



ZOO*3600 Comparative Animal Physiology I

Fall 2022

Section(s): 01

Department of Integrative Biology

Credit Weight: 0.50

Version 1.00 - September 07, 2022

1 Course Details

1.1 Calendar Description

This course will examine the physiological processes that enable animals to live within a diverse range of environments. Lectures will focus on the underlying molecular and cellular events that mediate physiological processes and contribute to whole animal homeostasis, and emphasize strategies and adaptations used by different animals when influenced by various environmental conditions. Fundamental mechanisms in animal physiology such as diffusion, osmosis, feedback systems, and homeostasis will be explored in nervous, muscular, endocrine and sensory physiological systems. An associated lab course (ZOO*3610) is available.

Pre-Requisites: BIOC*2580, ZOO*2090, (STAT*2040 or STAT*2230 is recommended)

1.2 Course Description

This course will be in-person during Fall 2022.

1.3 Timetable

Lectures: T/Th 1:00PM - 2:20PM

1.4 Final Exam

Exam time and location is subject to change. Please see WebAdvisor for the latest information.

2 Instructional Support

2.1 Instructional Support Team

Instructor:	Dr. S.L. Alderman
Email:	alderman@uoguelph.ca
Office:	SSC 3470
Office Hours:	There are no in-person office hours this term. Virtual appointments can be scheduled during regular business hours using Microsoft Teams. Typical appointments are 15 minutes.

3 Learning Resources

3.1 Required Resources

Courselink (Website)

<https://courselink.uoguelph.ca>

This course will make use of the University of Guelph's course website on D2L (via Courselink). Consequently, you are responsible for all information posted on the Courselink page for ZOO*3600. Please check it regularly.

3.2 Recommended Resources

Animal Physiology (Textbook)

Animal Physiology (5th Ed) by R.W. Hill, G.A. Wyse, and M. Anderson (2016). Published by Sinauer Associates, Inc.,

ISBN 9781605354712

On reserve at the library.

eText available at: vitalsource.com and redshelf.com

*****You can also use the 3rd or 4th editions. Buy used, save your money!

3.3 Additional Resources

Eckert's Animal Physiology (Textbook)

Eckert's Animal Physiology (any edition) by Randall et al. (2002)

On reserve at the library.

Principles of Animal Physiology (Textbook)

Principles of Animal Physiology (any edition) by Moyes and Schulte (2016)

On reserve at the library.

Animal Physiology: From Genes to Organisms (Textbook)

Animal Physiology: From Genes to Organisms (2nd Edition) by Sherwood, Klandorf, and Yancey (2013)

4 Learning Outcomes

4.1 Course Learning Outcomes

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

1. Understand the concept of homeostasis, the basic principles of membrane transport and how muscles, nerves, endocrine and sensory systems function in a variety of invertebrates and vertebrates.
2. Synthesize information to explain the regulation of physiological systems at multiple levels of organization (e.g. molecular, cellular, organ systems and whole animal).
3. Integrate data from the primary literature, on a variety of animals, to build an understanding of comparative physiology.
4. Apply an understanding of physiological mechanisms to real world scenarios, such as predicting the influence of environmental change on animal form and function.
5. Analyze and summarize current publications in comparative physiology and identify critical connections with previous studies to describe progress in the field.

5 Teaching and Learning Activities

5.1 Course Content

Topic	Date	Chapter	Example questions
1) Central Themes in Animal Physiology	Sept. 8	Ch. 1	Why are most physiological systems based on negative feedback mechanisms?

Topic	Date	Chapter	Example questions
2) Membrane Transport of Ions & Water	Sept. 13, 15, 20	Ch. 2, 5, 6, 10, 16, 28	Why do red blood cells burst in pure water? What is the difference between facilitated diffusion and active transport?
3) Nerves	Sept. 22, 27, 29, Oct. 4, 6	Ch. 12, 13	Why has the squid giant axon been so useful to understand neurons? What are the factors that affect conduction speed?
4) Muscles	Oct. 13, 18, 20, 25, 27	Ch. 8, 20, 21, 25	How do muscle proteins slide back and forth to produce force and movement? How can the muscles of flying insects contract 10 times faster than vertebrate muscles?
5) Endocrinology	Nov. 1, 3, 8, 10, 15	Ch. 2, 16, 17, 21	Why are thyroid hormones important for metamorphosis? What happens when estrogen mimics are present in the environment?
6) Sensory Physiology	Nov. 17, 22, 24, 29, Dec. 1	Ch. 14	How do sea turtles and birds use the Earth's magnetic field to migrate?

