

Department of Physiology and Pharmacology
Cellular and Molecular Neurobiology and Physiology 4680B

Course outline for Winter 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. Course Overview and Important Dates:



| Delivery Mode | Dates | Time |
|-----------------------|--|---------------------------|
| Online (asynchronous) | Lectures and seminars will be recorded and released weekly | |
| Online (synchronous) | Tutorials, seminar Q/A, and discussions will be in virtual class | Monday, 2:30 pm – 4:30 pm |

*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 |
|---------------|------------------|-------------|---------------|--------------|
| January 4 | February 13 - 21 | April 5 | April 6 and 7 | April 8 - 30 |

*March 7, 2021: Last day to drop a second-term half course or a second-term full course without penalty

3. Contact Information



| Course Coordinator | Contact Information |
|--------------------|--|
| Dr. Wei-Yang Lu | wlu53@uwo.ca / use OWL message |

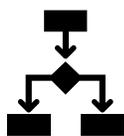
| Instructor(s) or Teaching Assistant(s) | Contact Information |
|--|--|
| Dr. Wei-Yang Lu | wlu53@uwo.ca / use OWL message |
| Dr. Julio Martinez-Trujillo | julio.martinez@robarts.ca |
| Dr. Stephen Pasternak | spasternak@robarts.ca |

4. Course Description and Design

Physiology 4680B is a 0.5-unit course.

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

Anti-requisite: None



This exciting course focuses on the function of neuronal cells in the central nervous system. Topics taught by the three instructors/professors will cover cellular and molecular mechanisms of intrinsic neuronal activity, excitatory and inhibitory synaptic transmission, integrative neuronal activities in the processes of visual perception and cognition, and protein processing pathways related to neuronal signaling of memory. Pathophysiology of some neurological illnesses such as Alzheimer's disease is also introduced. This course is composed of lectures by 3 professors and research paper presentations by students (lectures vs paper presentation is approximately 3:2).

Specifically, pre-recorded lecture videos (MP4) and PPT/PDF files of the lecture will be posted on OWL 3 days before the scheduled class hours (Monday 2:30 – 4:30pm), for everyone to watch and raise questions. Post questions regarding the lecture in the forum on OWL. The scheduled virtual class is run via Zoom, during which lecture tutorials, Q&A, or in-class discussions, s will be conducted.

Two students will be paired up to present one of the research papers designated by the instructor(s) during the scheduled (synchronous) virtual class hours. Paper presentation dates will be scheduled through a process of time/date selection by students on OWL, but the final schedule will be determined by the course instructor. Specifically, papers for student presentation will be distributed to all students via the OWL course site ~7 days prior to the time for presentation. Using PowerPoint and Zoom platforms, paper presentation will be conducted during virtual live class. Each paper presentation should be 25 minutes maximum, in which the objectives and background of the research, relevant experimental methodology and results, as well as a summary of observations and conclusions are to be introduced. Two presenters should contribute equally to the presentation especially on results and discussion. Attention should focus on the physiological mechanisms studied. Following the presentation, a question and answer period of ~10 minutes will be moderated by the assigned Discussion Leaders, with support from the sessional instructor/professor.

To learn how to prepare paper presentation and how to participate in paper discussions, please watch the instructional videos [How To: Paper Presentation](#), including *How to: Virtual group presentation in Owl* and *How to: Discussion Leader Signup*, and view [Example Student Page Setup](#) All files can be found at the OWL site under **Paper Presentations**.

The paper presenters are required to submit to the sessional instructor a written summary of the paper within a week after their presentation. The summary should be less than 2 pages, containing 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. Students who wrote a poor summary or did not submit a summary by the next Monday will lose part of the marks (maximum 5%).

| Mode | Dates | Time | Frequency |
|----------------------|---------|---------------------|-----------|
| Virtual synchronous | Mondays | 2:30 – 4:00/4:30 pm | weekly |
| Virtual asynchronous | N/A | ~2 hours | weekly |

- Asynchronous pre-work must be completed 3 days 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; 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 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



| Week | Dates | Topic | Instructor |
|------|----------------------|--|--|
| 1 | Jan 11 – 17 | Course introduction + Lecture: Glutamatergic synaptic transmission | Wei-Yang Lu |
| 2 | Jan 18 – 24 | Lecture: Synaptic plasticity + Review | Wei-Yang Lu |
| 3 | Jan 25 – 31 | Lecture: GABA _A receptor signaling + 1 paper presentation | Wei-Yang Lu |
| 4 | Feb 1 – 7 | 2 paper presentations | Wei-Yang Lu |
| 5 | Feb 8 – 14 | Feb 8: Midterm Exam* | Wei-Yang Lu |
| 6 | (Feb 15) – 21 | (Family Day) Reading Week | N/A |
| 7 | Feb 22 – 28 | Lecture: Integrative neuronal activities in visual perception and attention | Julio Martinez-Trujillo |
| 8 | Mar 1 – 7 | Lecture review 1 paper presentation | Julio Martinez-Trujillo |
| 9 | Mar 8 – 14 | 2 paper presentations | Julio Martinez-Trujillo |
| 10 | Mar 15 – 21 | Lecture: Amyloidogenesis and mechanisms of Alzheimer's disease | Stephen Pasternak |
| 11 | Mar 22 – 28 | Lecture review 2 paper presentations | Stephen Pasternak |
| 12 | Mar 29 – Apr 4 | 2 paper presentations [#] | Stephen Pasternak |
| 13 | Apr 5 – Apr 30 | No class Final examination period** | Martinez-Trujillo + Stephen Pasternak |

* Midterm exam will be conducted online during 2:30-4:30 pm (Monday, Feb 8, 2021).

** Final exam date and time, TBA.

[#] Depending on the number of students who take the course.

7. Online Participation and Engagement



- Students are expected to participate and engage with content as much as possible
- Students can participate during sessions or post on after watching the recording
- Students can also participate 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 | Weight | Due Date |
|----------------------------|----------------------|--------|--------------------------|
| Paper presentation | Oral presentation | 15% | The scheduled day |
| Paper summary | Writing summary | 5% | 7 day after presentation |
| Participation / Discussion | Paper discussant | 5% | The scheduled day |
| Midterm exam | Short answer + Essay | 31% | February 8, 2021 |
| Final exam | Short answer + Essay | 44% | TBA |

- All assignments are due at scheduled unless otherwise specified
- Virtual proctoring will be used
- Essay should be an interpretative composition in a coherent manner
- Written assignments will be submitted to Turnitin (statement in policies below)
- Students will have unlimited submissions to Turnitin
- 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 a self-reported absence or submission of approved documentation to academic counselling will be subject to a late penalty 25%/day
- Late assessments with a self-reported absence should be submitted within 24 hours of submission of the last day of the self-report
- Exam re-evaluation will be offered in response to a formal request made within 5 days after releasing exam grades. Note: re-evaluation may increase or decrease 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

9. Communication:



- Students should check the OWL site every 24 – 48 hours
- 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
- Students will be able to sign up for an appointment using Sign Up on OWL

11. Resources



- All resources will be posted in OWL
- Required textbook

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 (audio or video) are not permitted to be used without explicit permission
- Permitted recordings are not to be distributed to others
- 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.

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](#)