NSC 3361.006 INTRODUCTION TO NEUROSCIENCE— Spring 2023

TUESDAY + THURSDAY 8:30-9:45 AM
GR 4.428

Instructor Contact Information Dr. Diana Kim
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Office hours By appointment
Email with Name, Course Name, Available dates/times

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Course Description:
This is an introductory science course that explored the basic structure and function of the nervous system with emphasis on the neurophysiological processes that underlie behavior. The course includes an overview of neuroanatomy, cellular neuroscience, neuropharmacology, sensory and motor systems, cognitive neuroscience, behavioral neuroscience, and disorders of the nervous system.

Course Content:
To begin to study complex behaviors and treat neurological diseases in humans, one must first understand how the brain works. Since this is an introductory neuroscience course, we will first cover the cells of the nervous system and their physiological roles in processes such as the propagation of nerve impulses and the transfer of information between neurons. This will include a survey of basic neuroanatomy and the organization as well as the development of the nervous system. Next, we will explore how sensory systems including touch, vision, and hearing, as well as, motor systems control behavior. We will then delve deeper into emotion and motivation including drugs, sex, hunger, thirst, and sleep. Finally, we will discuss learning and memory, intelligence, psychological disorders, and language. Whenever possible, clinically relevant examples will be incorporated into lectures leading to discussions of current research.

Course Learning Objectives:
Students who complete this course should be able to: 1. Analyze the contributions of anatomical, physiological, behavioral, cell and molecular, developmental, pharmacological, and biological studies to the cross-disciplinary field of neuroscience. 2. Compare and contrast how neurons and glia cells will react in different disease states. 3. Explain how action potentials propagate along neurons, how information is transferred from neuron to neuron, and how glial cells influence these processes. 4. Predict how damage to neuro-anatomical structures will impact specific behaviors. 5. Evaluate the changes that the nervous system undergoes during typical development and how this is influence by genes vs. the environment. 6. Describe the anatomical structures and mechanisms associated with motivation, emotion, sensation, movement, and complex behaviors at the cellular and systems levels. 7. Demonstrate how scientists create and test hypotheses to study complex behaviors, neurological diseases, and psychiatric disorders. 8. Display a basic understanding of neurochemistry and neuropharmacology as it relates to neuronal function and mental disorders 9. Integrate pathological findings from psychology, psychiatry, physiology, and neurology with basic scientific work in the neurosciences. 10. Apply neuroscience concepts, theories, and research findings to issues in everyday life.

Required Textbook and Materials:
Watson and Breedlove. The Mind's Machine 3rd edition ISBN: 9781605357300.
Textbooks and some other bookstore materials can be ordered online or purchased at the UT Dallas Bookstore.

Course Access and Navigation: This course can be accessed using your UT Dallas NetID account on the eLearning website. Please see the course access and navigation section of the Getting Started with eLearning webpage for more information. To become familiar with the eLearning tool, please see the Student eLearning Tutorials webpage. UT Dallas provides eLearning technical support 24 hours a day, 7 days a week. The eLearning Support Center includes a toll-free telephone number for immediate assistance (1-866-588-3192), email request service, and an online chat service.

Communication:
This course utilizes online tools for interaction and communication. Some external communication tools such as regular email and a web conferencing tool (MS Teams) will also be used during the semester. Grades will be posted as soon as they are available. Announcements will be made from time to time via email and in class.

Lectures:
Attendance of classes is strongly recommended, as tests will be based on material taken from the classes and will not be restricted to the topics and textbooks indicated in this syllabus, which serves predominantly as a guideline to the course.

Class Materials:
PDFs of lecture slides will be posted on eLearning in clearly labeled folders. These will be made available to all students registered for this class as they are intended to supplement the classroom experience. These materials may be downloaded during the course; however, these materials are for registered students' use only. Classroom materials may not be reproduced or shared with those not in class, or uploaded to other online environments except to implement an approved Office of Student Accessibility accommodation. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Class Recordings:
All recordings of powerpoint material will be recorded via Teams and made available to students on Blackboard. Any white board or doc cam teaching will not be recorded. Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Examinations:
Students will be evaluated with 4 midterm exams and an optional comprehensive final exam. Each midterm exam will consist of 25 multiple choice and true/false questions covering the preceding untested material – each question will be worth 1 point each. All midterm exams will be taken in person during the scheduled lecture period (45 minutes). The optional comprehensive final exam will be cumulative and consist of 80 multiple choice and true/false questions on material presented throughout the semester – each question will be worth 1 point each. Cumulative final exam will be taken in person during the scheduled final exam period (120 minutes). The final exam can be taken to replace a midterm exam. If more than one midterm lecture exam is missed, ALL of the missed exams must be excused by the instructor. Tests will be curved and at the instructor's discretion. The instructor reserves the right to change the evaluation criteria at their discretion throughout the semester.

Quizzes:
Quizzes will be administered via Blackboard. 8 quizzes will be offered throughout the semester of which the lowest 3 will be dropped. Each quiz will be worth 5 points each. These quizzes will include 5 multiple choice and true/false questions taken over 10 minute time period with 1 submission attempt. There will be no makeups or extensions for missed quizzes, even excused absences and technical difficulties.

Academic Integrity:

Academic Dishonesty including but not limited to cheating on exams and sharing or posting exam questions (with or without the correct answers) will not be condoned in my class or at UTD. Any action deemed as potential academic dishonesty will be reported to the Office of Community Standards and Conduct for official review.

