

Essentials of Cell Biology and Neuroscience 01:146:295

Fall Semester 2020

Classroom: Remote

Time: Asynchronously

Professor: Dr. J Schjott

E-mail: schjott@dls.rutgers.edu

Office hours: Tuesdays and Wednesdays 12 noon - 1pm

Course Web site: Canvas.rutgers.edu

Lectures, Exams and Quizzes

Sept 1 Nerve Cells and Glia Cells

Chapter 2, Bear (p. 39-43, 44-46, 49-52, 105)

4 Brain Anatomy and Embryonic Development

Chapter 7, Bear (p. 183-186, 193-203, 206-207) + 524 and 759

11 Membrane Transport: Pumps, Channels and Transporters

Chapter 11, Alberts (p. 361-362)

Chapter 12, Alberts (p. 383-387, 390-394, 396-400)

Chapter 4, Bear (p. 92-98)

15 Resting Membrane Potential

Chapter 3, Bear (p. 66-77)

Chapter 12, Alberts (p. 398-400)

Quiz 1 due at 11:59 pm

18 Action Potentials

Chapter 4, Bear (p. 82-91, 98-104)
Chapter 12, Alberts (p. 403-409)

22 Action Potentials, continued

Chapter 4, Bear (p. 82-91, 98-104)
Chapter 12, Alberts (p. 403-409)

Quiz 2 due at 11:59 pm

25 Synaptic Transmission and Vesicle Transport

Chapter 5, Bear (p. 111-115, 119-134)
Chapter 15, Alberts (p. 506-507)

29 Synaptic Transmission and Vesicle Transport, continued

Chapter 5, Bear (p. 111-115, 119-134)
Chapter 15, Alberts (p. 506-507)

Quiz 3 due at 11:59 pm

Oct 2 Neurotransmitters and Receptors

Chapter 16, Alberts (p. 530, 538 , 543)
Chapter 5, Bear (p. 120, 539-547, 150, 160-162, 166-168, 769, 448)

6 Exam 1 at 12 noon

9 Neurotransmitters and Receptors, continued

Chapter 16, Alberts (p. 530, 538 , 543)
Chapter 5, Bear (p. 120, 539-547, 150, 160-162, 166-168, 769, 448)

13 Cytoskeleton

Chapter 17, Alberts (p. 566-586)

Quiz 4 due at 11:59 pm

16 Alzheimer's Disease

Chapter 2, Bear (p. 40-41)

20 Alzheimer's Disease, continued

Chapter 2, Bear (p. 40-41)

Quiz 5 due at 11:59 pm

23 Motor System

Chapter 13, Bear (p. 457, 464-476)
Chapter 14, Bear (p. 486-502, 513-515)
Chapter 17, Alberts (p. 592-598)

27 Motor System, continued

Chapter 13, Bear (p. 457, 464-476)
Chapter 14, Bear (p. 486-502, 513-515)
Chapter 17, Alberts (p. 592-598)

Quiz 6 due at 11:59 pm

30 Somatosensory System and Pain

Chapter 12, Bear (p. 417-423, 427-428, 431-432, 437-438, 444-447) Chapter
13, Bear (p.469-477, Proprioception)

Nov 3 Eye and Retina

Chapter 9, Bear (p. 297, 305-316, 322-325)

Quiz 7 due at 11:59 pm

6 Exam 2 at 12 noon

10 Eye and Retina, continued

Chapter 9, Bear (p. 297, 305-316, 322-325)

13 Central Visual System

Chapter 10, Bear (p. 333-362)

17 Central Visual System, continued

Chapter 10, Bear (p. 333-362)

Quiz 8 due at 11:59 pm

20 Sleep and Circadian Rhythms

Chapter 19, Bear (p. 658-681)

24 Sleep and Circadian Rhythms, continued

Chapter 19, Bear (p. 658-681)

Quiz 9 due at 11:59 pm

25 Speech and Language

Chapter 20, Bear (p. 692-708)

Dec 1 Speech and Language, continued

Chapter 20, Bear (p. 692-708)

