

## 1. Course Information

Physiology 4630b: Motor Neurophysiology

Fall/Winter Term 2017

### Lectures:

Thursdays from 10:30 to 12:30

### Requisites:

Prerequisite(s): [Physiology 3120](#), [3130Z](#) and [Physiology 3140A](#); or [Neuroscience 2000](#), [Physiology 3140A](#) and registration in Year 4 of an Honors Specialization in Neuroscience.

### Senate regulation regarding the student's responsibility regarding requisites:

Unless you have either the requisites for this course or written special permission from your Dean to enroll 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.

### 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 Services for Students with Disabilities (SSD) at 661-2111 x 82147 for any specific question regarding an accommodation.*

## 2. Instructor Information

Instructor	Email	Office	Phone	Office Hours
Dr. Stefan Everling (Course Coordinator)	severlin@uwo.ca	RRI 1250F	24359	Fridays from 3:00 to 4:00

### OWL:

Students with OWL issues should see: <https://owl.uwo.ca/portal/site/owldocs>

## 3. Course Syllabus

This course provides a survey of motor neurophysiology in humans and nonhuman primates. We will consider the role of a number of cortical and subcortical areas in higher level motor control. These will include the basal ganglia, cerebellum, primary motor

cortex, premotor cortex, prefrontal cortex, as well as others. The course covers textbook material as well as selected recent topics in motor neurophysiology.

By the end of the course, successful students will be able to: (1) Explain the neural processes underlying limb and eye movement motor control at the single neuron and systems level; (2) Critically evaluate and discuss an assigned research paper in motor control through a group presentation; (3) Analyze, integrate, and discuss the current state of knowledge in a subfield of motor neurophysiology through an independent essay.

January 11	Session 1	Introduction and Techniques
January 18	Session 2	Spinal Cord and Primary Motor Cortex
January 25	Session 3	Student Presentations I
February 1	Session 4	Premotor Cortex and Basal Ganglia
February 8	Session 5	Student Presentations II
February 15	Session 6	Cerebellum and Motor Learning
February 22	Reading Week	
March		Test
March 8	Session 8	Student Presentations III
March 15	Session 9	Eye Movements and Clinical Applications
March 22	Session 10	Student Presentations IV
March 29	Session 11	Executive Control of movement
April 5	Session 12	Student Presentations V

#### 4. Course Materials

Lectures and papers will be posted on Owl.

#### 5. Evaluation:

Component	Date	% of Final Mark
Midterm test		20
Presentation		20
Assignment		20
Final exam		40

Note: Across the Basic Medical Sciences Undergraduate Education programs and within the department of Physiology and Pharmacology we strive to maintain high standards that reflect the effort that both students and faculty put into the teaching and learning experience during a course. Final grades on this course will be rounded to the closest whole integer, e.g. a 73.5 becomes a 74. We WILL NOT bump marks to the next grade, e.g. a 69 will NOT be bumped up to a 70, an 89 WILL NOT be bumped up to a 90, etc. The mark attained is the mark you achieved and the mark assigned; there is no bumping to the next grade level.

## **Presentation**

Students will present an assigned research paper in the field of motor neurophysiology. These papers go beyond the textbook knowledge and will expose the students to more recent developments in the field of motor neurophysiology.

Students will give a 20-minute presentation (e.g. Powerpoint or Keynote), followed by a 10-minute discussion period. Students have to submit their electronic presentation at least 48 hours prior to the session to the teaching assistant.

The following marking scale will be used:

### **MARKING SCALE**

<b><i>Excellent</i></b>	<b>5</b>	<b><i>Good</i></b>	<b>4</b>	<b><i>Average</i></b>	<b>3</b>	<b><i>Limited</i></b>	<b>2</b>	<b><i>Poor</i></b>	<b>1</b>	<b><i>Not Completed</i></b>	<b>0</b>
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1. How well was the background information presented; was it clear and correct?  
5 ---- 4.5 ----- 4 ----- 3.5 ----- 3 ---- 2.5 ----- 2 ----- 1.5 ---- 1 ---- 0.5 ---- 0
2. How well was the rationale for the study stated; was it clear and correct?  
5 ---- 4.5 ----- 4 ----- 3.5 ----- 3 ---- 2.5 ----- 2 ----- 1.5 ---- 1 ---- 0.5 ---- 0
3. How well was the hypothesis stated? Was it clear, specific and testable?  
5 ---- 4.5 ----- 4 ----- 3.5 ----- 3 ---- 2.5 ----- 2 ----- 1.5 ---- 1 ---- 0.5 ---- 0
4. How well were the methods explained? Were all methods explained clearly?  
5 ---- 4.5 ----- 4 ----- 3.5 ----- 3 ---- 2.5 ----- 2 ----- 1.5 ---- 1 ---- 0.5 ---- 0
5. How well were the results presented?  
5 ---- 4.5 ----- 4 ----- 3.5 ----- 3 ---- 2.5 ----- 2 ----- 1.5 ---- 1 ---- 0.5 ---- 0
6. Was the discussion relevant to the material presented?  
5 ---- 4.5 ----- 4 ----- 3.5 ----- 3 ---- 2.5 ----- 2 ----- 1.5 ---- 1 ---- 0.5 ---- 0
7. How well did the student respond to questions; were they able to provide correct responses?  
5 ---- 4.5 ----- 4 ----- 3.5 ----- 3 ---- 2.5 ----- 2 ----- 1.5 ---- 1 ---- 0.5 ---- 0
8. How well was the paper critiqued? Was the critique fair and appropriate?  
5 ---- 4.5 ----- 4 ----- 3.5 ----- 3 ---- 2.5 ----- 2 ----- 1.5 ---- 1 ---- 0.5 ---- 0
9. How well were the slides constructed: did they contain appropriate sized font, balanced text/images?  
5 ---- 4.5 ----- 4 ----- 3.5 ----- 3 ---- 2.5 ----- 2 ----- 1.5 ---- 1 ---- 0.5 ---- 0
10. How strong was the student's presentation skills? Was the speaker clear and enthusiastic?  
5 ---- 4.5 ----- 4 ----- 3.5 ----- 3 ---- 2.5 ----- 2 ----- 1.5 ---- 1 ---- 0.5 ---- 0

**TOTAL** \_\_\_\_\_ (out of 50 total points)

**COMMENTS:**

## Essay

The purpose of the essay, in addition to its role as an evaluative tool, is to give you the opportunity to explore an emerging research area in motor control in detail.

Students can pick one of the following topics:

*“Role of the mirror system in motor control”*

*“Role of the cerebellum in motor control and cognition”*

*“Role of the anterior cingulate cortex in motor control”*

*“Present state of brain-machine interfaces”*

Length: A maximum of 7 pages, double-spaced, Font size 12, Fonts Arial or Times New Roman, Minimum border of 2 cm(!) around document. Any text beyond 7 pages will be removed. The information in the essay should be presented in a way that is logical and has a well thought-out flow. The essay must be written in paragraph format and all references must be cited. Students are encouraged to follow American Psychological Association style.

Include name and ID in the header and number the pages!

References: Maximum 30

The following marking scale will be used:

### MARKING SCALE

<i>Excellent</i>	<i>5</i>	<i>Good</i>	<i>4</i>	<i>Average</i>	<i>3</i>	<i>Limited</i>	<i>2</i>	<i>Poor</i>	<i>1</i>	<i>Not Completed</i>	<i>0</i>
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1. Is the topic appropriately addressed?

5 ----- 4.5 ----- 4 ----- 3.5 ----- 3 ----- 2.5 ----- 2 ----- 1.5 ----- 1 ----- 0.5 ----- 0

2. How good is the structure? Was it clear and correct?

5 ----- 4.5 ----- 4 ----- 3.5 ----- 3 ----- 2.5 ----- 2 ----- 1.5 ----- 1 ----- 0.5 ----- 0

3. How appropriate is the style?

5 ----- 4.5 ----- 4 ----- 3.5 ----- 3 ----- 2.5 ----- 2 ----- 1.5 ----- 1 ----- 0.5 ----- 0

4. Does it show wide reading and understanding?

5 ----- 4.5 ----- 4 ----- 3.5 ----- 3 ----- 2.5 ----- 2 ----- 1.5 ----- 1 ----- 0.5 ----- 0

5. How original is the essay?

5 ----- 4.5 ----- 4 ----- 3.5 ----- 3 ----- 2.5 ----- 2 ----- 1.5 ----- 1 ----- 0.5 ----- 0

**TOTAL \_\_\_\_\_ (out of 25 total points)**

**COMMENTS:**

## **6. Additional Information/Statements**

### **Statement on Use of Electronic Devices**

No electronic devices are allowed during tests and examinations.

