

Physiology and Pharmacology
Diseases of Ion Channels – Physiology 4600A

Course outline for Fall 2021 (updated on Aug. 17, 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
Donglin Bai	donglin.bai@schulich.uwo.ca

Instructor(s) or Teaching Assistant(s)	Contact Information
Wei-Yang Lu (Instructor)	wlu53@uwo.ca
Kendrick Lee (TA)	Klee843@uwo.ca

4. Course Description and Design

Delivery Mode: in-person

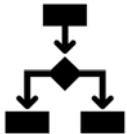
This is a 4th year course on ion channel related diseases, including congenital hearing loss, cataracts, cardiac arrhythmias, immunodeficiency, and some neurological diseases. We will cover physiology and pathophysiology of relevant ion channels.

Anti-requisite: None

Prerequisites: Physiology3120 and Physiology3140A.

2 lecture hours (lecture vs seminar approximately 3:2). 0.5 course

The course is taught by two professors and involves student participation through presentation and discussion of research papers. Evaluation of student performance will include a midterm test (32%), participation (5%), marks for presentation (20%), a written summary of the presentation (5%), and a final examination (38%). The midterm test and final examination will consist of fill in the blanks, draw diagrams/structure models, essay and short-answer style questions. PPT files of the lectures will be posted on OWL before each class. Questions regarding each lecture can be asked during or after each lecture in class or post in the forum on OWL. Similarly, questions to student presentations can be asked after the student presentation. Note that the timing of our midterm test will be during the class time, 2:30-4:30 on Wednesday, October 20th.



Papers to be used for student presentations will be distributed one week prior to presentation time (Wednesday afternoon). The scheduling of presentations will be through a process of time selection by students on OWL, but the final schedule will be determined by the course manager. There will be up to 18 papers to be presented. Two students will be paired up to present each paper. The presentation should be 20 minutes maximum, during which the objectives and background of the research, relevant experimental methodology and results, as well as summary of observations and conclusions are to be described. Two students should contribute equally to the presentation especially on results and discussion. Attention should focus on the physiological mechanisms studied. A question and answer period of 5~10 minutes will be conducted after each presentation moderated by the assigned Discussion Leaders. After the presentation, the presenters are required to submit a written summary of their talk to the instructor and TA, to be posted on the web site. The summary should be less than 2 pages, containing hypothesis, objectives, brief methods and main results of the paper. Students who wrote a poor summary or did not submit a summary by the next Monday after their presentation will lose part of the marks (maximum 5%). Power-point or equivalent should be used for student presentation.

Timetabled Sessions

Component	Date(s)	Time
In class and virtual synchronous	Wed.	14:30 – 16:30
Virtual asynchronous	N/A	~1 hour

- Presentation preparations must be completed prior to sessions
- Attendance at class/sessions is required
- Missed work should be completed within 24 hours

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

synchronously (i.e., at times indicates in the timetable). The grading scheme will not change. Any remaining presentations will also be conducted online via Zoom during class time.

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:



- understand/explain the mechanisms of channel physiology and how diseases are related to ion channel function
- effectively present original research papers

6. Course Content and Schedule



Week	Dates	Topic	Instructor
1	Sept 8	Introduction and how to present scientific papers	Bai / Lu
2	Sept 15	Lecture on calcium-release activated calcium (CRAC) channels	Lu
3	Sept 22	Lecture on CRAC channels related immune deficiency (2 papers)	Lu
4	Sept 29	Lecture on other store-operated calcium channels (2 papers)	Lu
5	Oct 6	Lecture on implications of TRPC channel for Neurological Diseases (2 paper)	Lu
6	Oct 13	(2 papers) Session review	Lu
7	Oct 20	Midterm test	Lu / Bai
8	Oct 27	Lectures on gap junction and methods of measurement	Bai
9	Nov 3	Reading Week	N/A
10	Nov 10	Lecture on GJ function and diseases (2 papers)	Bai
11	Nov 17	(2 papers) Lecture on mechanisms of GJ diseases	Bai
12	Nov 24	(4 papers)	Bai
13	Dec 1	(2 papers) Lecture on GJ structure and gating	Bai
14	Dec 8	Review lectures	Bai
	Dec 11-22	Final exam	Bai / Lu

7. Participation and Engagement



- Students are expected to participate and engage with content as much as possible
- Students can also participate by interacting in class or in the forum 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
Midterm test	Short answer and long essay questions	32%	Oct. 20, 2021
Participation	Being discussion leaders for student presentations and raise questions	5%	See updated schedule
Presentation	Presentation of an original research paper in class	20%	See updated presentation schedule
Written summary	A summary of the presented paper with no more than 2 pages	5%	The 1 st Mon. after your presentation
Final exam	Fill in the blanks, draw cartoons, diagrams, and/or structure models, short answer, and long essay questions	38%	To be determined

- Presentation summaries are due at 11:55 pm EST unless otherwise specified
- A student may not receive the same grade as their group members if it is determined that the distribution of work was not equal
- 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:

- Late assessments without self-reported absences or accommodation will be subject to a late penalty 10%/day
- Late assessments with self-reported absences or accommodation should be submitted within 24 hours of the end of the self-report or accommodation (e.g., due Mon 11:55 pm; self-report covers Mon/Tue; new deadline is Wed by 11:55 pm)
- One make-up test will be arranged by departmental secretary.
- 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 email
- 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 if needed
- Office hours will be held at mutually agreed time if needed

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. 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.
4. Connect with others. Try forming an online study group and try meeting on a weekly basis for study and peer support.
5. Do not be afraid to ask questions. If you are struggling with a topic, check the online discussion boards (forum) or contact your instructor(s) and or teaching assistant(s).
6. 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 Offences

"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](#)