Quiz 10 due at 11:59 pm

4 Memory

Chapter 24, Bear (p. 815-817, 824-833, 841-842, 847-852)

Chapter 25, Bear (p. 872-882, 897)

8 Memory, continued

Chapter 24, Bear (p. 815-817, 824-833, 841-842, 847-852) Chapter 25, Bear (p. 872-882, 897)

Final Exam:

Time:

Text Books

Neuroscience: Exploring the Brain, by Bear et al., 4th edition (no access code needed) (ISBN-10: 0781778174, ISBN-13: 978-0781778176)

Essential Cell Biology, by Alberts et al. 4th edition
(ISBN-13: 978-0815344551, ISBN-10: 0815344554)

The textbooks are referred to as Bear and Alberts in the syllabus. Please note that even though the class will cover topics in both cell biology and neuroscience, there will be an emphasis on neuroscience.

Other Resources:

An online Neuroscience textbook from University of Texas (free) can be found here:

<https://nba.uth.tmc.edu/neuroscience/toc.htm>

Grading

The final grade in the class will be based on three exams and 10 quizzes according to the following:

Exam 1: 40 points ($\frac{1}{4}$ of final grade)

Exam 2: 40 points ($\frac{1}{4}$ of final grade)

Exam 3 (during final exams period): 40 points ($\frac{1}{4}$ of final grade) Quizzes:

40 points ($\frac{1}{4}$ of final grade)

Grading Scale (% of 160 points):

A	90 - 100
B+	85 - 89
B	80 - 84
C+	75 - 79
C	70 - 74
D	60 - 69
F	0 - 59

There will not be any extra credits offered, all the points come from quizzes and exams.

Exams

The exams will be open book, meaning that you are allowed to refer to your notes and the internet when you take the exam. You are not allowed to work together with other students or communicate with other students while you are taking the exams.

All exam questions will be multiple choice. The third exam will cover material presented after the second exam and will not be cumulative. The questions will be on the material I have covered in the screencast lectures. I do recommend reading the textbook chapters indicated in the syllabus because it really helps with understanding but there will not be exam questions on material from the textbooks that I have not covered in lecture.

Each exam will have 40 questions and each question will be worth one point. All students will get the same questions but the order of the questions will be randomized. You will see only one question at a time and each question has to be answered before moving on to the next question. It will not be possible to go back to previously answered questions. The exams will be timed to 80 minutes and given only at the date and time indicated on the syllabus.

I have always had 40 multiple choice questions in 80 minute long exams when teaching in-person and giving closed-book exams. Students have not felt that there is any time pressure in that setting and I

don't expect that you will feel that either. However, you do have to be prepared for the exams and you cannot count on finding answers to questions while the exam is going on. It's important to have watched the lectures, taken notes, read the textbooks and figured out if you have questions on the material before the exams.

Quizzes

There will be 10 quizzes during the semester. The quizzes will be posted on Canvas 5-6 days before the due date and they will not be timed. You can submit your quiz at any time before the deadline.

The quizzes are open book. You are allowed to refer to your notes and the internet when you take the exam. You are allowed to work together with other students when you are taking the quizzes. Correct answers will be released after the deadline of each quiz. Each question on a quiz will be worth 0.4 points, and there will be 10 questions per quiz, so each quiz is worth 4 points. All 10 quizzes will count, I will not drop one.

Due dates for the quizzes are noted on the syllabus. Because the correct answers are released right after the deadline, no one will be able to take a quiz after the deadline, regardless of the reason for missing the quiz.

The purpose of the quizzes is to make sure you keep up with the lectures and to test your understanding of the material. Make sure you ask questions while you are studying or if you are not sure why you got a quiz question wrong. Take advantage of this opportunity for learning. If you simply copy a classmate's answers on the quiz you'll miss out on this learning opportunity. Please note that the exams account for 75% of the final grade and all the quizzes together account for 25%. It is therefore useful to think about the quizzes as part of the course work to help prepare you for the exams.

Lectures

I will prerecord screencasts of the lectures and post them on Canvas. Because there will not be any opportunity to ask questions during lecture I encourage you to attend office hours to ask questions. There will also be discussion boards on Canvas where you can ask questions and get them answered.

