

NEUR 166 (FALL 2019)

Course Title: Explorations in Neuroscience

Credits: 1 (Pass/No Pass)

Weekly Schedule: 1 class meeting per week, 50 minutes per session.

Class Meetings: Tuesdays at 2:30 - 3:20 PM.

Course Description: This survey course provides students with an opportunity to learn about some of the most exciting and timely concepts in neuroscience, including topics in basic and translational research, as well as perspectives on neuroscience as a profession, through a series of 14 lectures given by members of the Neurosciences Department in the Case Western Reserve University School of Medicine. Topics are presented in a way that can be understood by students who have taken a high school biology class. Every effort is made to explain any new concepts that are included in the lectures. Each lecturer will provide general background reading material for the topics they discuss.

Learning Objectives: Students who enroll in this course will have an opportunity to:

1. Develop a general understanding of nervous system structure and function;
2. Learn about current topics/areas of neuroscience research and the technologies that are used to study them;
3. Understand the relevance of nervous system function and research to public health.

Overview of the course content: Topics discussed will vary from year to year but for its inaugural year the course will include an introduction to the field of neuroscience, functional and structural properties of the nervous system, discussions of outstanding basic and translational research topics in neuroscience, new approaches to studying nervous system function, and some of the mechanisms and approaches to treatment of neurological diseases.

Class Format: Class sessions will be lecture-based but will include discussion, where appropriate.

Prerequisites: There are no prerequisites for this course although familiarity with basic biology at the high school level is assumed.

Textbook and other course resources: There is no textbook for this course. However, individual lecturers will provide resources, such as review articles or short papers, in advance of class meetings to serve as background for material to be discussed in class.

Description of the work expected: (1) All students are expected to attend all lectures, except for excused absences. Students are allowed up to and including two unexcused absences.

(2) Students are expected to read the review articles/papers that are distributed in advance of lecture presentations. These readings will be chosen in an effort to provide a general background without requiring excessive preparation time. (3) Finally, following each lecture, students will be required to write a brief summary of the material that was discussed, along with one or more questions that the lecture stimulated them to consider in the area addressed by lecture.

Grading: NEUR 166 is graded on a PASS/NOPASS basis. Students who have more than two unexcused absences will not pass. Further, journal logs, based on discussion and prompts given in the lecture will be reviewed for content and assigned a pass/fail grade based on demonstration of a basic understanding of the material discussed. Failure or lack of completion of more than two of the weekly journal logs will result in a NOPASS grade.

Instructor contact information:

Heather Broihier, PhD

Room E714, Robbins Bldg, School of Medicine

Office hours TBD

Heather.Broihier@case.edu

216.368.4326

Evan Deneris, PhD

Room E640, Robbins Bldg, School of Medicine

Office hours TBD

Evan.Deneris@case.edu

216.368.8725

David Friel, PhD (Course Director)

Room E647, Robbins Bldg, School of Medicine

Office hours TBD

David.Friel@case.edu

216.368.4930

David M. Katz, PhD

Room E712, Robbins Bldg, School of Medicine

Office hours TBD

David.Katz@case.edu

216-368-6116

Lin Mei, PhD

Room E750A, Robbins Bldg, School of Medicine

Office hours TBD

Lin.Mei@case.edu

216.368.4928

Jerry Silver, PhD

Room E661, Robbins Bldg, School of Medicine

Office hours TBD

Jerry.Silver@case.edu

216.368.2150

Ben Strowbridge, PhD

Room E659, Robbins Bldg, School of Medicine

Office hours TBD

bens@case.edu

216.368.6974

Wen-Cheng Xiong, PhD

Room E721, Robbins Bldg, School of Medicine

Office hours TBD

wxx119@case.edu

Richard Zigmond, PhD

Room E701, Robbins Bldg, School of Medicine

Office hours TBD

rez@case.edu

216.368.4614

Course policies:General

As a survey course, NEUR 166 is intended to be a resource for students interested in neuroscience so they can develop a broad understanding of the field. To get the most out of the course, students should attend class, and read background material provided by lecturers.

Classroom Etiquette

Students are expected to be on time and limit the use of electronic devices to course related activities.

