

ESSENTIALS OF CELL BIOLOGY AND NEUROSCIENCE

01:146:295; FALL 2026

Professor: Dr. Tara Cominski

Office Location: Busch Lab Center, Rm 101

Email: tara.cominski@rutgers.edu



[LinkedIn Profile](#)

CLASS MEETS MONDAY & THURSDAY 8:30 – 9:50 AM; PH-115 (SCHOOL OF PHARMACY); BUSCH

- Link to the Rutgers map: <https://maps.rutgers.edu/>
- **Regular class attendance is expected!!!!**
- All course materials will be available through CANVAS

STUDENT SUPPORT HOURS (VIRTUAL AND IN-PERSON)

OFFICE LOCATION: BUSCH LAB CENTER RM 101

- ⇒ **Tuesday 11:00 AM – 1:00 PM**
- ⇒ **VIRTUAL - Wednesday 12:00 PM – 1:00 PM**
- ⇒ **Thursday 11:00 AM – 12:00 PM**
- ****If you would like to meet outside of these times, please email me! I am also available right before/after class and prefer meeting then!**
- **Office Location:** Middle of the building, down the small hallway near the bathroom. Walk toward the exit door in the middle of the building, and my office is immediately to your right.
- **[Virtual Office Link](#)**

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; instead, it is intended for students seeking a solid understanding of the disciplines by covering selected areas. Lecture material will range from gene transcription regulation to neural signaling and cognition. The main objective is to provide students with the essential background and understanding to follow new scientific advancements in these fields.

REQUIRED TEXTS AND COURSE MATERIALS

- **A notebook and pen/pencil to complete in-class participation activities!!**
- **Recommended: Neuroscience 6th Edition**, Dale Purves, George J. Augustine, David Fitzpatrick, et.al; ISBN: 9781605353807 (other editions can be used)
- **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.**
 - Both textbooks are on reserve at the Library of Science and Medicine on Busch Campus; at front desk under "Cominski"

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, activities/assignments, and exams.**
- In addition, other applications 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

Link to 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.

TEACHING PHILOSOPHY/TEACHING STYLE

The focus of my teaching is to promote understanding and appreciation of complex biological concepts. I achieve this through the pedagogical methods listed below.

- All lecture materials will be available on Canvas
- Additional resources will be provided to supplement the lecture material
 - Links to videos
 - Links to informative websites, i.e. NCI
 - Exam review sheets and practice questions
 - Review questions are provided at the end of most lectures
 - Journal articles
 - Excerpts from text/journal articles
- Class Design
 - PowerPoint lecture emphasizing the explanation of figures and pictures to enhance the ability to integrate individual concepts into a broader understanding.
 - In-class activities/assignments
 - Drawing
 - Open-ended
 - Group activities
 - Multiple-choice questions
 - Questions to encourage critical thinking about the concepts introduced in the lecture.
- Canvas quiz after each lecture
- Homework assignments
 - Video and PlayPosit quizzes
 - Journal article assignments
 - Assignments to extend concepts, i.e. drug mechanism of action
- Exams and quizzes are delivered through Canvas and include figures from the lectures. The questions evaluate comprehension and interpretation of these figures.

GRADING SCALE

- ⇒ A = 92 and above
- ⇒ B+ = 87-91
- ⇒ B = 80-86
- ⇒ C+ = 75-79
- ⇒ C = 70-74
- ⇒ D = 60-69
- ⇒ F = 59 or below
- ⇒ Warning grades will be entered through the Regis grading system if applicable
- ⇒ Grades will be calculated in the Canvas gradebook. This information will be available to students throughout the semester. If you have a question about a grade, please ask as soon as possible. I do make mistakes!
- ⇒ **Letter grades will be based on the total percentage calculated in Canvas, using the scale above; I will not round up!**

ASSESSMENT / GRADING COMPONENTS

Weighting of Assessments

- ⇒ The final course grade will be determined by the following criteria:
 - **70%- Exams**
 - 4 exams – equally weighted
 - Final Exam (Exam 4) will be given during the final exam period
 - Semi-cumulative
 - **10% - In-Class Assignments/Activities** (Class participation/attendance)
 - Assignments will be given during most classes, with consideration for religious observances and add/drop period.
 - **The 2 lowest in-class assignment grades will be dropped**
 - Due dates will vary depending on the activity and must be submitted by the time specified for full credit
 - **Some**, not ALL, assignments can be submitted after the specified time, but before 11:59 PM that night, for partial credit (20-point deduction)
 - Assignments not submitted by 11:59 PM or the specified deadline will not be accepted, resulting in a **ZERO** being given.
 - **IN-CLASS ASSIGNMENTS CANNOT BE MADE UP FOR ANY REASON!!!**
 - **20%- Quizzes/Homework Assignments**
 - A graded quiz will be given through Canvas for each lecture (depending on the size of the lecture, a quiz may combine two or more lectures)
 - Homework assignments will be given for select topics