Office Hours

I will have live office hours using Webex twice a week. This is a good chance to ask questions and get clarifications on the material covered in lecture. I encourage everyone to attend to ask questions or to listen in to other students' questions.

Final Grade

The final grade cannot be negotiated. I simply add up your points during the semester and assign a letter grade based on the grading scale above. This is all done in an effort to treat all students equally and to be fair to everybody. Inherent in the system of letter grades is the fact that there will be students who are just below (as well as just over) the cut-off for a particular letter grade. I will not bump students up at the end of the semester. Please do not email me with these requests. I do round 0.5 up and 0.4 down, so 89.5 will round up to an A and 89.4 will round down to a B+

Academic Integrity

Exams should be your own work and you are not allowed to collaborate with other students while taking them. It is a violation of the Academic Integrity policy to use sources like Chegg, CourseHero, StudyBlue, GroupMe, etc. during an exam. All exams, quizzes and PowerPoint presentations are my intellectual property and thus cannot be uploaded to any study help websites. I report all violations to Rutgers Office of Academic Integrity that has a process for investigating violations of academic integrity and taking disciplinary action. Here is a link to their website explaining the process and different violations

<http://academicintegrity.rutgers.edu/academic-integrity-at-rutgers/>

Recommendation Letters

With the class being fully online and all the exams open-book format, I do not feel comfortable writing recommendation letters.

Rules for Final Exam Conflicts

Final exam schedules and rules for exam conflicts can be found here:

<https://scheduling.rutgers.edu/scheduling/exam-scheduling>

I follow Rutgers official rules for final exam conflict which states that:

A student shall be said to have an exam conflict if that student has:

- More than two (2) exams on one calendar day.
- More than two (2) exams scheduled in consecutive periods (e.g., a student has exams scheduled for 4:00-7:00 pm and 8:00-11:00 pm on one day and 8:00-11:00 am on the following day.)
- Two exams scheduled for the same exam period.

CBN Student Learning Goals

The department of CBN offers a wide range of lecture, laboratory, seminar and independent research courses. Our curriculum not only provides students with facts and concepts in cell biology and neuroscience but also emphasizes analytical skills and scientific reasoning. Upon the completion of our program, we expect our students to:

1. Master factual and conceptual knowledge in cell biology and neuroscience that will provide a solid foundation for success in advanced training and professional careers.
2. Develop an ability to summarize, integrate and organize information.
3. 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.

Student-Wellness Services

Counseling, ADAP & Psychiatric Services (CAPS)

(848) 932-7884 / 17 Senior Street, New Brunswick, NJ 08901/ www.rhscaps.rutgers.edu/

CAPS is a University mental health support service that includes counseling, alcohol and other drug assistance, and psychiatric services staffed by a team of professionals within Rutgers Health services to support students' efforts to succeed at Rutgers University. CAPS offers a variety of services that include: individual therapy, group therapy and workshops, crisis intervention, referral to specialists in the community and consultation and collaboration with campus partners.

Violence Prevention & Victim Assistance (VPVA)

(848) 932-118

3 Bartlett Street, New Brunswick, NJ 08901

www.vpva.rutgers.edu/

The Office for Violence Prevention and Victim Assistance provides confidential crisis intervention, counseling and advocacy for victims of sexual and relationship violence and stalking to students, staff and faculty. To reach staff during office hours when the university is open or to reach an advocate after hours, call 848-932-1181.

Disability Services

(848) 445-6800

Lucy Stone Hall, Suite A145, Livingston Campus, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854

<https://ods.rutgers.edu/>

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order 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: <https://ods.rutgers.edu/students/documentation-guidelines>. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the Registration form on the ODS web site at: <https://ods.rutgers.edu/students/registration-form>.

Scarlet Listeners

(732) 247-5555

<http://www.scarletlisteners.com/>

Free and confidential peer counseling and referral hotline, providing a comforting and supportive safe space.

Self Help Apps

<http://rhscaps.rutgers.edu/self-help-apps/>