Course Outline

Course Overview

Welcome to BIOM*3090DE Principles of Pharmacology! Pharmacology is the science of drugs and can be broken down into the composition of drugs, various uses of drugs and the effects (desired or adverse) of the drugs on an organism. It is a very important field of study to medicine which is evident based on the clinically relevant agents that have been developed and utilized over the years.

The course begins with an introduction to pharmacokinetics which represents the process by which a drug is absorbed, distributed, metabolized and excreted within the body and pharmacodynamics which is the study of the action or effects of drugs on the body. The first system that will be covered is the autonomic nervous system which will focus on cholinergic versus adrenergic drugs. Following that, the cardiovascular system will be investigated with respect to pharmacological agents that can be utilized to treat conditions such as heart failure, hypertension and angina. In unit 5 we will come back to the nervous system and look at central nervous system pharmacology. This unit will involve pharmacological agents that are used to treat neurological disorders such as Alzheimer's or Parkinsonism and mood disorders such as depression and bipolar disorder. The last unit that we will study is pre-anesthetics and anesthetics which encompass numerous pharmacological agents that have a range of effects that result in loss of sensation or pain. 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 is very important and you will need to apply it to this course in order to be successful.

Time Commitment and Workload

A lot of information is presented in this course. You are responsible for 0.5 credit worth of information presented over one semester. Therefore it is recommended that you spend at minimum an average 9 hours/week to learn and review the material (including completion of online assignments). Due to the volume of information presented, the course will provide a framework of the fundamental principles of pharmacology including autonomic, cardiovascular and central nervous system pharmacology. You will be given a list of drugs that you are responsible for learning the mechanism of action and adverse effects on the body.

Course Goals and Objectives

Goals

This course is designed to provide basic instruction 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 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.

Objectives

Upon successful completion of this course you should be able to:

- Recognize the fundamental principles of pharmacodynamics (i.e. drug-receptor interactions) and pharmacokinetics (i.e. absorption, distribution, metabolism, and elimination of drugs).
- Identify how drugs alter cellular function through the study of pharmacodynamics.
- 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.
- Describe the pharmacology of the autonomic nervous system at an introductory level as preparation for understanding CNS drug actions.
- 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.
- List and discuss selected drugs used to stimulate or inhibit the sympathetic or parasympathetic nervous systems, including their clinical uses and potential adverse effects.
- 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.
- Name the major classes and provide specific examples, mechanisms of action, adverse effects and contraindications of pre-anesthetics and anesthetics.

Required Resources

Textbook(s)

Principles of Pharmacology, the Pathophysiologic Basis of Drug Therapy, Golan, Tashjian, Armastrong and Artmstrong, Third Edition, 2012

Textbooks can be purchased at the University of Guelph Bookstore or the Guelph Campus Co-op Bookstore.

Technical Requirements

See the **Resources** link in the top navigation for a link to the basic Technical Requirements for this course.

Course Structure

The concepts of this course are presented in 6 online units. These units will help guide you in pacing yourself through the course materials. The units are as follows:

UNIT 01: **Pharmacokinetics**
UNIT 02: **Pharmacodynamics**
UNIT 03: **Autonomic Pharmacology**
UNIT 04: **Cardiovascular Pharmacology**
UNIT 05: **CNS Pharmacoloogy**
UNIT 06: **Pre-anesthetics and Anesthetics**

Note: It is strongly recommended that you follow the course **Schedule** (see **Schedule** link located in the top navigation bar). The **Schedule** outlines what you should be working on during each week of the course. By following the **Schedule**, you will be better prepared to complete course assignments and will be able to participate more effectively in the online discussions. Also note each of the 6 units are not of equal length.

Method of Instruction and Evaluation

Examinations will consists of multiple-choice (MC) and or short answer (SA) questions to test students' knowledge of physiology. Multiple-choice questions will also constitute five **online quizzes** that will compose 10% of your overall mark (approximately 10 questions per quiz). 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.

Assignment Evaluation Table	
Assignment	**Value**
Quizzes (5 x 2%)	10%
Midterm	40%
Final Exam	50%
Total	**100%**

Grading

In general your marks will be based on the University of Guelph undergraduate grading breakdown, as follows:

- **80 - 100 (A) Excellent**. An outstanding performance in which the student demonstrates a superior grasp of the subject matter, and an ability to go beyond the given material in a critical and constructive manner. The student demonstrates a high degree of creative and/or logical thinking, a superior ability to organize, to analyze, and to integrate ideas, and a thorough familiarity with the appropriate literature and techniques.
- **70 - 79 (B) Good**. A more than adequate performance in which the student demonstrates a thorough grasp of the subject matter, and an ability to organize and examine the material in a critical and constructive manner. The student demonstrates a good understanding of the relevant issues and a familiarity with the appropriate literature and techniques.
- **60 - 69 (C) Acceptable**. An adequate performance in which the student demonstrates a generally adequate grasp of the subject matter and a moderate ability to examine the material in a critical and constructive manner. The student displays an adequate understanding of the relevant issues, and a general familiarity with the appropriate literature and techniques.
- **50 - 59 (D) Minimally Acceptable**. A barely adequate performance in which the student demonstrates a familiarity with the subject matter, but whose attempts to examine the material in a critical and constructive manner are only partially successful. The student displays some understanding of the relevant issues, and some familiarity with the appropriate literature and techniques.
- **0 - 49 (F) Fail**. An inadequate performance.

