

Department of Physiology and Pharmacology

Physiology 4680B - Cellular Molecular Neurobiology

Course Syllabus for Winter 2025



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	Reading Week	Classes End	Study day(s)	Exam Period
January 6	February 15–23	April 4	April 5–6	April 7–30

March 31, 2025: Last day to withdraw from second-term half course without academic penalty

3. Contact Information

Course Coordinator / Manager	Contact Information
Wei-Yang Lu	wlu53@uwo.ca

Instructor(s) or Teaching Assistant(s)	Contact Information
Wei-Yang Lu	wlu53@uwo.ca
Julio Martinez-Trujillo (Prof. / Instructor)	julio.martinez@robarts.ca
Stephen Pasternak (Prof. / Instructor)	spasternak@robarts.ca
Mehrzad Rahmani (Teaching Assistant)	mrahm337@uwo.ca

4. Course Description and Design

Delivery Mode: In-person

Physiology 4680B is a 0.5-credit course (2 hours every week).

Prerequisite(s): Physiology 3120 and 3140A; or Neuroscience 2000 and Physiology 3140A.

Unless you meet the prerequisites for this course or have obtained written special permission from your Dean to enroll, you may be removed from the course, and it will be deleted from your record. This decision is final and cannot be appealed. In the event you are dropped from the course for not having the necessary prerequisites, you will not be entitled to a fee adjustment.

Anti-requisite: None

Course Description:

This course explores the function of neuronal cells in the central nervous system. The three instructors will cover topics including the cellular and molecular mechanisms of excitatory and inhibitory synaptic transmission, integrative neuronal activities involved in cognition, and protein processing pathways related to memory-related neuronal activity. The course also introduces the pathophysiology of neurological disorders, such as Alzheimer's disease.

Course Design:

The course consists of lectures by instructors/professors as well as paper presentations and discussions by students. The ratio of lectures to student presentations/discussion is approximately 3:2. All lectures and student presentations will be conducted in-person. Lecture slides and presentation papers (PPT/PDF documents) will be posted on the course site on OWL Brightspace in advance. Students may post questions regarding course content on the course Discussion forum on OWL Brightspace.

The presentation papers are selected by the course instructors and are related to the lecture topics. The course manager will assign each student a paper for presentation. Two students will work together to present each paper, and the presentation pairs and dates will be arranged through a time/date selection process by the students. However, the final schedule will be coordinated and determined by the course manager. Each paper will be distributed to all students via OWL Brightspace seven days prior to the presentation date. Guidelines and requirements for paper presentations will be introduced on the first day of the course.

Evaluation of Student Performance:

Student performance will be assessed based on the following components:

Paper presentation: 15%

Written summary of the presentation paper: 5%

Paper discussion leader: 2%

Class attendance: 4%

Midterm test: 30%

Final examination: 44%

The midterm and final exams will consist of essay and short-answer questions. Please note that undocumented absences will not be accepted for the midterm or final exams.

Timetabled Sessions

Component	Date(s)	Time
Lectures, Presentations	Mondays	2:30 – 4:20 pm
Midterm Exam	Feb 10, 2025	2:30 – 4:20 pm (1 hour 50 mins)

- Attendance at sessions is required
- Students should read the papers prior to student presentations

All course material will be posted to OWL: <https://westernu.brightspace.com/d2l/login>. 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 Brightspace Help](#). Alternatively, they can contact the [Western Technology Services Helpdesk](#). They can be contacted by phone at 519-661-3800 or ext. 83800.

Current versions of all popular browsers (e.g., Safari, Chrome, Edge, and Firefox) are supported with OWL Brightspace; what is most important is that you update your browser frequently to ensure it is current. All JavaScript and cookies should be enabled.

5. Learning Outcomes

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

- Understand/explain the cellular and molecular mechanisms of some brain functions such as cognition, learning and memory.
- Effectively present original research articles in the field of neurophysiology.

