

WESTERN UNIVERSITY  
LONDON CANADA  
Department of Psychology  
2021 - 2022

Psychology 4260G Section 001  
Sensorimotor Neuroscience

## 1.0 CALENDAR DESCRIPTION

This course provides an in-depth examination of how the nervous system is organized for voluntary movement how we learn new motor skills. Topics include the organization of cortical brain areas, the role of feedback in movement control, and the role of the somatosensory system in learning new motor skills.

Antirequisite: Not Applicable

**Antirequisites are courses that overlap sufficiently in content that only one can be taken for credit. If you take a course that is an antirequisite to a course previously taken, you will lose credit for the earlier course, regardless of the grade achieved in the most recent course.**

Prerequisite(s): Psychology 2220A/B, Psychology 2221A/B or Neuroscience 2000, and registration in third or fourth year Honours Specialization in Psychology, Honours Specialization in Developmental Cognitive Neuroscience, Honours Specialization in Neuroscience, or Honours Specialization in Animal Behaviour. Other Psychology students and Psychology Special Students who receive 70% in the prerequisite course(s) may enrol in this course.

3 seminar hours; Course Weight: 0.5

**Unless you have either the prerequisites for this course or written special permission from your Dean to enrol in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.**

## 2.0 COURSE INFORMATION

Instructor:	Dr. Paul Gribble
Office and Phone Number:	WIRB 4122
Office Hours:	by appointment
Email:	pgribble@uwo.ca
Teaching Assistant:	Natalia Mangos (nmangos@uwo.ca)
Time and Location of Classes:	Thursdays 9:30 am – 12:30 pm, WIRB 1130
Delivery Method:	In-Person & Zoom as necessary

Students who are in emotional/mental distress should refer to Health and Wellness @Western <https://www.uwo.ca/health/> for a complete list of options about how to obtain help.

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 Student Accessibility Services (formerly known as Services for Students with Disabilities) at 519-661-2147.

### 3.0 TEXTBOOK

No textbook. Required readings will be provided electronically on the OWL course website.

### 4.0 COURSE OBJECTIVES & LEARNING OUTCOMES

Course objectives: The general goal of the course is to review current neuroscience research and theories in sensorimotor neuroscience. The specific goals are:

1. To provide a research-oriented overview of key findings, methodology, theories, and contentious issues in the study of sensorimotor neuroscience, drawing from the literature on both human and animal studies.
2. To encourage reading and writing about primary source material in neuroscience research; to encourage critical thinking about the topics; to explore and appreciate the limits of current scientific knowledge in the field.
3. To provide training for public (in-class) presentations on a specific research question and its empirical study; to encourage discussion of contentious issues in neuroscience research.

<b>Learning Outcome</b>	<b>Learning Activity</b>	<b>Assessment</b>
<i>Depth and Breadth of Knowledge.</i>	Reading papers, preparing class presentations, participating in class discussion, writing papers & essay	Class presentations Class participation Short papers Final essay
<i>Knowledge of Methodologies.</i>	Reading papers, preparing class presentations, participating in class discussion, writing papers & essay	Class presentations Class participation Short papers Final essay
<i>Application of Knowledge.</i>	Reading papers, preparing class presentations, participating in class discussion, writing papers & essay	Class presentations Class participation Short papers Final essay
<i>Communication Skills.</i>	Reading papers, preparing class presentations, participating in class discussion, writing papers & essay	Class presentations Class participation Short papers Final essay
<i>Awareness of Limits of Knowledge.</i>	Reading papers, preparing class presentations, participating in class discussion, writing papers & essay	Class presentations Class participation Short papers Final essay
<i>Autonomy and Professional Capacity.</i>	Reading papers, preparing class presentations, participating in class discussion, writing papers & essay	Class presentations Class participation Short papers Final essay

### 5.0 EVALUATION

Students are expected to attend all classes and read assigned material including background readings.

Students will select an assigned primary research article and they will prepare (i) a presentation and (ii) a short thought paper. Each student will do this twice over the course of the term: once in the

period before reading week and a second time in the period after reading week. Students will present in groups of two but each student must submit their own original short paper. Students will also (iii) select one of the papers discussed in the course and write an essay, submitted at the end of term.

