



UNIVERSITY OF  
CALGARY

DEPARTMENT OF BIOLOGICAL SCIENCES  
COURSE OUTLINE

1. **Course:** **ZOOLOGY 461 – ANIMAL PHYSIOLOGY I**

Lecture Section(s)	L01 MWF	9:00	ENC 70	Fall 2016
LABS:	T	0900, 1200, 1500	BI 199	
	R	0900, 1200, 1530	BI 199	

**Coordinator:** **Dr. D. Syme**

**Instructor(s):** Dr. D. Syme BI 289 220-5281 [syme@ucalgary.ca](mailto:syme@ucalgary.ca)  
 Dr. M. Vijayan BI 488 220-3094 [matt.vijayan@ucalgary.ca](mailto:matt.vijayan@ucalgary.ca)  
 Dr. C. Flynn BI 238B 220-5055 [cflynn@ucalgary.ca](mailto:cflynn@ucalgary.ca)

Labs: Dr. C. Flynn (lab coordinator)  
 Please address all communication regarding missed labs and lab administrative issues to:  
[Zool461@ucalgary.ca](mailto:Zool461@ucalgary.ca)

Desire 2 Learn (D2L) course website: ZOOLOGY 461 L01 - (Fall 2016) - Animal Physiology I

Biological Sciences Department BI 186 403-220-3140 [biosci@ucalgary.ca](mailto:biosci@ucalgary.ca)

2. **Prerequisites:** **Biology 331 or Neuroscience 301**

See section 3.5.C in the Faculty of Science section of the online Calendar  
[www.ucalgary.ca/pubs/calendar/current/sc-3-5.html](http://www.ucalgary.ca/pubs/calendar/current/sc-3-5.html)

Antirequisite(s): Credit for both Zoology 461 and any of Biology 305, Medical Science 404, 604, Zoology 269, Kinesiology 259, 260 or 323 will not be allowed.

NOTE: Prior completion of Physics 211 or 221 and 223 and Biochemistry 341, 393 or Chemistry 351 is strongly recommended.

3. **Grading:** The University policy on grading and related matters is described sections [F.1](#) and [F.2](#) of the online University Calendar. In determining the overall grade in the course the following weights will be used:

<b>Midterm Examination (Thurs Oct 27, 7:00-8:30 PM, KNB 132)</b>	<b>30 %</b>
<b>Laboratory Reports</b>	<b>30 %</b>
<b>Final Examination (Lecture and Laboratory Material)</b>	<b>40 %</b>

There will be a final exam scheduled by the Registrar's office

Calculation of final letter grade: Each piece of work (assignment, laboratory report, midterm test or final examination) will be assigned a percentage score. The score for the various components listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade based on the grade conversion scheme listed below. **However, students who do not achieve a passing grade (D minimum) on the weighted combination of the Midterm and Final exams will receive an F in the course, regardless of their lab grade.**

4. **Missed Components of Term Work:** The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in [Section 3.6](#). It is the student's responsibility to familiarize himself/herself with these regulations. See also [Section E.6](#) of the University Calendar

5. **Scheduled out-of-class activities:** Midterm exam Thurs Oct 27, 7:00-8:30 PM.

**REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY.** If you have a clash with this out-of-class-time-activity, please inform your instructor as soon as possible so that alternative arrangements may be made for you.

6. **Course Materials:**

TEXT Recommended: Animal Physiology. Hill, Wyse, Anderson. Sinauer Associates, Inc., Mass., 4th edition.

7. **Examination Policy:** All examinations are closed book. Aids, other than those listed on the front page of the exam, are not allowed. Students should also read the Calendar, [Section G](#), on Examinations.
8. **Approved Mandatory and Optional Course Supplemental Fees:** None. Students are expected to provide a lab coat and dissection kit for the labs.
9. **Writing across the curriculum statement:** e.g. In this course, the quality of the student's writing in laboratory reports will be a factor in the evaluation of those reports. See also [Section E.2](#) of the University Calendar.

#### ETHICS IN THE BIOLOGICAL SCIENCES

Studies in the Biological Sciences involve the use of living and dead organisms. Students taking laboratory- and field-based courses in these disciplines can expect involvement with and experimentation on such materials. Students perform dissections on dead or preserved organisms in some courses. In particular courses, students experiment on living organisms, their tissues, cells, or molecules. Sometimes field work requires students to collect a variety of living materials by many methods, including humane trapping.

All work on humans and other animals conforms to the Helsinki Declaration and to the regulations of the Canadian Council on Animal Care. The Department strives for the highest ethical standards consistent with stewardship of the environment for organisms whose use is not governed by statutory authority. Individuals contemplating taking courses or majoring in one of the fields of study offered by the Department of Biological Sciences should ensure that they have fully considered these issues before enrolling. Students are advised to discuss any concern they might have with the Undergraduate Program Director of the Department.

