

# Course Syllabus

## Brain and Behavior

CORE-UA.306

Spring 2022

Professor Schneider

Brain and Behavior is a Core course that satisfies the Natural Science II requirement in the College of Arts and Sciences. The goals of the course are to understand how brain organization and activity generates normal and abnormal behavior. Brain and Behavior is intended to be far-ranging and comprehensive, requiring students to appreciate how basic scientific principles (chemicals, ions, and electricity) give rise to behavior, sensation, perception, and cognition.

The course begins with an overview of basic principles of brain development, organization, and operation. With these foundations, we set out to understand how the brain processes the sensory world and controls our actions. Next, we explore memory, emotions, and cognition. We conclude with the study of drugs, mental disorders, and artificial intelligence.

### **PROFESSOR**

Dr. David Schneider  
Center for Neural Science  
4 Washington Place (Meyer Hall)  
Room 773  
212-998-3922  
[david.schneider@nyu.edu](mailto:david.schneider@nyu.edu)

### **OFFICE HOURS**

Tuesday 11:00am – 1:00pm  
Wednesday 8:00pm – 9:00pm (This window is for students on the other side of the planet.)  
Please sign up for a 15 minute block here: <https://calendly.com/schneiderlab/15min>  
Meetings will be held virtually here: <https://nyu.zoom.us/j/9067182091>

### **LECTURES**

9:30am - 10:45am, Tuesday and Thursdays (207 Silver Building)  
Lectures will also be broadcast on Zoom and saved for asynchronous viewing.

**Attendance at lectures is mandatory.** You are responsible for the material covered in the lectures, some of which is not in the textbook or additional reading materials.

Throughout all aspects of this course, students are expected to abide by NYU's **policy on academic integrity**, which can be found [here](#). Whether taking an evaluation in person or online, students are expected to respect that all evaluations are closed book, meaning that students may not use their textbook(s), notes, lecture slides, or any other materials, nor may they discuss the quizzes or exams with other students while they are ongoing. Failure to abide by these policies will result in failure of the exam or quiz and may result in failure of the exam.

**Some points regarding COVID:** COVID is still here. It is therefore likely that at some point during the semester, some of us will be unable to participate in the class in-person. The current NYU COVID absence policy means that anyone who needs to isolate should not attend in-person lectures or labs. If I am ill, in isolation, or otherwise cannot be present at a lecture, the lecture will be delivered virtually over Zoom.

# Course Materials

## **REQUIRED MATERIAL**

### **1. Life science: Brain and Behavior Lab Manual**

Each portion of the lab manual will be made available digitally through NYU Classes, typically 24 hours prior to each lab.

### **2. The Mind's Machine - Foundation of Brain and Behavior**

Watson and Breedlove. Sinauer, Fourth Edition

### **3. Addition content**

You may be assigned readings, podcasts, or movies on topics of interest, the contents of which may be included on exams and quizzes. See the **Additional Quizzes and Assignments** column of the **Course Organization** section below. Any additional content will be provided through NYU Classes.

***IMPORTANT:*** Your course is participating in the Follett Access program. This is an NYU Bookstore initiative that delivers required course materials digitally at the lowest possible price. The book for this course, The Mind's Machine, will be delivered to you digitally. You should have received an email before classes began, giving you the link to access the material.

The cost of the book is \$70.00, which will be added as a “book charge” to your bursar bill, this is a savings of \$101.95 over the new hardcopy price.

If you decide not to use this digital edition you can opt-out of the program. **The deadline for opting out is February 8th.**

The link to opt out of the program is: <https://includedcp.follett.com/2015>

# Labs

All students enrolled in Brain and Behavior must also be enrolled in one of the accompanying laboratory sections. **Participation in laboratories is mandatory.** The labs are designed to give you a hands-on experience that is relevant to the class material. **Labs will be held in person. If the class moves to a remote platform at some point during the semester, the labs will remain an important and mandatory component of this course and will also move to a remote platform.** Labs 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 and interpretative process that requires meticulous attention to detail as well as integrating information and observations into concepts.

