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## NEUR\*2100 - Foundations in Neuroscience II

### Winter 2024 Course Outline

**Section: 01**

**Credits: 0.50**

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## Land Acknowledgement: Guelph

The University of Guelph resides on the ancestral lands of the Attawandaron people and the treaty lands and territory of the Mississaugas of the Credit. We recognize the significance of the Dish with One Spoon Covenant to this land and offer respect to our Anishinaabe, Haudenosaunee and Métis neighbours. Today, this gathering place is home to many First Nations, Inuit, and Métis peoples and acknowledging them reminds us of our important connection to this land where we work and learn.

## Calendar Description

This course will emphasize general principles of the function and organization of the peripheral nervous system, providing both an in-depth view of the subject and a foundation for advanced courses. Topics will include the physical and chemical bases for sensory transduction in the periphery; anatomy and physiology of sensory and motor systems; peripheral gain; sensory and motor pathways; the neuroscience of movement sense, plasticity and adaptation. By the end of this course, students will appreciate the complexities of the peripheral nervous system. This will lay the foundation for further integrative topics on the inter-relationship of the whole system and its functional outcomes.

**Prerequisite(s):** NEUR\*2000

**Restriction(s):** Restricted to students in BSCH.NEUR, BSCH.NEUR:C and NEUR minor. This is a Priority Access Course. Enrolment will initially be restricted to BSCH.NEUR and BSCH.NEUR:C major. When this Priority Access is lifted, students in the NEUR minor will have the opportunity to enroll (space permitting). See the BSc Advising website for more information.

**Department(s):** Department of Human Health & Nutritional Sciences & Department of Molecular and Cellular Biology

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## Course Description

This course builds on material introduced in Neur\*2000, where the emphasis was on structure and function of the human brain. This course will emphasize general principles of the function and organization of the peripheral nervous system, providing both an in depth view of the subject and a foundation for advanced courses. Topics will include the physical and chemical bases for sensory transduction in the periphery; anatomy and physiology of sensory and motor systems; peripheral gain; sensory and motor pathways; the neuroscience of movement sense, plasticity and adaptation. By the end of these courses (Neur\*2000, Neur\*2100), students will appreciate the complexities of both the central and peripheral nervous system. This will lay the foundation for further integrative topics on the inter-relationship of the whole system and its functional outcomes. .

## Lecture Schedule

MonWedFri 8:30am-9:20am in MCLN\*102 (1/8 to 4/23)

## Instructor Information

Leah Bent

Email: lbent@uoguelph.ca

Office: ANNU 331

Winter 2024 Office Hours:

TBD

Angela Scott

Email: angela.scott@uoguelph.ca

Office: SSC 3446

Winter 2024 Office Hours:

TBD

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## Teaching Assistants

**Issac Sullivan**

Email: [isulliva@uoguelph.ca](mailto:isulliva@uoguelph.ca)

**Erika Howe**

Email: [ehowe01@uoguelph.ca](mailto:ehowe01@uoguelph.ca)

Office Hours: By email appointment only

## Textbooks

Group	Title	Author	ISBN
Recommended	Neuroscience 6th Edition	Dale Perves	9781605357225
Recommended	Principles of Neural Science 5th Edition	Kandel et al.	

## Learning Resources

Link to Principles of Neural Science:

- Principles of Neural Science [5th edition] <https://archive.org/details/PrinciplesOfNeuralScienceFifthKANDEL/page/n911/mode/2up> (<https://archive.org/details/PrinciplesOfNeuralScienceFifthKANDEL/page/n911/mode/2up/>)
- Please note that some lecture material will not be covered in the readings and the readings may go into the details not covered in lecture.

### CourseLink Support

If you need any assistance with the software tools or the CourseLink website, contact CourseLink Support. Email: [courselink@uoguelph.ca](mailto:courselink@uoguelph.ca)

Tel: 519-824-4120 ext. 56939 Toll-Free (CAN/USA): 1-866-275-1478

### Support Hours (Eastern Time):

Monday Thursday Friday: 8:30 am-8:30 pm

Saturday: 10:00 am-4:00 pm

Sunday: 12:00 pm-6:00 pm

## Campus Resources

If you are concerned about any aspect of your academic program: Make an appointment with a Program Counsellor (<https://www.uoguelph.ca/uaic/programcounsellors/>) in your degree program. If you are struggling to succeed academically: There are numerous academic resources offered by the Learning Commons (<https://www.lib.uoguelph.ca/using-library/spaces/learning-commons/>) including, Supported Learning Groups for a variety of courses, workshops related to time management, taking multiple choice exams, and general study skills.

