BRAIN AND BEHAVIOR (CORE-UA.306) INFORMATION AND SYLLABUS

This CORE course satisfies the Natural Science II requirement.

LECTURE DAYS AND TIMES
11:00-12:15, Mondays and Wednesdays, 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
Thursday 11:00 - 12:40 Najib Judeh Majaj
Thursday 1:00 - 2:40 Najib Judeh Majaj
Thursday 3:00 - 4:40 Bianca Jones Marlin
Thursday 5:00 - 6:40 Bianca Jones Marlin
Friday 9:00 - 10:40 Shih-pi Ku
Friday 11:00 - 12:40 Shih-pi Ku

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 at the end of lecture on Monday.

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
Biological Psychology
The textbook has online resources you should examine: http://7e.biopsychology.com
For access, you will need to enter the instructor’s email address: afenton@nyu.edu

CORE B&B 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

Professor
André Fenton (Center for Neural Science, Meyer Room 980) afenton@nyu.edu

Teaching Assistants
Bianca Jones  Bianca.Jones@med.nyu.edu
Najib Judeh Majaj  najib.majaj@nyu.edu
Shih-pi Ku  spk3@nyu.edu
SYLLABUS

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

4/5-Sep  Lab 1. The Scientific Method

Week 2
8-Sep  Lecture 2. Brain Organization 1: Structure and function - another intimate couple
Reading: Chapter 2 p. 34-57

10-Sep  Lecture 3. Brain organization 2: billions of cool cells
Reading: Chapter 2 p. 23-33

11/12-Sep  Lab 2. Sheep Brain Dissection

Week 3
15-Sep  Lecture 4. Bioelectricity: Electric meat (fat, water and salt)
Reading: Chapter 3 p. 59-63

17-Sep  Lecture 5. Neural communication 1: The exciting electrical language of neurons
Reading: Chapter 3 p. 63-71

18/19-Sep  Lab 3. A model dendrite

Week 4
22-Sep  Lecture 6. Neural communication 2: Synapses - connections and influence
Reading: Chapter 3 p. 71-89

24-Sep  Lecture 7. Neural communication 3: Synapses - circuits and networking
Reading: Chapter 3

25/26-Sep  Lab 4. Build your own brain

Week 5
29-Sep  Lecture 8. Neural communication 4: Exchanging drugs - there's a lot chemistry between two neurons
Reading: Chapter 4 p. 91-124

1-Oct  Lecture 9. Neural communication 5: Hormones - action at a distance
Reading: Chapter 5

2/3-Oct  Lab 5. Microscopy
Week 6
6-Oct  Lecture 10. Evolution: animals are models too
Reading: Chapter 6

8-Oct  Lecture 11. Neurodevelopment or how to build something really complicated
Reading: Chapter 7

9/10-Oct  Lab: Review

Week 7
13-Oct  Columbus Day - No classes
15-Oct  Midterm Exam 1

16/17-Oct  Lab 6. Somatic sensation

Week 8
20-Oct  Lecture 12. Sensation and touching in your head
Reading: Chapter 8

22-Oct  Lecture 13. Ear hairs - Hearing and balance
Reading: Chapter 9 p. 256-276

23/24-Oct  Lab 7. Response time

Week 9
27-Oct  Lecture 14. Tasting and smelling (chemicals)
Reading: Chapter 9 p. 276-290

29-Oct  Lecture 15. Seeing and perceiving: how brains see 1
Reading: Chapter 10

30/31-Oct  Lab 8. Vision

Week 10
3-Nov  Lecture 16. Seeing and perceiving: how brains see 2
Reading: Chapter 10

5-Nov  Lecture 17. Moving, how complicated could it be?
Reading: Chapter 11 p. 327-346

6/7-Nov  Lab 9. Action potentials in cockroach
Week 11
10-Nov  Lecture 18. Motor dysfunctions
Reading: Chapter 11 p. 347-357

12-Nov  Lecture 19. Neural representation and computation
Reading: Primary literature to be provided

13/14-Nov Lab: Review

Week 13
17-Nov  Midterm Exam 2

Reading: Chapter 18 p. 561 -570, 17 p. 525-541

20/21-Nov Lab 10. C. elegans behavior

Week 14
24-Nov  Lecture 21. Memory 2: Synaptic and molecular plasticity
Reading: Chapter 17 p. 542-559

26-Nov  Lecture 22. Memory 3: Persistent storage
Reading: Primary literature and NYT piece on PKMzeta to be provided

27/28 Nov Thanksgiving Break
No lab this week

Week 15
1-Dec  Lecture 23. Reward, decision, and abuse
Reading: Chapter 4 p. 116-121 and primary literature

3-Dec  Lecture 24. Emotion and stress  Reading: Chapter 15

4/5-Dec  Lab. TBA

Week 16
8-Dec  Lecture 25. Neurogenesis: what good are new neurons?
Reading: Chapter 17 p. 554-557

10-Dec  Lecture 26. Mental Illness and brain dysfunction
Reading: Chapter 16

11/12-Dec Lab. Review/Evaluations

Final Exam  PLACE AND TIME TO BE DETERMINED