

Department of Physiology and Pharmacology
Cellular Physiology 3140A

Course Syllabus for Fall 2023



Western University is committed to a **thriving campus**; therefore, your health and wellness matter to us! The following link provides information about the resources available on and off campus to support students: <https://www.uwo.ca/health/> Your course coordinator can also **guide you** to resources and/or services should you need them.

1. Technical Requirements:



Stable internet connection



Laptop or computer

2. Important Dates:



Classes Begin	Classes End	
Thursday, September 7, 2023	Friday, December 8, 2023	
* November 13, 2023: Last day to drop a first-term half course without academic penalty		
Reading Week	Study day(s)	Exam Period
October 30–November 5	December 9	December 10–22

3. Contact Information



Course Coordinator	Contact Information
Dr. Christine Bell	Use OWL message
Instructor(s) or Teaching Assistant(s)	Contact Information
Dr. John Di Guglielmo	Use OWL message
Dr. Donglin Bai	Use OWL message
Dr. Peter Chidiac	Use OWL message
Dr. Chris Pin	Use OWL message
Jenica Kakadia (TA)	Use OWL message
Stephanie Leighton (TA)	Use OWL message
Sergiu Lucaciu (TA)	Use OWL message
Robert Wong (TA)	Use OWL message

4. Course Description and Design

Delivery Mode: In Person

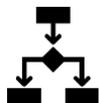
Physiology 3140A is a half-course to introduce students to the basic concepts of cellular and molecular physiology and some of the molecular tools used in the field.

The course consists of 5 sections:

- a) Cell architecture and membrane transport
- b) Cellular electrophysiology including ion channels and resting membrane potential
- c) G-protein coupled receptors and enzyme-linked receptors
- d) Cellular signaling
- e) The nucleus and gene regulation

Perturbations to the intracellular and extracellular environments of the cell will be selected to illustrate physiological responses to stimuli.

In addition, there are five online modules presenting an overview of 5 techniques that are commonly used in scientific research. These should be completed by students by the recommended dates. Material presented in the online modules will assist students with understanding lecture content and help with answering questions in group assignments and for the exams in the course.



Each instructor will post their lecture slides as well as the lectures. The course materials are from multiple sources, including textbooks and scientific literature. There are no required textbooks for the course. The figures used by each lecturer will be referenced in the slides.

Requisites: It is strongly recommended that Biochemistry 2280A and Biology 2382B be taken prior to Physiology 3140A

Timetabled Sessions

Component	Date(s)	Time
████████	████████	████████

- Attendance at sessions is required
- Missed work should be completed within 24 hours

All course material will be posted to OWL: <http://owl.uwo.ca>. Any changes will be indicated on the OWL site and discussed with the class.

If students need assistance, 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.

[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](#).

Learning Outcomes

Upon successful completion of this course, students will be able to:



- 1) Examine the basic principles involved in cellular physiology.
- 2) Explain intercellular and intracellular communication of biological information.
- 3) Identify and describe experimental approaches and techniques used to study cellular communication.

5. Course Content and Schedule

Week	Dates	Topic	Instructor
1	Sept. 8th	Course Introduction	Dr. Bell/Dr. Di Guglielmo
2	Sept. 11th	Integrating Cells into Tissues	Dr. Di Guglielmo
	Sept. 13th	Cell-Matrix Interactions	Dr. Di Guglielmo
	Sept. 15th	Cell-Matrix Interactions II	Dr. Di Guglielmo
3	Sept. 18th	Cell-Cell Interactions	Dr. Di Guglielmo
	Sept. 20th	Epithelial Cell Polarity/Properties	Dr. Di Guglielmo
	Sept. 22nd	Transport Across Epithelium	Dr. Di Guglielmo
4	Sept. 25th	Cytoskeleton/Scaffolding Proteins	Dr. Di Guglielmo
	Sept. 27th	Membrane Properties/ Lipid Bilayer	Dr. Di Guglielmo
	Sept. 29th	<i>Truth and Reconciliation Day – no lecture</i>	
5	Oct. 2nd	Membrane Rafts/ Signaling Platforms	Dr. Di Guglielmo
	Oct. 4th	Ion Channels	Dr. Bai
	Oct. 6th	Molecular Structure of Ion Channels	Dr. Bai
6	Oct. 9th	<i>Thanksgiving – no lecture</i>	
	Oct. 11th	Patch Clamp and other Methods	Dr. Bai
	Oct. 12th	Ionic Distribution and Nernst Equation	Dr. Bai
7	Oct. 16th	Resting Membrane Potential, Action potentials	Dr. Bai
	Oct. 18th	Ion Channel Application of Principles	Dr. Bai
	Oct. 20th	Cell Signaling Introduction	Dr. Chidiac
8	Oct. 23rd	Receptor Signaling classes	Dr. Chidiac
	Oct. 25th	GPCR I	Dr. Chidiac
	Oct. 27th	GPCR II	Dr. Chidiac
9	Oct. 31st - Nov. 5th	<i>Reading Week</i>	
10	Nov. 6th	G protein mediated signaling I	Dr. Chidiac
	Nov. 8th	G protein mediated signaling II	Dr. Chidiac
	Nov. 10th	Signaling overview/application	Dr. Chidiac
11	Nov. 13th	Enzyme linked receptors	Dr. Di Guglielmo
	Nov. 15th	From membrane to nucleus I – WNT/b-catenin	Dr. Pin
	Nov. 17th	From membrane to nucleus II - TGFb/SMADs	Dr. Pin
12	Nov. 20th	Nuclear organization and structure	Dr. Pin
	Nov. 22nd	Transcription I Genes, promoters & enhancers	Dr. Pin
	Nov. 24th	Transcription II – Transcription factors	Dr. Pin
13	Nov. 27th	Transcription III – Nuclear receptors	Dr. Pin
	Nov. 29th	Epigenetics I – Histone modifications	Dr. Pin
	Dec. 1st	Epigenetics II – DNA methylation	Dr. Pin
14	Dec. 4th	Epigenetics III – non-coding RNAs	Dr. Pin
	Dec. 6th	DNA damage and repair I	Dr. Pin
	Dec. 8th	DNA damage and repair II	Dr. Pin