## Course Learning Outcomes

1. Describe the neuromuscular physiology of the peripheral nervous system
2. Explain the sensory and motor systems, including peripheral anatomical structures and neural circuitry, that enable functional movement and perception
3. Apply knowledge from different research areas and from primary literature to describe neuromuscular physiology concepts
4. Discuss advances and limitations in models of aging, pathology and reduced or altered motor control
5. Recognize the strengths and weaknesses of primary research in the field of neuromuscular physiology
6. Effectively and concisely communicate scientific ideas in a written format.
7. Demonstrate the ability to integrate information across levels of biological information, from cellular aspects of neurons to circuitry and systems.

## Teaching and Learning Activities

This course employs a learner-centered approach to facilitate a deep understanding of the many aspects of the connections between the peripheral and central nervous systems. Course material is presented in lecture and assigned and supplementary readings. To encourage lecture attendance and peer-collaboration, **lecture slides with overview content** will be provided on CourseLink prior to each lecture. Material will be elaborated on during lecture. Independent learning will be assessed through summaries and literature critique assignments, which provide an opportunity for you to critically assess primary literature in the neuroscience field. The midterm and final exam will test your understanding of the lecture material and assigned readings through both topic specific and integrative questions.

## Assessment Breakdown

{NOTE: instructor can add another row by hitting "TAB" button when they are at the end of the row}

Description	Weighting (%)	Due Date
Journal summary and critique (Intro/Methods)	15%	Feb 5, 2024
Quiz #1	2.5%	Jan 29-Feb 2, 2024
Midterm exam	30%	Feb 16, 2024
Journal summary and critique (Results/Dis)	20%	Mar 25, 2024
Quiz #2	2.5%	Mar 18-22, 2024
Final exam	30%	April 22, 2024

## Assessment Details

### Paper

#### Journal summary and critique

15%

Refer to courselink for detailed description and rubric for this assignment from the first half of course.

Course Learning Outcomes Assessed: 4, 5, 6, 7

#### Journal summary and critique

20%

Refer to courselink for detailed description and rubric for this assignment from the second half of the course.

Course Learning Outcomes Assessed: 3, 4, 5, 6, 7

### Participation

#### Quizzes

5%

There are two quizzes that will occur, one in each half of the course. These are designed to test your knowledge of material covered as topics are introduced and help prepare you for the midterm and final exams. Importantly, the quizzes will be completed on courselink and need to be completed at any time during the week assigned. Participation in the quiz will earn you 2.5% for each quiz. Incomplete quizzes will result in 0% for this component.

Course Learning Outcomes Assessed: 1, 2, 7

### Exam

#### Midterm

30%

The midterm will take place in-class on Feb. 16th, 2024. Topics covered will include material from all lectures between Jan. 8th - Feb. 14th. Content outside of the lecture material (in the recommended reading) will not be examined.

Course Learning Outcomes Assessed: 7

#### Final Exam

30%

The final exam will be held on April 22, 2024. Material delivered prior to the midterm will not be examined. Location will be determined at a later date.

Course Learning Outcomes Assessed: 1, 2, 7

## Final Exam

Date: Apr 22

Time: Mon 2:30pm-4:30pm

Location: TBA *Please see Web Advisor closer to the date of scheduled final for location.*

To understand rules and regulations regarding Examinations students are encouraged to read Student's Responsibilities (<https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/examinations/>)

If the student is unable to meet the final exam requirements due to medical, psychological or compassionate circumstances they are encouraged to review Student's Responsibilities in the Academic Consideration, Appeals and Petitions (<https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/academic-consideration-appeals-petitions/>) section of the Academic Calendar.