**Evaluation will be based on:**

- (1) two in-class presentations
- (2) two short papers
- (3) one end of term essay
- (4) class participation

2 x Presentations (12.5% each) 2 x Short papers (10% each)	25 % 20 %
End of term Essay (35%) & proposal presentation (10%)	45 %
Participation in class discussions	10 %

**In-class Presentations**

Students are required to give two presentations on the assigned primary research papers over the course of the term. Each presentation will typically be given by groups of two students, but the course size in a given year may also require presentations in other formats. Presentations should be about 30 min in length, and must be supported by visual aids (e.g., Keynote/PowerPoint). Students should offer a summary of the article, including coverage of (i) background and motivation of the study; (ii) the specific research question addressed, (iii) the specific hypotheses tested (if any), (iv) the design and methods used, (v) the main results reported (with Figures and/or Tables), and (vi) the main conclusions drawn. Students are strongly encouraged to link the study to broader issues discussed in the background readings. Students are invited to consult other academic resources (papers, books, online resources) for inclusion of additional background, and they should reference them when used. In the final section of the presentation, students are asked to include questions and critique so as to stimulate class discussion. The presenters should consider themselves as experts on the topic and the study they present. They are expected to take on an active role in the discussion and should also be prepared to answer related questions.

In addition to these two paper presentations, all students are expected to orally present and defend the study they propose in their essay in the last one or two classes in the course, at the end of the term. These presentations will be brief (~ 5–7 min plus 2–3 min for discussion each).

**Short Papers**

Students are required to write two short papers (maximum 500 words; approx. 1.5–2 double-spaced pages in 12-point font) on the research articles they present in class (described above). Short papers should include a brief summary of the study as well as independent thoughts, which could focus on strength and weaknesses, alternative interpretations, comparisons to other research findings, proposals for follow-up research, or application to daily experiences outside the laboratory. Students are also strongly encouraged to link the study to issues discussed in the background readings. Short papers are meant to get students thinking about what they want to discuss in class. Short papers must be uploaded to the course website in PDF format no later than 11:55 pm 7 days after the student presents the research article on which the short paper is based.

**Final Essay**

Students are required to submit one essay on a topic covered in the course. The essay must be a proposal for a research project that would follow up on one of the studies covered in the primary research articles associated with the course. Essays may be based on one of the two papers that the

student presented in class, or alternatively on any other paper presented or assigned during the course. Essays should include (i) an Introduction with a brief review of pertinent background, (ii) a clear specification of the research question and a statement about why it is important, (iii) a description of research methods and the proposed study design, (iv) a description of anticipated results, and (v) a summary of the conclusions that can be drawn if the outcome is as expected. The paper should not exceed a maximum of 10 pages (12-point font, double-spaced, about 2500 words, excluding cover page and references) and should be written in the format of a typical article in the Journal of Neurophysiology. Essays must be submitted electronically through the course website no later than 11:55 pm on April 22, 2021. Students will present these study proposals in the last week of classes in a brief 5–7 minute oral presentation.

### **Class Participation**

Students are expected to participate in class discussion and will be graded on their participation.

Missing or late assignments will receive a grade of zero unless an extension is arranged in advance. Extensions will be considered at the discretion of the instructor. Grades will not be rounded.

**PLEASE NOTE:** Because this is an essay course, as per Senate Regulations, you must pass the essay component to pass the course. That is, the average mark for your written assignments must be at least 50%.

**PLEASE NOTE:** This course is exempt from the Senate requirement that students receive assessment of their work accounting for at least 15% of their final grade at least three full days before the date of the deadline for withdrawal from a course without academic penalty.

### **5.1 POLICY ON MISSING COURSEWORK**

Missing or late assignments will receive a grade of zero unless an extension is arranged in advance. Extensions will be considered at the discretion of the instructor.

**PLEASE NOTE:** Because this is an essay course, as per Senate Regulations, you must pass the essay component to pass the course. That is, the average mark for your written assignments must be at least 50%.

This course is exempt from the Senate requirement that students receive assessment of their work accounting for at least 15% of their final grade at least three full days before the date of the deadline for withdrawal from a course without academic penalty.

