

INTD 5043
Fundamentals of Neuroscience II: Systems Neuroscience
FALL 2016

CLASS DAYS and TIME: Tues & Thurs, 8:30-10:30 am

CLASSROOM: Room 229B Conference Room

COURSE FACULTY: Dan Lodge, Course Director

OFFICE LOCATION and HOURS: By Appointment, 217B

EMAIL: Lodged@uthscsa.edu

TELEPHONE: 210-567-4188

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: Fundamental Neuroscience, Squire, Bloom, McConnell, Roberts, Spitzer and Zigmond (Eds), Academic Press. Copies are on reserve in the library and also available in the Neuroscience Program Coordinators Office, 225B and in Dr. Lodge's office, 217B

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 ACCOMODATIONS 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/eoo/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.

TENTATIVE CLASS SCHEDULE
INTD 5043
Fundamentals of Neuroscience II: Systems Neuroscience
FALL 2016

General Organization

- I. Neurotransmitter System**
- II. CNS Development**
- III. Sensory Systems**

Exam 1 – covers 20 lecture hours

- IV. Autonomic and Motor Systems**
- V. Neuroendocrine Systems**
- VI. Limbic and Integrative Systems**

Exam 2 – covers 16 lecture hours

- VII. Genetic Aspects of Neuroscience**
- IX. Clinical Aspects of Neuroscience**

Exam 3 – covers 18 lecture hours

Module I. – Neurotransmitter System - Chapters: 7-10

Tuesday July 12

8:30-9:30 - Identification and organization of neurotransmitter systems - **Morilak**

9:30-10:30 - Synthesis metabolism and regulation of neurotransmitters - **Morilak**

Thursday July 14

9:30-10:30 - Mediation vs. modulation; Brain circuits - **Morilak**

8:30-9:30 - Techniques for measuring neurotransmitter release in vivo – **Daws**

Tuesday July 19

8:30-9:30 – Neurotransmitter transporters I - **Daws**

9:30-10:30 – Neurotransmitter transporters II - **Daws**

- BREAK -

Module II. – CNS Development - Chapters: 14,17,20

Thursday July 28

8:30-9:30 – Synapse formation I. – **Sia**

9:30-10:30 – Synapse formation II. – **Sia**

Tuesday Aug 2

8:30-9:30 – Neurogenesis and neural stem cells I: Identification and localization – **Kokovay**

9:30-10:30 – Neurogenesis and neural stem cells II: Potential Therapeutics – **Kokovay**

Thursday Aug 4

8:30-9:30 - Myelination - **Kim**

9:30-10:30 – Development of auditory processing - **Kim**

Module III. - Sensory Systems - Chapters: 22-25, 27

Tuesday Aug 9

8:30-9:30 - Peripheral sensory receptors, receptor potentials & sensory coding – **Hargreaves**

9:30-10:30 - Spinal and ascending somatic sensory pathways – **Hargreaves**

Thursday Aug 11

8:30-9:30 - Pain, Nociception and Antinociception I. – **Jeske**

9:30-10:30 - Pain, Nociception and Antinociception II. – **Jeske**

Tuesday Aug 16

8:30-9:30 – Visual system - Peripheral mechanisms – **Glickman**

9:30-10:30 - Visual system - Central processing I – **Glickman**

Thursday Aug 18

8:30-9:30 - Visual system - Central processing II - **Glickman**

9:30-10:30 – Visual system - Central processing III - **Glickman**

EXAM 1: 20 lecture hours - Receive Exams by Mon Aug 22th at 5:00 p.m., Return them by Sunday Aug 28th at 5:00pm.

Module IV. – Autonomic and Motor Systems - Chapters: 28-32

Tuesday Aug 23

8:30-9:30 - Basal ganglia: anatomy, neurochemistry, function – **Strong**

9:30-10:30 - Aging-related changes in motor function: Parkinson's Disease – **Strong**

Thursday Aug 25

8:30-9:30 – The Autonomic Nervous System – **Lodge**

9:30-10:30 – Neuronal regulation of cardio-respiratory function – **Lodge**

Module V. – Neuroendocrine Systems - Chapters: 34-40

Tuesday Aug 30

8:30-9:30 – Hypothalamus I – **Lu**

9:30-10:30 – Hypothalamus II – **Lu**

Thursday Sep 1

8:30-9:30 – Neural and endocrine control of feeding behavior and energy balance I – **Lu**

9:30-10:30 – Neural and endocrine control of feeding behavior and energy balance II – **Lu**

Tuesday Sep 6

8:30-9:30 – Neuroimmunology I: Interactions between the immune system and the brain
– **O'Connor**

9:30-10:30 – Neuroimmunology II: Neurodegeneration and neuroimmunological disorders – **O'Connor**

Module VI. – Limbic and Integrative Systems – Chapters: 43-44

Thursday Sep 8

8:30-9:30 – The forebrain limbic system - **Morilak**

9:30-10:30 – Integrating autonomic, endocrine & behavioral responses: Arousal, fear & stress - **Morilak**

Tuesday Sep 13

8:30-9:30 – Motivation and consummatory behavior – The brain reward system I – **France**

9:30-10:30 – Motivation and consummatory behavior – The brain reward system II – **France**

Thursday Sep 15

8:30-9:30 – Learning and Memory – basic concepts and neural mechanisms – **Koek**

9:30-10:30 – Drug effects on different models of conditioning – **Koek**

EXAM 2: 16 lecture hours - Receive Exams by Mon Sep 19th at 5:00 p.m., Return them by Sunday Sep 25th at 5:00pm.

Module VII. – Genetic aspects of Neuroscience

Tuesday Sep 20

8:30-9:30 – Epigenetics I: Basic Mechanisms – **O'Connor**

9:30-10:30 – Epigenetics II: Association with Disease – **O'Connor**

Thursday Sep 22

8:30-9:30 – Neurogenetics and neurogenetic disorders I – **Leach**

9:30-10:30 – Neurogenetics and neurogenetic disorders II – **Leach**

Module VII. – Clinical Aspects of Neuroscience – supplemental reading material

Tuesday Sep 27

8:30-9:30 – Hippocampus I: Circuitry, neurochemistry, LTP – **Lodge**

9:30-10:30 – Hippocampus II: Function in memory and other processes – **Lodge**

Thursday Sep 29

8:30-9:30 – Schizophrenia I: Etiology and neural bases - **Lodge**

9:30-10:30 – Schizophrenia II: Psychopharmacology and treatment - **Lodge**

Tuesday Oct 4

8:30-9:30 – Sleep and Arousal I: Sleep mechanisms and circadian physiology – **Ingmundson**

9:30-10:30 – Sleep and Arousal II: Neuroanatomy and neurotransmitter systems– **Ingmundson**

Thursday Oct 6

8:30-9:30 – Sleep Disorders I: Narcolepsy and sleep apnea – **Ingmundson**

9:30-10:30 – Sleep Disorders II: Movement disorders of sleep, parasomnias– **Ingmundson**

Tuesday Oct 11

8:30-9:30 – Psychopathology and Psychotherapeutics I – **Frazer**

9:30-10:30 – Psychopathology and Psychotherapeutics II – **Frazer**

Thursday Oct 13

8:30-9:30 – Neural Basis of Attention – **Sauder**

9:30-10:30 – Attention Deficit Disorder – **Sauder**

EXAM 3: 18 lecture hours - Receive Exams by Monday Oct 17th at 5:00 p.m., Return them by Sunday Oct 23rd at 5:00pm.

Final grades due from Lecturers by Tuesday Nov 1st.