#### 10. OTHER IMPORTANT INFORMATION FOR STUDENTS:

- (a) **Academic Misconduct:** (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under [Section K](#). Student Misconduct to inform yourself of definitions, processes and penalties
- (b) **Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on [assembly points](#).
- (c) **Student Accommodations:** Students needing an Accommodation because of a Disability or medical condition should contact Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities available at [http://www.ucalgary.ca/policies/files/policies/procedure-for-accommodations-for-students-with-disabilities\\_0.pdf](http://www.ucalgary.ca/policies/files/policies/procedure-for-accommodations-for-students-with-disabilities_0.pdf).  
  
Students needing an Accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a Protected Ground other than Disability, should communicate this need, preferably in writing, to the Associate Head of Biological Sciences, Dr. H. Addy by email [addy@ucalgary.ca](mailto:addy@ucalgary.ca) or phone 403 220-3140.
- (d) **Safewalk:** Campus Security will escort individuals day or night (<http://www.ucalgary.ca/security/safewalk/>). Call 220-5333 for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.
- (e) **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPPA). As one consequence, students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information see also <http://www.ucalgary.ca/secretariat/privacy>.
- (f) **Student Union Information:** VP Academic Phone: 220-3911 Email: [suvpaca@ucalgary.ca](mailto:suvpaca@ucalgary.ca).  
SU Faculty Rep. Phone: 220-3913 Email: [sciencerep@su.ucalgary.ca](mailto:sciencerep@su.ucalgary.ca); [Student Ombudsman](#)
- (g) **Internet and Electronic Device Information:** You can assume that in all classes that you attend, your cell phone should be turned off unless instructed otherwise. Also, communication with other individuals, via laptop computers, Blackberries or other devices connectable to the Internet is not allowed in class time unless specifically permitted by the instructor. If you violate this policy you may be asked to leave the classroom. Repeated abuse may result in a charge of misconduct.
- (h) At the University of Calgary, feedback provided by students through the Universal Student Ratings of Instruction (USRI) survey provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses ([www.ucalgary.ca/usri](http://www.ucalgary.ca/usri)). Your responses make a difference - please participate in USRI Surveys.

Department Approval \_\_\_\_\_ ORIGINAL SIGNED \_\_\_\_\_ Date \_\_\_\_\_

Associate Dean's Approval for  
out of regular class-time activity: \_\_\_\_\_ ORIGINAL SIGNED \_\_\_\_\_ Date: \_\_\_\_\_  
Z461 F16; 8/8/2016 10:44 AM

## LECTURE OUTLINE - 2016

Neurophysiology: (C. Flynn, 9 lectures)

Sept. 12 – 30  
Introduction to Neurobiology  
Passive Electrical Properties  
Ion Channels  
The Action Potential

Endocrinology: (M. Vijayan, 8 lectures)

Oct. 3 – 21  
Hormone-target interactions and specificity  
Mechanisms of hormone action  
Hypothalamic and pituitary hormone production and function  
Integrated control of growth, development, reproduction and metabolism

Oct 10                   **Thanksgiving Day, no lecture**

Oct 27                   **MIDTERM EXAM 19:00-20:30, KNB 132**

Muscle Physiology: (D. Syme, 10 lectures)

Oct 24 – Nov 16  
Anatomy, ultrastructure, sliding filament theory  
Excitation-contraction coupling  
Mechanics, contractile properties  
Energetics, fibre types  
Neural control, muscle spindles  
Control of movement, reflexes  
Smooth Muscle  
Asynchronous flight muscle (if time)

Nov 10-11              **READING DAYS, NO LECTURES**

Sensory Physiology (C. Flynn, 9/10 lectures)

Nov. 18 – Dec. 7/9  
Sensation and Perception  
Skin Receptors and Mechanoreception  
The Auditory System  
The Vestibular System  
The Visual System  
The Chemical Senses

## Zool 461 Laboratory Schedule

Fall 2016

<u>Date</u>	<u>Laboratory Exercise</u>
Sept. 19 – 30	Lab 01 - Tonicity and Cell Volume
Oct. 3 – 14	Lab 02 - Action Potentials in Earthworm Giant Axons
Oct. 17 – 28	Lab 03 - Endocrine Disorders: an Investigative Exercise
Oct 31 – Nov 11	Lab 04 - Mechanical Properties of Skeletal Muscle
Nov. 14 – 25	Lab 05 - Physiological Properties of Visceral Smooth Muscle
Nov 28 - Dec. 9	Lab 06 - Senses and Reflexes

### **Letter grade conversion scheme for Zool 461:**

91 A+

86 A

81 A-

76 B+

71 B

67 B-

63 C+

59 C

55 C-

50 D+

45 D

below 45 F