6. Participation and Engagement



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

7. Evaluation

Below is the evaluation breakdown for the course. Any deviations will be communicated.

Assessment	Format	Weighting	Due Date
Assignment #1	Group Assignment (based on the online molecular technique modules)	8%	Oct. 16 th 11:59 PM
Midterm Exam	MC and short answer	35%	Oct. 27 th 6-8 PM
Assignment #2	Group Assignment	10%	Nov. 22 nd 11:59 PM
Assignment #3	Group/individual Assignment	2%	Dec. 6 th 11:59 PM
Final Exam	MC and short answer	45%	TBD 3 hours

- Not all members of a group may get the same grade in an assignment.
- 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
- Any grade appeals on assignments, or exams must be received within 3 weeks of the grade being posted.
- 15% of your course grade will be evaluated and returned 3 days prior to the drop deadline (statement in policies below).



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.

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

Information about late or missed evaluations:

- Late assignments without accommodation will be subject to a late penalty 20%/day
- Midterm Exam: One make up midterm exam will be offered to eligible students (for e.g., students who missed the original exam due to illness). If both are missed, the value of the exam will be shifted to the final exam.
- Final Exam: One make up final exam will be offered to eligible students during the make-up exam date set by the department.
- The final exam must be completed to pass the course. If this is missed, an INC will show up on transcripts and students would write the final exam the next time that the course is offered.

INC (Incomplete Standing): If a student has been approved by the Academic Counselling Office (in consultation with the instructor/department) to complete term work at a later date, an INC will be assigned. Students with INC will have their course load in subsequent terms reduced to allow

them to complete outstanding course work. Students may request permission from Academic Counselling to carry a full course load for the term the incomplete course work is scheduled.

SPC (Special examination): If a student has been approved by the Academic Counselling Office to write a Special Examination and the final exam is the only outstanding course component, an SPC will be assigned. If the class has a makeup exam, the student is expected to write the makeup exam. If the class doesn't have a makeup exam or the student misses the makeup exam for reasons approved by the Academic Counselling Office, the student will write the exam the next time the course is offered. Outstanding SPCs will reduce the course load for the term the exam is deferred as outlined in [Types of Examinations](#) policy.

8. Communication:



- Students should check the OWL site every 24–48 hours
- Emails will be monitored daily; students will receive a response in 24–48 hours
- Students should post all course-related queries on the discussion forum so that everyone can access the questions and responses

9. Office Hours: Office hours may change in response to public health recommendations



- Office hours will be held in-person or remotely using Zoom
- Office hours will be booked/ drop-in, depending on the instructor
- Office hours will be individual and /or group, depending on the instructor

10. Resources



- All resources will be posted in OWL

11. Professionalism & Privacy:



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

- All course materials created by the instructor(s) are copyrighted and cannot be sold/shared (e.g., Must Knows Facebook group, Course Hero, Chegg, etc.)
- 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 before some assessments

Western is committed to providing a learning and working environment that is free of harassment and discrimination. All **students**, staff, and faculty have a role in this commitment and have a responsibility to ensure and promote a safe and respectful learning and working environment. Relevant policies include Western's [Non-Discrimination/Harassment Policy](#) (M.A.P.P. 1.35) and [Non-Discrimination/Harassment Policy – Administrative Procedures](#) (M.A.P.P. 1.35).

Any **student**, staff, or faculty member who experiences or witnesses' behaviour that may be harassment or discrimination **must report the behaviour** to the Western's [Human Rights Office](#). Harassment and discrimination can be human rights-based, which is also known as EDI-based, (sexism, racism, transphobia, homophobia, islamophobia, xenophobia, antisemitism, and ableism) or non-human rights-based (personal harassment or workplace harassment).

12. How to Be Successful in this Class:

Students enrolled in this class should understand the level of autonomy and self-discipline required to be successful.