**Absences:** You may miss ONLY ONE lab due to illness or any other unforeseen event. Your score on the missed lab report and missed quiz will both be dropped.

**Working with animals:** Note that some labs will use animal tissue or living animals. Because participation in labs is mandatory, if you believe you will not be able to take part in labs because of the use of animals you may wish to enroll in a different course.

**Lab quizzes:** There will be a short quiz that must be completed online prior to each lab. Regardless of your lab section, the lab quizzes must be completed by on the Tuesday prior to lab, by 12:00pm NYC time.

**Lab reports:** During and following each lab, you will write a report that documents the lab experience, reflects notes taken during the lab, and expresses your ideas about the experiments performed. Lab reports must be handed in (through NYU Brightspace) within 7 days from the start time of your lab. Points will be taken off of reports handed in more than 10 minutes late.

**Review session:** Lab sessions 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 in preparation for exams.

## **LOCATION**

Labs will be held in Room 201 Silver Building. If the course moves to a remote platform during the semester, labs will be held on Zoom at the same time.

## **LAB SECTIONS**

Section 002	Tuesday	3:30 PM – 4:45 PM
Section 003	Tuesday	4:55 PM – 6:10 PM
Section 004	Wednesday	9:30 AM – 10:45 AM
Section 005	Wednesday	11:00 AM – 12:15 PM
Section 006	Wednesday	12:30 PM – 1:45 PM
Section 007	Wednesday	2:00 PM – 3:15 PM

## **LAB INSTRUCTORS/TEACHING ASSISTANTS**

Dr. Anamaria Alexandrescu (Sections 002 & 003)  
Office hours: By appointment unless otherwise noted  
[aa3453@nyu.edu](mailto:aa3453@nyu.edu)

Habon Issa (Sections 006 & 007)  
Office hours: By appointment unless otherwise noted  
[hai216@nyu.edu](mailto:hai216@nyu.edu)

Chloe Bair-Marshal (Sections 004 & 005)  
Office hours: By appointment unless otherwise noted  
[cbm416@nyu.edu](mailto:cbm416@nyu.edu)

# Grades

## EXAMS

There will be four exams: 3 midterm exams and a cumulative final exam. The questions will be based on material from the lectures, textbook, and assigned readings. Questions will be multiple choice, fill-in-the-blank, short answer, simple drawing, and short essay types.

**There are no makeup exams!** Note the exam dates on the syllabus. If you complete all three midterm exams, only the two highest scores will count toward your final grade (25% each). If you miss a midterm, the other two exams will count toward your final grade.

Exams will be timed, will be closed book, and will be delivered online through NYU Brightspace. Students who are approved for extra time through the Moses Center will be granted the extra time. Students who are several time zones away and for whom the standard lecture time slot does not work may be provided an alternative time to take each exam.

## LABS

Lab grades will be determined from lab reports and from quizzes at the beginning of each lab.

## CLASSWORK, QUIZZES & PARTICIPATION

There will be short in-class quizzes between each midterm and participation in class is expected. Short assignments may be assigned at the discretion of the professor. In general, every student begins the semester earning full marks for participation. Marks for participation can be lost through the obvious failure to participate, including but not limited to missing several labs without excuse; refusing to participate in lab activities; or missing in-class quizzes without excuse.

## GRADE WEIGHTING

Grades will be determined according to the following breakdown:

25%	Highest score of Midterm Exams 1-3
25%	Second highest score of Midterm Exams 1-3
0%	Lowest score of Midterm Exams 1-3
25%	Final Exam
20%	Labs (90% reports, 10% in-lab quizzes)
5%	Classwork, quizzes, and participation

## LETTER GRADES

Although the following grading rubric generally applies, the professor reserves the right to adjust the grading criteria throughout the semester.

