BIOM*3090 Principles of Pharmacology

Fall 2019
Section: DE01

Department of Biomedical Sciences
Credit Weight: 0.50

Course Details

Calendar Description

This course will introduce students to the basic principles of pharmacology. Topics to be covered include pharmacokinetics and drug-receptor interactions as well as the mechanism of action and toxicity of drugs acting on the cardiovascular and central nervous system.

Pre-Requisite(s): BIOC*2580, (1 of ANSC*3080, BIOM*3200, HK*3810, HK*3940, ZOO*3200, ZOO*3600)

Co-Requisite(s): None

Restriction(s): None

Method of Delivery: Online

Final Exam

Date: December 13, 2019
Time: 07:00PM - 09:00PM
Location: On campus
Instructional Support

Instructor

Sarah Lepage, MSc., PhD  
Email: lepages@uoguelph.ca  
Office: Biomedical Sciences, room 3604

My name is Sarah Lepage and I am an instructor and adjunct faculty in the Department of Biomedical Sciences at the University of Guelph. My main research interests include investigating stem cells for use in curative cell-based therapies and tissue engineering. I have a strong background in teaching at the undergraduate and graduate level, and am really looking forward to teaching Pharmacology in the online classroom in the fall semester. Please do not hesitate to contact me with any questions or concerns.

Teaching Assistant(s)

Name: TBA  
Email: TBA

Learning Resources

Required Textbook

Title: Principles of Pharmacology: The Pathophysiological Basis of Drug Therapy  
Author(s): David E. Golan, Ehrin J. Armstrong, and April W. Armstrong  
Publisher: Wolters Kluwer  
ISBN: 9781451191004  
Note: The 3rd edition of this textbook, published in 2012, is also acceptable.

You may purchase the textbook at the Guelph Campus Co-op Bookstore or the University of Guelph Bookstore. Please note that DE textbooks are located in the Distance Education section of the University of Guelph Bookstore.

https://guelphcampus.coop/bookstore  
http://www.bookstore.uoguelph.ca/

Course Website

CourseLink (powered by D2L’s Brightspace) is the course website and will act as your classroom. It is recommended that you log in to your course website every day to check
for announcements, access course materials, and review the weekly schedule and assignment requirements.

https://courselink.uoguelph.ca

Ares

For this course, you will be required to access course reserve materials through the University of Guelph McLaughlin Library. To access these items, select Ares on the navbar in CourseLink. Note that you will need your Central Login ID and password in order to access items on reserve.

For further instructions on accessing reserve resources, visit How to Get Course Reserve Materials.

If at any point during the course you have difficulty accessing reserve materials, please contact the e-Learning Operations and Reserve Services staff at:

Tel: 519-824-4120 ext. 53621
Email: libres2@uoguelph.ca
Location: McLaughlin Library, First Floor, University of Guelph

http://www.lib.uoguelph.ca/find/find-type-resource/course-reserves-ares/how-get-course-reserve-material

Learning Outcomes

Course Learning Outcomes

This course is designed to provide basic instruction in the principles of pharmacology and is intended primarily for students in the Honours Biomedical Sciences, Biomedical Engineering, Nutritional and Nutraceutical Sciences and Specialized Honours Toxicology majors, and other students who have an interest in the treatment of disease processes. The course will emphasize pharmacokinetic principles, drug-receptor interactions, mechanisms of drug action and toxicity and will provide an introduction to drugs that act on the nervous and cardiovascular systems. The main goal of this course is a strong knowledge base of pharmacology that will provide the framework for future pharmacology courses provided in the department of Biomedical Sciences and beyond.

By the end of this course, you should be able to:

1. Recognize the fundamental principles of pharmacodynamics (i.e. drug-receptor interactions) and pharmacokinetics (i.e. absorption, distribution, metabolism, and elimination of drugs);
2. Identify how drugs alter cellular function through the study of pharmacodynamics;
3. Determine how the body handles drugs through pharmacokinetic processes such as absorption, distribution, metabolism, elimination, dose-response relationships, half-life, steady-state concentrations and volume of distribution;

4. Describe the pharmacology of the autonomic nervous system at an introductory level as preparation for understanding central nervous system drug actions;

5. Describe the distribution and identify the function of clinically relevant receptors in the autonomic nervous system and identify why they represent useful targets for therapeutic manipulation;

6. List and discuss selected drugs used to stimulate or inhibit the sympathetic or parasympathetic nervous systems, including their clinical uses and potential adverse effects;

7. Name major classes and provide specific examples, mechanisms of action, adverse effects and contraindications for drugs affecting the autonomic nervous system, cardiovascular system and central nervous system; and

8. Name the major classes and provide specific examples, mechanisms of action, adverse effects and contraindications of pre-anesthetics and anesthetics.

