

Western University
Faculty of Health Sciences
School of Kinesiology

**KIN 4480A - Exercise Neuroscience
Fall 2021**

<p>Instructor (first half of course): Matthew Heath Email: mheaht2@uwo.ca Office Hours: Wednesday 11:30 – 1:30 via Zoom</p> <p>Instructor (second half of course): Dr. Lindsay Nagamatsu, PhD Office: Arts & Humanities Bldg Rm 3G20 Email: lindsay.nagamatsu@uwo.ca Office Hrs: TBD</p> <p>TAs: Priyanka Persaud, ppersau6@uwo.ca James Van Riesen, jvanries@uwo.ca Michelle Wong, ywong252@uwo.ca</p>	<p>Lectures: M, W, F 10:30am-11:20am</p> <p>Instruction Mode: In person and online asynchronous</p> <p>Location: FNB-1220</p>
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NOTE: All course information including grades, assignment outlines, deadlines, etc. are available via OWL. Check the website regularly for course announcements.

Calendar Course Description (including prerequisites/anti-requisites):

This course will examine the relationship between exercise and cognitive neuroscience. Students will be provided with an overview of fundamental methodologies used in cognitive neuroscience research before examining the literature on exercise neuroscience, with a focus on different study designs and application to various age groups and clinical populations.

Prerequisite(s): None.

Extra Information: 3 lecture hours per week (in-person and online).

You are responsible for ensuring that you have successfully completed all course pre-requisites, and that you have not taken an anti-requisite course.

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.

NOTE: If you wish to enroll in this course without the stated pre-requisite(s), you must obtain written approval from the course instructor. The approval should then be forwarded to your academic counsellor.

Copyright:

The course instructors own the intellectual property and asserts copyright protection over the lecture videos and all course materials. Accordingly, you may stream – but not download or record – lecture videos and you may not post or repurpose lecture materials (e.g., overheads, discussion questions, practice questions etc.).

Course Description:

This course provides an overview of the field of exercise neuroscience. The course begins with an overview of the central nervous system and the cortical and subcortical systems supporting cognitive and perceptual-motor processes. The course will include an overview of the fundamental methodologies used in neuroscience (e.g., EEG, MRI) before examining the extant exercise neuroscience literature – from classic studies to the newest cutting-edge findings. This course will provide you the opportunity to refine your critical thinking and interpretation skills. Throughout the course you are expected to participate in meaningful, engaging discussions.

Learning Outcomes:

Upon completion of this course, you will be able to:

1. Identify and apply knowledge of central nervous system structure and function
2. Understand the fundamental methodologies used in neuroscience research
3. Critically evaluate and interpret research in the field of exercise neuroscience
4. Communicate (written & oral) effectively
5. Engage in meaningful discussion with peers

Required Course Material/Text:

All course information including grades, assignment outlines, deadlines, etc. are available via OWL. There is no textbook for this course. Required readings will be provided in PDF form on OWL one week in advance.

Distribution of Student Load:

In-person and online video lectures	~1.5 hours/wk
Private study and discussion groups:	~2.5 hours/wk

Communication:

Office hours & appointments: If you have questions about course material or would like to discuss issues related to the course in more detail the preferred means is to discuss during instructor office hours or discuss before or after in-person lectures. It is also possible to email the instructor regarding a question; however, sending a question via email does not ensure a prompt response.

Email Policy:

Who to contact for your concerns or questions: If you have a question, please first consult this syllabus and the course website; there is a good chance your question can be answered through these resources, especially regarding course logistics or content (e.g., deadlines, assignments, course materials). You are also encouraged to use the forum on OWL to post questions to your

peers and check to see if your question has already been answered! If you cannot find an answer to your question on the syllabus or course website, you may contact the instructor; however, and as indicated above the preferred means of contact is via office hours.

