



CUMMING SCHOOL OF MEDICINE  
GRADUATE COURSE OUTLINE

<b>COURSE TITLE:</b>		<b>Basic Principles of Pharmacology</b>	
<b>Course</b>	MDSC 621.01		
<b>Pre/Co-Requisites</b>	Zoology 461, Medical Science 404 and Medical Science/Biology 501, or consent of the Faculty		
<b>Faculty</b>	Cumming School of Medicine, Graduate Science Education		
<b>Instructor Name(s)</b>	Mark Giembycz Andrew Braun	<b>Email</b>	<a href="mailto:giembycz@ucalgary.ca">giembycz@ucalgary.ca</a> <a href="mailto:abraun@ucalgary.ca">abraun@ucalgary.ca</a>
<b>Office Location</b>	HRIC 4C66 (MG) HMB G74 (AB)	<b>Office Hours</b>	0.900 - 17.00 0.900 - 17.00
<b>Instructor Email Policy</b>	No policy		
<b>Telephone No.</b>	403 210 8562 (MG) 403 220 8861 (AB)		
<b>TA Name, if applicable</b>	N/A	<b>Email</b>	
<b>Class Term, Days</b>	<b>Tuesday &amp; Thursday from 10<sup>th</sup> September to 5<sup>th</sup> December</b>		
<b>Class Times</b>	15.00 – 16.20		
<b>Class Location</b>	G743		

<b>COURSE INFORMATION/DESCRIPTION OF THE COURSE</b>
This course covers basic principles of pharmacology, with a focus on pharmacodynamics and mechanisms of signal transduction. Topics to be covered include: signal transduction linked to G-protein coupled receptors; ion channel function and pharmacology; receptor signalling for steroids, growth factors and cytokines; smooth muscle function and pharmacology; pharmacology relating to pain and inflammation; and introductory toxicology.
<b>LEARNING RESOURCES/REQUIRED READING</b>
There are no required textbooks. Textbooks that may be useful include: a) Pharmacology, 7th Edition, by Rang, Dale, Ritter, Flower & Henderson 8th Edition; b) Molecular Cell Biology, 7th Edition, by Lodish, Berk, Kaiser, Krieger, Scott, Bretscher, Ploegh and Matsudaira; c) Ion Channels of Excitable Membranes, 3rd Edition, by B. Hill; Goodman and Gilman's The Pharmacological Basis of Therapeutics, 11th Edition.

**COURSE OBJECTIVES/LEARNING OUTCOMES**

To gain an understanding of the principles, concepts and mechanisms underlying drug action in mammals at the cellular and molecular levels.

**CUT POINTS FOR GRADES**

This course adheres to the grading system outlined in the University of Calgary, Faculty of Graduate Studies Calendar. Grades of A+ and A are not distinguished in the calculation of GPAs. Percentage/letter grade conversion used for this course is as follows

Grade	Grade Point Value	Percentage Conversion	Graduate Description
A+	4.00	95-100	Outstanding
A	4.00	90-94	Excellent – superior performance showing comprehensive understanding of the subject matter
A-	3.70	85-89	Very Good Performance
B+	3.30	77-84	Good Performance
B	3.00	72-76	Satisfactory Performance
B-	2.70	68-71	Minimum Pass for Students in the Faculty of Graduate Studies
C+	2.30	63-67	All grades below ‘B-’ are indicative of failure at the graduate level and cannot be counted toward Faculty of Graduate Studies course requirements

**Assessment Components:** The University policy on grading related matters is outlined in the [2019-2020 Calendar](#).

Assessment Methods	Description	Weight (%)	Due Date and Time
Short and essay-type questions marked by relevant instructors	Mid-term examination	40	22 <sup>nd</sup> October
Short and essay-type questions marked by relevant instructors	Final Examination	40	10 <sup>th</sup> – 20 <sup>th</sup> December
Assessed by instructors	Oral presentation	10	26 <sup>th</sup> /28 <sup>th</sup> November or 5 <sup>th</sup> December
Marked by instructors	Essay based on oral presentation	10	24.00- 5 <sup>th</sup> December

#### ASSESSMENT AND EVALUATION INFORMATION

**ATTENDANCE AND PARTICIPATION EXPECTATIONS:** Students enrolled in MDSC 621.01 are expected to attend all lectures and presentations.

