Course Details

Calendar Description

Topics covered in this course include drugs used in the treatment of inflammatory, allergic, hormonal, infectious, neoplastic and hemorrhagic/thromboembolic disease. The focus will be on drug targets and mechanisms of action that explain therapeutic and toxicological effects.

Pre-Requisite(s): BIOM*3090
Co-Requisite(s): None
Restriction(s): None
Method of Delivery: Online

Final Exam

Date: Wednesday, April 18, 2017
Time: 7:00 pm ET to 9:00 pm ET
Location: On campus
Instructional Support

Instructor

Robert Jones, PhD
Email: rjones12@uoguelph.ca
Telephone: (519) 824-4120 Ext. 58261
Office: Building 39, Room 3638

My name is Rob Jones and I am a postdoctoral fellow in the Department of Biomedical Sciences at the University of Guelph. I have been involved with teaching in the Biomedical Sciences department at the undergraduate and graduate levels primarily in the fields of cellular and molecular biology. My main research interests are in breast and lung cancer development and the identification of novel targets for therapy. I have a strong background in pharmacology and was recently a member of a research team that identified a glycylcycline antibiotic with strong anti-cancer properties towards an aggressive subtype of breast cancer. I am looking forward to teaching this course and hope you enjoy it as well. Please do not hesitate to contact with me with any questions or concerns.

Teaching Assistant(s)

Name: TBA
Email: TBA

Learning Resources

Required Textbook

Title: Principles of Pharmacology: The Pathophysiologic Basis of Drug Therapy
Author(s): David E. Golan, Ehrin J. Armstrong, and April W. Armstrong
Publisher: Wolters Kluwer
ISBN: 9781451191004

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/shared/login/login.html

Learning Outcomes

Course Learning Outcomes

This course is the second of a two-course introduction to pharmacology (the first being BIOM*3090). Drugs used in the treatment of inflammatory, allergic, hormonal, infectious, parasitic, neoplastic, and hemorrhagic/thromboembolic diseases will be discussed from a systemic perspective. By the end of this course students should understand the mechanisms of action of selected drugs and be able to relate these to both the desired clinical effects and any common adverse drug reactions.

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

1. Describe the fundamental pharmacokinetic principles that govern drug movement through the body (recall from BIOM*3090);
2. Describe the basic mechanisms by which selected classes of systemic drugs exert their therapeutic actions;
3. Explain pathophysiological, biochemical, pharmacological and patient-specific factors that may alter a patient’s response to a particular drug;
4. List the generic name and class (+/- trade or “brand” names) of common drugs used to treat common systemic disorders; and
5. Describe how and why adverse drug reactions occur and know the main adverse effects of selected major classes of drugs used to treat common systemic disorders.

Teaching and Learning Activities

Method of Learning

This course is designed to build on the concepts you learned in the principles of pharmacology and is intended primarily for students in the Honours Bio-Medical 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 drugs that are used to treat
specific disorders or infections. The main goal of this course is a strong knowledge base of pharmacology that will provide the framework for future pharmacology courses or application beyond the department of Biomedical Sciences.

**Course Structure**

The concepts of this course are presented in 11 online units in 2 main sections. These units will help guide you in pacing yourself through the course materials. The units are as follows:

1. Drugs Used in the Treatment of Endocrine Disorders
   - Unit 01: Hypothalamic-Anterior Pituitary Hormones, Adrenal Axis, and Thyroid Gland
   - Unit 02: Gonadal Axis, Posterior Pituitary, and Bone Mineral Homeostasis
   - Unit 03: Endocrine Pancreas and Growth Hormone Axis
   - Unit 04: Drugs Used in the Treatment of Inflammation
   - Unit 05: Drugs Used in the Treatment of Disorders of the Blood

