

Integrative Neuroscience II – Fall 2019

NSCI430-011 (NSCI630-011)

Instructor: Dr. Jaelyn M. Schwarz, Associate Professor, Psychological and Brain Sciences
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Office Hours: 10-11AM on Tuesday and Thursday

Class Times: **Mondays and Wednesdays 8:40 AM – 9:55 AM, Penny Hall, Room 004**

Teaching Assistant: Lexi Turano, PhD Candidate, aturano@psych.udel.edu, Wolf Hall Room 434

Text, Readings, and Other Materials:

1. Kandel, Schwartz, Jessell, Siegelbaum & Hudspeth “*Principles of Neural Science*” 5th edition, McGraw-Hill (referred to in the syllabus as KSJSH)
2. Assigned primary research articles or review articles, posted on Canvas.
3. iClicker required

Course Description:

This is the second of a two-semester course (Integrative Neuroscience I, NSCI429, and Integrative Neuroscience II, NSCI430) for senior undergraduate students. NOTE: Participation in the 1st semester course is not a prerequisite for this course; however, this course is designed for students who have completed many of the basic requirements for the neuroscience major or something similar (e.g. NSCI100, PSYC209, and NSCI320).

The course is intended to provide an in-depth and interdisciplinary examination of contemporary topics and approaches in the field of neuroscience. We will integrate the current understanding of different neural systems with the functions they support and their impact on every-day behaviors and disease. Thus Integrative Neuroscience II will cover the general neuroanatomy and physiology of the nervous system underlying behaviors such as arousal, emotion, homeostasis, sex, thought, mood, as well as learning and memory. In addition, we will discuss the development of the nervous system and aging, as well as common neurological and neuropsychiatric disorders of the nervous system.

Course Goals and Objectives:

Goal #1) The course will actively engage students in critical thinking about neuroscience, enhance their scientific reading and discussion skills, and teach students the importance of teamwork and accountability. By the end of this course, you should be able to synthesize and interpret the foundations of neuroscience, apply them to your life, and confront misconceptions and evaluate popular and current ideas about neuroscience in the media.

Goal #2) *Importantly, this course should also provide a mechanism for self-reflection towards professional and career goals. What are the aspects of neuroscience that you feel excited about or spur your interests? How do you see yourself turning these interests or any related interests into a future career?*

NOTE: Lectures will be recorded via UD Capture and uploaded directly to Canvas (under ‘Media Gallery’).

Course Organization in 5 Parts:

1) Quizzes (20 quizzes X 5 points each = 100 points total):

Each class will begin with a short quiz on the assigned readings (specifically, the assigned chapter in KSJSH) for that class period (see right column of class schedule below). Quizzes will take ~5 minutes of each class period. Each question on the quiz is worth 1 point, and thus each quiz is worth 5 points total. ***The quizzes are not meant to be difficult. They are meant to assess your understanding of the material. If you did the reading, you should do well.*** If you do not read the assigned material, you may not get the points for the day. If you are late and you miss any questions, you will not get the points for those questions. Complete the

readings and be on time for class. **If you do not bring your Clicker, you cannot participate in the quiz and you will not earn the quiz points for the day. I will not allow you to write the answers on a piece of paper instead.** You will be allowed to drop the two lowest quizzes from the semester.

For more info about clickers, visit: <http://ats.udel.edu/clickers/faq.php>. In keeping with UD's Code of Conduct related to cheating, attempts to use more than one clicker per class period are subject to academic dishonesty ramifications. Register your clicker using the link available in our Canvas course. You can register multiple clickers if you're concerned about picking up your roommate's, or if you lose your clicker mid-semester

2) Short Lecture / Discussion of the Topic covered in the assigned KSJSH chapter

Following the quiz each day, there will be a brief (20 to 25-minute) discussion of the material presented in the text. We will highlight important concepts, clarify any difficult points in the text, and consider the material in a bit more depth.

3) Team Based Learning (20 TBLs X 15 points each = 300 points):

As part of the course, you will be a member of a permanent team.

