

Biology 2601a: Organismal Physiology

September – December 2023

1. Course Information

Biology 2601a, Organismal Physiology, is an entirely in-person course with 2 hours of lecture per week and 3 hours of lab/tutorial per week.

The class is divided into two general lab groups (A and B). The lab section in which you are enrolled determines whether you belong to group A or group B, each with a separate schedule.

Note that labs and tutorials begin the week of September 18. Attendance in the laboratories and tutorials is compulsory and attendance will be taken. There will be no mark penalty for failing to attend labs or tutorials; however, if you miss a lab or tutorial without approved accommodation (see below), you will receive zero for the associated quiz and the TAs will not provide any out-of-hours assistance for you in the preparation of your lab report.

List of Prerequisites

A minimum mark of 60% in either Biology 1001A or Biology 1201A and a minimum mark of 60% in either Biology 1002B or Biology 1202B or Integrated Science 1001X are required. Unless you have either the requisites for this course or written special permission from your Dean's Designate (i.e., 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 and Contact Information

Dr. Chris Guglielmo (he/him) and Dr. Sheila Macfie (she/her), Department of Biology, will co-instruct the course. TAs will instruct the labs and tutorials. After it is finalized, a list of TAs will be posted on OWL

Students are required to first **use the Forum on OWL to pose questions about the course** content; answers will be provided by the professors, TAs, or their peers. The instructors and TAs will monitor the Forum regularly and provide answers/corrections as needed. The instructors will be available for office hours via appointment only. **Students must use Messages on OWL to ask questions directly to an instructor and/or to request an 'office hour appointment'**. Instructors will answer questions about general course material and policies, and about the lectures they deliver (e.g., Dr. Guglielmo will answer questions about the lectures he gives and Dr. Macfie will answer questions about the lectures she gives).

3. Course Syllabus, Schedule, Delivery Mode

This course provides a general background in the mechanisms and consequences of physiological processes in plants and animals. It will take an integrated approach and include a comparative context, wherever possible. It will include laboratory demonstrations with both plants and animals. For the lab reports, an emphasis will be placed on analyzing data, interpreting relationships from graphs, and communicating information clearly and concisely.

Lecture Topics include:

Homeostasis and physiological plasticity
Effects of temperature
Energy metabolism
Water and ion balance

Gas Exchange
Nutrient acquisition and use
Fluid transport
Hormone regulation

Learning Outcomes:

From lecture materials and readings, students will be able to identify:

- how organisms maintain homeostasis of energy, ions, water and gases
- how temperature affects physiology and biochemistry, including Q_{10} effects
- the terminology describing thermoregulation of organisms
- the processes of photosynthesis and mitochondrial respiration, including the roles of key enzymes, substrates and products
- the principles of gas exchange, including diffusion and gas solubility in water, in order to explain how organisms exchange O_2 and CO_2 with their environment
- the principles of water balance, including osmosis, to describe how organisms maintain a homeostatic water balance as their environment changes
- the principles of fluid transport, in order to explain the various physiological systems used by animals to transport internal fluids
- how water is transported in plants and the use of equations for water potential to calculate the direction of water movement in plants
- the nutritional needs of plants and the physiological mechanisms underlying plant nutrient acquisition
- the anatomical structures of a plant, including leaf, stem and root cross-sectional anatomy
- how excretory systems and epithelia of animals regulates ions
- basic organization and function of endocrine systems
- hormonal regulation of plant function

From labs and tutorials student will be able to:

- understand data on animal metabolic rates and their responses to short- and long-term changes in environmental condition (i.e., acute temperature effects versus acclimation)
- understand the effect of light on photosynthesis in plants acclimated to different conditions
- explain how water and ion exchange change in animals in response to changes in salinity
- work with data provided to them
- graph and clearly present data using programs, such as R Studio
- analyze data with basic statistics (e.g., t-tests) using programs, such as R Studio
- interpret data to make conclusions about the physiological processes underlying acclimation of organisms to changes in their environment

Schedule

Classes begin: Thursday September 7, 2023

Labs and tutorials begin the week of September 18, 2023

Mid-term exam: week of October 16, 2023

Fall Reading Week: October 30 – November 5, 2023

Classes end: Friday December 8, 2023

Final exam period: December 10-22, 2023

Mode of delivery

Lectures, labs, and tutorials will be held synchronously in-person.

