ESSENTIALS OF CELL BIOLOGY AND NEUROSCIENCE

01:146:295; FALL SEMESTER 2022

Professor: Dr. Tara Cominski
Office Location: Busch Lab Center, Rm 101
Email: tara.cominski@rutgers.edu

CLASS MEETS ON MONDAY AND THURSDAY FROM 10:20 AM – 11:40 AM IN THE ENGINEERING BUILDING, ROOM B-120 (IN-PERSON)

- Here is a link to the Rutgers map: https://maps.rutgers.edu/
- Here is a link to our classroom in the map: https://dcs.rutgers.edu/classrooms/engineering-building-room-b120
- We will meet in-person for class during our designated meeting times as described above. All course materials will be available through CANVAS, you can access our course directly by following the link below and logging in with your Rutgers credentials.
- https://rutgers.instructure.com/courses/187075

IN-PERSON STUDENT SUPPORT HOURS (BUSCH LAB CENTER RM 101)

Monday 12:00 – 4:00 PM
Thursday 1:30– 3:00 PM

- Please feel free to stop by during the hours listed above to discuss anything related to class, career, life or just to say hi!
- **If you would like to meet outside of these times, please email me.

COURSE DESCRIPTION

Link to Course Description

Prerequisites

General Biology 119:115-116 or 119:101-102

Course Description

The aim of this course is to provide a solid background in cell biology and neuroscience. This course is not intended for CBN majors and is instead intended for students wishing to obtain a good understanding of the disciplines by covering selected areas. Lecture material will range from regulation of gene transcription to neural signaling and

cognition. The ultimate goal is to give students the necessary background and understanding to be able to follow new scientific achievements in these fields.

REQUIRED TEXTS AND COURSE MATERIALS

- **Neuroscience** 6th Edition, Dale Purves, George J. Augustine, David Fitzpatrick, et.al; ISBN: 9781605353807
- **Optional:** The Cell A Molecular Approach, 8th Edition, Geoffrey M. Cooper & Robert E. Hausman, Sinauer Associates, Inc., ISBN: 9781605357072; a version of this textbook was placed on reserve at the Library of Science and Medicine; **I will only use this textbook for a few lectures, therefore, it is not necessary or recommended that you purchase this.**
    - Students can access the optional text by following the link below or using the reading list in Canvas: https://www.libraries.rutgers.edu/teaching-support/reading-lists-and-reserves **There may be a delay in the availability of the text through the library, please contact me if necessary.

TECHNICAL / TECHNOLOGY REQUIREMENTS

- **Mobile device or laptop:** Students must have access to their own personal laptop or tablet during class. **Students will regularly use Canvas to complete in-class quizzes or activities.**
- In addition, other types of technology (i.e. *Socrative*) may be used to allow students to actively engage in class and enable the professor to assess student understanding.
- If you do not have the appropriate technology for financial reasons, please email the Dean of Students at deanofstudents@echo.rutgers.edu for assistance. If you are facing other financial hardships, please visit the Office of Financial Aid: https://financialaid.rutgers.edu/.
- Please visit the Rutgers Student Tech Guide website for resources: https://it.rutgers.edu/technology-guide/students/#new-brunswick

LEARNING GOALS

Course and Department Learning Goals

By fully participating in this course you will master factual and conceptual knowledge in cell biology and neuroscience that will provide a solid foundation for success in advanced training and professional careers. Develop an ability to summarize, integrate and organize information. Use scientific reasoning to evaluate the potential for current research and new discoveries to improve our understanding of cell biology and neuroscience and its relevance to human health and to our society. These goals are

consistent with those set by the Department of Cell Biology and Neuroscience, as well as, the Division of Life Sciences at Rutgers University.

GRADING SCALE

⇒A = 90 and above
⇒B+ = 85-89
⇒B = 80-84
⇒C+ = 75-79
⇒C = 70-74
⇒D = 60-69
⇒F = 59 or below
⇒Warning grades will be entered for those students who are exhibiting poor performance or poor attendance.

ASSESSMENT / GRADING COMPONENTS

Weighting of Assessments

The final course grade will be determined by the following criteria:

- **60%-** Average of grades on exams (3 exams total; the 3rd exam will be given during the final exam period, but will not be cumulative)
- **40%**- Assignments/In-class activities and review exercises, i.e. completion of exam review sheets and/or review questions /**Quizzes** (I will post a quiz on Canvas for each lecture (depending on the size of the lecture a quiz may combine two or more lectures); **most quizzes will be completed in class through Canvas, on the student's personal laptop or tablet.**

** Grades will be calculated using the gradebook in Canvas; this information will be available to students throughout the semester. if you have a question about a grade, please ask asap. I do make mistakes!!