Email inquiries to instructor: For all email responses, please permit 24 hours before a response can be expected (i.e., you are unlikely to receive a response the night before a quiz/assignment). It is encouraged that view any email as your chance to practice professionalism. Consider that your communication style is a direct reflection of you as a person. Hence, when sending an email include appropriate salutation and valediction and ensure proper syntax, grammar and punctuation.

Course Evaluation:

Weeks 1 – 6 1. Article Summaries 2. Midterm	25% (4 assignments @ 6.25% each) 25%
Weeks 7 - 14 1. Weekly Quizzes 2. Discussion Group Participation 3. Final Assignment	24% (6 quizzes @ 4% each) 4% 22%

Course Evaluation Details:

Weeks 1- 6

1. *Article Summaries (25%):* Four article summaries will be assigned with each relating to a research theme arising from lectures. You will be responsible for reading and completing a two-page written summary of the article (Note: your write-up will not exceed a two-page limit). The format of the write-up will entail double-spacing with all margins set at 2.54 cm and written via Times New Roman 12. The assignment will be uploaded to OWL as a MSWORD document. Only MSWORD documents will be accepted.

Your written summary is to outline the article’s theoretical background (i.e., the basis for the study), methods, results and conclusions. Your summary will be succinct and clear and demonstrate your extant understanding of the article. As such, summaries will be graded for the effectiveness and efficiency of writing (~25% of grade) and for demonstrating competence in understanding theory (25%), methods/results (25%) and conclusions (25%).

Article Summary/Title	Assigned	Due Date
TBD	Sept 17	Sept 22
TBD	Sept 24	Sept 29
TBD	Oct 1	Oct 6
TBD	Oct 8	Oct 13

Article summaries submitted not more than 24 hours after the due date will receive a 50% late penalty. Articles summaries submitted beyond 24 hours of the due date will receive a grade of zero.

2. *Midterm (25%):* A midterm test is scheduled for October 15. The test will be

completed online during regular class hours (50-min duration) and include multiple choice and short answer responses to material associated with lectures.

Weeks 7-14

3. *Quizzes (24%)*: We will have quizzes each Friday from weeks 7-14 which will be completed on OWL. There will be a total of 6 quizzes, each worth 4%. The purpose of these quizzes is to ensure that you come to class prepared, ready to contribute to an engaging and meaningful discussion about the readings. They may also contain content from previous classes. There will be NO MAKEUP QUIZZES. If you receive accommodation or use a self-reported absence, your quiz mark will be re-weighted accordingly.
4. *Discussion Group Participation (4%)*: You will sign up for ONE group discussion section. These will take place during Friday class time. In small groups led by a TA, you will discuss the topic and reading for the week.
5. *Final Assignment (22%)*: Your final assignment will be to write a grant proposal. Details will be provided in advance. The assignment must be completed independently and submitted via OWL before the deadline. If you receive accommodation for a missed assignment, a new due date will be decided by the instructor. Submitting a late assignment without appropriate documentation will result in a zero (0) grade.

Formatting: APA style is the approved style of writing for all assignments produced for this course. Please refer to Western University Library webpage for information on citation style and format or consult the APA publication manual: Publication manual of the American Psychological Association (6th ed.). (2009). Washington, DC: American Psychological Association.

Course/University Policies:

1. **Statement on Use of Personal Response Systems (“Clickers”):**

If Personal Response Systems (“Clickers”) are used in the course, a reference to the Guidelines for their use (Guidelines are shown below). Instructors are to communicate clearly to students information on how clickers are used including: how the student’s privacy will be protected, how clickers may be used by the instructor for data gathering and for evaluating the students, and why they cannot be used by anyone but the student (since the students involved in misuse of a clicker may be charged with a scholastic offence).

2. **Academic offences:** They are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf

A) Students must write their essays and assignments in their own words. Whenever students take an idea, or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence (see Scholastic Offence Policy in the Western Academic

Calendar). 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 Western University and Turnitin.com <http://www.turnitin.com>

B) 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.