OWL: Students are responsible for checking OWL (<http://owl.uwo.ca>) on a regular basis for news and updates. *OWL is the primary method by which information will be disseminated to all students in the class.* All course material, including lecture slides, lab and tutorial instructions, additional reading, and assignments will appear on the OWL site. In addition, important announcements will be made on OWL, and you are responsible for obtaining this information.

The OWL Forum is available for you to ask content-related questions, discuss concepts, and to help out each other. The instructors and TAs will monitor the Forum discussions and respond to content questions, but most questions will be answered by other members of the class. Use of social media group sites for the sharing of course information and discussions is neither sanctioned nor recommended.

If students need assistance with OWL, they can seek support on the [OWL Help page](#). Alternatively, they can contact the [Western Technology Services Helpdesk](#). The helpdesk can be contacted by phone at 519-661-3800 or ext. 83800.

[Google Chrome](#) or [Mozilla Firefox](#) are the preferred browsers to optimally use OWL; update your browsers frequently. Students interested in evaluating their internet speed, please click [here](#).

Participation and Engagement

- Students are expected to participate and engage with content as much as possible
- Students should also participate by interacting in the forums with their peers and instructors

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

Readings: No publisher produces a textbook that includes both plant and animal physiology at a level that is appropriate for this course. We will use material from two different texts:

Hill, R.W., Wyse, G.A. & Anderson, M. 2021. *Animal Physiology, Fifth Edition*. Sinauer, Sunderland, MA.

Taiz, L., Møller I.M., Murphy A. & Zeiger, E., 2022. *Plant Physiology and Development, Seventh Edition*. Sinauer, Sunderland, MA.

To keep your costs down, a bundled loose-leaf version and eBook rentals of both textbooks are available at the bookstore. The hardcover texts are also available. If you use earlier editions or other textbooks, you will not receive assistance in identifying suitable readings. You can purchase the bundled books (coursepac) or eBook rentals through the Western Bookstore at:

https://bookstore.uwo.ca/textbook-search?campus=UWO&term=W2023A&courses%5B0%5D=001_UW/BIO2601A

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

Lectures will include references to additional readings to give you broader and deeper information, and will also give you a different form of explanation. The material presented in the **lectures, assigned readings, laboratories, and tutorials** defines the examinable material, so you are advised to make notes first from the lectures, and then use the readings to clarify and increase your knowledge and understanding.

Technical Requirements

For labs you will need to install R and R Studio software on your computer or create an account on R Studio Cloud (<https://rstudio.cloud/>). To participate in the course if it needs to move online, you will need a stable internet connection and a computer with a working microphone and webcam.

5. Methods of Evaluation

Lab/tutorial:

Intro to R Assignment	1%
Pre-lab/tutorial quizzes	5%
Lab Report One	6%
Lab Report Two	6%
<u>Lab Report Three</u>	<u>12%</u>
Total for labs	30%

Examinations:

Mid-term Exam	25%
<u>Final Exam</u>	<u>45%</u>
Total for exams	70%

Your marks will be regularly updated under 'Gradebook' in OWL. You may query any apparent inconsistencies between what you thought you received and what is on OWL. When assessing these marks, keep in mind you will not have grades for things that have not yet been marked.

The final grade for the course will be calculated as the sum of the marks for each of the components. This mark will then be rounded to the nearest integer. No marks will be awarded for arbitrary reasons, and there will be no after-the-fact changes (e.g., of 69 to 70%).

- All assignments are due at 11:55 PM EST unless otherwise specified
- Written assignments will be submitted to Turnitin (statement in policies below)
- Students will have 1 submission to OWL/Turnitin. If there is a problem with the first submission contact your TA
- Rubrics will be used to evaluate assessments and will be posted with the instructions
- After an assessment is returned, students should wait 24 hours to digest feedback before contacting their evaluator; to ensure a timely response, reach out within 7 days

Lab Reports

You will submit one lab assignment and write three lab reports in this course. The aim is to allow you to learn from your mistakes and build on what you learned by writing the earlier lab reports. The lab reports will concentrate on the presentation, analysis, and interpretation of data associated with each lab exercise.

Deadlines: The deadline for each lab report will be **11:55 PM EST** of the following dates:

R assignment	Wednesday September 13
Crayfish lab	Wednesday October 11
Photosynthesis lab	Wednesday November 8
Osmoregulation lab	Wednesday November 29

Submitting lab assignments and reports: To submit your lab assignment or report, perform the following actions before the 11:55 PM deadline:

1. Documents must be submitted as .doc, .docx or pdf files. Do not submit other file formats that cannot be checked by Turnitin. Please use this format to name the files: yoursurnameyourinitialassignment.doc(x). For example, Guglielmo lab1.doc
2. Submit your electronic copy to turnitin.com, via the link provided on Bio. 2601 OWL. If there is a software problem or you note an error before finalizing the submission, contact your TA to arrange for an additional submission. **Once submitted, do not return to the submission page to check status or you could accidentally unsubmit your assignment.**

Note that if you fail to submit your lab report to turnitin.com we will consider your work 'not submitted' and you will receive a mark of zero for the assignment.

