://www.uwo.ca/sci/undergrad/academic\\_counselling/index.html](http://www.uwo.ca/sci/undergrad/academic_counselling/index.html)

USC Student Support Services: <http://westernusc.ca/services/>

Student Development Services: <http://www.sdc.uwo.ca>

Student Health Services: <http://www.shs.uwo.ca/>

Students who are in emotional/mental distress should refer to Mental Health@Western <http://www.uwo.ca/uwocom/mentalhealth/> for a complete list of options about how to obtain help.