The expectation for course grades within the Psychology Department is that they will be distributed around the following averages:

70%	1000-level to 2099-level courses
72%	2100-2999-level courses
75%	3000-level courses
80%	4000-level courses

The Psychology Department follows Western's grading guidelines, which are as follows (see: [http://www.uwo.ca/univsec/pdf/academic\\_policies/general/grades\\_undergrad.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/general/grades_undergrad.pdf))

A+	90-100	One could scarcely expect better from a student at this level
A	80-89	Superior work that 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

Note that in the event that course grades are significantly higher or lower than these averages, instructors may be required to make adjustments to course grades. Such adjustment might include the normalization of one or more course components and/or the re-weighting of various course components.

Policy on Grade Rounding: Please note that although course grades within the Psychology Department are rounded to the nearest whole number, no further grade rounding will be done. No additional assignments will be offered to enhance a final grade; nor will requests to change a grade because it is needed for a future program be considered. To maximize your grade, do your best on each and every assessment within the course.

## 6.0 ASSESSMENT/EVALUATION SCHEDULE

There are no tests or examinations in this course. Evaluation is based on the components summarized in Section 5.0.

## 7.0 CLASS SCHEDULE

January 13	Introduction and Course Organization Background readings assigned
<i>January 20</i>	<i>no class—preparation time for paper choices</i>
January 27	<b>Organization and Planning of Movement</b> Selected papers presented by students
February 3	<b>Spinal Cord</b> Selected papers presented by students
February 10	<b>Primary Motor Cortex</b> Selected papers presented by students
February 17	<b>Parietal / Premotor Cortex / SMA / Cerebellum</b> Selected papers presented by students
<i>February 24</i>	<i>no class—Reading week</i>
March 3	<b>Special topic</b> Selected papers presented by students
March 10	<b>Special topic</b> Selected papers presented by students
March 17	<b>Special topic</b> Selected papers presented by students
March 24	<b>Special topic</b> Selected papers presented by students
March 31	Final essay proposal presentations
April 7	Final essay proposal presentations

## 8.0 LAND ACKNOWLEDGEMENT

We acknowledge that Western University is located on the traditional lands of the Anishinaabek, Haudenosaunee, Lūnaapéewak and Attawandaron peoples, on lands connected with the London Township and Sombra Treaties of 1796 and the Dish with One Spoon Covenant Wampum.

With this, we respect the longstanding relationships that Indigenous Nations have to this land, as they are the original caretakers. We acknowledge historical and ongoing injustices that Indigenous Peoples (e.g. First Nations, Métis and Inuit) endure in Canada, and we accept responsibility as a public institution to contribute toward revealing and correcting miseducation, as well as renewing respectful relationships with Indigenous communities through our teaching, research and community service.

## 9.0 STATEMENT ON ACADEMIC OFFENCES

Students are responsible for understanding the nature and avoiding the occurrence of plagiarism and other scholastic offences. Plagiarism and cheating are considered very serious offences because they undermine the integrity of research and education. Actions constituting a scholastic offence are described at the following link:

[http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/scholastic\\_discipline\\_undergrad.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf)

As of Sept. 1, 2009, the Department of Psychology will take the following steps to detect scholastic offences. All multiple-choice tests and exams will be checked for similarities in the pattern of responses using reliable software, and records will be made of student seating locations in all tests and exams. All written assignments will be submitted to TurnItIn, a service designed to detect and deter plagiarism by comparing written material to over 5 billion pages of content located on the Internet or in TurnItIn's databases. 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 and Turnitin.com (<http://www.turnitin.com>).

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

In classes that involve the use of a personal response system (PRS), data collected using the PRS will only be used in a manner consistent to that described in this outline. It is the instructor's responsibility to make every effort to ensure that data remain confidential. However, students should be aware that as with all forms of electronic communication, privacy is not guaranteed. Your PRS login credentials are for your sole use only. Students attempting to use another student's credentials to submit data through the PRS may be subject to academic misconduct proceedings.

Possible penalties for a scholastic offence include failure of the assignment/exam, failure of the course, suspension from the University, and expulsion from the University.

