

BB 360
Spring Term 2018

Introduction to Neuroscience

Topics covered: Structure of neurons, Nernst equation, action potentials, synaptic transmission, sensory cells, schizophrenia, blood brain barrier and drugs.

Instructor: Dr. Colin Johnson
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Teaching assistants:

Class Hours: MWF 9-10

Office Hours:

Course Credits: The course will meet 3 hours of lecture per week for the 10-week term, for 3 credits.

Textbook: *Neuroscience Exploring the Brain*

Course Description: The course is composed of a series of lectures meant to introduce students to the essential concepts of neuroscience, neurobiology, and neurochemistry, including the concepts of membrane potentials and the general structure of neurons and neuronal connectivity, neuronal communication as well as central nervous system disorders and diseases including prion disease.

Evaluation: Examinations (two, non-cumulative, each 200 points; 400 points total).
Quizzes (five; 50 points total).

Learning aids:

- Lecture notes are posted on Canvas site (there may be some changes **after** each lecture has been given).
- End-of-chapter problems from the book are recommended.
- Recommended (not "required") materials will also be available on Canvas.

Learner Outcomes:

Specific skills and knowledge you should obtain as a result of instruction are listed below:
Students are expected to:

1. Describe the structure of neurons and their subcellular components
2. Explain the principals of electrophysiology recording techniques
3. Explain the basis for the cell membrane potential and describe the steps of the action potential.
4. Explain the concept of long term potentiation
5. Recall the cellular processes associated with vision, olfaction, taste, and hearing

6. Describe the basic processes involved in neural signaling and cell-cell communication
7. Explain the effects of psychoactive drugs on the nervous system
8. Define and contrast prion disease, mood disorders, fear and the amygdala, and explain the molecular basis for each

Learner Expectations and Course Policies:

You should attend every class. If you cannot attend a class, please obtain notes and review the material with another student. Please note the date and time of the exams. All exams must be taken. In cases of serious illnesses or other traumatic events a make-up exam may be granted if you contact me within 24 h of the event and provide documentation. Makeup exams will not be given for airline reservations, routine illness (colds, flu, stomach aches), or other common ailments.

Please use the resource on Canvas, the material is there to aid in your understanding of the material. Additionally, attend and ask questions during recitation, as it provides an opportunity to test your comprehension.

University Policies

Statement Regarding Students with Disabilities

Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval please contact DAS immediately at 541-737-4098 or at <http://ds.oregonstate.edu>. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations. The DAS Statement is posted online at: ds.oregonstate.edu/faculty-advisors

University rules on civility and honesty:

<http://studentlife.oregonstate.edu/studentconduct/offenses-0>

Cheating or plagiarism by students is subject to the disciplinary process outlined in the Student Conduct Regulations. Students are expected to be honest and ethical in their academic work. Academic dishonesty is defined as an intentional act of deception in one of the following areas:

- Cheating-use or attempted use of unauthorized materials, information or study aids
- Fabrication-falsification or invention of any information
- Assisting-helping another commit an act of academic dishonesty
- Tampering-altering or interfering with evaluation instruments and documents
- Plagiarism-representing the words or ideas of another person as one's own

Behaviors disruptive to the learning environment will not be tolerated and will be referred to the Office of Student Conduct for disciplinary action.

Use of cellular phones is not permitted in the classroom during lectures or exams.

"The goal of Oregon State University is to provide students with the knowledge, skill and wisdom they need to contribute to society. Our rules are formulated to guarantee each student's freedom to learn and to protect the fundamental rights of others. People must treat each other with dignity and respect in order for scholarship to thrive. Behaviors that are disruptive to teaching and learning will not be tolerated, and will be referred to the Student Conduct Program for disciplinary action. Behaviors that create a hostile, offensive or intimidating environment based on gender, race, ethnicity, color, religion, age, disability, marital status or sexual orientation will be referred to the Affirmative Action Office."

Grades:

Letter grades will be determined at the end of the term based on a point distribution – exam 1 (45%), exam 2 (45%), quizzes (10%). For each exam, the mean score for the class will be posted. If your exam has been wrongly graded, bring it to my attention and request regrading within two class periods after the day that exams are returned to the class. After this, no requests will be considered. In addition, students are also referred to AR 18 and AR 19 of the Evaluation of Student Performance statement at OSU:

<http://catalog.oregonstate.edu/ChapterDetail.aspx?key=75#Section2886>

Policy on incompletes

A grade of incomplete (I) is considered appropriate if one or more of the course requirements has not been completed due to circumstances beyond the student's control, and at least half of the work for the course has been completed with a grade of C- or better. A note from a doctor is required in cases where medical problems prohibit the student from fulfilling the course requirements. Note that the difficulty of the course, the amount of time that must be devoted to the course, or poor scores on the exams and quizzes are not acceptable reasons for an incomplete.

Prerequisites and Co-requisites

PREREQUISITES: A minimum grade of C- is required for the following courses: BI 211,212,213, CH 233/263.