In class, following the quiz and a short lecture, we will “break out” into our teams to work on an activity or an in-depth application question that is based on the assigned textbook reading **and** the primary research article posted on Canvas. *Each of these Team-Based learning (TBL) sessions will be focused on reinforcing, analyzing, synthesizing, or applying the concepts covered in the textbook, the lecture, and the research article. These activities will focus on relevant and current topics in neuroscience.* During the Team-Based learning sessions, you will work in your teams to complete the activity or answer the application questions based on your knowledge. Each Team Based Learning assignment will be worth a total of 15 points.

The Team-Based Learning is not optional. If you do not participate in the TBL assignment, you will not receive the TBL points for the day. *These activities and/or application questions will be completed on paper, in class. At least one member of your team will need a pen or pencil to complete these application questions.*

Preparation for Class and Participation. Your team may be called on in class to answer the application questions, recall information, and/ or evaluate or synthesize information. You are expected to participate in the activities of your group and to contribute in a meaningful way that will lead to the best possible answer by your team. Teams are expected to participate in the activities assigned and to volunteer responses during Team-Based learning sessions.

4) TBL Individual Evaluations (30 points total)

Individual evaluations of your performance and contribution to TBL activities will occur two times during the semester. The evaluation will be performed by other members of your team, by you (e.g. you will rate yourself), and by me (I will rate your performance). **Your score will be based on your contribution to the team based learning activities on a scale of 0-15 (15 being the highest contribution).** Your peer evaluation score will be an average of your individual evaluation scores and the professor's evaluation of your involvement (from 0-15 total). *You* must complete the peer evaluation for each of your teammates, including an evaluation of yourself, in order to receive full credit for the TBL Individual Evaluation. These evaluations will be due via Canvas **on October 21st (Evaluation I) and again on December 4th (Evaluation II).**

5) Exams (125 points each X 3 exams):

Three exams will be given (see specific dates below). The exams will include questions about specific topics covered in the readings, the lecture, and the team based learning sessions. I may also ask you to integrate or compare some of the topics you have learned across different classes. **Exam I** will cover class material from 9/4/19 – 9/18/19, **Exam II** will cover class material from 9/25/19 – 10-16-19, and **Exam III** will cover class material from 10/28/19 – 12/4/19. Thus, the “final exam”, Exam III, is not cumulative.

Each exam is worth 125 points.

No make-up exams will be given for an unexcused absence. Only the professor can grant an excused absence for an exam, which will be determined on a case-by-case basis. You must contact the professor at least 2 weeks prior to the exam for athletic or religious conflicts. If you are too ill to take an examination, you must contact the professor PRIOR to that exam. If you are hospitalized or require emergency treatment, you may have a member of the family contact the professor on your behalf. You may be asked to provide documentation of the emergency. In these cases, a make-up exam may be administered on a case-by-case basis.

5) Reflective Writing Assignment (100 points)

This writing assignment is a maximum of 2 pages.

Identify a topic about which you are passionate – something that you have considered turning into a future career. Consider the topics we covered in class, how might any one of these concepts that we covered in class influence your potential career path? Alternatively, what concepts did we cover in class that were surprising to you, changed your way of thinking, something that might spark even a new career choice for you? How do you plan on pursuing your future career goals, what *specific* steps are you taking to make your career goals happen? Some ideas to consider include physical therapy or psychotherapy, counseling, medicine, psychiatry, social work, biomedical research, primary/secondary education, therapy for children with learning disabilities, drug development, pharmaceutical industry, artificial intelligence, ethics, LGBTQT issues, sex-based medicine, working for non-profits related to diseases, end-of-life care, military service and veteran’s affairs, the criminal justice system or juvenile justice, or forensics. There are many fascinating career choices, ALL of which are influenced by neuroscience research. And there may be others that aren’t listed here! **What I want to see is that you have reflected on career goals that may be of interest to you as NSCI majors (even if they are in their earliest stages) and consider how the topics we covered in class may influence your career path.** Personal anecdotes are nice but not necessary. NOTE: Consider this as an initial draft for a personal statement that could be used in the future when applying to graduate schools or jobs! Please start on the assignment early and feel free to come to me to discuss your ideas! I am willing to read one draft of the assignment prior to submission. You have all semester to consider how the topics that we will cover in class may inform your future career goals.