## 10.0 POLICY ON THE USE OF EXAM PROCTORING SOFTWARE

When examinations and tests cannot be given in person (e.g., in courses coded as Distance Studies; in the event of a lockdown order), they **may** be conducted using either a monitoring platform such as Zoom or a remote proctoring service, such as Proctorio. If Zoom is used for exam invigilation, you will be required to keep your camera on for the entire session, hold up your student card for identification purposes, and share your screen with the invigilator if asked to do so at any time during the exam. The exam session using Zoom will **not** be recorded.\*

If a remote proctoring service is used, the service will require you to provide **personal information** (including some biometric data). The session will be **recorded**. The instructor will alert you to the use of this software as close as possible to the start of the term, however, in the event that in-person exams are unexpectedly canceled, you may only be given notice of the use of a proctoring service a short time in advance. More information about remote proctoring is available in the Online Proctoring Guidelines. Please ensure you are familiar with any proctoring service's technical requirements before the exam. Additional guidance is available at the following link:  
<https://www.uwo.ca/univsec/pdf/onlineproctorguidelines.pdf>

\* Please note that Zoom servers are located outside Canada. If you would prefer to use only your first name or a nickname to login to Zoom, please provide this information to the instructor in advance of the test or examination. See this link for technical requirements:  
<https://support.zoom.us/hc/en-us>

## 11.0 POLICY ON ACCOMMODATION FOR ILLNESS OR OTHER ABSENCES

Western's policy on Accommodation for Medical Illness can be found at:

[http://www.westerncalendar.uwo.ca/PolicyPages.cfm?PolicyCategoryID=1&Command=showCategory&SelectedCalendar=Live&ArchiveID=#Page\\_12](http://www.westerncalendar.uwo.ca/PolicyPages.cfm?PolicyCategoryID=1&Command=showCategory&SelectedCalendar=Live&ArchiveID=#Page_12)

The full policy for consideration for absences can be accessed at:

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/Academic\\_Consideration\\_for\\_absences.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Consideration_for_absences.pdf)

If you experience an extenuating circumstance (e.g., illness, injury) sufficiently significant to temporarily make you unable to meet academic requirements, you may request accommodation through the following routes:

- i. Submitting a Self-Reported Absence form (for circumstances that are expected to resolve within 48 hours);
- ii. For medical absences, submitting a Student Medical Certificate (SMC) signed by a licensed medical or mental health practitioner in order to be eligible for Academic Consideration;
- iii. For non-medical absences, submitting appropriate documentation (e.g., obituary, police report, accident report, court order, etc.) to Academic Counselling in their Faculty of registration in order to be eligible for academic consideration. Students are encouraged to contact their Academic Counselling unit to clarify what documentation is appropriate.

Students must see the Academic Counsellor and submit all required documentation in order to be approved for certain accommodation. The self-reported absence form must be submitted before the exam/coursework deadline in order to be valid. It **may NOT** be used for absences **longer than 48 hours; coursework/tests/exams/etc., worth more than 30% of the final grade; or exams scheduled in the December or April final-exam periods:**

[http://counselling.ssc.uwo.ca/procedures/medical\\_accommodation.html](http://counselling.ssc.uwo.ca/procedures/medical_accommodation.html)

Students seeking academic consideration:

- are advised to consider carefully the implications of postponing tests or midterm exams or delaying handing in work;
- are encouraged to make appropriate decisions based on their specific circumstances, recognizing that minor ailments (upset stomach) or upsets (argument with a friend) are not normally an appropriate basis for a self-reported absence;
- **must communicate with their instructors no later than 24 hours** after the end of the period covered by either the self-reported absence or SMC, or immediately upon their return following a documented absence

Students seeking accommodation for religious purposes are advised to contact Academic Counselling at least three weeks prior to the religious event and as soon as possible after the start of the term.

## 12.0 CONTINGENCY PLAN FOR RETURN TO LOCKDOWN: IN-PERSON & BLENDED CLASSES

In the event of a COVID-19 resurgence or any other event that necessitates the course delivery moving away from face-to-face interaction, all remaining course content will be delivered entirely online, either synchronously (i.e., at the times indicated in the timetable) or asynchronously (e.g., posted on OWL for students to view at their convenience). The grading scheme will **not** change. Any remaining assessments will also be conducted online, as determined by the course instructor.

