

Physiology and Pharmacology
Disease of Ion Channels – Physiology 4600A

Course outline for Fall 2020 (updated on Sept. 6, 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, seminars, will be recorded and released weekly | |
| Online (synchronous) | Tutorials, seminar Q/A, in class discussions | Wed. 14:30 – 16:30 |

*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 |
|--------------------|------------------------|
| Donglin Bai | Please use OWL message |

| Instructor or Teaching Assistant | Contact Information |
|----------------------------------|------------------------|
| Wei-Yang Lu (Instructor) | Please use OWL message |
| Tianhe Li (TA) | Please use OWL message |

4. Course Description and Design

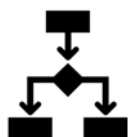
This is a 4th year course on ion channel related diseases, including congenital hearing loss, cataracts, cardiac arrhythmias, immunodeficiency, and some neurological diseases. We will cover physiology and pathophysiology of relevant ion channels.

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 essay and short-answer style questions. Pre-recorded lecture videos, PPT files of the lecture, and student MP4 presentation videos will be posted on OWL before Monday noon for everyone to watch and raise questions. For questions regarding the lecture, post them in the forum on OWL, for questions to student video presentations, use the comments tool that will be on the same OWL page as the posted video presentation. During the scheduled class hours (Wednesday 14:30 – 16:30) we will run Zoom meetings for lecture tutorials, student presentation questions and answers, and/or in class discussions. Note that the timing of our midterm test will be during the class time, 2:30-4:30 on Wednesday, October 21st.



Papers to be used for student presentations will be distributed at ~10 days prior to presentation submission time (Monday noon). 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 presented. Two students will be paired up to present each paper and will upload their final MP4 presentation video on OWL (Monday noon). 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 ~10 minutes will be conducted during our regular class time with a Zoom meeting moderated by the assigned Discussion Leaders. After the presentation, the presenters are required to submit a written summary of their talk to the instructor, 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 on Zoom or other platforms should be used for generating presentation video as a final MP4 format, which should be uploaded on Monday noon of the presentation week.

| Mode | Dates | Time | Frequency |
|----------------------|-------|---------------|-----------|
| Virtual synchronous | Wed. | 14:30 – 16:30 | weekly |
| Virtual asynchronous | N/A | ~1-2 hours | weekly |

- Asynchronous pre-work must be completed prior to synchronous sessions
- Attendance at synchronous 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; up 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) understand/explain the mechanisms of channel physiology and how diseases are related to ion channel function;
- 2) effectively present original research papers.

6. Course Content and Schedule



| Week | Dates | Topic | Instructor |
|------|-----------|-----------------------------------------------------------------------------|------------|
| 1 | Sept 9 | Introduction and how to present a scientific paper | Bai |
| 2 | Sept 16 | Lecture on calcium-release activated calcium (CRAC) channels | Lu |
| 3 | Sept 23 | Lecture on CRAC channels related immune deficiency (2 papers) | Lu |
| 4 | Sept 30 | Lecture on other store-operated calcium channels (2 papers) | Lu |
| 5 | Oct 7 | Lecture on implications of TRPC channel for Neurological Diseases (2 paper) | Lu |
| 6 | Oct 14 | (2 papers) Session review | Lu |
| 7 | Oct 21 | Midterm test | Lu / Bai |
| 8 | Oct 28 | Lectures on gap junction and methods of measurement | Bai |
| 9 | Nov 4 | Reading Week | N/A |
| 10 | Nov 11 | Lecture on GJ function and diseases (2 papers) | Bai |
| 11 | Nov 18 | (2 papers) Lecture on mechanisms of GJ diseases | Bai |
| 12 | Nov 25 | (4 papers) | Bai |
| 13 | Dec 2 | (2 papers) Lecture on GJ structure and gating | Bai |
| 14 | Dec 9 | Review lectures | Bai |
| | Dec 11-22 | Final exam | Bai |

7. Online 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 |
|-----------------|--------------------------------------------------------------------------------------------------|-----------|------------------------------------------|
| Midterm test | Short answer and long essay questions | 32% | Oct. 21, 2020 |
| Participation | Being discussion leaders for student presentations and raise questions in paper discussion forum | 5% | Please see updated schedule |
| Presentation | Presentation of an original research paper with a prerecorded MP4 video and upload in OWL | 20% | Please see updated presentation schedule |
| Written summary | A summary of the presented paper with no more than 2 pages | 5% | First Monday after your presentation |
| Final exam | Short answer and long essay questions | 38% | To be determined |



- Written assignments will be submitted to Turnitin (statement in policies below)
- 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 video presentation without documentation or a self-reported absence will be subject to a late penalty 25 %/day
- Late video presentation with a self-reported absence should be submitted within 24 hours of submission of the self-report
- 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

9. Communication:



- Students should check the OWL site every 24 – 48 hours
- Students should email their instructor(s) and teaching assistant(s) using OWL “messages”
- This course will use the OWL forum for questions on lectures and paper presentations
- 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 by instructors or teaching assistant

10. Office Hours:



- Office hours will be held remotely using Zoom in class time on Wed. afternoon
- 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

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.

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](#).

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](#)