Teaching and Learning Activities

Course Structure

The course is organized into six units:

- Unit 01: Introduction to Pharmacokinetics
- Unit 02: Introduction to Pharmacodynamics
- Unit 03: Autonomic Pharmacology
- Unit 04: Cardiovascular Pharmacology
- Unit 05: Central Nervous System Pharmacology
- Unit 06: Pre-anesthetics and Anesthetics

Schedule

It is strongly recommended that you follow the course schedule provided below. The schedule outlines what you should be working on each week of the course and lists the important due dates for the assessments. By following the schedule, you will be better prepared to complete the assessments and succeed in this course.
## Unit 01: Pharmacokinetics

### Weeks 1 & 2 – Thursday, September 5 to Sunday, September 22

**Readings**
- Website: Unit 01 Content
- Textbook:
  - 3rd edition: Chapter 3 pgs. 27-42 and Chapter 4 pgs. 43-47
  - 4th edition: Chapter 3 pgs. 27-42 and Chapter 4 pgs. 43-47

**Activities**
- Familiarize yourself with the course website by reviewing the Start Here section of the course.
- Review the Outline and Assessments sections on the course website to learn about course expectations, assessments, and due dates.

## Unit 02: Pharmacodynamics

### Week 3 – Monday, September 23 to Sunday, September 29

**Readings**
- Website: Unit 02 Content
- Textbook:
  - 3rd edition: Chapter 1 pgs. 6-13 and Chapter 2 pgs. 17-24
  - 4th edition: Chapter 1 pgs. 6-13 and Chapter 2 pgs. 17-25

## Unit 03: Autonomic Pharmacology

### Week 4 – Monday, September 30 to Sunday, October 6

**Readings**
- Website: Unit 03 Content
- Textbook:
  - 3rd edition: Chapter 8 pgs. 93-96 and Chapter 7 pg. 89-92
  - 4th edition: Chapter 9 pgs. 110-114 and Chapter 8 pgs. 102-109
Assessments

- **Quiz 1**
  Opens: Monday, September 30 at 12:01 am ET
  Closes: Sunday, October 6 at 11:59 pm ET

**Week 5 – Monday, October 7 to Sunday, October 13**

Readings

- Website: Unit 03 Content

Textbook:

- 3rd edition: Chapter 9 pgs. 110-116, 119-127 and Chapter 10 pgs. 132-142
- 4th edition: Chapter 10 pgs. 127-134, 137-144 and Chapter 11 pgs. 150-161

Assessments

- **Quiz 2**
  Opens: Monday, October 14 at 12:01 am ET
  Closes: Sunday, October 20 at 11:59 pm ET

**Week 6 – Monday, October 14 to Sunday, October 20**

Readings

- Website: Unit 03 Content

Assessments

- **Quiz 2**
  Opens: Monday, October 14 at 12:01 am ET
  Closes: Sunday, October 20 at 11:59 pm ET

**Unit 04: Cardiovascular Pharmacology**

**Week 7 – Monday, October 21 to Sunday, October 27**

Readings

- Website: Unit 04 Content

Textbook:

Assessments

- **Midterm**
  Opens: Tuesday, October 22 at 12:01 am ET
  Closes: Thursday, October 24 at 11:59 pm ET

**Week 8 – Monday, October 28 to Sunday, November 3**

**Readings**
- Website: Unit 04 Content
- Textbook:
  - 3rd edition: Chapter 23 pgs. 401-415 and Chapter 25 pgs.449-452
  - 4th edition: Chapter 24 pgs. 433-437 and Chapter 26 pgs. 479-484