Late submissions of lab reports will be accepted without penalty for 48 hours following the deadline, after which a penalty of 1% per day of the total course mark will be assessed. In other words, the report that is due by Wednesday September 13th by 11:55 PM will be accepted without penalty until Friday September the 15th at 11:55 PM. **Please note:** if an Academic Consideration is granted after the deadline (e.g., after Wednesday at 11:55 PM) it will not be relevant to the missed report. To receive an extension for the report, Academic Consideration

would have to be granted before the deadline (e.g., before Wednesday at 11:55 PM) and be valid past the end of the grace period (e.g., be valid until or after Friday at 11:55 PM).

Please note: a computer problem is not considered as an excuse for failing to hand in a lab report on time. You are expected to keep adequate backups of your data, to ensure files are saved in a format suitable for uploading to turnitin.com, and to manage your time.

Labs are marked according to a rubric, and the marking scheme and TAs are remarkably consistent in their markings. If you have a concern, the first thing you must do is speak to your TA. **Please do not approach your TA with a query about the marking until 24 h after the report has been returned.** Please send a polite email to your TA that outlines your concerns and ask to make an appointment to discuss those concerns. Please email within 7 days of receiving your mark. Any re-marking of assignments by an administrative TA or instructor may result in an increase, a decrease, or no change to your mark on the assignment. Disrespectful, aggressive, or intimidating behaviour will not be tolerated and may result in disciplinary action (see the student code of conduct at <https://www.uwo.ca/univsec/pdf/board/code.pdf>).

Pre-lab/tutorial Quizzes: There will be 6 short quizzes, worth a total of 5% of the final grade, conducted at the start of each lab/tutorial. The quizzes will test high-level concepts and knowledge of methods from the lab/tutorial instructions and are meant to aid students in working through the material efficiently and safely. The quizzes will be based on randomly assigned questions. The top 5 of the 6 quizzes will be counted towards your mark. You must arrive to lab or tutorial on time to take the quiz.

Mid-term Exam: The mid-term exam will consist of questions covering material up to, and including, material presented in the lecture preceding the exam. Material covered in required readings, labs and tutorials up to that point in time are also testable. The mid-term exam will be designed to be 2 hours in duration but will be held over a 3 hour period. The mid-term exam will be held in-person. Only those students who receive Academic Consideration for missing the mid-term will be eligible to write the make-up mid-term exam.

Final Exam: The final exam will be 3 hours in duration. It will cover **all** of the material covered in the course, including lectures, required readings, labs, and tutorials. The date of the final exam will be determined by the Registrar's office. Use of pocket calculators, tablets, iPods, cellular phones, laptop computers or any other electronic devices is not allowed during exams unless directed or approved by the instructors.

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

Policy for Late Assignments or Missed Exams

Late submissions of the Introduction to R assignment and lab reports will be accepted without penalty for 48 hours following the deadline, after which a penalty of 1% per day of the total course mark will be assessed (please see details in Section 6).

A make-up mid-term exam will be scheduled for students with a valid Academic Consideration. If you miss the make-up mid-term with a valid Academic Consideration, the exam value (25%) will be reweighted to the weight of the final exam (which will become 70%). If you miss the Final Exam, please contact your Faculty's Academic Counselling Office as soon as you are able to do so. They will assess your eligibility to write the Special Exam (SPC), the name given by the university to a make-up Final Exam. The make-up exam for the final exam, for those with valid Academic Consideration from the Academic Counselling Office, will be held at a single date and time that will be announced later in the course and via OWL. If you miss BOTH the regular final exam and the make-up final exam AND you have valid Academic Consideration for both exams, you will receive an incomplete (INC) grade in the course. An INC grade means you are qualified to write the final exam during the next time the course is offered.