Course and Instructor Policies:
Excused absences for assessments will be given only if:

- illness
- emergencies
- religious observances
- represent UTD in a university-sanctioned event

You must notify the instructor IN ADVANCE of the scheduled exam if possible and must provide documentation. Otherwise, you will receive a zero for that exam. A maximum extension of one week (7 days) beyond the scheduled exam date can be granted, except for the final exam, which must be taken on the final exam date.

Extra help:
Supplemental Instruction (SI) is offered for this course. SI sessions are collaborative group study sessions, scheduled two times per week. Sessions are facilitated by an SI Leader, who has taken the course and received a high final grade. Attendance is voluntary. For information about the days, times, and locations of SI sessions refer to http://www.utdallas.edu/studentsuccess/help-with-courses/supplemental-instruction/.
Review sessions will be held each week by our undergraduate TAs, who have previously taken the course. In these sessions, TAs will review lecture material presented that week and answer questions. These sessions are not mandatory.
Individual help is also available. You are welcome and indeed encouraged to meet with the instructor or our TAs during virtual office hours or by appointment to go over difficult concepts, discuss learning strategies, and review exams.

Grading Scale:

A+ = 96.45% or greater	B+ = 86.45-89.44%	C+ = 76.45-79.44%	D+ = 66.45-69.44%
A = 92.45-96.44%	B = 82.45-86.44%	C = 72.45-76.44%	D = 62.45-66.44%
A- = 89.45-92.44%	B- = 79.45-82.44%	C- = 69.45-72.44%	D- = 59.45-62.44%

F = 59.44% or below

GRADING WORKSHEET

ASSESSMENT	TOTAL POINTS EARNED	TOTAL POINTS POSSIBLE	NOTE
Quiz 1		10	LOWEST 3 QUIZZES DROPPED
Quiz 2		10	
Quiz 3		10	
Quiz 4		10	
Quiz 5		10	
Quiz 6		10	
Quiz 7		10	
Quiz 8		10	
Midterm Exam 1		100	OPTIONAL FINAL TO REPLACE 1 MIDTERM EXAM
Midterm Exam 2		100	
Midterm Exam 3		100	
Midterm Exam 4		100	
Midterm Exam 5		100	
Final Exam		100	
Total:		550	

TENTATIVE SCHEDULE

WEEK	DATE	LECTURE	TOPIC	TEXT	QUIZ
1	Tues, Jan 17	1	Introduction	1	
	Thurs, Jan 19	2	Neuron and Glia	2	
2	Tues, Jan 24	3	Electrical Signaling	3	
	Thurs, Jan 26	4	Synaptic Transmission	3	#1 due 1/29
3	Tues, Jan 31		Exam 1 Review		
	Thurs, Feb 2		**EXAM 1 (Lectures 1-4)**		
4	Tues, Feb 7	5	Neurotransmitters	4.1	
	Thurs, Feb 9	6	Neuropharmacology	4	#2 due 2/12
5	Tues, Feb 14	7	Neuroanatomy	2	
	Thurs, Feb 16	8	Development of the Nervous System	13.3	#3 due 2/19
6	Tues, Feb 21		Exam 2 Review		
	Thurs, Feb 23		**EXAM 2 (Lectures 5-8)**		
7	Tues, Feb 28	9	Somatosensory System	5	
	Thurs, Mar 2	10, 11	Auditory + Vestibular Systems	6	#4 due 3/5
8	Tues, Mar 7	12	Chemical Senses	6	
	Thurs, Mar 9	13	Visual System	7	#5 due 3/12
9	Tues, Mar 14		**NO CLASS – SPRING BREAK**		
	Thurs, Mar 16		**NO CLASS – SPRING BREAK**		
10	Tues, Mar 21	14	Motor Control	5	
	Thurs, Mar 23		**EXAM 3 (Lectures 9-13)**		
11	Tues, Mar 28	15	Neuroendocrinology	8	
	Thurs, Mar 30	16	Neurobiology of Sex	8	#6 due 4/2
12	Tues, Apr 4	17	Hunger, Thirst, and Homeostasis	9	
	Thurs, Apr 6	18	Biological Rhythms and Sleep	10	
13	Tues, Apr 11		**EXAM 4 (Lectures 14-18)**		
	Thurs, Apr 13	19	Emotions	11	
14	Tues, Apr 18	20	Psychopathology	12	
	Thurs, Apr 20	21	Learning + Memory		#7 due 4/23
15	Tues, Apr 25	22	Cognition	14, 15	
	Thurs, Apr 27	23	Language		#8 due 4/30
16	Tues, May 2		**EXAM 5 (Lectures 19-23)**		
	Thurs, May 4		Final Exam Review		
	TBD		**OPTIONAL CUMULATIVE FINAL EXAM (Lectures 1-23)**		

Schedule:
This schedule is tentative. There may be unforeseen outside factors (e.g. illness, weather) that necessitate adjustments to this schedule, including the dates of reviews and tests. Any such adjustments will be announced in class and/or via e-learning. All descriptions of the didactic material and the timelines are subject to change at the discretion of the instructor. The information in the following link constitutes the University's policies and procedures segment of the course syllabus: Please go to http://go.utdallas.edu/syllabus-policies for these policies.