SCHEDULE OF TOPICS

Updates to this schedule will be made on Canvas

Date	Topics Covered	Class Plan
Week 1: 9/3	⇒ Course Introduction ⇒ Syllabus and Course Expectations	Welcome to Class Discussion Board Student Introductions Syllabus Quiz
Week 2: 9/8 (Tuesday) & 9/10	⇒ Chapter 1: Studying the Nervous System (Chapter 1) ⇒ Plasma Membrane and Membrane Potential	Lecture In-class activity/assignment Canvas Quiz
Week 3: 9/14 & 9/17	⇒ Neural Signaling (Chapters 2-4)	Lecture In-class activity/assignment Canvas Quiz
Week 4: 9/21 & 9/24	Review for Exam 1	**EXAM 1 THURSDAY 9/24**
Week 5: 9/28 & 10/1	⇒ Synaptic Transmission (Chapter 5) ⇒ Neurotransmitters (Chapter 6)	Lecture In-class activity/assignment Canvas Quiz
Week 6: 10/5 & 10/8	⇒ Neurotransmitters (Chapter 6) ⇒ Molecular Signaling	Lecture In-class activity/assignment Canvas Quiz Drug Mechanism Assignment
Week 7: 10/12 & 10/15	⇒ Cytoskeleton ⇒ Review for Exam 2	Lecture In-class activity/assignment Canvas Quiz
Week 8: 10/19 & 10/22	⇒ Exam 2 ⇒ Somatic Sensory System (Chapter 9)	**EXAM 2 MONDAY 10/19** Ramachandran Assignment
Week 9: 10/26 & 10/29	⇒ Pain (Chapter 10) ⇒ Movement and its Central Control (Chapter 16-19)	Lecture In-class activity/assignment Canvas Quiz
Week 10: 11/2 & 11/5	⇒ Movement and its Central Control (Chapter 16-19)	Lecture In-class activity/assignment Canvas Quiz
Week 11: 11/9 & 11/12	⇒ Exam 3 Review ⇒ Exam 3	**EXAM 3 THURSDAY 11/12**
Week 12: 11/16 & 11/19	⇒ Neuroanatomy and Brain Atlas ⇒ Early Brain Development (Chapter 22)	Lecture In-class activity/assignment Brain atlas in-class activity Canvas Quiz
Week 13: 11/23 Thanksgiving	⇒ Construction of Neural Circuits (Chapter 23)	Lecture In-class activity/assignment Canvas Quiz

Week 14: 11/30 & 12/3	⇒ Modification of Neural Circuits (Chapter 24)	Lecture In-class activity/assignment Canvas Quiz
Week 15: 12/7 & 12/10	⇒ Repair and Regeneration of the Nervous System (Chapter 25) ⇒ Review for Final Exam	Lecture In-class activity/assignment Canvas Quiz
12/11 & 12/14	Reading Days	No Classes
Final Exam Week: 12/15-12/22	Final Exam – Semi-Cumulative	**FINAL EXAM ** TUESDAY 12/15 8:00 – 11:00 AM

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-class activities and assignments enhance student learning and are necessary for success in this course.**
 - See the “Grading Components” section for more information
 - These assignments serve as the class participation/attendance portion of your grade
 - **Students are not entitled to a perfect score for this portion of the grade; this system is designed to reward students who attend class regularly, rather than penalize those who miss some classes.**
- 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.**
- **Make-ups for Quizzes and Exams are at the professor's discretion and may not be granted!**
- 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.
- [Self-reporting Absence Application Link](#)

EXPECTATIONS:

For Students:

- Be fully (well at least almost fully) present/engaged
- Be respectful – one voice, but it is okay to disagree!
- Ask questions
- Share your experiences and expertise
- **Attend class regularly – Why do you think I care about this??**
- Make mistakes, but own them; I do it all the time...
- Be late (sometimes)
- Miss an assignment
- Miss a class
- Be interested

For the Instructor:

- Be respectful
- Share experiences and expertise
- Make mistakes, but own them
- Be prepared
- Be responsive
- Be late (sometimes)
- Miss an email
- Forget to post a quiz or assignment
- Miss a class
- Be fair
- Provide the opportunity and environment for **ALL** students to **learn**
- Be engaged and enthusiastic

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 see me before or after class to confirm that I have received your accommodation form and to discuss expectations.**
- 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 (**this includes AI**), 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/