94 – 100	A
90 – 94	A-
87 – 90	B+
84 – 87	B
80 – 84	B-

77 – 80	C+
74 – 77	C
70 – 74	C-
67 – 70	D+
64 – 67	D
0 – 64	F

# Course Organization\*

(\*Subject to change. Check class website for updates.)

Week #	Date	Topic	Textbook Reading	Additional reading and assignments
1	1 25-Jan	Why and how do we study the brain and behavior?	INTRO.1 Chapter 1.5-1.6	<a href="#">The pursuit of ignorance</a> , by Stuart Firestein (TED)
	2 27-Jan	Organization of the brain and nervous system Lab <i>None</i>	Chapter 1.1-1.4	
2	3 1-Feb	Development & Plasticity: Building a brain and changing it with experience	Chapter 4.1-4.4	
	4 3-Feb	Bioelectricity Lab <i>The Scientific Method</i>	Chapter 2.1A	
	3 4 8-Feb	Neural communication 1: Electrical	Chapter 2.1B,2.2	<i>QUIZ (online)</i>
3	5 10-Feb	Neural communication 2: Chemical Lab <i>Sheep brain dissection: Pt. 1</i>	Chapter 3.1,3.2	
	4 6 15-Feb	In-class review for Exam 1		
4	17-Feb	<b>EXAM 1</b>		
	Lab	<i>Review weeks 1-4 material</i>		
	5 9 22-Feb	Touching and receptive fields	Chapter 5.1,5.2	<a href="#">Behind most breakthroughs is animal research</a> (Massive)
5	10 24-Feb	Hearing Lab <i>Sheep brain dissection: Pt. 2</i>	Chapter 6.1-6.4	
	6 11 1-Mar	Seeing	Chapter 7	
6	12 3-Mar	Smelling and tasting Lab <i>Microscopy</i>	Chapter 6.5,6.6	<i>QUIZ (online)</i>
	7 13 8-Mar	Motor systems and moving	Chapter 5.3, 15.3,15.4	



	14	10-Mar	Population coding: Neurons working together Lab <i>Sensory transduction</i>	None	
<b>8</b>	15	15-Mar	No class (Spring Break)		
	16	17-Mar	No class (Spring Break) Lab <i>None</i>		
<b>9</b>	15	22-Mar	In-class review for Exam 2		
	16	24-Mar	<b>EXAM 2</b> Lab <i>Review weeks 5-9 material</i>		
<b>10</b>	17	29-Mar	Memory and the learning process	Chapter 13.1, 13.2	<a href="#">A neuroscientist prepares for death</a> , by David Linden (The Atlantic)
	18	31-Mar	Memory at a synaptic and cellular level Lab <i>Vision</i>	Chapter 13.3, 13.4	
<b>11</b>	19	5-Apr	Predicting the future and focusing attention	Chapter 14.1-14.3	
	20	7-Apr	Choosing behaviors, evaluating outcomes, and neuroeconomics Lab <i>Action potentials in cockroach leg</i>	Chapter 14.4	<a href="#">QUIZ (online)</a>
<b>12</b>	21	12-Apr	Emotions and hormones	Chapter 8.1, 11.1-11.3	
	22	14-Apr	Rhythms and sleep Lab <i>C. elegans behavior: Pt 1</i>	Chapter 9-10	
<b>13</b>	23	19-Apr	In-class review for Exam 3		
	24	21-Apr	<b>No class</b> Lab <i>Review week 10-13 materials</i>		
<b>14</b>	25	26-Apr	<b>EXAM 3</b>		
	26	28-Apr	This is your brain on drugs. Lab <i>C. elegans behavior: Pt 2</i>	Chapter 3.3-3.7	

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15 27 3-May Mental illness and brain disorders Chapter 12

28 5-May In-class review for Final

Lab *Review for Final Exam*

11-May **Cumulative FINAL EXAM**

through Time: TBD

17-May Location: TBD