BCS 110: Neural Foundations of Behavior
Syllabus: Spring 2026

Time and Location:

Tuesdays and Thursdays, 11:05 AM – 12:20 PM
Hoyt Auditorium

Cross-listed:

PSY 110 and CVS 110

Pre-requisites or co-requisites:

None

Credit Hour Policy:

This course follows the College credit hour policy for four-credit courses. This course meets two times weekly (two lectures at 75 minutes each) for three academic hours per week. The course also includes a recitation for one academic hour per week.

Instructor Information:

Course Instructor: Dr. Kevin Davis
Email: kevin_davis@urmc.rochester.edu
Office: Meliora Hall 303E
Office hours: F 1-2PM or by appt.

What is this Course About?

This course is designed to provide a general overview on a number of topics related to the biological basis of behavior. You will be introduced to the structure, organization and function of the brain and nervous system and its many roles in daily life, including control of sensation, perception, thought, action and emotion. We will progress from understanding the basic components of the nervous system toward an appreciation for how these components work together to produce complex and highly coordinated behaviors.

Course Objectives and Outcomes

In this course, the goals are: (1) to learn about the cellular makeup of the nervous system, its organization and how cells work and communicate with one another at the synapse; (2) to examine how the brain processes sensory information about the environment and controls movement; (3) to explore the neural control of species-survival behaviors including sleep, hunger, reproduction, language and learning and memory; and (4) to examine the neurobiology of some higher order functions including intelligence, personality and emotion, and of mental illness.

Upon successful completion of this course, you will be able to:

- **identify** the major cell types of the nervous system and the key structures of the central and peripheral nervous systems, and describe their functions.
- **describe** the electrical and chemical signals generated by neurons and how they contribute to information processing in the nervous system.
- **compare and contrast** the organization and function of different sensory systems (e.g., vision, hearing, touch).
- **elucidate** the biological underpinnings of many species-survival and higher order behaviors, and of mental illness
- **predict** the functional consequences of damage or dysfunction in specific brain regions or neural pathways.
- **communicate** effectively about biopsychology concepts, both orally and in writing, using appropriate scientific terminology.
- **appreciate** the interdisciplinary nature of biopsychology and its connections to fields like biology, psychology and medicine.

Course Requirements

The textbook for the course is:
Pinel and Barnes, Biopsychology, 11th edition

The aim of this course is to introduce students to topics in lecture that may be supplemented with other resources, including the textbook. You will not be tested specifically on material in the textbook that is not covered in lectures. However, the textbook covers in more detail many topics presented in the lectures, thus providing you with a greater understanding of the material. It may be helpful to review the relevant textbook chapters before lectures – these are listed in the lecture schedule.

How Will I Be Graded?

You will complete a minimum of 10 (of 12) quizzes on-line (via Blackboard). They are open book, open note, and will have a matching type format covering the course content immediately preceding the quiz. Quiz scores (out of 100) will not be curved, and the average of the best 10 of 12 scores will be worth 20% of your total numerical grade. **It is not mandatory to complete all 12 quizzes.**

You will complete 4 unit exams in class. All exams will have a multiple-choice / matching type format. Unit exams will cover the course content immediately preceding the exam and will not be cumulative. Each unit exam will be curved individually. The average score on these 4 unit exams will be worth 80% of your total numerical grade. **All unit exams are mandatory!**

In an effort to reduce anxiety over exam performance, you will be given the opportunity to drop your worst unit exam grade from the average. During the final exam period, you may write an **optional cumulative final exam** which will cover material from the whole course. If you perform better on this (curved) exam than one of your unit exams, then that unit grade will be discarded and replaced by the grade on the final exam to compute a higher exam average.

Thus, your total grade will be calculated as follows: 0.2 * quiz average (from best 10 of 12) + 0.8 * exam average (from best 4 of 5, if final is taken). Total grades are rounded to the nearest integer and letter grades assigned: A, 93-100; A-, 90-92; B+, 87-89; B, 83-86; B-, 80-82; etc.

All exams will take place in the lecture hall either during regularly scheduled class time for unit exams or the time set by the Registrar for the final exam. The dates of these exams are identified on the lecture schedule. **Please note the dates and times for the unit and final exams!** If you believe you have a conflict that would prevent you from attending an exam, such as a school-sanctioned event, or you have missed an exam due to an extraordinary personal situation or illness, please email Dr. Davis as soon as possible.