**Unit 05: Central Nervous System Pharmacology**

**Week 9 – Monday, November 4 to Sunday, November 10**

**Readings**
- Website: Unit 05 Content
- Textbook:

**Assessments**
- **Quiz 3**
  Opens: Monday, November 4 at 12:01 am ET
  Closes: Sunday, November 10 at 11:59 pm ET

**Week 10 – Monday, November 11 to Sunday, November 17**

**Readings**
- Website: Unit 05 Content
- Textbook:
Unit 06: Pre-anesthetics and Anesthetics

Week 11 – Monday, November 18 to Sunday, November 24

Readings
- Website: Unit 06 Content
- Textbook:

Assessments
- Quiz 4
  Opens: Monday, November 18 at 12:01 am ET
  Closes: Sunday, November 24 at 11:59 pm ET

Week 12 – Monday, November 25 to Friday, November 29

Readings
- Website: Unit 06 Content
- Textbook:
  - 3rd edition: Chapter 11 pgs. 147-160
  - 4th edition: Chapter 12 pgs. 167-180

Assessments
- Quiz 5
  Opens: Monday, November 25 at 12:01 am ET
  Closes: Friday, November 29 at 11:59 pm ET

Assessment

The grade determination for this course is indicated in the following table. A brief description of each assessment is provided below. Select Content on the navbar to locate Assessments in the table of contents panel to review further details of each assessment. Due dates can be found under the Schedule heading of this outline.
Table 1: Course Assessment

<table>
<thead>
<tr>
<th>Assessment Item</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quizzes (5 @ 2% each)</td>
<td>10%</td>
</tr>
<tr>
<td>Midterm</td>
<td>40%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>50%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100%</td>
</tr>
</tbody>
</table>

Assessment Descriptions

Quizzes

Quizzes will consist of multiple-choice questions designed to test your knowledge of physiology. You will have 1 attempt at each of the 5 quizzes which will be valued at 2% each. Quizzes will be available for 1 week, however, once you begin the quiz you will have 20 minutes in which to complete it.

Midterm

The midterm will consist of multiple-choice questions to test your knowledge of pharmacology. You will be given 75 minutes to complete the midterm, with 1 attempt.

Final Exam

This course requires you to write a traditional sit-down final exam. Final exams are written on campus at the University of Guelph or at alternate locations for students at a distance. The final exam will consist of multiple choice and short answer questions which will test your knowledge of course content and are based on Units 04-06 that are posted on the course website and textbook readings that are assigned for this course.

It is assumed that all DE students will be writing their final examination on campus at the University of Guelph. University of Guelph degree and associate diploma students must check WebAdvisor for their examination schedule. Open Learning program students must check the Open Learning Program Final Examination Schedule for their examination schedule.

If you are studying at a distance, you can request to write your final exam at an alternate location. It is recommended that you make arrangements as early as possible in the semester since changes cannot be guaranteed after the deadline. Exam schedules for off-campus exams will be emailed by Week 9 of the course. For more information, please visit Final Exams.

https://webadvisor.uoguelph.ca/
Course Technologies and Technical Support

CourseLink System Requirements

You are responsible for ensuring that your computer system meets the necessary system requirements. Use the browser check tool to ensure your browser settings are compatible and up to date. (Results will be displayed in a new browser window).

http://spaces.uoguelph.ca/ed/system-requirements/
https://courselink.uoguelph.ca/d2l/systemCheck

Technical Skills

As part of your online experience, you are expected to use a variety of technology as part of your learning:

- Manage files and folders on your computer (e.g., save, name, copy, backup, rename, delete, and check properties);
- Install software, security, and virus protection;
- Use office applications (e.g., Word, PowerPoint, Excel, or similar) to create documents;
- Be comfortable uploading and downloading saved files;
- Communicate using email (e.g., create, receive, reply, print, send, download, and open attachments);
- Navigate the CourseLink learning environment and use the essential tools, such as Dropbox, Quizzes, Discussions, and Grades (the instructions for this are given in your course);
- Access, navigate, and search the Internet using a web browser (e.g., Firefox, Internet Explorer); and
- Perform online research using various search engines (e.g., Google) and library databases.