6. Course Content and Schedule (Monday, 2:30 - 4:20 pm)

Weeks	Dates	Topics	Instructors
1	Jan 6	Course introduction + Lecture: Glutamatergic synaptic transmission (Part 1)	Lu
2	Jan 13	Lecture: Glutamatergic synaptic transmission (Part 2)	Lu
3	Jan 20	Lecture: Glutamatergic synaptic plasticity 1 Lu session paper presentation	Lu
4	Jan 27	Lecture: GABA _A R signaling in the central nervous system 1 Lu session paper presentation	Lu
5	Feb 3	Lecture Review 2* Lu session paper presentations	Lu
6	Feb 10	Midterm exam	Lu + TA
7	Feb 17-23	Spring Reading Week (starts Feb 15 th)	n/a
8	Feb 24	Lecture: Neuronal activity and cognition (part 1)	Martinez-Trujillo
9	Mar 3	Lecture: Neuronal activity and cognition (Part 2) 1 Martinez-Trujillo session paper presentation	Martinez-Trujillo
10	Mar 10	Lecture: Amyloid genesis and mechanisms of Alzheimer's disease (Part 1)	Pasternak
11	Mar 17	Lecture review: 2* Martinez-Trujillo session paper presentations	Martinez-Trujillo
12	Mar 24	Lecture: Amyloid genesis and mechanisms of Alzheimer's disease (Part 2) 1 Pasternak session paper presentation	Pasternak
13	March 31	Session Lecture Review 2* Pasternak session paper presentations	Pasternak
14	Apr 7 - 30	Final examination (date & time -TBA)	Martinez-Trujillo + Pasternak + TA

*The numbers of paper presentations may change in accordance with the final number of enrolled students

7. Participation and Engagement

- Students are expected to participate and engage with content as much as possible.
- Students can participate during lectures and in-class discussion by questions and comments. However, questions on student presentation are encouraged to be asked after presentation.
- Students can also participate by interacting on the Discussions board in OWL Brightspace with their peers and instructors.

8. Assessment and Evaluation

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

Assessment	Format	Weighting	Due Date	Flexibility
Paper presentation	Oral presentation by 2 students using PPT	15%	The scheduled day	None
Paper summary	A written summary (<u>Word version</u>) by 2 students	5%	Send the summary to assessments tab 4 days after presentation (Friday at 11:59 PM)	72 hour no late penalty
Discussion leader	Paper discussants lead one paper discussion	2%	The scheduled day	None
Attendance	Classes attendance	4%	Tracked weekly by TA	
Midterm exam	Short answers + essay (Covering Dr. Lu's section only)	30%		None
Final exam	Short answers + essay (covering two sections of Dr. Martinez-Trujillo and Dr. Pasternak)	44%	TBA	None

Designated Assessment: Instructors are permitted to designate one assessment per course per term as requiring supporting documentation to receive academic consideration. See below for information on academic consideration policy and missed course work. For this course the following assessment has been designated as requiring supporting documentation]:

- **Student presentation:** The guidance and requirements of paper presentations will be introduced by the course manger on the first day of the course. Please see presentation schedule for dates/times.

Information about flexibility in assessment

- The course contains a full scheduled lectures and student presentations. No late penalty within 72 hours.

General information about assessments

- Midterm and final exams:** 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.
- Rubrics will be used to evaluate assessments by the instructors **but will not be posted!**
- Any grade appeals on assignments or midterm must be received within 3 weeks of the grade being posted.
- Paper presentation:** The time-length of PPT presentation should be 14 - 16 minutes, 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. Student presentations will be marked by the effectiveness of the presentation to cover the key points of the paper within the allowed time and capability to handle questions.

- ✓ A student might not receive the same grade as their group member for their presentation/summary if it is determined that the distribution of work was not equal or presentation style was very different
- ✓ **Discussion Leaders:** After each presentation, a Q&A period of 5~8 min will be conducted and moderated by the two assigned Discussion Leaders. Each discussion leader should ask at one meaningful question of the presentation paper.
- ✓ **Written summary:** The presenters are required to submit a written summary of the presentation paper to the Assessment tab on the course Brightspace site. The summary should be less than 2 pages (single spaced and font size = 12), containing background, (hypothesis), objectives, brief methods, main results, and conclusions of the paper. The summary should be submitted as a Word document, in case it requires necessary corrections/revisions.
- ✓ Paper summaries are due at 11:59 PM EST on Friday of the presentation week. Students who did not submit a summary within 72 hours of that deadline (*72 hours no penalty*) will lose marks as described in the late penalty below
- ✓ Paper summaries should clearly and correctly cover the key aspects of the original research paper within the given 2 pages. Students are responsible for ensuring that the MS Word file for the presentation summary is submitted; incorrect submissions including corrupt files could be subject to late penalties (see 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.

