INTD 5043
Fundamentals of Neuroscience II: Systems Neuroscience
FALL 2022

CLASS DAYS and TIME: Tues & Thurs, 8:00-10:00 am

CLASSROOM: CLASS WILL BE HELD IN PERSON FOR FALL 2022 – Room 229B Pharmacology Conference Room

COURSE FACULTY: Sarah Hopp, Course Director – Dan Lodge, Assistant Course Director

OFFICE LOCATION and HOURS: Meetings are by appointment either virtually or in person

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READ THIS DOCUMENT CAREFULLY - YOU ARE RESPONSIBLE FOR ITS CONTENTS.

COURSE DESCRIPTION AND OBJECTIVES
To provide a fundamental understanding of systems neuroscience designed to prepare graduates for professional scientific careers.

Semester credit hours – 3

ATTENDANCE
In order to achieve the expected level of competency, students must be fully engaged. Therefore, attendance for every class session is expected. It is recognized that a student may occasionally arrive late to class due to unexpected traffic problems or inclement weather. However, chronic lateness is considered an unprofessional behavior that disrupts the learning environment for everyone else in the classroom.

TEXTBOOKS
Recommended: A textbook is not required for this course.

GRADING POLICIES AND EXAMINATION PROCEDURES

Grading System

Final letter grades are primarily based on your performance on three equally weighted take home exams. Grading may be curved at the discretion of the course director and is based on the following scale:
A = 90-100% B = 80-89% C = 70-79% F = < 70%

REQUESTS FOR ACCOMMODATIONS FOR DISABILITIES
In accordance with policy 4.2.3, Request for Accommodation Under the ADA and the ADA Amendments Act of 2008 (ADAAA), any student requesting accommodation must submit the appropriate request for accommodation under the American with Disabilities Act (ADA, form 100) to his/her appropriate Associate Dean of their School and a copy to the ADA Coordinator. Additional information may be obtained at http://uthscsa.edu/eeo/request.asp.
ACADEMIC INTEGRITY AND PROFESSIONALISM

Any student who commits an act of academic dishonesty is subject to discipline as prescribed by the UT System Rules and Regulations of the Board of Regents. Academic dishonesty includes, but is not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an exam for another person, signing attendance sheets for another student, and any act designed to give unfair advantage to a student or the attempt to commit such an act. Additional information may be obtained at http://catalog.uthscsa.edu/generalinformation/generalacademicpolicies/academicdishonestypolicy/

TITLE IX AT UTHSCSA

Title IX Defined:
Title of the Education Amendments of 1972 is a federal law that prohibits sex discrimination in education. It reads “no person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance.”

University of Texas Health Science Center San Antonio’s Commitment:
University of Texas Health Science Center San Antonio (UTHSCSA) is committed to maintaining a learning environment that is free from discriminatory conduct based on gender. As required by Title IX, UTHSCSA does not discriminate on the basis of sex in its education programs and activities, and it encourages any student, faculty, or staff member who thinks that he or she has been subjected to sex discrimination, sexual harassment (including sexual violence) or sexual misconduct to immediately report the incident to the Title IX Director.

In an emergency, victims of sexual abuse should call 911. For non-emergencies, they may contact UPD at 210-567-2800. Additional information may be obtained at http://students.uthscsa.edu/titleix/

EMAIL POLICY

Every student is issued a University e-mail address and account at the time of enrollment. As a matter of University Policy, communications between students and faculty that occur using the student’s University e-mail address is considered official business. Therefore, students are expected to check their university email inboxes on a regular basis so that any announcements, instructions, or information regarding this course will be received in a timely way. Missed communications due to inadequate monitoring of incoming emails on the University’s email server will never be a valid excuse for unsatisfactory academic progress.

USE OF RECORDING DEVICES

Recording of lectures and other learning activities in this course by any means (e.g., video, audio, etc.) is only permitted if approved by the instructor or required for compliance with Americans with Disabilities Act (ADA).

ELECTRONIC DEVICES

Computers and electronic tablets are allowed only for participating in classroom activities (e.g., viewing slides presented in lecture or conference materials). No texting, tweeting, emailing, web-surfing, gaming, or any use of electronic devices that is not directly connected with classroom activities is permitted.
CLASS SCHEDULE
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FALL 2022

General Organization

1. Molecules, Cells, and Circuits
2. From Genes to Behavior
3. Sensory and Motor Systems
4. Homeostatic, Limbic, and Integrative Systems

1. Molecules, Cells, and Circuits
8/16/2022 Tuesday
8:00-9:00 - Intro to Systems Neuroscience - Hopp
9:00-9:55 - Cellular Players in Systems Neuroscience - Hopp