* For specific grading criteria, review the expectations for each assignment under the **Assignments** link, located in the top navigation of the website.

Getting your Grades

Unofficial assignment marks will be available in the **Grades** section of the course website. Feedback on assignments will be returned online via the **Grades** link, located in the top navigation bar of the course website.

How to be Successful

To successfully complete this course it is recommended that you:

- Start by navigating through all the course components to become comfortable with the organization of the course and familiar with the course expectations. A good place to begin is here with the course **Outline**. You also need to visit the **Schedule** (where you will find a timeline for the course along with due dates). The **Units** guide you for each of the 12 weeks of the course. The **Resources** section of the course website has useful information and links to the library. If you have any questions you can ask them in the **Assignment & Course Questions** discussions area.

- Log on to the course website frequently to keep up on course developments. You are responsible for attending to all announcements, assignments and course material distributed online. Please check regularly for important messages from the instructor in the **News** section on the **Course Home** page and the **Assignment & Course Questions** discussions area.

- Your course website acts as your classroom. Every student is of course different, but you should plan on spending an average of 10-12 hours per week on this course. Scheduling your time wisely in an online course is very crucial. Since we do not meet at a scheduled time every week, it is up to you to make sure you are logging in regularly. You will need to visit the course website a minimum of 3-5 times per week to find out what to do, get help and talk to your instructor and your classmates.

- Manage your time well. Plan to set aside time each week to complete all unit activities, assignments and readings. Use the **Schedule** to chart out your workload and timelines for completion.

- Read through all the unit and textbook readings, learning activities and assignments prior to beginning each unit.

- Stay active and in touch with your instructor and classmates by participating in all discussions.

- Complete and submit all assignments according to the due dates listed on the course **Schedule**.

Undergraduate Policies and Procedures

Distance Education and Open Learning Program Handbooks

Degree Credit Students:

Please ensure that you have reviewed the DE Handbook. In particular, ensure that you review the sections that pertain to Assignment Submissions and Returns, Online Quizzes or Tests and Final Examinations.

Open Learning Program Students:

Please ensure that you have reviewed the Open Learning program Handbook for the specific procedures and policies related to your studies through Open Learning and Educational Support.

Email Communication

Degree Credit 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 *without* a University of Guelph email account:

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

Degree Credit Students:

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. See the Undergraduate Calendar for information on regulations and procedures for Academic Consideration.

Open Learning Program Students:

Please refer to the Open Learning program Handbook.

Drop Date

Degree Credit Students:

The last date to drop one-semester courses, without academic penalty, is indicated in the **Schedule** section of this course website. See the Undergraduate Calendar for regulations and procedures for Dropping Courses.

Open Learning Program Students:

Please refer to the Open Learning program Handbook.

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

Degree Credit Students:

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: Centre for Students with Disabilities.

Open Learning Program Students:

Students with disabilities requiring special accommodation for tests during the semester or for final exams shall contact the Open Learning and Educational Support Program Counsellor at counsellor@OpenEd.uoguelph.ca, before the end of the first week of classes to ensure that appropriate support can be arranged. If contact is not made by this time, support may be delayed. Students will be asked to provide documentation from a health professional or from their home institution. Please note all information provided

is held in confidence.

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.

Acceptable Use

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

Resources

Degree Credit Students:

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. See Academic Calendars.

Open Learning Program Students:

The Open Learning program Handbook is the source for information about policies and regulations.

Your Instructor

My name is Nicole Campbell and I will be your instructor for Pharmacology this semester. I graduated from the University of Guelph with my Bachelor's of Science and Doctorate in Biomedical Sciences. Since then, I have had numerous teaching experiences at the University of Guelph and have also been an instructor at the University of Ontario. These experiences include course designer, classroom lecturer and online education. I created this course to reflect the lecture version and I hope you enjoy it. Please do not hesitate to contact me with any questions or concerns and I appreciate any feedback because this is a new offering.

Contact Information

Contact your Instructor

Name: Nicole Campbell, PhD Email: nsolinge@uoguelph.ca

Teaching Assistant

Name: Stacey Butler, MSc candidate Email: sbutler@uoguelph.ca

Technical Support

If you have any questions regarding the technical requirements of this course or about access to your course website please contact:

Open Learning and Education Support Technical *Help Desk*

Email: help@OpenEd.uoguelph.ca
Tel: (519) 824-4120 ext. 56939
Toll Free (Canada & USA only): 1-866-275-1478
Fax: (519) 824-1112
Office: Johnston Hall, Room 153

Help Desk Hours of Operation

Monday – Friday: 8:30 a.m. – 8:30 p.m.
Saturday: 10:00 a.m. – 4:00 p.m.
Sunday: 12 noon – 12:00 midnight

(All times are Eastern)

General Inquiries

If you have any general questions about your course or about online learning, please contact our main office:

Open Learning and Educational Support University of Guelph Johnston Hall, Room 160 Email: info@OpenEd.uoguelph.ca Tel: 519-767-5000