Course Technologies

CourseLink

Distance Education courses are offered entirely online using CourseLink (powered by D2L's Brightspace), the University of Guelph's online learning management system.
(LMS). By using this service, you agree to comply with the University of Guelph’s Access and Privacy Guidelines. Please visit the D2L website to review the Brightspace privacy statement and Brightspace Learning Environment web accessibility standards.

http://www.uoguelph.ca/web/privacy/
https://www.d2l.com/legal/privacy/
https://www.d2l.com/accessibility/standards/

Technical Support

If you need any assistance with the software tools or the CourseLink website, contact CourseLink Support.

CourseLink Support
University of Guelph
Day Hall, Room 211
Email: courselink@uoguelph.ca
Tel: 519-824-4120 ext. 56939
Toll-Free (CAN/USA): 1-866-275-1478

Walk-In Hours (Eastern Time):
Monday thru Friday: 8:30 am–4:30 pm

Phone/Email Hours (Eastern Time):
Monday thru Friday: 8:30 am–8:30 pm
Saturday: 10:00 am–4:00 pm
Sunday: 12:00 pm–6:00 pm

Course Specific Standard Statements

Acceptable Use

The University of Guelph has an Acceptable Use Policy, which you are expected to adhere to.

https://www.uoguelph.ca/ccs/infosec/aup

Communicating with Your Instructor

During the course, your instructor will interact with you on various course matters on the course website using the following ways of communication:

- **Announcements:** The instructor will use Announcements on the Course Home page to provide you with course reminders and updates. Please check this section frequently for course updates from your instructor.

- **Ask Your Instructor Discussion:** Use this discussion forum to ask questions of your instructor about content or course-related issues with which you are
unfamiliar. If you encounter difficulties, the instructor is here to help you. Please post general course-related questions to the discussion forum so that all students have an opportunity to review the response. To access this discussion forum, select **Discussions** from the **Tools** dropdown menu.

- **Email:** If you have a conflict that prevents you from completing course requirements, or have a question concerning a personal matter, you can send your instructor a private message by email. The instructor will respond to your email within 48 to 72 hours.

- **Skype:** If you have a complex question you would like to discuss with your instructor, you may book a Skype meeting. Skype meetings depend on the availability of you and the instructor, and are booked on a first come first served basis.

**Netiquette Expectations**

For distance education courses, the course website is considered the classroom and the same protections, expectations, guidelines, and regulations used in face-to-face settings apply, plus other policies and considerations that come into play specifically because these courses are online.

Inappropriate online behaviour will not be tolerated. Examples of inappropriate online behaviour include:

- Posting inflammatory messages about your instructor or fellow students;
- Using obscene or offensive language online;
- Copying or presenting someone else’s work as your own;
- Adapting information from the Internet without using proper citations or references;
- Buying or selling term papers or assignments;
- Posting or selling course materials to course notes websites;
- Having someone else complete your quiz or completing a quiz for/with another student;
- Stating false claims about lost quiz answers or other assignment submissions;
- Threatening or harassing a student or instructor online;
- Discriminating against fellow students, instructors, and/or TAs;
- Using the course website to promote profit-driven products or services;
- Attempting to compromise the security or functionality of the learning management system; and
- Sharing your username and password.
Obtaining Grades and Feedback

Unofficial assessment marks will be available in the Grades tool of the course website. Your instructor will have grades posted online within 2 weeks of the submission deadline, if the assignment was submitted on time. Once your assignments are marked you can view your grades on the course website by selecting Grades from the Tools dropdown menu on the navbar. Your course will remain open to you for seven days following the last day of the final exam period.

University of Guelph degree students can access their final grade by logging into WebAdvisor (using your U of G central ID). Open Learning program students should log in to the OpenEd Student Portal to view their final grade (using the same username and password you have been using for your courses).

https://webadvisor.uoguelph.ca/
https://courses.opened.uoguelph.ca/portal/logon.do?method=load

Rights and Responsibilities When Learning Online

For distance education (DE) courses, the course website is considered the classroom and the same protections, expectations, guidelines, and regulations used in face-to-face settings apply, plus other policies and considerations that come into play specifically because these courses are online.

For more information on your rights and responsibilities when learning in the online environment, visit Rights and Responsibilities.

http://opened.uoguelph.ca/student-resources/rights-and-responsibilities

University Standard Statements

University of Guelph: Undergraduate Policies

As a student of the University of Guelph, it is important for you to understand your rights and responsibilities and the academic rules and regulations that you must abide by.