## 13.0 STATEMENTS CONCERNING ONLINE ETIQUETTE

In courses involving online interactions, the Psychology Department expects students to honour the following rules of etiquette:

- please “arrive” to class on time
- please use your computer and/or laptop if possible (as opposed to a cell phone or tablet)
- please ensure that you are in a private location to protect the confidentiality of discussions in the event that a class discussion deals with sensitive or personal material
- to minimize background noise, kindly mute your microphone for the entire class until you are invited to speak, unless directed otherwise
- In classes larger than 30 participants please turn off your video camera for the entire class unless you are invited to speak
- In classes of 30 students or fewer, where video chat procedures are being used, please be prepared to turn your video camera off at the instructor’s request if the internet connection becomes unstable
- Unless invited by your instructor, do **not** share your screen in the meeting

The course instructor will act as moderator for the class and will deal with any questions from participants. To participate please consider the following:

- If you wish to speak, use the “raise hand” function and wait for the instructor to acknowledge you before beginning your comment or question.
- Please remember to unmute your microphone and turn on your video camera before speaking.
- Self-identify when speaking.
- Please remember to mute your mic and turn off your video camera after speaking (unless directed otherwise).

General considerations of “netiquette”:

- Keep in mind the different cultural and linguistic backgrounds of the students in the course.
- Be courteous toward the instructor, your colleagues, and authors whose work you are discussing.
- Be respectful of the diversity of viewpoints that you will encounter in the class and in your readings. The exchange of diverse ideas and opinions is part of the scholarly environment. “Flaming” is never appropriate.
- Be professional and scholarly in all online postings. Use proper grammar and spelling. Cite the ideas of others appropriately.

Note that disruptive behaviour of any type during online classes, including inappropriate use of the chat function, is unacceptable. Students found guilty of Zoom-bombing a class or of other serious online offenses may be subject to disciplinary measures under the Code of Student Conduct.

## 14.0 OTHER INFORMATION

Office of the Registrar: <http://registrar.uwo.ca>

Student Development Services: [www.sdc.uwo.ca](http://www.sdc.uwo.ca)

Please see the Psychology Undergraduate web site for information on the following:  
[http://psychology.uwo.ca/undergraduate/student\\_responsibilities/index.html](http://psychology.uwo.ca/undergraduate/student_responsibilities/index.html)

- Policy on Cheating and Academic Misconduct
- Procedures for Appealing Academic Evaluations
- Policy on Attendance
- Policy Regarding Makeup Exams and Extensions of Deadlines
- Policy for Assignments
- Short Absences
- Extended Absences
- Documentation
- Academic Concerns
- 2021-2022 Calendar References

If you wish to appeal a grade, please read the policy documentation at:

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/appealsundergrad.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/appealsundergrad.pdf)

Please first contact the course instructor. If your issue is not resolved, you may make your appeal to the Undergraduate Chair in Psychology ([psyugrd@uwo.ca](mailto:psyugrd@uwo.ca)).

*Copyright Statement:* Lectures and course materials, including power point presentations, outlines, videos and similar materials, are protected by copyright. You may take notes and make copies of course materials for your own educational use. You may not record lectures, reproduce (or allow others to reproduce), post or distribute any course materials publicly and/or for commercial purposes without the instructor's written consent.

*Policy on the Recording of Synchronous Sessions:* Some or all of the remote learning sessions for this course (if scheduled) may be recorded. The data captured during these recordings may include your image, voice recordings, chat logs and personal identifiers (name displayed on the screen). The recordings will be used for educational purposes related to this course, including evaluations. The recordings may be disclosed to other individuals participating in the course for their private or group study purposes. Please contact the instructor if you have any concerns related to session recordings. Participants in this course are not permitted to privately record the sessions, except where recording is an approved accommodation, or the student has the prior written permission of the instructor.

### Course delivery with respect to the COVID-19 pandemic

Although the intent is for this course to be delivered in-person, the changing COVID-19 landscape may necessitate some or all of the course to be delivered online, either synchronously (i.e., at the times indicated in the timetable) or asynchronously (e.g., posted on OWL for students to view at their convenience). The grading scheme will not change. Any assessments affected will be conducted online as determined by the course instructor.