6. Student Absences and Missed Deadlines

Please familiarize yourself with the University policy on Academic Consideration for Student Absences – Undergraduate Students in First Entry Programs:

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

and the Student Medical Certificate (SMC):

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

Students should note that individual instructors are not permitted to receive documentation directly from a student, whether in support of an application for consideration on medical grounds, or for other reasons. **All documentation required for absences must be submitted to the Academic Counselling office of a student's Home Faculty.**

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

A. Assessments worth less than 10% of the overall course grade:

For the **quizzes**: The top 5 of 6 quizzes will be counted towards your mark; therefore, students do not require Academic Consideration for missing one quiz. If you miss a session due to an approved Academic Consideration, the remaining quizzes will be used for your mark. If more than one of the quizzes are missed with approved Academic Considerations, the average of the remaining quizzes will be used for the missed quiz(zes).

For the **Intro to R assignment** and **Lab reports 1 & 2**: students are not required to contact either the professor or TAs, nor obtain Academic Consideration, if the absence is short in duration and the assignment is submitted within the 48-hour grace period after the deadline.

All lab assignments have a 48-hour penalty-free period following the deadline. For longer periods of absence, students must obtain Academic Consideration from their Dean's Academic Counselling office that starts before or on the original deadline (not during the grace period). Students must contact the instructor or TAs within 24 hours after the accommodated period expires in order to arrange for new deadlines.

B. Assessments worth 10% or more of the overall course grade:

For work totaling 10% or more of the final course grade, you must provide valid medical or supporting documentation to the Academic Counselling Office of your Faculty of Registration as soon as possible.

For **Lab Report 3**: students are not required to contact either the professor or TAs, nor obtain Academic Consideration, if the absence is short in duration and the assignment is submitted within the 48-hour grace period after the deadline. All lab assignments have a 48-hour penalty-free period following the deadline. For longer periods of absence, students must obtain Academic Consideration from their Dean's Academic Counselling office that starts before or on the original deadline (not during the grace period). Students must contact the instructor or TAs within 24 hours after the accommodated period expires in order to arrange for new deadlines.

For the **mid-term exam**: Students who miss the mid-term exam must obtain Academic Consideration from their Dean's Academic Counselling office and be prepared to write the make-up mid-term exam. If the Academic Consideration for missing the mid-term exam extends past the date of the make-up exam, then the weight of the mid-term exam (25%) will be added to the final exam (which will become 70% of the course grade). Similarly, if you miss the scheduled make-up mid-term and have a valid Academic Consideration for that date, then the weight of the mid-term exam will be added to the final exam.

Absence from Final Examination: 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). Arrangements for this are also to be made through your deans' Academic Counselling office.

If a student fails to write a scheduled Special Examination, the date of the next Special Examination (if a second Academic Consideration is 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 Academic Calendar for details (under [Special Examinations](#)).

7. EDI statement

This course supports the goals of equity, diversity and inclusion. Science and learning are best achieved by diverse participants having equal opportunities and feeling valued and included.

Pronouns:

- Dr. Guglielmo (he/him); Dr. Macfie (she/her)
- Course TAs will inform students of their preferred pronouns at the start of labs.

8. Land Acknowledgement

We acknowledge that Western University is located on the traditional lands of the Anishinaabek, Haudenosaunee, Lūnaapéewak and Attawandaron peoples, on lands connected with the London Township and Sombra Treaties of 1796 and the Dish with One Spoon Covenant Wampum. This land continues to be home to diverse Indigenous peoples (e.g. First Nations, Métis and Inuit) whom we recognize as contemporary stewards of the land and vital contributors of our society.

9. 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 or requiring Academic Accommodation should work with Accessible Education (formerly SSD), which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The Academic Accommodation for Students with Disabilities policy can be found at:

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

10. Academic Policies

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

In accordance with policy, 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 account holders to ensure that e-mail received from the University at their official university

address is attended to in a timely manner. The full policy can be found here:
https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf.

Participants in this course are not permitted to record live lectures or live on-line sessions, except where recording is an approved Academic Accommodation, or the participant has the prior written permission of the instructor. Audio recorded lectures, lab presentations or videos are solely for the personal use of students registered in this course. Accordingly, distributing these materials, posting recordings to social media sites, or selling recordings of lectures or other course materials is a violation of the intellectual property of the instructors and is subject to legal or disciplinary procedures.

Use of pocket calculators, tablets, iPods, cellular phones, laptop computers or any other electronic devices is not allowed during exams unless directed or approved by the instructors.

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.

Turnitin ***aids*** in identifying plagiarism. 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.