Textbook Readings are from Hill et al. 2012 and Hill et al. 2016 (same chapters)

5.2 Important Dates

All tests and assignments are due on Fridays before midnight to the associated Dropbox folder on CourseLink.

Unit Comprehension Tests (5): Sept. 23, Oct. 7, Oct. 28, Nov.18, Dec. 2

Written Assignment 1 due Sept. 30th, midnight

Written Assignment 2 due Nov 18th, midnight

Final Exam (cumulative): TBA

6 Assessments

6.1 Assessment Details

Unit Comprehension Tests (20%)

Date: 11:59 pm on the Friday after test is provided

Learning Outcome(s) Addressed: 1, 2, 3

- Course content topics 2 - 6
- Short tests are posted on CourseLink on the last Tuesday of a unit and students will upload completed tests by Friday of the same week. A total of 5 tests will be offered. Each test is worth 5% and only the top 4 marks will be kept.
- Due to the low stakes, 'best 4 of 5' nature of this assessment, no late submissions or extensions will be granted.

Written Assignment 1 (15%)

Due: Fri, Sep 30

Course Content/Activity: topics 1-6, summary of assigned paper (500 words)

Learning Outcome(s) Addressed: 5

Written Assignment 2 (25%)

Due: Fri, Nov 18

Course Content/Activity: topics 1-6, assigned papers (1000 words)

Learning Outcome(s) Addressed: 5

Final Cumulative Exam (40%)

Course Content/Activity: topics 1-6

Learning Outcome(s) Addressed: 1-4

6.2 Description of Assessments

Tests (20% of grade) and Exam (40% of grade):

Your understanding of the physiological mechanisms introduced in class and through assigned textbook readings will be assessed through unit comprehension tests and a cumulative final exam held during the final exam period.

Written assignment #1 (15% of grade):**Purpose:**

- 1) To get students reading current scientific literature
- 2) To increase skills in scientific communication

Summary:

Students will write a summary of a recent paper in comparative physiology (max. 500 words). Paper will be selected from a list of 5 provided by instructors. Summary needs to be written so that a senior high school student could comprehend the purpose and significance of work. Further details will be provided in class.

Written assignment #2 (25% of grade):**Purpose:**

To increase understanding of how current research is dependent on the previous work of others.

Summary:

Students will choose one paper from a list of 5 provided by the instructors. The report (max. 1000 words) will summarize the paper and describe how the work has been influenced by earlier studies. Further details will be provided in class.

7 Course Statements

7.1 Grading

Unit comprehension tests (5) and written assignments (2) will be submitted through the course D2L website. All due dates correspond to Fridays at 11:59 PM. Grades will be assigned according to the standards outlined in the U of G Undergraduate Calendar (p40 - 41).

Late Policy:

Both written assignments are mandatory and must be completed to receive a final grade for this course. A late penalty of 20% of assignment value per day will apply for assignments submitted after the posted deadline.

The submission folders for each unit comprehension test will close after the posted deadline and no late submissions will be accepted. Comprehension tests are not mandatory, but any missing submissions will be assigned a mark of 0. Only the top 4 marks will be kept.

7.2 Etiquette Statement

Please come to class with an open mind and ready to learn.

Offensive, discriminatory, and other inappropriate behaviours will not be tolerated.

All current public health guidelines and University policies for slowing the spread of Covid-19, including wearing masks, must be adhered to at all times.

