



Neuroscience 301: Neuropsychiatric Diseases

Location Science Hall 208
Loras College TTH 9:30-10:50

Psychology Program Spring 2017

Instructor: Jake Kurczek, PhD
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Office Hours: By appointment

Textbook: *None*

Class Website: You will be able to find PDFs of the lectures and discussions posted on eLearn

Course Goals and Overview

In this course, you will:

- Gain factual knowledge that includes brain anatomy, neuron function, neurotransmitters, and hormones
- Explore current topics in neuroscience through critical review of the primary literature
- Develop collaborative scientific skills through research projects

Learning Outcomes

- Understanding of fundamentals of neuronal and membrane physiology, and how these relate to pathology.
- Familiarization with contemporary thought in the Neuroscience community regarding the underlying basis for the diseases and conditions discussed in the class.
- Familiarization with contemporary therapeutic treatments and interventions for the diseases discussed in the class, as well as the limitations and expected outcomes of those treatments.
- Familiarization with common research techniques and technologies used in Neuroscience.

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. Assignments are due at 9:00PM on the day they are due unless otherwise noted. Assessment of student learning will be determined as follows (see descriptions below):

Quizzes	100
Discussion Leader	50
Portfolio	250
Presentation – Data Blitz	50
Participation	100
Reflections/Questions	100
TOTAL	650

- Quizzes

Quizzes will review material for the lecture/reading of the day. Discussion leaders will provide 5 quiz questions on their topic for the rest of the class to take. These will take the form of fill-in-the-blank or multiple choice.

- Daily Reflections

For each day (starting 2/9) I'd like you to write down your thoughts/reactions about the readings. These should include critical thoughts about the readings (e.g., what and why you agree or disagree with, what did you find interesting or confusing, etc.) *rather than summaries*. These should be about 1-2 pages in length (1" margins, 12-point TNR font, double spaced) Post these to eLearn (Subject Topic Forums) the night before class (9:00PM) so that I can 1) read them before class & 2) possibly assemble them all together, print them out and hand them out in class for all to see. - There are 20 opportunities, so my plan is to take your top 10.

- Discussion Leader

Students will be expected to be the "discussion leader" for 1 day of articles/topics distributed over the semester, beginning – 2/28. On the day you are the discussion lead *you do not need to write a reflection or post questions*. However, you will be asked to come up with 5 multiple choice or fill-in-the blank quiz questions about the reading topic that the rest of the class will take at the beginning of the class period.

The job of the discussion leader is to provide some structure to the discussion of the issues that week. This should 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. So the discussion leader **will not** summarize the article, but rather use the article as a touchstone on the topic of the day. So a discussion leader will likely need to do outside research to help with the discussion. Activities, debates, videos and other active learning techniques are *highly encouraged*, or let's just say, they're required.

- Class Participation

This is a reading and discussion based course. I expect that everybody come to class having read the articles and put some thought into them. To facilitate the discussion (starting 2/9), in addition to the reaction/reflection papers, I'd like everybody to come up with at least 2 questions about each of the readings/concepts and post these to eLearn (Pre-Class Qs) the night before class (9:00PM). The discussion leader for the day does not need to post questions to eLearn the night

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

- Portfolio

The major project for this course is a portfolio studying a particular neurobiological disease. Your portfolio should contain 2 major artifacts and 3 minor artifacts (one of the minor artifacts must be a Kid Poster – see below). Each time you turn something in, it should be in APA style (if appropriate). You will be offered the opportunity to revise one major and one minor artifact. Each major artifact is 1/4 of the portfolio grade and each minor artifact is 1/6 of the portfolio grade.

- Kid Poster

A one-slide powerpoint poster on the neurobiological disease from your portfolio which should be designed for elementary/middle school aged children. The poster should introduce kids to the neurobiological disease in a fun and entertaining way. Think about how you can communicate a complicated topic in a less complicated way.

- Presentation

Students will be asked to give a 7-8 minute presentation on their portfolio at the end of the semester. The presentation will give students an opportunity to summarize their findings for an academic audience.

Schedule*

Day	Topic	Reading	Assignment
1/31	Course Intro		Course Intro
2/2	Neural Communication		Syllabus Signed
2/7	Synaptic Communication		Portfolio Plan
2/9	Methods / Genetics	(Mullen, Crompton, Carney, Helbig, & Berkovic, 2009; Nestler & Hyman, 2010)	Q/A Reflections Start
2/14	Stroke	(Lo, Dalkara, & Moskowitz, 2003)	
2/16	Stroke	(Murphy & Corbett, 2009)	
2/21	AD and Dementia	(Masters et al., 2015)	
2/23	The Aging Brain	(Morrison & Baxter, 2012)	Minor Artifact 1
2/28	Epilepsy	(Ben-Ari & Dudek, 2010)	
3/2	Parkinson's Disease	(Shulman, De Jager, & Feany, 2011)	Discussion Leaders Start Kid Poster
3/7	Huntington's Disease	(Bates et al., 2015)	

3/9	Multiple Sclerosis	(Goldenberg, Marvin, 2012)	
3/14	Muscular Dystrophy	(Mercuri & Muntoni, 2013)	
3/16	Cerebral Palsy	(Graham et al., 2016)	Major Artifact 1
3/21	ALS	(Salameh, Brown, & Berry, 2015)	
3/23	Major Depressive Disorder	(Otte et al., 2016)	
3/28	Anxiety Disorders	(Yehuda et al., 2015)	Minor Artifact 3
3/30	ADHD	(Faraone et al., 2015)	
4/4	Autism/Asberger's	(Silver & Rapin, 2012)	
4/6	Schizophrenia	(Kahn et al., 2015)	Revisions Due
4/10-4/17	No Class	Easter Break	
4/18	Work Day / Peer Review		
4/20	Addiction	(Feltenstein & See, 2013)	
4/25	Pain	(Leknes & Tracey, 2008)	
4/27	Work Day / Peer Review		
5/2	Migraine	(May & Schulte, 2016)	
5/4	Viral Infections	(Zanusso, Monaco, Pocchiari, & Caughey, 2016)	Data Blitz Due 5/8
5/9	Presentations – Data Blitz		
5/11	Presentations – Data Blitz		
FINALS			Portfolio Final

*Instructor reserves the right to modify this syllabus and schedule when necessary. Modifications will be made following notification via e-mail, eLearn, and/or in class announcement

Note: The Neuroscience Club is pairing with Psi Chi to host *Brain Games: Neuronal Fun for All Ages!* on March 15th during common time (11AM-12:15PM) in the ACC Ballrooms. You are invited to either help host the event or to attend. Please let me know if you would like to help out or plan to attend.

References

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