Plagiarism in lab reports or cheating in exams will be viewed as academic offenses and dealt with as such. Penalties range from severe mark reduction, to failure of the course, or expulsion from the University. More information on academic integrity is available via the plagiarism links on OWL. Common sources of plagiarism include copying text from published sources, making use of a previous year's report and deliberately or inadvertently copying it, large similarities arising from lab partners working together, and (most commonly) overt copying of someone else's report, with or without their permission. In cases of plagiarism, both the copier and copy-ee will be penalized, and you are thus advised to guard the text of your lab report closely. Please bear in mind that turnitin.com does not conduct analyses for within-course plagiarism until after the deadline has expired, and that previous years' lab reports are stored in the turnitin.com database.

Professionalism & Privacy:

Western students are expected to follow the [Student Code of Conduct](#). Additionally, the following expectations and professional conduct apply to this course:

- Students are expected to follow in-class and online etiquette expectations, which are provided below and posted on OWL
- All course materials created by the instructor(s) are copyrighted and cannot be sold/shared
- Recordings are not permitted (audio or video) without explicit permission
- Permitted recordings are not to be distributed
- Students will be expected to take an academic integrity pledge for some assessments
- All recorded sessions will remain within the course site or unlisted if streamed

In-class Etiquette:

- Arrive to class on time
- Use your computer and/or laptop if possible (as opposed to a cell phone or tablet)
- To minimize distractions to your classmates, do not use your computer for anything other than note-taking
- Save your questions about the lecture content until after you have read the corresponding material in the textbook and looked for a similar question on the OWL forum

Online Etiquette:

Some components of this course may involve online interactions. To ensure the best experience for both you and your classmates, please honour the following rules of etiquette:

- “Arrive” to class on time
- Use your computer and/or laptop if possible (as opposed to a cell phone or tablet)
- Ensure that you are in a private location to protect the confidentiality of discussions in the event that a class discussion deals with sensitive or personal material
- To minimize background noise, mute your microphone for the entire class until you are invited to speak, unless directed otherwise
- In order to give us optimum bandwidth and web quality, turn off your video camera for the entire class unless you are invited to speak
- Please be prepared to turn your video camera off at the instructor’s request if the internet connection becomes unstable
- Unless invited by your instructor, do not share your screen in the meeting

The course instructor will act as moderator for the class and will deal with any questions from participants.

To participate please consider the following:

- If you wish to speak, use the “raise hand” function and wait for the instructor to acknowledge you before beginning your comment or question.
- Please remember to unmute your microphone and turn on your video camera before speaking.
- Self-identify when speaking.
- Please remember to mute your mic and turn off your video camera after speaking (unless directed otherwise).

General considerations of “netiquette”:

- Keep in mind the different cultural and linguistic backgrounds of the students in the course.

- Be courteous toward the instructor, your colleagues, and authors whose work you are discussing.
- Be respectful of the diversity of viewpoints that you will encounter in the class and in your readings. The exchange of diverse ideas and opinions is part of the scholarly environment. “Flaming” is never appropriate.
- Be professional and scholarly in all online postings. Use proper grammar and spelling. Cite the ideas of others appropriately.

Note that disruptive behaviour of any type during online classes, including inappropriate use of the chat function, is unacceptable. Students found guilty of Zoom-bombing a class or of other serious online offenses may be subject to disciplinary measures under the Code of Student Conduct.

11. Support Services

Please visit the Science & Basic Medical Sciences Academic Counselling webpage for information on add/drop 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 (http://www.health.uwo.ca/mental_health) for a complete list of options about how to obtain help.

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 instructors 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 Student Accessibility Services (SAS) at (519) 661-2147 if you have any questions regarding accommodations.

Learning-skills counsellors at the Student Development Centre (<https://learning.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.

Western University is committed to a thriving campus as we deliver our courses in the mixed model of both virtual and face-to-face formats. We encourage you to check out the Digital Student Experience website to manage your academics and well-being: <https://www.uwo.ca/se/digital/>.

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

The following links provide information about support services at Western University.

[Appeal Procedures](#)

[Registrarial Services](#)

[Student Development Services](#)

[Student Health Services](#)

This course is supported by the Science Student Donation Fund. If you are a BSc or BMSc student registered in the Faculty of Science or Schulich School of Medicine and Dentistry, you pay the Science Student Donation Fee. This fee contributes to the Science Student Donation Fund, which is administered by the Science Students' Council (SSC). One or more grants from the Fund have allowed for the purchase of equipment integral to teaching this course. You may opt out of the Fee by the end of September of each academic year by completing the online form linked from the Faculty of Science's Academic Counselling site. For further information on the process of awarding grants from the Fund or how these grants have benefitted undergraduate education in this course, consult the chair of the department or email the Science Students' Council at ssc@uwo.ca.