School of Kinesiology  
Faculty of Health Sciences  
Western University  

KIN 9466B – Special Topics: Exercise Neuroscience  
Winter 2022  

Instructor: Lindsay Nagamatsu, PhD  
Location: TBD  
Lectures: Thursday 9:30-11:30AM  
Office: AHB 3G20  
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Course Description: The primary objective of this course is to provide you with an overview of the emerging field of Exercise Neuroscience – an interdisciplinary field at the intersection of kinesiology, psychology, and neuroscience. The first section of the course will cover basics in cognitive neuroscience and neuroimaging methodology to provide a foundation for subsequent course material. The remainder of the course will focus on recent literature examining the effects of exercise and fitness on cognition and brain function/structure. Within each of the readings, we will focus on critically evaluating the research methods so you can develop your skills to effectively consume and contribute to scientific knowledge about exercise neuroscience.

Course Format: Seminars held weekly.

Learning Objectives:  

During this course, you will learn:  
1. Foundations for cognitive neuroscience research;  
2. The effects of exercise and fitness on brain health and plasticity; and  
3. Professional skills to help you succeed in academia and beyond, including: presenting your ideas, critically evaluating literature, peer review, and writing a grant proposal.

Required Course Material: All required readings will be emailed or distributed in class at least one week in advance on OWL.

Course Evaluation Summary:  

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<tr>
<th>Evaluation Type</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>In-class presentation</td>
<td>20%</td>
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<tr>
<td>In-class participation</td>
<td>20%</td>
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<tr>
<td>Weekly reflection (x10)</td>
<td>30%</td>
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<tr>
<td>Final paper: Grant proposal</td>
<td>30%</td>
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1. In-class presentations  
The discussion for each class will be led by 2-3 class members. During your week, you will provide a brief background/history on the topic to give context to the issues and provide an overview of the assigned readings. While all members of the class are required to participate in the discussion, you will be responsible for facilitating the discussion – e.g., posing thoughtful
questions to the class, taking charge of the direction of the discussion. You are encouraged to be **creative** when planning the format of the class! For example: a debate, smaller break-out groups, etc.

2. *In-class participation*
In this course, you are expected to make a contribution to all discussions.

3. *Weekly reflection*
Based on the assigned readings for that week, you will write down in point form (1-page maximum) a series of thought questions or discussion points that you found interesting. These should be based on the readings, but you can also incorporate your own background/research/experiences/personal interests. Note that this is NOT a summary of the articles. Everyone in the class (including me!) has already read the articles. You will submit this on OWL at least 1 hour before class each week. Late assignments will not be accepted and will receive a mark of 0.

4. *Final paper: Grant proposal*  
*DUE: TBD*
I will give more detailed instructions ahead of time. Your grant proposal should incorporate the themes/methods discussed in this course, but also reflect your own research interests and ideas. Your proposal should be 3-5 pages single-spaced (plus references and ONE PAGE for figures/tables).

**Course/University Policies**

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 Web site: [http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_grad.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_grad.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](http://www.turnitin.com)).

**Sample Topics**

Exercise and the brain – overview  
Neuroimaging basics: EEG/ERPs  
Neuroimaging basics: MRI/fMRI  
Acute exercise  
Exercise interventions  
Physical activity in childhood and adolescence  
Clinical populations  
Mechanisms  
Cognitive training