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 assessments:

- ✓ If a student misses the scheduled presentation due to an approved academic consideration, another student of the pair could present the paper alone or re-pairing with another student for a different paper if possible.
- ✓ The student who misses the scheduled presentation due to an approved academic consideration could be rescheduled for another new paper alone, or with another student (if available). If the schedule is impossible to schedule an additional student presentation in class time, we may need to schedule a presentation outside of class time to the TA and the relevant instructor within 3 days of the scheduled presentation.
- ✓ Late assessments without academic consideration will be subject to a late penalty **10% / day**.
- ✓ Attendance (4%) includes participation in all lectures and presentations, as well as asking at least one question on any of the presented papers at any time within the term.
- ✓ Discussion Leader (2%) should be at the assigned spot. Students will fail the assessment if the assigned spot is missed and no empty spot becomes available.
- ✓ One make-up test for midterm and final will be offered for students with approved academic consideration. If the midterm or final makeup is also missed, then they will receive an **INC** (midterm) or **SPC** (final) and must take the missed exam(s) in the following year to finish the course.

INC (Incomplete Standing): If a student has been approved by the Academic Advising 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 Advising 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 Advising 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 Advising 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.

9. Communication

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

10. Office Hours

- Office hours will be held as needed in-person or remotely using Zoom

11. Resources

- All resources will be posted in OWL Brightspace, including lecture PowerPoint slides, papers for student presentations, and 2-page paper summaries.

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 (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, such as using AI-collected information for writing paper presentation summary, before some assessments. Please remember that certain AI detection software is problematic and not reliable.

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).

13. How to Be Successful in this Class

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 Brightspace to ensure you have seen everything posted to help you succeed in this class.
3. Take notes as you go through the class material. Keeping handwritten notes or even notes on a regular Word document will help you learn more effectively than just reading PPT slides.
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 board or contact your instructors and or teaching assistant.
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

A. Absence from Course Commitments

Students must familiarize themselves with the Policy on [Academic Consideration – Undergraduate Students in First Entry Programs](#).

Students missing course work for medical, compassionate, or extenuating circumstances can request academic consideration by completing a request at [the central academic consideration portal](#). Students are permitted one academic consideration request per course per term **without** supporting documentation. Note that supporting documentation is **always** required for academic consideration requests for examinations scheduled by the office of the registrar (e.g., December and April exams) and for practical laboratory and performance tests (typically scheduled during the last week of the term).

Students should also note that the instructor may **designate** one assessment per course per term that requires supporting documentation. This designated assessment is described elsewhere in this document. Academic consideration requests may be denied when flexibility in assessment has already been included. Examples of flexibility in assessment include when there are assessments not required for calculation of the final grade (e.g. 8 out of 10 quizzes) or there is flexibility in the submission timeframe (e.g. 72 hour no late penalty period).

Please note that any academic considerations granted in this course will be determined by the instructor of this course, in consultation with the academic advisors in your Faculty of Registration, in accordance with information presented in this course syllabus. Supporting documentation for academic considerations for absences due to illness should use the [Student Medical Certificate](#) or, where that is not possible, equivalent documentation by a health care practitioner.

Accommodation for Religious Holidays

Students should review the policy for [Accommodation for Religious Holidays](#). Where a student will be unable to write examinations and term tests due to a conflicting religious holiday, they should inform their instructors as soon as possible but not later than two weeks prior to writing the examination/term test. In the case of conflict with a midterm test, students should inform their instructor as soon as possible but not later than one week prior to the midterm.

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](#).

B. 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.

Computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

C. 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](#)

D. 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](#).

E. 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](#).

F. 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. 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, e.g., cell phones, tablets, cameras, smart glasses, smart watch 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., 74.45 becomes 74, and 74.50 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.

Statement on the use of Generative Artificial Intelligence (AI) Platforms

This course allows students to use AI tools for information gathering and preliminary research purposes. These tools are intended to enhance the learning experience by providing access to diverse information sources. It is essential, however, that students should critically evaluate the obtained information, exercise independent thinking, and engage in original research to synthesize and develop their own ideas, arguments, and perspectives, with uphold academic integrity by appropriately attributing all sources and avoiding plagiarism. Assignments will mainly focus on students' own thoughts and independent written work. It is expected that adhering to these guidelines, students may get into an ethical learning environment that promotes critical thinking and written skills.

16. Support Services

- Students who are in emotional/mental distress should refer to Mental Health @Western Health <https://www.uwo.ca/health/> for a complete list of options about how to obtain help.
- To connect with a case manager or set up an appointment, please contact support@uwo.ca.
- Other important links:
 - [Academic Advising \(Science and Basic Medical Sciences\)](#)
 - [Appeal Procedures](#)
 - [Registrar Services](#)
 - [Student Development Services](#)
 - [Student Health Services](#)

Statement on Gender-Based and Sexual Violence

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.