8 Department of Integrative Biology Statements

8.1 Academic Advisors

If you are concerned about any aspect of your academic program:

- Make an appointment with a program counsellor in your degree program. [B.Sc. Academic Advising](#) or [Program Counsellors](#)

8.2 Academic Support

If you are struggling to succeed academically:

- Learning Commons: There are numerous academic resources offered by the Learning Commons including, Supported Learning Groups for a variety of courses, workshops related to time management, taking multiple choice exams, and general study skills. You can also set up individualized appointments with a learning specialist. <http://www.learningcommons.uoguelph.ca/>
- Science Commons: Located in the library, the Science Commons provides support for physics, mathematic/statistics, and chemistry. Details on their hours of operations can be found at: <http://www.lib.uoguelph.ca/get-assistance/studying/chemistry-physics-help> and <http://www.lib.uoguelph.ca/get-assistance/studying/math-stats-help>

8.3 Wellness

If you are struggling with personal or health issues:

- Counselling services offers individualized appointments to help students work through personal struggles that may be impacting their academic performance. <https://www.uoguelph.ca/counselling/>
- Student Health Services is located on campus and is available to provide medical attention. <https://www.uoguelph.ca/studenthealthservices/clinic>
- For support related to stress and anxiety, besides Health Services and Counselling Services, Kathy Somers runs training workshops and one-on-one sessions related to stress management and high performance situations. <http://www.selfregulationskills.ca/>

8.4 Personal information

Personal information is collected under the authority of the University of Guelph Act (1964), and in accordance with Ontario's Freedom of Information and Protection of Privacy Act (FIPPA) <http://www.e-laws.gov.on.ca/index.html>. This information is used by University officials in order to carry out their authorized academic and administrative responsibilities and also to establish a relationship for alumni and development purposes.

For more information regarding the Collection, Use and Disclosure of Personal Information policies please see the Undergraduate Calendar. (<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/intro/index.shtml>)

8.5 Course Offering Information Disclaimer

Please note that course delivery format (face-to-face vs online) is subject to change up to the first-class day depending on requirements placed on the University and its employees by public health bodies, and local, provincial and federal governments. Any changes to course format prior to the first class will be posted on WebAdvisor/Student Planning as they become available.

9 University Statements

9.1 Email Communication

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

9.2 When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The grounds for Academic Consideration are detailed in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Academic Consideration and Appeals
<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Graduate Calendar - Grounds for Academic Consideration

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

Associate Diploma Calendar - Academic Consideration, Appeals and Petitions

<https://www.uoguelph.ca/registrar/calendars/diploma/current/index.shtml>

9.3 Drop Date

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all students (undergraduate, graduate and diploma) except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in their respective Academic Calendars.

Undergraduate Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

Graduate Calendar - Registration Changes

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-reg-regchg.shtml>

Associate Diploma Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/diploma/current/c08/c08-drop.shtml>

9.4 Copies of Out-of-class Assignments

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

9.5 Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to make a booking at least 14 days in advance, and no later than November 1 (fall), March 1 (winter) or July 1 (summer). Similarly, new or changed accommodations for online quizzes, tests and exams must be approved at least a week ahead of time.

For Guelph students, information can be found on the SAS website
<https://www.uoguelph.ca/sas>

For Ridgetown students, information can be found on the Ridgetown SAS website
<https://www.ridgetownc.com/services/accessibilityservices.cfm>

9.6 Academic Integrity

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 encourages academic integrity. 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.

Undergraduate Calendar - Academic Misconduct
<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

Graduate Calendar - Academic Misconduct
<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

9.7 Recording of Materials

Presentations that are made in relation to course work - including lectures - cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

9.8 Resources

The Academic Calendars are the source of information about the University of Guelph's procedures, policies, and regulations that apply to undergraduate, graduate, and diploma programs.

Academic Calendars
<https://www.uoguelph.ca/academics/calendars>

9.9 Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings, changes in classroom protocols, and academic schedules. Any such changes will be announced via CourseLink and/or class email.

This includes on-campus scheduling during the semester, mid-terms and final examination schedules. All University-wide decisions will be posted on the COVID-19 website (<https://news.uoguelph.ca/2019-novel-coronavirus-information/>) and circulated by email.

9.10 Illness

Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g.. final exam or major assignment).

9.11 Covid-19 Safety Protocols

For information on current safety protocols, follow these links:

- <https://news.uoguelph.ca/return-to-campus/how-u-of-g-is-preparing-for-your-safe-return/>
- <https://news.uoguelph.ca/return-to-campus/spaces/#ClassroomSpaces>

Please note, these guidelines may be updated as required in response to evolving University, Public Health or government directives.