1. Invest in a planner or application to keep track of your courses. Populate all your deadlines at the start of the term and schedule your time throughout the course.
2. Make it a daily habit to log onto OWL to ensure you have seen everything posted to help you succeed in this class.
3. Follow weekly checklists created on OWL or create your own to help you stay on track.
4. Take notes as you go through the lesson material. Keeping handwritten notes or even notes on a regular Word document will help you learn more effectively than just reading or watching the videos.
5. Connect with others. Try forming an online study group and try meeting on a weekly basis for study and peer support.
6. Do not be afraid to ask questions. If you are struggling with a topic, check the online discussion boards or contact your instructor(s) and or teaching assistant(s).
7. Reward yourself for successes. It seems easier to motivate ourselves knowing that there is something waiting for us at the end of the task.

13. Western Academic Policies and Statements

Absence from Course Commitments

A. Absence for medical illness:

Students must familiarize themselves with the [Accommodation for Illness Policy](#).

A student seeking academic accommodation for any **work worth less than 10%** must contact the instructor or follow the appropriate Department or course specific instructions provided on the course outline. Instructors will use good judgment and ensure fair treatment for all students when considering these requests. You are not required to disclose details about your situation to your instructor; documentation is not required in this situation, and you should not send any pictures to your instructor.

If you are unable to meet a course requirement for any **work worth 10% or greater** due to illness or other serious circumstances, you must provide valid medical or other supporting documentation to the Academic Counseling as soon as possible and contact your instructor immediately. It is the student's responsibility to make alternative arrangements with their instructor once the accommodation has been approved and the instructor has been informed. Please note that the format of a make-up test, exam, or assignment is at the discretion of the course coordinator.

A student requiring academic accommodation due to illness should use the Student Medical Certificate when visiting an off-campus medical facility or request a Record's Release Form (located in the Dean's Office) for visits to Student Health Services. The form can be found at: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf

B. Absence for non-medical reasons:

Student absences might also be approved for non-medical reasons such as religious holidays and compassionate situations. Please review the policy on [Accommodation for Religious Holidays](#). All non-medical requests must be processed by Academic Counselling. Not all absences will be approved; pay attention to the academic calendar and final exam period when booking any trips.

C. Special Examinations

A Special Examination is any examination other than the regular examination, and it may be offered only with the permission of the Dean of the Faculty in which the student is registered, in consultation with the instructor and Department Chair. Permission to write a Special Examination may be given on the basis of compassionate or medical grounds with appropriate supporting documents. To provide an opportunity for students to recover from the circumstances resulting in a Special Examination, the University has implemented Special Examinations dates. These dates as well as other important information about examinations and academic standing can be found [here](#).

Academic Offenses

Scholastic offences are taken seriously, and students are directed [here](#) to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence.

Accessibility Statement

Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Accessible Education (AE) at 661-2111 x 82147 for any specific question regarding an accommodation or review [The policy on Accommodation for Students with Disabilities](#)

Correspondence Statement

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. You can read about the privacy and security of the UWO email accounts [here](#).

Discovery Credit Statement

Students are permitted to designate up to 1.0 Discovery Credit course (or equivalent) for pass/fail grading that can be counted toward the overall course credits required for their degree program. The details of this policy and the deadlines can be found [here](#).

14. BMSUE Academic Policies and Statements

Cell Phone and Electronic Device Policy (for in-person tests and exams)

The Schulich School of Medicine & Dentistry is committed to ensuring that testing and evaluation are undertaken fairly across all our departments and programs. For all tests and exams, it is the policy of the School that any electronic devices, i.e., cell phones, tablets, cameras, smart glasses or iPod are strictly prohibited. These devices **MUST** be left either at home or with the student's bag/jacket at the front of the room and **MUST NOT** be at the test/exam desk or in the individual's pocket. Any student found with one of these prohibited devices will receive a grade of zero on the test or exam. Non-programmable calculators are only allowed when indicated by the instructor. The program is not responsible for stolen/lost or broken devices.

Copyright and Audio/Video Recording Statement

Course material produced by faculty is copyrighted and to reproduce this material for any purposes other than your own educational use contravenes Canadian Copyright Laws. You must always ask permission to record another individual and you should never share or distribute recordings.

Rounding of Marks Statement

Across the Basic Medical Sciences Undergraduate Education programs, we strive to maintain high standards that reflect the effort that both students and faculty put into the teaching and learning experience during this course. All students will be treated equally and evaluated based only on their actual achievement. **Final grades** on this course, irrespective of the number of decimal places used in marking individual assignments and tests, will be calculated to one decimal place and rounded to the nearest integer, e.g., 74.4 becomes 74, and 74.5 becomes 75. Marks WILL NOT be bumped to the next grade or GPA, e.g., a 79 will NOT be bumped up to an 80, an 84 WILL NOT be bumped up to an 85, etc. The mark attained is the mark you achieved, and the mark assigned; requests for mark “bumping” will be denied.

15. Support Services

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

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.

[Academic Counselling \(Science and Basic Medical Sciences\)](#)

[Appeal Procedures](#)

[Registrarial Services](#)

[Student Development Services](#)

[Student Health Services](#)