Quiz and exam grades will be posted on Blackboard.

Only sufficient proof of illness or other extenuating circumstances will be considered for allowing you to complete course exams at a different time or to arrange a make-up. You will not be permitted to arrange a make-up on the basis of personal obligations, or because you have multiple exams on the same day. Please note the exam schedule before making travel arrangements. There will be no exceptions to this rule.

Where Do I Look for Course Information?

The course syllabus, lecture schedule, lecture slides and associated reading, quizzes, exam schedule, as well as announcements and grade updates are available on Blackboard http://learn.rochester.edu.

How Do I Get Help with the Course?

Recitations:

In addition to Dr. Davis' office hours, three Teaching Assistants (TAs) will each run a weekly recitation. Attendance at one of these recitations is required, and will help ensure success in the course. You should register for one on-line, but may attend any of the sessions. During recitations, TAs will review the concepts from the lecture material and answer questions from students, as well as lead discussions. It is up to you to come prepared with questions and utilize this resource. TA's will not simply re-teach the lecture slides. **Recitations will begin the first week of class (the week of January 19th), and available days/times and locations will be posted on Blackboard.**

To contact the TAs for questions, or to arrange individual meetings:

Gianna Miceli: gmiceli@u.rochester.edu
Alexandra Reyda: areyda@u.rochester.edu
Dylan Heller: dheller6@u.rochester.edu

Additional Resources:

If you are experiencing difficulties with the course material and would like extra help, there are several opportunities for additional assistance, such as Tutoring, Study Groups, and Disability Support:

The Learning Center
https://www.rochester.edu/college/learningcenter/index.html
College Center for Advising Services
http://www.rochester.edu/college/CCAS/index.html
Office of Disability Resources
http://www.rochester.edu/disability/

Lecture Schedule

Lecture slides will be made available on Blackboard. Slides are not intended to be a substitute for class attendance or reading. Suggested readings are listed from Pinel and Barnes, Biopsychology, 11th edition.

The following schedule is tentative, depending on the amount of material covered in each class.

Date:	Topic:	Suggested Reading:
1/20	Introduction/Research Methods	Ch. 1 and Ch. 5
1/22	Cells of the Nervous System	Ch. 3
1/27	Nervous System Development and Organization	Ch. 3 and Ch. 9
1/29	Structures of the Brain	Ch. 3
2/3	Neural Conduction	Ch. 4
2/5	Synaptic Transmission	Ch. 4
2/10	**UNIT EXAM ONE: Foundations of Biopsychology**	
2/12	Visual System	Ch. 6
2/17	Auditory System	Ch. 7
2/19	Somatosensory System	Ch. 7
2/24	Chemical Senses	Ch. 7
2/26	Sensorimotor System: Cortex	Ch. 8
3/3	Sensorimotor System: Sub-cortical	Ch. 8
3/5	**UNIT EXAM TWO: Sensory and Motor Systems**	
3/10, 3/12	**Spring Break – No class**	

3/17	Sleep and Dreaming	Ch. 14
3/19	Thermoregulation and Water Balance	Ch. 12
3/24	Hunger and Satiety	Ch. 12
3/26	Hormones and Sex	Ch. 13
3/31	Language and Speech	Ch. 16
4/2	Learning and Memory	Ch. 11
4/7	**UNIT EXAM THREE: Basic Motivations**	
4/9	Intelligence	
4/14	Personality, Morality and Spirituality	
4/16	Reward and Addiction	Ch. 15
4/21	Emotion and Stress	Ch. 17
4/23	Psychiatric Disorders	Ch. 18
4/28	Brain Damage and Neuroplasticity	Ch. 10
4/30	**UNIT EXAM FOUR: Mental Functions**	

FINAL EXAM – THURSDAY MAY 7TH 2026 7:15–8:30PM

Expectations

As a student, you should expect that your instructors provide a respectful learning environment and provide appropriate feedback and guidance. Similarly, we expect you to show this same respect to your instructors, and fellow students by attending, and participating in, lectures and recitations. It is also expected that you will adhere to the policies regarding academic honesty outlined at https://www.rochester.edu/college/honesty/ Violations of academic integrity, such as cheating and plagiarism, are taken seriously, and will be dealt with accordingly.

I look forward to working with you this term, and hope you enjoy this introduction to the Neural Foundations of Behavior!