2. Drugs Used in the Treatment of Infections
   - Unit 06: Principles of Antibacterial Therapy, Beta-Lactams
   - Unit 07: Aminoglycosides, Tetracyclines
   - Unit 08: Sulfonamides, Fluoroquinolones, Macrolides, Chloramphenicol
   - Unit 09: Antifungal Drugs, Antiviral Drugs
   - Unit 10: Drugs Used in the Treatment of Cancer
   - Unit 11: Drugs Used in the Treatment of Parasitic Infestations

**What to Expect for Each Unit**

The course begins with an introduction to endocrine pharmacology and some of the drugs that are used to treat endocrine disorders. Unit 01 introduces the physiology and regulation of hypothalamic and pituitary hormones with a focus on feedback regulation. Topics within this first section include: the adrenal axis, thyroid gland, gonadal axis, posterior pituitary and endocrine pancreas. The pharmacologic application of various drugs will also be discussed.

Unit 04 will discuss drugs that are used to treat inflammation such as NSAIDS and glucocorticoids. Unit 05 will focus on drugs that are used to treat blood disorders such as hemorrhagic disease and thromboembolic disease. A substantial amount of content will then be dedicated to drugs that are used to treat infections (Units 06, 07, & 08). These units will examine the principles of antibacterial, antifungal and antiviral therapies. In Unit 09 we will investigate cancer development as well as some of the current anticancer drugs that are available. The last unit that we will study focuses on parasitic infestations and drugs that are used to treat them.
You will notice throughout the course that there will be some overlap with the pharmacological agents that are discussed and that is because many drugs act on different tissues in the bodies based on the receptors that are present. We will explore the mechanisms of action of drugs and identify the potential adverse effects that are associated. You will also notice that your knowledge of basic physiology and BIOM3090 is very important and you will need to apply it to this course in order to be successful.

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: Hypothalamic-Anterior Pituitary Hormones, Adrenal Axis, and Thyroid Gland

Week 1 – Monday, January 8 to Sunday, January 14

Readings

- Textbook:
  - Hypothalamic and Pituitary: Chapter 27: 498-507
  - Adrenal Axis: Chapter 29: 524-540
  - Thyroid: Chapter 28: 514-523

Activities

- Familiarize yourself with the course website by selecting Start Here on the navbar.
- Review Outline and Assessments on the course website to learn about course expectations, assessments, and due dates.

Unit 02: Gonadal Axis, Posterior Pituitary, and Bone Mineral Homeostasis

Week 2 – Monday, January 15 to Sunday, January 21

Readings

- Textbook:
  - Gonadal Axis: Chapter 30: 541-560
  - Posterior Pituitary: Chapter 27: 507-509
  - Bone Mineral Homeostasis: Chapter 32: 580-601
Unit 03: Endocrine Pancreas and Growth Hormone Axis

Week 3 – Monday, January 22 to Sunday, January 28

Readings
- Textbook:
  o Endocrine Pancreas: Chapter 31: 561-579
  o Growth Hormone Axis: Chapter 27: 501-504

Unit 04: Drugs Used in the Treatment of Inflammation

Week 4 – Monday, January 29 to Sunday, February 4

Readings
- Textbook:
  o Chapter 42: 783-793
  o Chapter 43: 794-818

Assessments
- Quiz 1
  Opens: Monday, January 29 at 12:01 am ET
  Closes: Sunday, February 4 at 11:59 pm ET

Unit 05: Disorders of Blood

Week 5 – Monday, February 5 to Sunday, February 11

Readings
- Textbook: Chapter 23-26: 403-469

Assessments
- Quiz 2
  Opens: Monday, February 5 at 12:01 am ET
  Closes: Sunday, February 11 at 11:59 pm ET

Unit 06: Principles of Antibacterial Therapy, Beta-Lactams

Week 6 – Monday, February 12 to Sunday, February 18

Readings
- Textbook:
  o Antibacterial Treatment: Chapter 33: 603-608
Antibacterial Treatment: Chapter 34: 622-627
Beta-Lactams: Chapter 35: 641-648; 650-653

Assessments
- Quiz 3
  Opens: Monday, February 12 at 12:01 am ET
  Closes: Sunday, February 18 at 11:59 pm ET