3. **Electronic Device Usage:**

During Quizzes: Unless you have medical accommodations that require you to do so, or explicit permission from the instructor of the course, you may not use any of the following electronic devices during ANY of the tests, quizzes, midterms, examinations, or other in-class evaluations: cellphones, smart phones, smart watches, smart glasses, audio players or recorders of any sort, video cameras, video games, DVD players, televisions, laptop/notebook/netbook computers, flashlights or laser pointers.

During Lectures: Although you are welcome to use a computer during lecture and tutorial periods, you are expected to use the computer for scholastic purposes only, and refrain from engaging in any activities that may distract other students from learning. Please be respectful to your fellow students and turn the sound off. If the professor receives complaints from other students regarding noise or other disruptive behavior (e.g. watching videos on YouTube.com, updating your Facebook status, playing Solitaire), your classroom privileges will be revoked. From time to time, your professor may ask the class to turn off all computers, to facilitate learning or discussion of the material presented in a particular class. **Unless explicitly noted otherwise, you may not make audio or video recordings of lectures – nor may you edit, re-use, distribute, or re-broadcast any of the material posted to the course website.**

4. **Health and Wellness:**

Information regarding health and wellness-related services available to students may be found at <http://www.health.uwo.ca/>.

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

5. **Support Services:**

There are various support services around campus and these include, but are not limited to:

1. *Student Development Centre* -- <http://www.sdc.uwo.ca/ssd/>
2. *Student Health & Wellness* -- <http://www.health.uwo.ca/>
3. *Registrar's Office* -- <http://www.registrar.uwo.ca/>
4. *Ombudsperson Office* -- <http://www.uwo.ca/ombuds/>

6. **Documentation for Academic Accommodation (Illness, Medical/Non-Medical Absences):**

http://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page_12

Students who experience an extenuating circumstance (illness, injury, or other extenuating

circumstance) sufficiently significant to temporarily render them unable to meet academic requirements may submit a request for academic consideration through the following routes:

- (i) Submitting a Self-Reported Absence (see below for conditions);
- (ii) For medical absences exceeding 48 hours, submitting a Student Medical Certificate (SMC) signed by a licensed medical or mental health practitioner to their Academic Counselling in their Faculty of registration in order to be eligible for Academic Consideration; or
- (iii) For non-medical absences exceeding 48 hours, 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 seeking academic consideration **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.

The following conditions are in place for self-reporting of medical or extenuating circumstances:

- a. **A maximum of two self-reported absences** between September and April and one self-reported absence between May and August;
- b. Any absences in excess of the number designated in clause A above will require students to present a Student Medical Certificate (SMC) or appropriate documentation supporting extenuating circumstances to the Academic Counselling unit in their Faculty of registration no later than two business days after the date specified for resuming responsibilities;
- c. The duration of the excused absence will be for a maximum of 48 hours from the time the Self-Reported Absence form is completed through the online portal, or from 8:30 am the following morning if the form is submitted after 4:30 pm;
- d. The duration of the excused absence will terminate prior to the end of the 48 hour period should the student undertake significant academic responsibilities (write a test, submit a paper) during that time;
- e. The duration of an excused absence will terminate at 8:30 am on the day following the last day of classes each semester regardless of how many days of absence have elapsed;
- f. Self-reported absences will not be allowed for scheduled final examinations; for midterm examinations scheduled during the December examination period; or for final lab examinations scheduled during the final week of term;
- g. Self-reporting may not be used for assessments (e.g. midterm exams, tests, reports, presentations, or essays) worth more than 30% of any given course.

For medical and non-medical absences that are not eligible for self-reporting Kinesiology students must submit an Academic Consideration Request form found online https://www.uwo.ca/fhs/kin/undergrad/files/accommodation_request.pdf in addition to an SMC or appropriate documentation in the event of a non-medical absence. These documents will be retained in the student's file, and will be held in confidence in accordance with the University's Official Student Record Information Privacy Policy.