**GUIDELINES FOR SUBMITTING ASSIGNMENTS:** Assignments are to be sent electronically in .doc, .docx or .pdf format to the course coordinator on or before the deadline stated on the course timetable.

**MID-TERM and FINAL EXAMINATIONS:** Examinations are closed-book and aids are not permitted except for calculators. The registrar will schedule the final examination.

**EXPECTATIONS FOR WRITING:** Concise and unambiguous writing is expected. **Brevity** and **clarity** will be rewarded.

**LATE AND/OR MISSING ASSIGNMENTS:** Late assignments will be subjected to a 10%/day penalty.

Is a passing grade on a particular component essential to pass the course as a whole? No

COURSE TIMETABLE			
Course Schedule Date	Topic & Reading	Instructor	Assignments/Due Dates & Times
10 <sup>th</sup> September (T)	Course overview and orientation	Mark Giembycz <a href="mailto:giembycz@ucalgary.ca">giembycz@ucalgary.ca</a>	
12 <sup>th</sup> September (Th)	Pharmacodynamics I	Mark Giembycz	
17 <sup>th</sup> September (T)	Pharmacodynamics II	Mark Giembycz	
19 <sup>th</sup> September (Th)	An introduction to receptors	Morley Hollenberg <a href="mailto:mhollenb@ucalgary.ca">mhollenb@ucalgary.ca</a>	
24 <sup>th</sup> September (T)	Pharmacogenomics	Chad Bousman <a href="mailto:chad.bousman@ucalgary.ca">chad.bousman@ucalgary.ca</a>	
26 <sup>th</sup> September (Th)	Pharmacokinetics (N.B. Room 1405B)	Donna Slater <a href="mailto:dmslater@ucalgary.ca">dmslater@ucalgary.ca</a>	
1 <sup>st</sup> October (T)	Receptor signalling and oncology	Shirin Bonni <a href="mailto:sbonni@ucalgary.ca">sbonni@ucalgary.ca</a>	
3 <sup>rd</sup> October (Th)	7-Transmembrane spanning receptors: signalling	Christophe Altier <a href="mailto:altier@ucalgary.ca">altier@ucalgary.ca</a>	
8 <sup>th</sup> October (T)	7-Transmembrane spanning receptors: desensitization	Christophe Altier	

10 <sup>th</sup> October (Th)	Cytokine receptors and signalling	Robert Newton <a href="mailto:rnewton@ucalgary.ca">rnewton@ucalgary.ca</a>	
15 <sup>th</sup> October (T)	Nuclear hormone receptors and gene expression	Robert Newton	
<b>17<sup>th</sup> October (Th)</b>	<b>No Lecture – Revision</b>		
<b>22<sup>nd</sup> October (T)</b>	<b>Mid-term examination</b>		
24 <sup>th</sup> October (Th)	Basic electrophysiology	Andrew Braun <a href="mailto:abraun@ucalgary.ca">abraun@ucalgary.ca</a>	
29 <sup>th</sup> October (T)	Molecular features of ion channels	Andrew Braun	
31 <sup>st</sup> October (Th)	Ion channel regulation	Andrew Braun	
5 <sup>th</sup> November (T)	Inflammation and pain I	Antione Dufour <a href="mailto:antoine.dufour@ucalgary.ca">antoine.dufour@ucalgary.ca</a>	
7 <sup>th</sup> November (Th)	Inflammation and pain II	Pierre-Yves von der Weid <a href="mailto:vonderwe@ucalgary.ca">vonderwe@ucalgary.ca</a>	
12 <sup>th</sup> November (T)	Inflammation and pain III	Pierre-Yves von der Weid	
<b>14<sup>th</sup> November (Th)</b>	<b>No Lecture – Fall Break</b>		
<b>19<sup>th</sup> November (T)</b>	<b>No Lecture – Fall Break</b>		
21 <sup>st</sup> November (Th)	Mechanisms of smooth muscle contraction	Justin MacDonald <a href="mailto:jmacdo@ucalgary.ca">jmacdo@ucalgary.ca</a>	
26 <sup>th</sup> November (T)	<i>Student presentations (20min each + 10min questions)</i>		
28 <sup>th</sup> November (Th)	<i>Student presentations (20min each + 10min questions)</i>		
3 <sup>rd</sup> December (T)	Cyclic nucleotides and smooth muscle relaxation	Justin MacDonald	
5 <sup>th</sup> December (Th)	<i>Student presentations (20min each + 10min questions)</i>		<b>Deadline for Essay Submission 24:00</b>
<b>10<sup>th</sup> - 20<sup>th</sup> December</b>	<b>Final examination</b>	Registrar Scheduled	