## Last Day to Drop Course

The final day to drop Winter 2024 courses without academic penalty is the last day of classes: April 08

After this date, a mark will be recorded, whether course work is completed or not (a zero is assigned for missed tests/assignments). This mark will show on the student's transcript and will be calculated into their average.

## Course Grading Policies

### Submission of Assignments

#### Academic Integrity

Students are responsible submitting work with the highest standards of integrity. The writing should be original work (i.e., in your own words). Any use of resources or the ideas of others must be acknowledged in the text with citations and listed in a reference section. Quotes should be used sparingly, if at all, and should be acknowledged with quotation marks and cited appropriately.

Artificial Intelligence (AI) agents are among resources that must be acknowledged with citations and references. It is imperative that you paraphrase and cite properly to express any ideas or arguments in your own words. If you are in any doubt as to whether your writing could be construed as academic misconduct (plagiarism, copying, unauthorized collaboration (including AI)), please consult your faculty advisor.

#### Turnitin

In this course, your instructor will be using Turnitin, integrated with the CourseLink Dropbox tool, to detect possible plagiarism, unauthorized collaboration or copying as part of the ongoing efforts to maintain academic integrity at the University of Guelph

All submitted assignments will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. Use of the Turnitin.com service is subject to the Usage Policy posted on the Turnitin.com site.

A major benefit of using Turnitin is that students can educate and empower themselves in preventing academic misconduct. In this course, you may screen your own assignments through Turnitin as many times as you wish before the due date.

#### Late Assignment

Students who will miss or have missed completing an assignment, test or other graded component, for this course for medical, psychological, or compassionate grounds should notify the course in writing to your instructor as soon as possible prior to missing it or within 72 hours of the missed component. The form of consideration granted for the missed grade component is at the discretion of the instructor and could vary based on what was missed.

Students who miss the final exam, lab exam, or submitting a final assignment for the course will need to connect with their [Program Counsellor](#) to [apply for a deferred condition](#). Instructors **do not** grant academic consideration for work completed, e.g. final exams or final assignments, after the last class day of the semester.

Please note that students are responsible for missed content and finding resources related to missing lectures, laboratories, or seminars. Resources may be available in your CourseLink course site.

## Course Standard Statements

### When you find yourself unable to meet an in-course requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor in writing/e-mail, with your name, student ID# and e-mail contact. Where possible, this should be done in advance of the missed work or event. See the undergraduate calendar for information on regulations and procedures for academic consideration.

### Late Policy

The penalty for late submission of the Journal Article Critique is a reduction of 10% per day. The critique must be submitted on CourseLink by the start of class and a hard copy must also be handed in at the beginning of class on the date it is due. Access to the quizzes will be closed by the indicated deadlines, late access will be denied.

### Laptops

They are permitted but not recommended in lecture. Incomplete class slides will be provided on CourseLink prior to class and note taking will include both writing concepts as well as drawing diagrams and adding to figures. Many students find sitting behind laptops distracting so please be conscious of this if you choose to bring a laptop to lecture. 7.4 Communication As per University regulations, all students are required to routinely check their uoguelph.ca email. This is the official route of communication between the University and its students. In addition, students are required to check CourseLink for further course specific communications.

### Emailing

To encourage independent learning, emailing the lecturer or teaching assistants about concepts should be the last resort after reading lecture slides, primary literature and using the discussion board. If you do send an email, please DO NOT email the lecturer or teaching assistants the same questions individually, and allow at least 24 hours for a response.

### Conduct in a Large Class

This is a large class but you are not a small part of it! It takes commitment from everyone to make our time together as valuable as possible. In order for you to get the most of the class please consider the following:

- All testable exam material comes from lectures. Complete lecture slides will not be provided.
- It is expected that you come to lecture prepared to learn and participate. This involves arriving on time and staying to the end, bringing the incomplete class notes and having reviewed the readings each week. Coming to class prepared will allow you and your classmates to get the most out of in class discussions.
- The due dates for the journal article critique are fixed. It is critical that these deadlines are met as extensions will only be granted in the most extreme situations. If a deadline cannot be met, you must inform the instructor in person or by email as soon as possible.
- It is expected that you help maintain a safe and positive environment for yourself and your classmates to learn. In lecture this means limiting distractions to the students around you (cell phones, laptops, talking, packing up early etc) as well as treating your fellow classmates, the teaching assistants and instructor with respect at all times.
- If you have a problem with the course material or in the way it is being presented, it is expected that you respectfully bring up your concerns with the course instructor as soon as possible.
- Providing a challenging and supportive learning environment is a priority of this course and involves a team effort from all of us.