7. **Grades:** Where possible assignment objectives and rubrics will be posted on OWL. Should you have a concern regarding the grade you received for an assignment or feel that it is unfair in any way, you must wait 24 hours from the receipt of the assignment to approach the instructor or TA. In doing so, please make an appointment and prepare in writing, with evidence, why you feel your grade is inappropriate. Please be aware that in requesting a grade reassessment, your

grade could go up/down/or stay the same. Note that calculations errors (which do occur!) should be brought to my attention immediately.

Generally, students can expect some form of feedback on their performance in a course before the drop date.

November 12, 2021 (for first term half-or full year courses)

A+	90-100	<i>One could scarcely expect better from a student at this</i>
A	80-89	<i>Superior work that is clearly above average</i>
B	70-79	<i>Good work, meeting all requirements and eminently</i>
C	60-69	<i>Competent work, meeting requirements</i>
D	50-59	<i>Fair work, minimally acceptable.</i>
F	below 50	<i>Fail</i>

Rounding of Grades (for example, bumping a 79 to 80%):

This is a practice some students request. **This practice will not occur here.** The edges of this course are clear and sharp. The mark attained is the mark you achieved and the mark assigned; there is no rounding to the next grade level, or ‘giving away’ of marks. Do not request that the instructor do this for you; the response will be “please review the course outline where this is presented”.

8. **Classroom Behaviour:** Class will begin promptly at the time specified at the top of page one of this syllabus. In the event that you must arrive late, please enter the classroom with a minimal disturbance to the class. Please keep all electronic devices on silent and avoid distracting classmates.

9. **Student Code of Conduct:**

The purpose of the Code of Student Conduct is to define the general standard of conduct expected of students registered at Western University, provide examples of behaviour that constitutes a breach of this standard of conduct, provide examples of sanctions that may be imposed and set out the disciplinary procedures that the University will follow. For more information, visit <https://www.uwo.ca/univsec/pdf/board/code.pdf>

10. **Recordings**

All of the remote learning sessions for this course will 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 under special circumstances. Please contact the instructor if you have any concerns related to session recordings.

Participants in this course are not permitted to record the sessions, except where recording is an approved accommodation, or the participant has the prior written permission of the instructor.

11. **Online Etiquette**

Some components of this course will involve online interactions. To ensure the best experience for both you and your classmates, please 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)

- 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 order to give us optimum bandwidth and web quality, please turn off your video camera for the entire class unless you are invited to speak
- 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
- remember to unmute your microphone and turn on your video camera before speaking
- self-identify when speaking.
- 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. 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.

Schedule (Subject to change)

Week	Topics	Schedule & Deadlines
Week 1: Sept. 8-10	Introduction and neuroplasticity	No assignment/test.
Week 2: Sept. 13-17	Divisions of the CNS, occipital and temporal lobe structure and function	September 17: online lecture and assignment (see OWL for details)
Week 3: Sept. 20-24	Parietal and frontal lobe structure and function	September 24: online lecture and assignment (see OWL for details)
Week 4: Sept. 27-Oct. 1	Frontal lobe structure with emphasis on motor areas	October 1: online lecture and assignment (see OWL for details)

Week 5: Oct. 4-8	Subcortical structure and function and descending pathways	October 8: online lecture and assignment (see OWL for details)
Week 6: Oct. 12-15 (Thanksgiving)	Descending pathways, review class and online test	October 15: online test -- regular class time
Week 7: Oct. 18-22	Introduction, neuroimaging basics	October 22: quiz 1
Week 8: Oct. 25-29	Acute exercise	October 29: quiz 2
Week 9: Nov. 1-5	FALL READING WEEK	
Week 10: Nov. 8-12	Cross-sectional & longitudinal studies	November 12: quiz 3
Week 11: Nov. 15-19	Clinical populations	November 19: quiz 4
Week 12: Nov. 22-26	Physical activity in childhood & adolescence	November 26: quiz 5
Week 13: Nov. 29-Dec. 3	Mechanisms	December 3: quiz 6
Week 14: Dec. 6-8	Wrap up	December 8: final assignment due