## INTERNET AND ELECTRONIC COMMUNICATION DEVICE INFORMATION

Cell phones must be turned off in class unless otherwise arranged with the instructor.

The use of laptop and mobile devices is acceptable when used in a manner appropriate to the course and classroom activities. Students are to refrain from accessing websites that may be distracting for fellow learners (e.g. personal emails, Facebook, YouTube). Students are responsible for being aware of the University's Internet and email use policy, which can be found at

<https://www.ucalgary.ca/policies/files/policies/electronic-communicationspolicy.pdf>.

## MEDIA AND RECORDING IN LEARNING ENVIRONMENTS

### **Media recording for lesson capture**

The instructor may use media recordings to capture the delivery of a lecture. These recordings are intended to be used for lecture capture only and will not be used for any other purpose. Although the recording device will be fixed on the Instructor, in the event that incidental student participation is recorded, the instructor will ensure that any identifiable content (video or audio) is masked, or will seek consent to include the identifiable student content to making the content available on University approved platforms.

### **Media recording for assessment of student learning**

The instructor may use media recordings as part of the assessment of students. This may include but is not limited to classroom discussions, presentations, clinical practice, or skills testing that occur during the course. These recordings will be used for student assessment purposes only and will not be shared or used for any other purpose.

### **Media recording for self-assessment of teaching practices**

The instructor may use media recordings as a tool for self-assessment of their teaching practices. Although the recording device will be fixed on the instructor, it is possible that student participation in the course may be inadvertently captured. These recordings will be used for instructor self-assessment only and will not be used for any other purpose.

### **Student Recording of Lectures**

Audio or video recording of lectures is prohibited except where explicit permission has been received from the instructor.

## UNIVERSITY OF CALGARY POLICIES AND SUPPORTS

### **ACADEMIC ACCOMMODATIONS**

Students seeking an accommodation based on disability or medical concerns should contact Student Accessibility Services; SAS will process the request and issue letters of accommodation to instructors. For additional information on support services and accommodations for students with disabilities, visit [www.ucalgary.ca/access/](http://www.ucalgary.ca/access/). Students who require an accommodation in relation to their coursework based on a protected ground other than disability should communicate this need in writing to their Instructor. The full



policy on Student Accommodations is available at <http://www.ucalgary.ca/policies/files/policies/student-accommodation-policy.pdf>

### **IMPORTANT INFORMATION**

Any research in which students are invited to participate will be explained in class and approved by the appropriate University Research Ethics Board

### **INSTRUCTOR INTELLECTUAL PROPERTY**

Course materials created by professor(s) (including course outlines, presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the professor(s). These materials may NOT be reproduced, redistributed or copied without the explicit consent of the professor. The posting of course materials to third party websites such as note-sharing sites without permission is prohibited. Sharing of extracts of these course materials with other students enrolled in the course at the same time may be allowed under fair dealing.

### **COPYRIGHT LEGISLATION**

All students are required to read the University of Calgary policy on Acceptable Use of Material Protected by Copyright ([www.ucalgary.ca/policies/files/policies/acceptable-use-of-material-protected-by-copyright.pdf](http://www.ucalgary.ca/policies/files/policies/acceptable-use-of-material-protected-by-copyright.pdf)) and requirements of the copyright act (<https://laws-lois.justice.gc.ca/eng/acts/C-42/index.html>) to ensure they are aware of the consequences of unauthorised sharing of course materials (including instructor notes, electronic versions of textbooks etc.). Students who use material protected by copyright in violation of this policy may be disciplined under the Non-Academic Misconduct Policy.