**All assignments will be delivered and submitted through Canvas.

**Exam grades will be posted on Canvas even if the exam is not delivered directly through Canvas.

SCHEDULE OF TOPICS

***This will be updated regularly on our course canvas site; please check the Canvas site for updates, including exams dates; do not use the syllabus for this information

***All lectures and related material will be available on Canvas; All exam questions will come from the lectures and supplementary material covered in class

Week 1 (9/8)
Course Introduction
Chapter 1: Studying the Nervous System

Week 2 (9/12-9/15)
Chapter 1: Studying the Nervous System
Plasma Membrane and Cell Membrane Potential Lecture (some of this content comes from the optional textbook; all information needed will be included in the power point file)

Week 3 (9/19-9/22)
Chapter 2-4: Neural Signaling (this lecture is supplemented with material from an additional textbook)

Week 4 (9/26-9/29)
Chapter 5: Synaptic Transmission
Chapter 6: Neurotransmitters and their receptors

Week 5 (10/3-10/6)
Chapter 7: Molecular Signaling
Cytoskeleton Lecture (this content comes from the optional textbook; all information needed will be included in the power point file)

Week 6 (10/10-10/13)
Review for Exam
Exam 1 Thursday October 13th at 10:20 am

Week 7 (10/17-10/20)
Chapter 9: Somatic Sensory System

Week 8 (10/24-10/27)
Chapter 10: Pain

Week 9 (10/31-11/3)
Chapters 16-19: Movement and its Central Control

Week 10 (11/7-11/10)
Chapter 21: The Visceral Motor System

Week 11 (11/14-11/17)
Exam 2 Review
Exam 2 Thursday 11/17 at 10:20 am

Week 12 (Monday 11/21 and Tuesday 11/22)
Neuroanatomy (supplemental material/Appendix A1-A31)
Chapter 22: Early Brain Development
**Wednesday 11/23 is a Friday schedule and Tuesday 11/22 is a Thursday schedule; No classes Thursday (11/24) and Friday (11/25) for Thanksgiving Recess

Week 13 (11/28 – 12/1)
Chapter 23: Construction of Neural Circuits
Chapter 24: Modification of Neural Circuits

Week 14 (12/5-12/8)
Chapter 25: Repair and Regeneration of the Nervous System
Chapter 26: Association Cortex and Cognition

Week 15 (Monday 12/12)
Final Exam Review

FINAL EXAM – Given during Final Exam Week 12/16-12/23 – Day and Time TBD

*****Fall Semester Regular Classes end on December 14th; Reading Day Thursday December 15th**

POLICIES

ATTENDANCE, PARTICIPATION AND MISSED ASSIGNMENTS

- Students are expected to attend class regularly; quizzes, review questions and other activities to support the lectures will take place during each class and will count toward the final grade. In addition, these exercises serve to enhance student learning and are necessary to succeed in this course.
- If you need to miss class or need extra time to complete an assignment, please email me ahead of time and we will work together to construct a plan to make-up the missed work. If you do not communicate with me about a missed quiz, exam, or assignment and contact me well after the due date, a make-up will not be possible.

- Students with prolonged health and/or financial issues impacting their academics and well-being over an extended period should contact the Dean of Students at deanofstudents@echo.rutgers.edu.
- Link to Rutgers Policy on Attendance and Cancellation of Classes

CLASSROOM NORMS

It is important that you come to class ready to learn. The following requirements are designed to increase everyone's classroom engagement.

- Be fully present even with technology
  - Do not use computers or other electronic devices during class unless you are using them to take notes or participate in a classroom activity.
  - If an urgent call needs to be answered, please leave the room to do so.
- Speak your truth
- Be respectful – one voice, but it is okay to disagree!
- Ask questions
- Share your experiences and expertise
- Be comfortable!
- If you need to go to the bathroom or attend to any other personal need, leave the classroom, there is no need to ask permission unless we are taking an exam.
- Continued disruption during class by texting, talking, or otherwise inappropriate behavior (i.e. sleeping) will result in ejection from the classroom and a referral to the Dean.

DISABILITY ACCOMMODATIONS

- To receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation.
- Please review the policies and procedures of the Office of Disability Services website: https://ods.rutgers.edu for additional information

ACADEMIC INTEGRITY

- Please familiarize yourself with the University website on Academic Integrity: Academic Integrity Policy Link
- Rutgers University takes academic dishonesty very seriously. By enrolling in this course, you assume responsibility for familiarizing yourself with the Academic Integrity Policy and the possible penalties (including suspension and expulsion) for violating the policy. As per the policy, all suspected violations will be reported to the Office of Student Conduct. Academic dishonesty includes (but is not limited to):

- Cheating
- Plagiarism
- Aiding others in committing a violation or allowing others to use your work
- Failure to cite sources correctly
- Fabrication
- Using another person's ideas or words without attribution, including re-using a previous assignment Unauthorized collaboration
- Sabotaging another student's work

If you are ever in doubt, consult your instructor.

STUDENT SUPPORT AND MENTAL WELLNESS

⇒ **Here is a list of Rutgers resources to support students in their academic success and mental wellness.**

- Student Success Essentials: https://success.rutgers.edu
- Student Support Services: https://www.rutgers.edu/academics/student-support
- The Learning Centers: https://rlc.rutgers.edu/
- The Writing Centers (including Tutoring and Writing Coaching): https://writingctr.rutgers.edu
- Rutgers Libraries: https://www.libraries.rutgers.edu/
- Office of Veteran and Military Programs and Services: https://veterans.rutgers.edu
- Student Health Services: http://health.rutgers.edu/
- Counseling, Alcohol and Other Drug Assistance Program & Psychiatric Services (CAPS): http://health.rutgers.edu/medical-counseling-services/counseling/
- Office for Violence Prevention and Victim Assistance: www.vpva.rutgers.edu/