

Physiology and Pharmacology Cell Physiology 3140A

Course outline for Fall 2021



Although this academic year might be different, Western University is committed to a **thriving campus**. We encourage you to check out the [Digital Student Experience](#) website to manage your academics and well-being. Additionally, the following link provides available resources to support students on and off campus: <https://www.uwo.ca/health/>.

1. Technical Requirements:



Stable internet connection



Laptop or computer

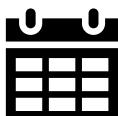


Working microphone



Working webcam

2. Important Dates:



Classes Begin	Reading Week	Classes End	Study day(s)	Exam Period
September 8	November 1–7	December 8	December 9	December 10–21

* November 12, 2021: Last day to drop a first-term half course or a first-term full course without penalty

3. Contact Information

Course Coordinator	Contact Information
John Di Guglielmo	Please Use OWL message



Instructor(s) or Teaching Assistant(s)	Contact Information
John Di Guglielmo	Please use OWL message
Donglin Bai	Please use OWL message
Peter Chidiac	Please use OWL message
Chris Pin	Please 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.

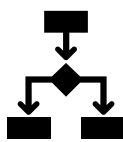
The course consists of 5 modules:

- 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.

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
Lecture	M/W/F	9:30-10:30

- Attendance at sessions is required
- Missed work should be completed within 24 hours
- A recording will be provided of the sessions

NOTE: In the event of a COVID-19 resurgence during the course that necessitates moving away from face-to-face interaction, remaining course content will be delivered entirely online, either synchronously (i.e., at times indicated in the timetable) or asynchronously (e.g., posted on OWL for students to view at their convenience). The grading scheme will not change. Any remaining assessments will also be conducted online at the discretion of the instructor.

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](#).

5. 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.

6. Course Content and Schedule

Week	Dates	Topic	Instructor
1	Sept 8–12	<ul style="list-style-type: none">• Course Introduction• Integrating Cells into Tissues	JD
2	Sept 13–19	<ul style="list-style-type: none">• Cell-Matrix Interactions• Cell-Matrix Interactions II• Cell-Cell Interactions	JD
3	Sept 20–26	<ul style="list-style-type: none">• Epithelial Cell Polarity/Properties of Epithelial Cells• Transport Across Epithelium• Cytoskeleton/Scaffolding Proteins	JD
4	Sept 27–Oct 3	<ul style="list-style-type: none">• Membrane Properties/ Lipid Bilayer• Membrane Rafts/ Signalling Platforms• Review Session	JD
5	Oct 4–10	<ul style="list-style-type: none">• Ion Channels• Molecular Structure of Ion Channels• Patch Clamp and other Methods	DB
6	Oct 11–17	<ul style="list-style-type: none">• <i>Thanksgiving – no lecture</i>• Ionic Distribution and Nernst Equation• Resting Membrane Potential	DB
7	Oct 18–24	<ul style="list-style-type: none">• Review session• Cell Signalling Introduction• Receptor signalling classes	DB PC PC
8	Oct 25–Oct 31	<ul style="list-style-type: none">• GPCR I• GPCR II• G protein mediated signalling I	PC
9	Nov 1–7	Reading Week	N/A
10	Nov 8–14	<ul style="list-style-type: none">• G protein mediated signalling I• Enzyme linked receptors• From membrane to nucleus I – WNT/β-catenin	PC JD CP
11	Nov 15–21	<ul style="list-style-type: none">• From membrane to nucleus II - TGFβ/SMADs• Nuclear organization and structure• Transcription I – Genes, promoters and enhancers	CP
12	Nov 22–28	<ul style="list-style-type: none">• Transcription II – Transcription factors• Transcription III – Nuclear receptors• Epigenetics I – Histone modifications	CP
13	Nov 29–Dec 5	<ul style="list-style-type: none">• Epigenetics II – DNA methylation• Epigenetics III – non-coding RNAs• DNA damage and repair I	CP
14	Dec 6–8	<ul style="list-style-type: none">• DNA damage and repair II	CP

7. Participation and Engagement



Students are expected to participate and engage with content as much as possible

- Students can also participate by interacting in the forums with their peers and instructors

8. Evaluation

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

Assessment	Format	Weighting	Due Date
Quizzes	multiple choice (MC) and short answer	10%	Please see schedule for details on OWL
Midterm Exam	MC and short answer	35%	TBD
Final Exam	MC and short answer	55%	During final exam period

- 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



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

Information about late or missed evaluations:

- One make-up test will be offered for the midterm and final exam.
- If a quiz is missed with documentation, the weight will be transferred to the other quizzes. There will be no make-ups for the quizzes.
- If a make-up assessment is missed with documentation, the student will receive an INC and complete the task the next time the course is offered

9. Communication:



- Students should check the OWL site every 24 – 48 hours
- Students should email their instructor(s) and teaching assistant(s) using OWL messenger
- Emails will be monitored daily; students will receive a response in 24 – 48 hours
- This course will use forums for discussions
- Students should post all course-related queries on the discussion forum so that everyone can access the questions and responses

10. Office Hours:



- Office hours will be held remotely using Zoom
- Office hours will be available and each instructor will indicate the times for sign-up for group or individual hours

11. Resources



- All resources will be posted in OWL

12. 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
- 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

13. 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 time at the start of each week to get organized and manage your time.
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. Treat this course as you would a face-to-face course. 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.

14. Western Academic Policies and Statements

Absence from Course Commitments

[Policy on Academic Consideration for Student Absences](#)

If you are unable to meet a course requirement due to illness or other serious circumstances, you must seek approval for the absence as soon as possible. Approval can be granted either through a **self-reported absence** or via the **Academic Counselling** unit. Students have two self-reports to use throughout the academic year; absence from course commitments including tests, quizzes, presentations, labs, and assignments that are worth 30% or less can be self-reported. Self-reported absences cover a student for 48 hours (yesterday + today or today + tomorrow). Your instructor will receive notification of your consideration; however, you should contact your instructor immediately regarding your absence. Students are expected to submit missed work within 24 hours of the end of the 48-hour period. Please review details of the [university's policy on academic consideration for student absences](#).

If you have used both their self-reported absences or will miss more than 48 hours of course requirements, a Student Medical Certificate (SMC) should be signed by a licensed medical or mental health practitioner and you should contact academic counselling. Science and BMSc students can contact academic counselling through the Help Portal: <https://www.uwo.ca/sci/counselling/>

Accommodation for Religious Holidays

The policy on Accommodation for Religious Holidays can be viewed [here](#).

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](#).

Turnitin and other similarity review software

All assignments will be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. Students will be able to view their results before the final submission. 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 Western University and [Turnitin.com](#).

15. 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, 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.

16. Support Services

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

Academic Counselling (Science and Basic Medical Sciences)

Appeal Procedures

Registrarial Services

Student Development Services

Student Health Services