

Physiology and Pharmacology  
Cell Physiology 3140A

Course outline for Fall 2020



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. Course Overview and Important Dates:



Delivery Mode	Dates	Time
Online (asynchronous)	Lectures recorded and released weekly	
Online (synchronous)	Weekly tutorial (optional)	TBD by each lecturer

\*Details about design and delivery of the course are listed below in Section 4

Classes Start	Reading Week	Classes End	Study day(s)	Exam Period
September 9	November 2 - 8	December 9	December 10	December 11 - 22

\* November 12, 2020: 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

Instructors	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

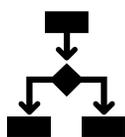
Physiology 3140A is a half-course to introduce students to the basic concepts of cellular and molecular physiology and some of the molecular tools used in the field.

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.

Mode	Dates	Time	Frequency
Virtual synchronous	TBD by lecturer	1 hour	TBD by lecturer
Virtual asynchronous	N/A	3 hours	weekly

- Asynchronous pre-work must be completed prior to synchronous sessions
- Missed work should be completed within 24 hours
- A recording will be provided for synchronous sessions

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 you're 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 9 – 13	<ul style="list-style-type: none"> <li>• Course Introduction</li> <li>• Integrating Cells into Tissues</li> </ul>	JD
2	Sept 14 – 20	<ul style="list-style-type: none"> <li>• Cell-Matrix Interactions</li> <li>• Cell-Matrix Interactions II</li> <li>• Cell-Cell Interactions</li> </ul>	JD
3	Sept 21 – 27	<ul style="list-style-type: none"> <li>• Epithelial Cell Polarity/Properties of Epithelial Cells</li> <li>• Transport Across Epithelium</li> <li>• Cytoskeleton/Scaffolding Proteins</li> </ul>	JD
4	Sept 28 – Oct 4	<ul style="list-style-type: none"> <li>• Membrane Properties/ Lipid Bilayer</li> <li>• Membrane Rafts/ Signalling Platforms</li> <li>• Review Session</li> </ul>	JD
5	Oct 5 – 11	<ul style="list-style-type: none"> <li>• Ion Channels</li> <li>• Molecular Structure of Ion Channels</li> <li>• Patch Clamp and other Methods</li> </ul>	DB
6	Oct 12 – 18	<ul style="list-style-type: none"> <li>• <i>Thanksgiving – no lecture</i></li> <li>• Ionic Distribution and Nernst Equation</li> <li>• Resting Membrane Potential</li> </ul>	DB
7	Oct 19 – 25	<ul style="list-style-type: none"> <li>• Review session</li> <li>• Cell Signalling Introduction</li> <li>• Receptor signalling classes</li> </ul>	DB PC PC
8	Oct 26 – Nov 1	<ul style="list-style-type: none"> <li>• GPCR I</li> <li>• GPCR II</li> <li>• G protein mediated signalling I</li> </ul>	PC
9	Nov 2 – 8	<i>Fall Break</i>	
10	Nov 9 – 15	<ul style="list-style-type: none"> <li>• G protein mediated signalling II</li> <li>• Enzyme linked receptors</li> <li>• From membrane to nucleus I – WNT/b-catenin</li> </ul>	PC JD CP
11	Nov 16 – 22	<ul style="list-style-type: none"> <li>• From membrane to nucleus II - TGFb/SMADs</li> <li>• Nuclear organization and structure</li> <li>• Transcription I – Genes, promoters and enhancers</li> </ul>	CP
12	Nov 23 – 29	<ul style="list-style-type: none"> <li>• Transcription II – Transcription factors</li> <li>• Transcription III – Nuclear receptors</li> <li>• Epigenetics I – Histone modifications</li> </ul>	CP
13	Nov 30 – Dec 6	<ul style="list-style-type: none"> <li>• Epigenetics II – DNA methylation</li> <li>• Epigenetics III – non-coding RNAs</li> <li>• DNA damage and repair I</li> </ul>	CP
14	Dec 7 – 9	<ul style="list-style-type: none"> <li>• DNA damage and repair II</li> </ul>	CP

## 7. Online Participation and Engagement



- 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
Midterm Exam	MC and short answer	35%	TBD
Final Exam	MC and short answer	55%	During final exam period

- Virtual proctoring will be used
- 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:

- An assessment cannot be submitted after it has been returned to the class; the weight will be transferred to the final grade
- A make-up test will be offered
- If a make-up assessment is missed, the student will receive an INC and complete the task the next time the course is offered

### Virtual Proctoring Service

Tests and examinations in this course will be conducted using the remote proctoring service, Proctortrack. By taking this course, you are consenting to the use of this software and acknowledge that you will be required to provide **personal information** (including some biometric data) and the session will be **recorded**. More information about this remote proctoring service is available in the Online Proctoring Guidelines at the following link:

<https://www.uwo.ca/univsec/pdf/onlineproctorguidelines.pdf>.

Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. Information about the technical requirements are available at the following link:

<https://www.proctortrack.com/tech-requirements/>.

## 9. Communication:



- Students should check the OWL site every 24 – 48 hours
- A weekly update will be provided on the OWL announcements
- Students should email their instructor(s) and teaching assistant(s) using OWL “messages”
- Emails will be monitored daily; students will receive a response in 24 – 48 hours
- This course will use the OWL forum for discussions
- Students should post all course-related content on the discussion forum so that everyone can access answers to questions
- The discussion forums will be monitored daily by instructors or teaching assistants

## 10. Office Hours:



- Office hours will be held remotely using Zoom (TBD by each instructor)
- Students will be able to sign up for an appointment using Sign Up on OWL

## 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:



- Students are expected to follow online etiquette expectations provided 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 before some assessments
- All recorded sessions will remain within the course site or unlisted if streamed

### 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. Academic Counselling will be operating virtually this year and can be contacted at [scibmsac@uwo.ca](mailto:scibmsac@uwo.ca).

#### 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](#).

### **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**

### **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](#)