## Department of Human Health and Nutritional Sciences

### Academic Advisors

If you are concerned about any aspect of your academic program:

Make an appointment with a program counsellor in your degree program. B.Sc. Academic Advising or Program Counsellors

### Academic Support

If you are struggling to succeed academically:

Learning Commons: (<http://www.learningcommons.uoguelph.ca/>) There are numerous academic resources offered by the Learning Commons including, Supported Learning Groups for a variety of courses, workshops related to time management, taking multiple choice exams, and general study skills. You can also set up individualized appointments with a learning specialist.

Science Commons: Located in the library, the Science Commons provides support for physics, chemistry, (<https://www.lib.uoguelph.ca/using-library/spaces/science-commons/>) and mathematic/statistics (<https://mathstat.uoguelph.ca/tutoring/>).

### Personal Information

Personal information is collected under the authority of the University of Guelph Act (1964), and in accordance with Ontario's Freedom of Information and Protection of Privacy Act (<http://www.e-laws.gov.on.ca/>) (FIPPA). This information is used by University officials in order to carry out their authorized academic and administrative responsibilities and also to establish a relationship for alumni and development purposes. For more information regarding the Collection, Use and Disclosure of Personal Information policies please see the Academic Calendar.

## Course Offering Information Disclaimer

Please note that course delivery format (face-to-face vs online) is subject to change up to the first-class day depending on requirements placed on the University and its employees by public health bodies, and local, provincial and federal governments. Any changes to course format prior to the first class will be posted on WebAdvisor/Student Planning as they become available.

## Standard Statements for Undergraduate Courses

### Academic Integrity

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

The Academic Misconduct Policy (<https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/academic-misconduct/>) is outlined in the Undergraduate Calendar.

### Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability. Use of the SAS Exam Centre requires students to make a booking at least 10 days in advance, and no later than the first business day in November, March or July as appropriate for the semester. Similarly, new or changed accommodations for online quizzes, tests and exams must be approved at least a week ahead of time. For students at the Guelph campus, information can be found on the SAS website. (<https://www.uoguelph.ca/sas/>)

### Accommodation of Religious Obligations

If you are unable to meet an in-course requirement due to religious obligations, please email the course instructor within two weeks of the start of the semester to make alternate arrangements.

See the Academic calendar for information on regulations and procedures for Academic Accommodations of Religious Obligations (<https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/academic-accommodation-religious-obligations/>).

### Copies of Out-of-class Assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

### Drop Date

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all undergraduate students except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in the Undergraduate Calendar - Dropping Courses (<https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/dropping-courses/>).

### Email Communication

As per university regulations, all students are required to check their <uoguelph.ca> e-mail account regularly: e-mail is the official route of communication between the University and its students.

### Health and Wellbeing

The University of Guelph provides a wide range of health and wellbeing services at the Vaccarino Centre for Student Wellness (<https://wellness.uoguelph.ca/>). If you are concerned about your mental health and not sure where to start, connect with a Student Wellness Navigator (<https://wellness.uoguelph.ca/navigation/>) who can help develop a plan to manage and support your mental health or check out our mental wellbeing

resources (<https://wellness.uoguelph.ca/shine-this-year/>). The Student Wellness team are here to help and welcome the opportunity to connect with you.

## **Illness**

Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g., final exam or major assignment).

## **Recording of Materials**

Presentations that are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

## **Resources**

The Academic Calendars (<http://www.uoguelph.ca/registrar/calendars/?index>) are the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs.

## **When You Cannot Meet a Course Requirement**

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. See the Undergraduate Calendar for information on regulations and procedures for Academic Consideration. (<https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/academic-consideration-appeals-petitions/>)