GRADING:

Your final grade will be based on the following four components:

1. Quizzes (20 quizzes X 5 points each)	100 points total
2. Team Based Learning Assignments (20 TBLs X 15 points each)	300 points total
3. Exams (3 X 125 points each)	375 points total
4. TBL Individual Evaluations (2 X 15 points each)	30 points total
4. Reflective Writing Assignment	<u>100 points</u>
	905 POINTS TOTAL

FINAL GRADE

There will be no rounding or “curving”. The points you’ve earned determined the grade you receive:

<u>Grade</u>	<u>Percentage</u>	<u>Points Earned</u>
A	93-100	841.6 – 905 points
A-	90-93	814.5 –
B+	87-90	787.3 –
B	83-87	751.1 –
B-	80-83	724 –
C+	77-80	696.8 –
C	73-77	660.6 –
C-	70-72	633.5 –
D	60-69	543 –
F	< 60	< 543 points

Tentative Schedule

Class Date	Day	Topic	Chapter	Points
8/28/19	Wed	Introduction to NSCI430 / NSCI630		
9/2/19	Mon	Labor Day – No Classes		
9/4/19	Wed	Ch. 47: Autonomic motor system and the hypothalamus	Ch. 47 p.1066-1076	Quiz 1 (5 points) / TBL 1 (15 points)
9/9/19	Mon	Ch. 48: Emotions & feelings	Ch. 48	Quiz 2 (5 points) / TBL 2 (15 points)
9/11/19	Wed	Ch. 49a: Homeostasis & motivation	Ch. 49a p.1093-1104	Quiz 3 (5 points) / TBL 3 (15 points)
9/16/19	Mon	Ch. 49b: Drug Abuse & Addictive states	Ch. 49b p. 1104-1113	Quiz 4 (5 points) / TBL 4 (15 points)
9/18/19	Wed	Ch. 51: Sleep & dreaming	Ch. 51	Quiz 5 (5 points) / TBL 5 (15 points)
9/23/19 (ASNI)	Mon	EXAM I (125 points)		
9/25/19 (ASNI)	Wed	Ch. 52: Patterning the nervous system	Ch. 52 p. 1165-1176	Quiz 6 (5 points) / TBL 6 (15 points)
9/30/19	Mon	Ch. 53: Differentiation & survival of nerve cells	Ch. 53 p. 1187-1204	Quiz 7 (5 points) / TBL 7 (15 points)
10/2/19	Wed	Ch. 55a: Formation of Synapses	Ch. 55 p. 1233-1247	Quiz 8 (5 points) / TBL 8 (15 points)
10/7/19	Mon	Ch. 55b: Formation and Elimination of Synapses	Ch. 55 p. 1247-1257	Quiz 9 (5 points) / TBL 9 (15 points)
10/9/19	Wed	Ch. 58: Sexual differentiation of the nervous system	Ch. 58	Quiz 10 (5 points) / TBL 10 (15 points)
10/14/19	Mon	Ch. 59: The Aging brain	Ch. 59	Quiz 11 (5 points) / TBL 11 (15 points)
10/16/19	Wed	Ch. 44: Degenerative diseases of the nervous system	Ch. 44	Quiz 12 (5 points) / TBL 12 (15 points)
10/21/19 (SfN)	Mon	No class – Study for Exam II		
10/23/19 (SfN)	Wed	EXAM II (125 points)		
10/28/19	Mon	Ch. 64: Autism & other neurodevelopmental disorders	Ch. 64	Quiz 13 (5 points) / TBL 13 (15 points)
10/30/19	Wed	Ch. 61: Disorders of conscious and unconscious mental processes	Ch. 61	Quiz 14 (5 points) / TBL 14 (15 points)
11/4/19	Mon	Ch. 62: Schizophrenia	Ch. 62	Quiz 15 (5 points) / TBL 15 (15 points)
11/6/19	Wed	Ch. 63a: Disorders of mood	Ch. 63a p. 1402-1415	Quiz 16 (5 points) / TBL 16 (15 points)
11/11/19	Mon	Ch. 63b: Disorders of anxiety	Ch. 63b p. 1418-1423	Quiz 17 (5 points) / TBL 17 (15 points)
11/13/19	Wed	Ch. 65: Learning & memory	Ch. 65	Quiz 18 (5 points) / TBL 18 (15 points)
11/18/19	Mon	Ch. 66a: Cellular mechanisms of implicit memory storage	Ch. 66a p. 1461-1476	Quiz 19 (5 points) / TBL 19 (15 points)
11/20/19	Wed	Ch. 66b: Cellular mechanisms of implicit memory storage	Ch. 66b p. 1476-1485	Quiz 20 (5 points) / TBL 20 (15 points)
11/25/19	Mon	Thanksgiving Break – No Classes		
11/27/19	Wed	Thanksgiving Break – No Classes		
12/2/19	Mon	Ch. 67a: Prefrontal cortex, hippocampus, and the biology of explicit memory storage	Ch. 67a p. 1487-1501	Quiz 21 (5 points) / TBL 21 (15 points)
12/4/19 (OSU)	Wed	Ch. 67b: Prefrontal cortex, hippocampus, and the biology of explicit memory storage	Ch. 67b p. 1501-1519	Quiz 22 (5 points) / TBL 22 (15 points)
TBD		EXAM III (125 points) - TBD		
Reflective Writing Assignment – due Friday December 6th				