If you are a registered University of Guelph Degree Student, consult the Undergraduate Calendar for the rules, regulations, curricula, programs and fees for current and previous academic years.

If you are an Open Learning Program Student, consult the Open Learning Program Calendar for information about University of Guelph administrative policies, procedures and services.

https://www.uoguelph.ca/registrar/calendars/undergraduate/current/
http://opened.uoguelph.ca/student-resources/open-learning-program-calendar
Email Communication

University of Guelph Degree Students

As per university regulations, all students are required to check their uoguelph.ca e-mail account regularly: e-mail is the official route of communication between the University and its students.

Open Learning Program Students

Check your email account (the account you provided upon registration) regularly for important communications, as this is the primary conduit by which the Open Learning and Educational Support will notify you of events, deadlines, announcements or any other official information.

When You Cannot Meet Course Requirements

When you find yourself unable to meet an in-course requirement due to illness or compassionate reasons, please advise your course instructor in writing, with your name, ID number and email contact.

University of Guelph Degree Students

Consult the Undergraduate Calendar for information on regulations and procedures for Academic Consideration.
https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml

Open Learning Program Students

Please refer to the Open Learning Program Calendar for information on regulations and procedures for requesting Academic Consideration.
http://opened.uoguelph.ca/student-resources/open-learning-program-calendar

Drop Date

University of Guelph Degree Students

Students will have until the last day of classes to drop courses without academic penalty. Review the Undergraduate Calendar for regulations and procedures for Dropping Courses.
https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml

Open Learning Program Students

Please refer to the Open Learning Program Calendar.
http://opened.uoguelph.ca/student-resources/open-learning-program-calendar
Copies of Assignments

Keep paper and/or other reliable back-up copies of all assignments: you may be asked to resubmit work at any time.

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.

University of Guelph Degree Students

Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact Accessibility Services as soon as possible.

For more information, contact Accessibility Services at 519-824-4120 ext. 56208, email Accessibility Services or visit the Accessibility Services website. accessibility@uoguelph.ca
https://wellness.uoguelph.ca/accessibility/

Open Learning Program Students

If you are an Open Learning program student who requires academic accommodation, please contact the Academic Assistant to the Director. Please ensure that you contact us before the end of the first week of your course (every semester) in order to avoid any delays in support. Documentation from a health professional is required for all academic accommodations. Please note that all information provided will be held in confidence.

If you require textbooks produced in an alternate format (e.g., DAISY, Braille, large print or eText), please contact the Academic Assistant to the Director at least two months prior to the course start date. If contact is not made within the suggested time frame, support may be delayed. It is recommended that you refer to the course outline before beginning your course in order to determine the required readings.

The provision of academic accommodation is a shared responsibility between OpenEd and the student requesting accommodation. It is recognized that academic accommodations are intended to “level the playing field” for students with disabilities.

jessica.martin@uoguelph.ca

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.

https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml

Copyright Notice

Content within this course is copyright protected. Third party copyrighted materials (such as book chapters and articles) have either been licensed for use in this course, or have been copied under an exception or limitation in Canadian Copyright law.

The fair dealing exemption in Canada's Copyright Act permits students to reproduce short excerpts from copyright-protected materials for purposes such as research, education, private study, criticism and review, with proper attribution. Any other copying, communicating, or distribution of any content provided in this course, except as permitted by law, may be an infringement of copyright if done without proper license or the consent of the copyright owner. Examples of infringing uses of copyrighted works would include uploading materials to a commercial third party web site, or making paper or electronic reproductions of all, or a substantial part, of works such as textbooks for commercial purposes.

Students who upload to CourseLink copyrighted materials such as book chapters, journal articles, or materials taken from the Internet, must ensure that they comply with Canadian Copyright law or with the terms of the University's electronic resource licenses.

For more information about students’ rights and obligations with respect to copyrighted works, review Fair Dealing Guidance for Students.

http://www.lib.uoguelph.ca/sites/default/files/fair_dealing_policy_0.pdf

Plagiarism Detection Software

Students should be aware that faculty have the right to use software to aid in the detection of plagiarism or copying and to examine students orally on submitted work. For students found guilty of academic misconduct, serious penalties, up to and including suspension or expulsion from the University can be imposed.
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.