Neuroscience 491: Senior Seminar

Department of Neuroscience	Spring 2017
Loras College	
Lecture	Science Hall 019
	F 10:00-10:50

Instructor:	Jake Kurczek, PhD
	Assistant Professor of Psychology and Neuroscience
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Office Hours:	By appointment

Textbook:	*None*
	Additional journal articles and materials will be assigned as needed and posted to eLearn.
Class Website:	You will be able to find PDFs of the lectures and discussions posted on eLearn

Course Goals and Overview

This course will serve as the second semester of a capstone series for all students completing a major in Neuroscience. The course will involve regular discussions of current and influential publications in neuroscience, as well as the creation of a class paper that is intended to serve as a reference for all members of the course. The course meetings will occur once per week, and majors will enroll in the course during the spring semester of their Senior year at Loras College

Primary Course Objectives

The objectives of this course include:
1) To allow students to become more familiar with current research in the field of neuroscience.
2) To foster educated and insightful discussion of current topics in neuroscience.
3) To develop written communication skills through the group projects.

Learning Outcomes

1) Awareness and understanding of current research in the field of neuroscience
2) The ability to participate in and lead discussions of current topics in neuroscience
3) The ability to create a meaningful contribution to a neuroscience reference

Course Requirements, Policies and Assignments

Assignments
This course is based on an interactive lecture format where students will be expected to contribute to class discussions, brainstorming sessions, and small group work. Assessment of student learning will be determined as follows (see descriptions below):

Behavioral Neuroscience Primer	100
Cognitive Neuroscience Primer	100
Discussion Leading	100
Participation	100
TOTAL	**400**

Behavioral Neuroscience Research Primer
As a class I'd like us to create written and video primers for conducting behavioral neuroscience research. This work WILL BE USED this semester in Introductory Neuroscience. Further, this primer will be required for any future student from Introductory Neuroscience, Biostats or for independent student research in order to work with the mice. I'd like us to create information for general animal husbandry and all of the steps for each of the behavioral measures that we have.

Cognitive Neuroscience Research Primer
As a class I'd like us to create written and video primers for conducting cognitive neuroscience research. This work WILL BE USED in the future in Introductory Neuroscience and Techniques in Neuroscience (a j-term course I'm proposing). Further, this primer will be required for any future students from Biostats or for independent student research in order to work with the me. I'd like us to create information for using the different cognitive measures that I have as well as designing Open Sesame Experiments for use in Introduction to Psychology and Learning and Cognition.

Discussion Leading
Students will be expected to be the "discussion leader" for one day of articles/topics distributed over the semester. The job of the discussion leader is to provide some structure to the discussion of the issues that week. This could be a PowerPoint or handouts, sets of questions for discussion, etc. The point is not for the leader to do all of the talking that day, rather to facilitate discussion. Feel free to consult with me about this. Your grades for this component of the course will be based on: a) demonstrated understanding of the assigned materials, b) your ability to synthesize material from the articles with additional references and/or material presented in lectures, and c) your ability to stimulate engaging discussion.

Participation
Class participation will be based on active participation in the discussions and also the submission of these assignments and questions the night before class.

Important Dates

Psychology
Drugs and Human Behavior – Instructor: Jake Kurczek Spring 2017

1/30 – First day of classes
3/17 – St. Patrick's Day
4-10 – 4/17 Easter Break
5/12 – Last day of classes
5/12 – 5/18 – Final Exam Week
5/20 – Graduation

Schedule*

Day	Topic	Reading	Assignment
2/3	Course Intro: Projects and discussion leaders	Many Fields	
2/10	Seductive Allure	(Weisberg, Keil, Goodstein, Rawson, & Gray, 2008)	
2/17	Ethics in Neuroscience	(Fuchs, 2006)	
2/24	Work Day		
3/3	Stats in Neuroscience	(Nieuwenhuis, Forstmann, & Wagenmakers, 2011)	
3/10	Publishing in Neuroscience	(Steuer, 2016)	Behavioral Primer Due
3/17	Challenges to Neuroscience	(Markham, 2013)	
3/24	Work Day		
3/31	Neuropedagogy	(Hardiman, 2012)	
4/7	Work Day		
4/14	Spring Break		
4/21	Neurolaw	(Meynen, 2013)	
4/28	Work Day – Jake @ MUPC		
5/5	Neuromarketing	(Lee, Broderick, & Chamberlain, 2007)	
5/12	Unsolved problems of Neuroscience	(Adolphs, 2015)	Cognitive Primer Due

References

Adolphs, R. (2015). The unsolved problems of neuroscience. *Trends in Cognitive Sciences*, *19*(4), 173–175. https://doi.org/10.1016/j.tics.2015.01.007

Fuchs, T. (2006). Ethical issues in neuroscience. *Current Opinion in Psychiatry*, *19*(6), 600–607.

Hardiman, M. (2012). Informing Pedagogy Through the Brain-Targeted Teaching Model. *Journal of Microbiology & Biology Education*, *13*(1), 11–16. https://doi.org/10.1128/jmbe.v13i1.354

Lee, N., Broderick, A. J., & Chamberlain, L. (2007). What is "neuromarketing"? A discussion and agenda for future research. *International Journal of Psychophysiology*, *63*(2), 199–204. https://doi.org/10.1016/j.ijpsycho.2006.03.007

Markham, Henry. (2013). Seven challenges for neuroscience. *Functional Neurology*, *28*(3), 145–151.

Meynen, G. (2013). A neurolaw perspective on psychiatric assessments of criminal responsibility: Decision-making, mental disorder, and the brain. *International Journal of Law and Psychiatry*, *36*(2), 93–99. https://doi.org/10.1016/j.ijlp.2013.01.001

Nieuwenhuis, S., Forstmann, B. U., & Wagenmakers, E.-J. (2011). Erroneous analyses of interactions in neuroscience: a problem of significance. *Nature Neuroscience*, *14*(9), 1105–1107. https://doi.org/10.1038/nn.2886

Steuer, Beth. (2016, June 5). *Publishing in the field of neuroscience: Scientists at the University of Minnesota Institute for Translational Neuroscience describe problems and potential solutions*. University of Minnesota.

Weisberg, D. S., Keil, F. C., Goodstein, J., Rawson, E., & Gray, J. R. (2008). The seductive

allure of neuroscience explanations. *Journal of Cognitive Neuroscience*, *20*(3), 470–477.

https://doi.org/10.1162/jocn.2008.20040