Policy on excused absences:

Classroom Attendance is Mandatory. Students play a vital role in the success and excitement of this course because the value of the course is in the activities and discussions that will occur during class. Classroom attendance is mandatory to receive points for the assessments (quizzes and TBL activities) that occur during that day. **In short, this class has a ‘no absence policy’.** Arriving to class late and leaving a class meeting before all activities are completed (prior to the end of the class) will be considered an absence and will result in a loss of some or all points accumulated for that class. There are 22 quizzes and 22 TBLs throughout the semester. At the end of the semester, I will **drop the two lowest quizzes and the two lowest Team Based Learning activities from your final grade.** Thus you will only be graded for 20 of the 22 quizzes and TBLs listed above. This means you can be sick or absent on two occasions without overt penalty to your grade. All students get this benefit regardless of whether they were ever absent. Excused absences beyond 2 occasions should be considered only on a case-by-case basis, would require documentation.

For excused absences validated through the Dean’s office related to long-term illness, death, serious family emergency, military duty, or athletic activities, please see the Student Class Attendance and Excused Absences policy online at:

<http://facultyhandbook.udel.edu/handbook/3113-student-class-attendance-and-excused-absences>

Academic Dishonesty

We follow University of Delaware policy and guidelines concerning academic dishonesty and cheating (see the Student Guide to University Policies, [Code of Conduct](#)). Cheating can result in penalties ranging from failing an exam or assignment, to failing the course, to being expelled from the University.

Center for Counseling and Student Development

At times, personal problems, anxiety, stress, changes in mood or attention, as well as other life circumstances can interfere with your academic functioning. UD’s Center for Counseling and Student Development provides a variety of services to support you in your academic work and help you to be successful. The Center works with you on a confidential and individual basis or in a group setting. In addition, you may utilize assessment and counseling services, and referral to additional resources off campus. Most services are covered by the Student Health Fee that all full-time matriculated students pay. For more information, visit www.udel.edu/counseling or call the office at 831-2141.

Disability Support Services (DSS)

Please note: The University of Delaware is committed to diversity and welcomes students with disabilities. If you have a disability related need for a modification or reasonable accommodation in this course, please contact the Office of Disability Support Services located at Alison Hall, Suite 130, email: dssoffice@udel.edu or call 302-831-4563. For more information, visit: <https://sites.udel.edu/dss/>.

Library Resources

The University of Delaware Library provides access to a wide variety of electronic resources, including more than 360 electronic databases which provide the full text of thousands of articles. Most of these electronic resources are available to students via the University of computing network in residence halls, classrooms, offices, and at home. When using links to databases or electronic journals from off-campus, you may be prompted for your UDeID and password. You may stop by The Reference Desk on the first floor of the Library to talk with a librarian about database searching and locating library resources.

The Writing Center

The Writing Center offers students assistance in the writing process – from creating a paper outline to the editing process. The University of Writing Center is staffed by undergraduate students majoring in English and graduate students in the English department’s MA or PhD programs. Writing consultations are provided on a one-on-one setting. <https://www.writingcenter.udel.edu/>