Student Accommodations

In accordance with federal law, if you have a documented disability, you may be eligible to request accommodations from Disability Resources. In order to be considered for accommodations you must first register with the Disability Resources office, located in Sears Rm 402 (Web site: <http://students.case.edu/education/disability/>). Please contact this office to register at 216.368.5230 or get more information on how to begin the process. Please keep in mind that accommodations are not retroactive.

Academic Integrity

Any violation of the University's Code of Ethics will not be tolerated. All forms of academic dishonesty including cheating, plagiarism, misrepresentation, and obstruction are violations of academic integrity standards and will result in a minimum penalty of receiving a zero for the assignment, the potential for failing the entire course. Cheating includes copying from another's work, falsifying problem solutions or laboratory reports, or using unauthorized sources, notes or computer programs. Plagiarism includes the presentation, without proper attribution, of another's words or ideas from printed or electronic sources. It is also plagiarism to submit, without the instructor's consent, an assignment in one class previously submitted in another. Misrepresentation includes forgery of official academic documents, the presentation of altered or falsified documents or testimony to a university office or official, taking an exam for another student, or lying about personal circumstances to postpone tests or assignments. Obstruction occurs when a student engages in unreasonable conduct that interferes with another's ability to conduct scholarly activity. Destroying a student's computer file, stealing a student's notebook, and stealing a book on reserve in the library are examples of obstruction. In addition, the incident will be reported to the Dean of Undergraduate Studies and Academic Review Board for undergraduates or Senior Associate Dean of Graduate Studies, for Graduate Students. The CWRU Statement of Ethics for graduate students can be found here: <http://case.edu/gradstudies/about-the-school/policies-procedures/>

Mental health and other issues

It is very difficult to do your best work while struggling with a mental health issue. All students have access to University Counseling Services (<https://students.case.edu/counseling/>); this is a service that is included in your tuition. Together with Disability Resources, UCS can help you manage your mental health and academic responsibilities. Please take advantage of these resources. Counseling services at University Health & Counseling Services are located at 220 Sears Building. Walk-ins for on-site counseling are available Monday-Wednesday and Friday from 8:30 AM to 4:45 PM and Thursday from 9:30 AM to 4:45 PM. A counselor can be reached by phone 24 hours per day, 7 days per week by calling (216)-368-5872. This is available for students as well as faculty seeking consultation regarding students.

For crises, additional information can be found here:

<https://students.case.edu/wellness/info/emergencies.html>

More information about University Health & Counseling Services can be found here:

<https://students.case.edu/departments/wellness/>

The following links from SAMHSA, NIMH, and NAMI contain additional helpful information about mental health.

<https://www.samhsa.gov/topics>

<https://www.nimh.nih.gov/index.shtml>

<https://www.nami.org/Learn-More>

Weekly Topics 2019-20

INTRODUCTION AND ORIENTATION

Week 1 – Aug 27 (Friel): Course introduction – What is Neuroscience?

Week 2 – Sept 3 (Friel): Cellular signaling.

Week 3 – Sept 10 (Strowbridge): What does the brain do?

Week 4 – Sept 17 (Strowbridge): Neurobiological basis of memory.

CELL AND MOLECULAR TOPICS

Week 5 – Sept 24 (Deneris): Specialized cellular functions with implications for understanding drug action and therapeutics.

Week 6 – Oct 1 (Zigmond): Discovery and function of endogenous opiates.

Week 7 – Oct 8 (Zigmond): Becoming a neuroscientist: From historian to biologist to ethologist to neuroscientist.

Week 8 – Oct 15 (Broihier): Linking genes to behavior.

Week 9 – Oct 22 (Broihier): Synapse assembly, disassembly, pruning and critical periods during development.

Week 10 – Oct 29 (Mei): Technological advances in the study of brain activity in awake behaving animals.

Week 11 – Nov 5 (Mei): Unlocking mysteries of the synapse.

DISORDERS OF THE NERVOUS SYSTEM AND NEW THERAPEUTICS

Week 12 – Nov 12 (Xiong): Neurodegenerative diseases.

Week 13 – Nov 19 (Katz): Gene therapy for Neurological Disorders

Week 14 – Nov 26 (Silver): Strategies to promote recovery from spinal cord injury and stroke

Week 15 – Dec 3 (Silver): Translational Neuroscience - From Bench to Bedside.