This CORE course satisfies the Natural Science II requirement.

LECTURE DAYS AND TIMES
9:30 - 10:45, Tuesdays and Thursdays, Room 207 Silver Building.

ATTENDANCE AT LECTURES IS MANDATORY
You are responsible for the material covered in the lectures, a good proportion of which is not in the textbook.

LAB SECTIONS AND TAs (participation in laboratories is mandatory)
Room 201 Silver Building
Section 003 Thursday 1:00 - 2:40 Monica Lewin
Section 004 Thursday 3:00 - 4:40 Monica Lewin
Section 005 Thursday 5:00 - 6:40 Monica Lewin
Section 006 Friday 9:00 - 10:40 Pedro Herrero Vidal
Section 007 Friday 11:00 - 12:40 Pedro Herrero Vidal

The labs are designed to give you hands-on experience that is relevant to the class material. This should facilitate understanding the lecture material and provide deeper understanding of the lecture material and concepts, which can seem abstract. The labs also give you an opportunity to experience how science works, that it is a creative interpretative process that requires meticulous attention to detail as well as integrating information and observations into concepts. You will write up each lab, which documents the lab experience, record notes, and expresses ideas. Some labs will use animal tissue or living animals. **Lab reports must be handed in to your TA before the start of lecture on Tuesday.**

LABS PRIOR TO EXAMS HAVE BEEN DESIGNATED AS REVIEW SESSIONS. These times have been allocated to provide you with an extra opportunity to review material and clarify understanding of the course material.

REQUIRED TEXTS
The Mind’s Machine – Foundation of Brain and Behavior
The textbook has online resources you should examine: [http://2e.mindsmachine.com](http://2e.mindsmachine.com)
For access, you will need to enter the instructor’s email address: afenton@nyu.edu

LIFE SCIENCE: BRAIN AND BEHAVIOR Lab manual (available at the bookstore)

CLASS WORK AND HOME WORK
You will be assigned readings, podcasts or movies on topics of interest from the media and there will be short quizzes on the assignments in lecture.
EXAMS
There will be three exams (2 midterm exams and a cumulative final exam). The questions will be based on material from the lectures and assigned readings. Questions will be multiple choice, fill-in the blank, short answer, simple drawing, and short essay types.

NOTE THE EXAM DATES ON THE SYLLABUS. THERE ARE NO MAKEUP EXAMS. If you miss a midterm exam, the grade on the final will count proportionately more.

GRADING
Grades will be determined according to the following breakdown:
20% Midterm Exam 1
20% Midterm Exam 2
30% Final Exam
25% Labs
5% Classwork and Homework

CONTACT INFORMATION

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SYLLABUS

Week 1
4-Sep  Lecture 1. Introduction: Brain and behavior an intimate couple (integrating across levels and scales of complexity)
Reading: Chapter 1

6-Sep  Lecture 2. Brain Organization 1: Structure and function - another intimate couple
Reading: Chapter 2

6/7-Sep  NO LABS

Week 2
11-Sep  Lecture 3. Bioelectricity: Electric meat (fat, water and salt)
Reading: Chapter 3 p. 50-55

13-Sep  Lecture 4. Neural communication I: The exciting electrical language of neurons
Reading: Chapter 3 p. 55-61

13/14-Sep  Lab 1. The Scientific Method

Week 3
18-Sep  Lecture 5. Neural communication 2: Synapses – connections, networks and influence
Reading: Chapter 3 p. 62-70

20-Sep  Lecture 6. Neural communication 4: Synapses - circuits and networks for exchanging drugs
Reading: Chapter 4 p. 78-95

20/21-Sep  Lab 2. Sheep Brain Dissection

Week 4
25-Sep  Lecture 7. Neural communication 3: Membrane Physiology Review
Reading: Review lectures 3-6

27-Sep  Lecture 8. Neurodevelopment or how to build something really complicated
Reading: Chapter 13 p.393-407

27/28-Sep  Lab 3. A model dendrite

Week 5
2-Oct  Lecture 9. Hormones and Sex - action at a distance
Reading: Chapter 8 p.208-225

4-Oct  Lecture 10. Stepping back: Evolution/Animals are models too
Reading: Reading Assignment,
Viewing:  [https://www.youtube.com/watch?v=fgQLyqWaCbA](https://www.youtube.com/watch?v=fgQLyqWaCbA)

**4/5-Oct**  Lab: Review to prepare for midterm exam

**Week 6**

9-Oct  No class: Legislative Day - Classes meet according to a Monday schedule

11-Oct  **Midterm Exam 1 (in class)**

11/12-Oct  Lab 4. Microscopy and Neuronal Visualization

**Week 7**

16-Oct  **Lecture 11.** Sensation and touching in your head 1  
Reading: Chapter 5 p.110-117

18-Oct  **Lecture 12.** Sensation and touching in your head 2  
Reading: Chapter 5 p.118-127

18/19-Oct  Lab 5. Build your own brain

**Week 8**

23-Oct  **Lecture 13.** Ear hairs – Hearing  
Reading: Chapter 6 p. 146-161

25-Oct  **Lecture 14.** Even more ear hairs – Balance and equilibrium  
Reading: Chapter 6 p. 162-163; Fenton Notes on the Vestibular system

25/26-Oct  Lab 6. Somatic sensation

**Week 9**

30-Oct  **Lecture 15.** Seeing and perceiving: how brains see 1  
Reading: Chapter 7 p.174-194

1-Nov  **Lecture 16.** Seeing and perceiving: how brains see 2  
Reading: Chapter 7 p.194-207

1/2-Nov  Lab 7. Vision

**2-Nov**  **Take home PRACTICE Exam delivered vis CLASSES (due Nov. 6)**

**Week 10**

6-Nov  **Class: Review Practice Take home Exam**

8-Nov  **Lecture 17.** Moving, how complicated could it be?  
Reading: Chapter 5 p.126-143

8/9-Nov  Lab: Review Exam to prepare for midterm exam
Week 11

13-Nov Midterm Exam 2 (in class)

15-Nov Lecture 18. Neural representation and computation

15/16-Nov Lab 8. Reaction time

Week 12

20-Nov Lecture 19. More of a good thing – adult neurogenesis

22-Nov Thanksgiving Break – no classes

22/23-Nov Thanksgiving Break - No lab this week

Week 13

27-Nov Lecture 20. Attention
Reading: Chapter 14 p. 408 -421

29-Nov Lecture 21. Memory 1: Amnesia, memory and the learning process
Reading: Chapter 13 p. 368-383

29/30-Nov Lab 9. Action potentials in cockroach

Week 14

4-Dec Lecture 22. Memory 2: Synaptic and molecular plasticity
Reading: Chapter 13 p. 383-393

6-Dec Lecture 23. Memory 3: Persistent storage
Reading: Reading assignment: NYT piece on PKMzeta: “Focusing on a memory molecule”

6/7-Dec Lab 10. C. elegans behavior

Week 15

11-Dec Lecture 24. Sleep – active brain behavior

13-Dec Lecture 24. Mental Illness and brain dysfunction
Reading: Chapter 12, Reading assignment: NPR: “Halting Schizophrenia Before It Starts”
Spectrum Viewpoint: “How a ‘pacemaker’ for the brain could ease autism traits”

13/14-Dec Lab: Review to prepare for final exam. Do course evaluations

Final Exam 18-Dec 8:00 a.m. – 9:50 a.m. Room 207 Silver Building