

Bio 3602 Course Outline

1. Course Information

Animal Physiology II, Winter 2024.

Lectures (Section 001): Mondays, Wednesdays, Fridays 10:30-11:20 AM.

- in person; students may record audio but not video

Tutorials: In person, every 2nd week (beginning 16 Jan., see OWL for schedule)

Tutorial Section	Day/Time
002	Tue. 9:30-11:20 AM
003	Tue. 1:30-3:30 PM
004	Wed. 2:30-4:30 PM
005	Th. 9:30-11:30 AM

List of Prerequisites

A minimum mark of 60% in Biology 2601A/B. Physiology 3120 will only be considered with special permission (see below).

Unless you have either the requisites for this course or written special permission from your Dean's Designate (Department/Program Counsellors and Science Academic Counselling) to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

2. Instructor Information

Instructor and Course Co-ordinator: James Staples, Professor (jfstaple@uwo.ca).

Tutorial Leader: Soren Coulson (soulso8@uwo.ca)

Students must use their Western (@uwo.ca) email addresses when contacting course staff.

Office Hours as needed and announced in class and on OWL, format TBD (likely by Zoom)

3. Course Syllabus, Schedule, Delivery Mode

This course, along with Biology 3601A/B (Animal Physiology I), explores the mechanisms, integration and evolution of physiological and biochemical systems within animals. By using a comparative approach, we will explore the diversity of evolutionary “strategies” adopted by phylogenetically distinct animals. We will also explore how these animals use these strategies to cope with natural selective pressures, especially in extreme environments. Human physiology will be discussed only briefly for the sake of comparison, but is not the main focus of this course.

Lecture Learning Outcomes: Successful students will achieve each of the following outcomes:

- have a working knowledge of the mechanisms and regulation of individual biochemical and physiological systems.
- understand and be able to articulate how both phylogeny and environmental selective pressures influence the evolution of biochemical and physiological systems.
- be able to integrate the function of these systems to explain the coordinated regulation of an animal’s internal environment.

Tutorial Learning Outcomes: Successful students will achieve each of the following outcomes:

- independently find primary literature and assess its quality and relevance to course topics
- make presentations of primary papers to their classmates in which they critically evaluate the papers, and emphasize data and their significance in the presentation
- lead discussions based on these papers
- use knowledge derived from reading the presented paper to contribute to the discussions led by classmates

Topics covered in Bio 3602 include:

- Unifying principles – phylogeny, thermodynamics, body size effects, environmental patterns, time scales
- Gas exchange – properties of water vs. air; Fick’s law of diffusion; metabolic consequences; CO₂ exchange; altitude & hypoxia adaptations.
- Circulation – evolutionary “design” of circulatory systems; flow properties and regulation; ventilation/perfusion matching.
- Digestion and Diet – comparing feeding modes; regulation of ingestion, digestion, absorption, incorporation, egestion; form & function related to diet type; metabolic and ecological consequences.
- Locomotory & Exercise Physiology – muscle physiology & biomechanics; cost of transport & its allometry; what determines/constrains exercise capacity?; training effects; recovery; selective pressures favouring sprint vs. endurance performance.
- Human Influences – physiological effects of environmental pollutants, global climate change etc.

Contingency plan

Although the intent is for this course to be delivered in person, should any university-declared emergency require some or all of the course to be delivered online, either synchronously or asynchronously, the course will adapt accordingly. The grading scheme will not change. Any assessments affected will be conducted online as determined by the course instructor.

4. Course Materials

Textbook (required): Hill, R.W., Wyse, G.A. & Anderson, M. (2016) Animal Physiology. 5th Edition. Sinauer, Sunderland, MA.

Note that this is the version of the book you used in Biology 2601 (and maybe 3601), so you may already own a copy. You may use the new 5th edition, and I will supply readings for both editions.

In the event that Lectures and Tutorials cannot be delivered in person students must have access to the following:

- a laptop or computer
- a working microphone and webcam
- a reliable internet connection

Students are responsible for checking the course OWL site (<http://owl.uwo.ca>) on a regular basis for news and updates. This is the primary method by which information will be disseminated to all students in the class.

All course material will be posted to OWL: <http://owl.uwo.ca>.

If students need assistance with the course OWL site, they can seek support on the OWL Help page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800.