Winter Break: Monday, February 19 to Sunday, February 25

Unit 07: Aminoglycosides, Tetracyclines
Week 7 – Monday, February 26 to Sunday, March 4

Readings
- Textbook:
  - Aminoglycosides: Chapter 34: 630-632
  - Tetracyclines: Chapter 34: 632-633

Assessments
- Midterm
  Opens: Monday, February 26 at 12:01 am ET
  Closes: Wednesday, February 28 at 11:59 pm ET

Unit 08: Sulfonamides, Fluoroquinolones, Macrolides, Chloramphenicol
Week 8 – Monday, March 5 to Sunday, March 11 (40th Class Day: Friday, March 9)

Readings
- Textbook:
  - Sulfonamides: Chapter 33: 615-617
  - Fluoroquinolones: Chapter 34: 628-629
  - Macrolides: Chapter 34: 633-634
  - Chloramphenicol: Chapter 34: 635

Unit 09: Antifungal Drugs, Antiviral Drugs
Week 9 – Monday, March 12 to Sunday, March 18

Readings
- Textbook:
Unit 10: Drugs Used in the Treatment of Cancer

Week 10 – Monday, March 19 to Sunday, March 25

Readings
- Textbook:
  - Chapter 33: 608-611; 614-615
  - Chapter 39: 732-741
  - Chapter 40: 761-763

Assessments
- Quiz 4
  Opens: Monday, March 19 at 12:01 am ET
  Closes: Sunday, March 25 at 11:59 pm ET

Unit 11: Drugs Used in the Treatment of Parasitic Infestations

Week 11 – Monday, March 26 to Sunday, April 1

Readings
- Textbook: Chapter 37: 674-693

Assessments
- Quiz 5
  Opens: Monday, March 26 at 12:01 am ET
  Closes: Sunday, April 1 at 11:59 pm ET

Review

Week 12 – Monday, April 2 to Friday, April 6

Activities
- Review readings and unit content in preparation for the final exam.

Assessments

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>
<thead>
<tr>
<th>Table 1: Course Assessments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assessment Item</strong></td>
</tr>
<tr>
<td>Quizzes (5 x 2%)</td>
</tr>
<tr>
<td>Midterm</td>
</tr>
<tr>
<td>Final Exam</td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
</tbody>
</table>

**Assessment Descriptions**

**Quizzes**

The five online quizzes are made up of approximately 10 multiple-choice questions per quiz. See Schedule in this outline for dates. The quizzes can be accessed through the **Quizzes** tool in the Tools dropdown list in the course navbar.

**Midterm**

The online Midterm exam will consist of multiple-choice and/or short answer questions to test students’ knowledge of pharmacology. The format of the online quizzes is similar to the midterm and final exam questions and is included in the course to facilitate staying on schedule of the assigned material. More details regarding each examination will be provided in the announcement section prior to the evaluation. The Midterm is accessed through the **Quizzes** tool (found in the Tools dropdown list in the course navbar).

**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 is based on units 6-11 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

http://opened.uoguelph.ca/student-resources/Open-Learning-Program-Final-Exam-Schedule

http://opened.uoguelph.ca/student-resources/final-exams

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 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

Ares

The library's Ares Course Reserve system is a software solution that provides you with access to digital resources used in your course. The system also provides information on print resources placed at the physical reserve desk at the library. Accessibility and privacy policy statements do not exist for this software.

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.
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 during regular business days (Mon-Fri).

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.

Late Policy

Extensions will be considered for medical reasons or other extenuating circumstances. If you require an extension, discuss this with the instructor as soon as possible and well before the due date. Barring exceptional circumstances, extensions will not be granted once the due date has passed. These rules are not designed to be arbitrary, nor are they inflexible. They are designed to keep you organized, to ensure that all students have the same amount of time to work on assignments, and to help to return marked materials to you in the shortest possible time.

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

The last date to drop one-semester courses, without academic penalty, is indicated on the Schedule section of this course outline. 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.