8/18/2022 Thursday
8:00-9:00 - Identification and organization of neurotransmitter systems - Morilak
9:00-9:55 - Synthesis metabolism and regulation of neurotransmitters - Morilak

8/23/2022 Tuesday
8:00-8:55 – Endocannabinoid Signaling – Chen
9:00-9:55 – Endocannabinoid Signaling – Chen

8/25/2022 Thursday
8:00-9:00 - Techniques for measuring neurotransmitter release in vivo – Daws
9:00-9:55 – Neurotransmitter transporters - Daws

8/30/2022 Tuesday
8:00-9:00 – Neurotransmitter transporters II – Daws
9:00-9:55 – Mediation vs. modulation; Brain circuits – Morilak

9/1/2022 Thursday
8:00-9:00 - Psychotherapeutics and Psychopathology  – Lodge
9:00-9:55 – Systems neuroscience methods for circuit function - Lodge

9/6/2022 Tuesday
8:00-9:00 – Synapse formation – Sia
9:00-9:55 – Synapse refinement – Sia

9/8/2022 Thursday
8:00-9:00 – Early neural development – Kokovay
9:00-9:55 – Adult Neurogenesis – Kokovay
Exam 1 – 16 lecture hours
Receive exams Tuesday September 13th, return by Tuesday September 20th before beginning of class

2. From Genes to Behavior

9/13/2022 Tuesday
8:00-9:55 – Model Systems I – Banerjee
9:00-9:55 – Model Systems II – Banerjee

9/15/2022 Thursday
8:00-9:00 – The genetics of neuropsychiatric disorders I – Hiroi
9:00-9:55 – The genetics of neuropsychiatric disorders II – Hiroi

9/20/2022 Tuesday
8:00-9:00 – Epigenetics I: Basic Mechanisms – O’Connor
9:00-9:55 – Epigenetics II: Association with Disease – O’Connor.

9/22/2022 Thursday
8:00-9:00 – The Circadian cycle & CLOCK genes I – Girotti
9:00-9:55 – The Circadian cycle & CLOCK genes II – Girotti

3. Sensory and Motor Systems

9/27/2022 Tuesday
8:00-9:00 - Myelination - Kim
9:00-9:55 – Auditory processing – Kim

9/29/2022 Thursday
8:00-9:00 - Peripheral sensory receptors, receptor potentials & sensory coding – Hargreaves
9:00-9:55 - Spinal and ascending somatic sensory pathways – Hargreaves

10/4/2022 Tuesday
8:00-9:00 - Pain, Nociception and Antinociception I. – Jeske
9:00-9:55 – Pain, Nociception and Antinociception II. – Jeske

10/6/2022 Thursday
8:00-9:00 - Basal ganglia: anatomy, neurochemistry, function – J. Boychuk
9:00-9:55 - Sensorimotor Integration & Pathology – J. Boychuk

10/11/2022 Tuesday
8:00-9:00 – Stroke & Traumatic Brain Injury I – Sayre
9:00-9:55 – Stroke & Traumatic Brain Injury II – Sayre

Exam 2 – 18 lecture hours
Receive exams Tuesday October 18th, return by Tuesday October 25th before beginning of class
4. Homeostatic, Limbic, and Integrative Systems

10/13/2022 Thursday
8:00-9:00 – The Autonomic Nervous System – C. Boychuk
9:00-9:55 – Neuronal regulation of cardio-respiratory function – C. Boychuk

10/18/2022 Tuesday
8:00-9:00 – Hypothalamus – Perez
9:00-9:55 – Sex Differences in Neuroscience – Perez

10/20/2022 Thursday
8:00-9:00 – Neuroimmunology I: HPA Axis and Brain-Immune interactions – O’Connor
9:00-9:55 – Neuroimmunology II: Neurodegeneration and neuroimmunological disorders – O’Connor

10/25/2022 Tuesday
8:00-9:00 – The forebrain limbic system - Morilak
9:00-9:55 – Integrating autonomic, endocrine & behavioral responses: Arousal, fear & stress - Morilak

10/27/2022 Thursday
8:00-9:00 – Autism Spectrum Disorders I – Lee
9:00-9:55 – Autism Spectrum Disorders II – Lee

11/1/2022 Tuesday
8:00-9:00 – Motivation and consummatory behavior – The brain reward system I – Collins
9:00-9:55 – Motivation and consummatory behavior – The brain reward system II – Collins

11/3/2022 Thursday
8:00-9:00 – Hippocampal circuits & Learning and memory - Lodge
9:00-9:55 – Hippocampal circuits & Learning and memory - Lodge

11/8/2022 Tuesday
8:00-9:00 – Alzheimer’s Disease I – Frost
9:00-9:55 – Alzheimer’s Disease II – Frost

Exam 3 – 16 lecture hours
Receive exams Wednesday November 16th, return by Wednesday November 23