5. Methods of Evaluation

The overall course grade will be calculated as listed below:

- in-class quiz (**tentative** date 31 Jan.).....15%
 - may include multiple choice, matching, fill-in-the-blank
 - material from lectures & readings from Lectures 1 through 10
- midterm (**tentative** date 7 March).....30%
 - out of class, likely 2 hours
 - may include multiple choice, short answer, calculations, graphing
 - NOT cumulative; covers lecture and reading material from Lectures 11 through 20
- Final Exam (date TBD by registrar).....35%
 - date/time determined by registrars office (3 hours)
 - normally short answer, essay
 - cumulative; covers material spanning all course lectures and readings (but not tutorials)
- Tutorial
 - Presentations.....10%
 - Assignments (biweekly)5%
 - participation5%

Course-specific conditions that are required to pass the course:

- (i) minimum attendance at 4 tutorials
- (ii) successful completion of assigned tutorial presentation with a passing (>50%) grade

Click [here](#) for a detailed and comprehensive set of policies and regulations concerning examinations and grading. The table below outlines the University-wide grade descriptors.

A+	90-100	One could scarcely expect better from a student at this level
A	80-89	Superior work which is clearly above average
B	70-79	Good work, meeting all requirements, and eminently satisfactory
C	60-69	Competent work, meeting requirements
D	50-59	Fair work, minimally acceptable
F	below 50	Fail

6. Student Absences

If you are unable to meet a course requirement due to illness or other serious circumstances, please follow the procedures below.

If you miss a tutorial the associated assignment cannot be submitted (i.e. you must attend the tutorial to submit the assignment), but the value for that assignment will be re-weighted among those assignments that you do submit.

For absences from the quiz, midterm or tutorial presentation, you must provide valid medical or supporting documentation to the Academic Counselling Office of your Faculty of Registration as soon as possible. For further information, please consult the University's medical illness policy at:

https://uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration.pdf.

The Student Medical Certificate is available at

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf.

For excused absences from tutorial presentation you can present again near the end of term.

For excused absences from the quiz or midterm there will be no “make up” test. Instead, your marks will be reassigned to the other tests or exams that you do write. Excused absences from tutorial presentations will be made up before the end of term, and scheduled by the instructor and tutorial leader.

Absences from Final Examinations

If you miss the Final Exam, please contact the Academic Counselling office of your Faculty of Registration as soon as you are able to do so. They will assess your eligibility to write the Special Examination (the name given by the University to a makeup Final Exam).

You may also be eligible to write the Special Exam if you are in a “Multiple Exam Situation” (e.g., more than 2 exams in 23-hour period, more than 3 exams in a 47-hour period).

If a student fails to write a scheduled Special Examination, the date of the next Special Examination (if granted) normally will be the scheduled date for the final exam the next time this course is offered. The maximum course load for that term will be reduced by the credit of the course(s) for which the final examination has been deferred. See the Academic Calendar for details (under [Special Examinations](#)).

Note: missed work can only be excused through one of the mechanisms above. Being asked not to attend an in-person course requirement due to potential COVID-19 symptoms is not sufficient on its own.

7. Accommodation and Accessibility

Religious Accommodation

When a course requirement conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request accommodation for their absence in writing at least two weeks prior to the holiday to the course instructor and/or the Academic Counselling office of their Faculty of Registration. Please consult University's list of recognized religious holidays (updated annually) at

<https://multiculturalcalendar.com/ecal/index.php?s=c-univwo>

Accommodation Policies

Students with disabilities are encouraged to contact Accessible Education, which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at:

[https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic Accommodation_disabilities.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf).

8. Academic Policies

The website for Registrarial Services is <http://www.registrar.uwo.ca>

In accordance with policy,

https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf

the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner.

Scientific calculators are permitted in quiz/midterm/final exam but no other electronic devices (cell phones, tablets, computers, smart watches etc.) are permitted.

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (<http://www.turnitin.com>).

Computer-marked multiple-choice tests and exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

9. Support Services

Please visit the Science & Basic Medical Sciences Academic Counselling webpage for information on adding/dropping courses, academic considerations for absences, appeals, exam conflicts, and many other academic related matters: <https://www.uwo.ca/sci/counselling/>

Students who are in emotional/mental distress should refer to Mental Health@Western (<https://uwo.ca/health/>) for a complete list of options about how to obtain help.

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Accessible Education at (519) 661-2147 if you have any questions regarding accommodations.

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at https://www.uwo.ca/health/student_support/survivor_support/get-help.html. To connect with a case manager or set up an appointment, please contact support@uwo.ca.

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Accessible Education at http://academicsupport.uwo.ca/accessible_education/index.html if you have any questions regarding accommodations.

Learning-skills counsellors at the Student Development Centre (<http://www.sdc.uwo.ca>) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Additional student-run support services are offered by the USC: <https://westernusc.ca/your-services/>