### **Statement on Academic Offences**

“Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following website:

[http://www.uwo.ca/univsec/handbook/appeals/scholastic\\_discipline\\_undergrad.pdf](http://www.uwo.ca/univsec/handbook/appeals/scholastic_discipline_undergrad.pdf) .”

All required papers may 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 The University of Western Ontario and Turnitin.com (<http://www.turnitin.com> ).

## **Absence from course commitments**

### **A. Absence for medical illness:**

Students must familiarize themselves with the Policy on Accommodation for Medical Illness for Undergraduate Students, located at:

[http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/accommodation\\_medical.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf)

The policy is also accessible from the Medical Accommodation Policy link at

<https://studentservices.uwo.ca/secure/index.cfm>

### **Statement from the Academic Counselling Office, Faculty of Science (for Science and BMSc students)**

If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or other supporting documentation to the Academic Counselling Office as soon as possible and contact your instructor immediately. It is the student's responsibility to make alternative arrangements with their instructor once the accommodation has been approved by the Academic Counselling Office and the instructor has been informed. In the event of a missed final exam, a "Recommendation of Special Examination" form must be obtained from the Academic Counselling Office immediately. For further information please see:

[http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/accommodation\\_medical.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf)

A student requiring academic accommodation due to illness, should use the Student Medical Certificate when visiting an off-campus medical facility or request a Record's Release Form (located in the Dean's Office) for visits to Student Health Services.

The form can be found at:

<https://studentservices.uwo.ca/secure/index.cfm>

## **B. Absence for non-medical reasons:**

A clear indication of how **non-medical absences** from midterms, tutorials, laboratory experiments, or late essays or assignments, will be dealt with must be provided. If documentation is required, such documentation must be submitted by the student directly to the appropriate Dean's/Academic Counselling Office and **not** to the instructor. It will subsequently be the Dean's/Academic Counselling Office that will determine if accommodation is warranted.

Students who are in emotional/mental distress should refer to Mental Health@Western <http://www.uwo.ca/uwocom/mentalhealth/> for a complete list of options about how to obtain help.

## **C. Special Examinations**

A Special Examination is any examination other than the regular final examination, and it may be offered only with the permission of the Dean/Academic Counselling Office 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.

A Special Examination must be written at the University or an Affiliated University College no later than 30 days after the end of the examination period involved. To accommodate unusual circumstances, a date later than this may be arranged at the time permission is first given by the Dean/Academic Counselling Office of the Faculty. The Dean/Academic Counselling Office will consult with the instructor and Department Chair and, if a later date is arranged, will communicate this to the Office of the Registrar.

If a student fails to write a scheduled Special Examination, permission to write another Special Examination will be granted only with the permission of the Dean/Academic Counselling Office in exceptional circumstances and with appropriate supporting documents. In such a case, the date of this Special Examination normally will be the scheduled date for the final exam the next time the course is offered.

When a grade of Special (SPC) or Incomplete (INC) appears on a student's record, the notations will be removed and replaced by a substantive grade as soon as the grade is available.

### **Support Services:**

Registrarial Services: <http://www.registrar.uwo.ca>

Academic Counselling (Science and Basic Medical Sciences):

[http://www.uwo.ca/sci/undergrad/academic\\_counselling/index.html](http://www.uwo.ca/sci/undergrad/academic_counselling/index.html)

USC Student Support Services: <http://westernusc.ca/services/>

Student Development Services: <http://www.sdc.uwo.ca>

Student Health Services: <http://www.shs.uwo.ca/>

Students who are in emotional/mental distress should refer to Mental Health@Western <http://www.uwo.ca/uwocom/mentalhealth/> for a complete list of options about how to obtain help.