### **ACADEMIC INTEGRITY**

The Cumming School of Medicine expects intellectual honesty from its students. Course participants should be aware of University policies relating to Principles of Conduct, Plagiarism and Academic Integrity. These are found in the printed Faculty of Graduate Studies Calendar, or online under Academic Regulations in the Faculty of Graduate Studies Calendar, available at [Faculty of Graduate Studies Academic Regulations](#)

### **ACADEMIC MISCONDUCT**

For information on academic misconduct and its consequences, please see the University of Calgary Calendar at <http://www.ucalgary.ca/pubs/calendar/current/k.html>

### **EMERGENCY EVACUATION AND ASSEMBLY POINTS**

Assembly points for emergencies have been identified across campus. The primary assembly points for South Campus (Health Science Centre (HSC); Health & Research Innovation Centre (HRIC); Heritage Medical Research Building (HMRB) and Teaching, Research and Wellness (TRW)) are:

- HSC and HMRB: HRIC Atrium (alternate assembly point is Parking Lot 6)
- HRIC: HMRB Atrium (alternate assembly point is Parking Lot 6)
- TRW: McCaig Tower (alternate assembly point is HMRB – Atrium)

### **APPEALS**

If there is a concern with the course, academic matter or a grade, first communicate with the instructor. If these concerns cannot be resolved, students can proceed with an academic appeal, as per Section N of the Faculty of Graduate Studies Calendar. Students must follow the official process and should contact the



Student Ombuds Office (<http://www.ucalgary.ca/provost/students/ombuds>) for assistance with this and with any other academic concerns, including academic and non-academic misconduct

### **THE FREEDOM OF INFORMATION AND PROTECTION OF PRIVACY (FOIP) ACT**

This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIP) and students should identify themselves on written assignments (exams and term work.) by their name and ID number on the front page and ID on each subsequent page. Assignments given by you to your course instructor will remain confidential unless otherwise stated before submission. The assignment cannot be returned to anyone else without your expressed permission to the instructor. Grades will be made available on an individual basis and students will not have access to other students' grades without expressed consent. Similarly, any information about yourself that you share with your course instructor will not be given to anyone else without your permission

### **WELLNESS AND MENTAL HEALTH RESOURCES**

The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the excellent mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 370, MacEwan Student Centre), <https://www.ucalgary.ca/wellnesscentre/services/mental-health-services> and the Campus Mental Health Strategy website <https://www.ucalgary.ca/mentalhealth/>

### **SUPPORTS FOR STUDENT LEARNING, SUCCESS, AND SAFETY**

**Student Ombudsman:** The Student Ombuds' Office supports and provides a safe, neutral space for students. For more information, please visit [www.ucalgary.ca/ombuds/](http://www.ucalgary.ca/ombuds/) or email [ombuds@ucalgary.ca](mailto:ombuds@ucalgary.ca)

**Student Union:** The SU Vice-President Academic can be reached at (403) 220-3911 or [suvpaca@ucalgary.ca](mailto:suvpaca@ucalgary.ca); Information about the SU, including elected Faculty Representatives can be found here: <https://www.su.ucalgary.ca>

**Graduate Student's Association:** The GSA Vice-President Academic can be reached at (403) 220- 5997 or [gsa.vpa@ucalgary.ca](mailto:gsa.vpa@ucalgary.ca); Information about the GSA can be found here: <https://gsa.ucalgary.ca>

### **SAFEWALK**

Campus security will escort individuals, day or night, anywhere on campus (including McMahon Stadium, Health Sciences Centre, Student Family Housing, the Alberta Children's Hospital and the University LRT station). Call 403-220-5333 or visit <http://www.ucalgary.ca/security/safewalk>. Use any campus phone, emergency phone or the yellow phone located at most parking lot pay booths. Please ensure your personal safety by taking advantage of this service.