



Course program and reading list

Semester 1 Year 2023

School: Baruch Ivcher School of Psychology

Psychology and Neuroscience: An Interdisciplinary Approach A

Lecturer:

Dr. Limor Shtoots slimor@runi.ac.il

Tutors:

Ms. Baillie Sarah Shuster baillie.shuster@post.runi.ac.il

Teaching Assistant:

Ms. Baillie Sarah Shuster baillie.shuster@post.runi.ac.il

Course No.:	Course Type :	Weekly Hours :	Credit:
9067	Lecture	2	4

Course Requirements :	Group Code :	Language:
Final Exam	231906720	English

Prerequisites

Students who took one of the courses listed below will not be allowed to register to the course Psychology and Neuroscience: An Interdisciplinary Approach A (9067):

8891 - Biological Basis of Behavior A
8935 - Biological Basis of Behavior A

This course provides a vital introduction to the connection between brain and mind. In the first semester, we will learn about the life of the cell, and the structure (anatomy) and function (physiology) of the neuron. We will then survey the architecture of the brain and nervous system, and learn about the neurotransmitter and hormone chemicals required for its operation (as well as those that alter it...). Along the way, we will learn about the techniques used to study the brain, such as event-related potentials and functional magnetic resonance imaging.



Course Goals

The goals of the course are:

1. To introduce students to the principles of cellular neurophysiology, systems neuroanatomy, and neurobiological signaling.
 2. To acquaint students with key methods of cognitive, affective, and behavioral neuroscience research such as electroencephalography and magnetic resonance imaging.
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Grading

Course requirements: Attendance of lectures and recitations (will be enforced in accordance with RUNI policy), reading all assigned material, writing quizzes and exams.

Grade components for the semester: 3 quizzes (6.66% each), semester exam (80%).

Make up quizzes – only for students that could not attend the quiz on the original date and with approval from the lecturer.



Learning Outcomes

Students should be able to:

1. Explain the principles of cellular neurophysiology, systems neuroanatomy, and neurobiological signalling.
 2. Demonstrate an understanding of electroencephalography and magnetic resonance imaging.
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Lecturer Office Hours

By appointment through e-mail: slimor@idc.ac.il



Tutor Office Hours

By appointment through e-mail: baillie.shuster@post.idc.ac.il



Teaching Assistant

By appointment through e-mail: baillie.shuster@post.idc.ac.il



Additional Notes

The required textbook chapters (noted below) will be supplemented by articles and other materials assigned by the instructor, which will be available on the course website. It is the responsibility of the student to check that website weekly (at least) for updates, changes and assignments



Reading List

Textbook: Laura A. Freberg, *Discovering Behavioral Neuroscience*, 3rd ed.

[+ = additional reading material posted on website]

Date	Recitation	Lecture
	(Sunday 13:45-15:15)	(Wednesday 08:00-09:30)
	Course Overview.	Thinking Biologically about the Mind.
30 Oct,	The Cell	Neurons & Glia – Structure
2	-----	-----
Nov	Alberts et al., <i>Essential Cell Biology</i> Chapter 1 (pp. 1-6; 11-23)	Freberg pp. 2-3; 64-76

6,9	Review (Neurons & Glia – Structure)	Resting & Action Potentials

Nov		Freberg pp.76-87
13,16	Review (Resting & Action Potentials)	Synapses

Nov		Freberg pp. 88-99
20,23		EEG

Nov	General Review for Quiz 1	1. Freberg pp.12-15; 86
		2. EEG handout
	QUIZ 1.	
27,30	Orientation, CSF, Meninges, Vascular, BBB	CNS-PNS, Spinal Cord, Cranial Nerves, Brainstem

Nov	-----	Freberg pp. 33-39; 51-57
	Freberg pp. 25-32	
4,7	Thalamus, Hypothalamus, Basal Ganglia, Amygdala, Hippocampus	Cerebral Cortex

Dec	-----	Freberg pp. 43-51
	Freberg pp. 39-43	
11,14		Neuroimaging (MRI, fMRI, PET, CT)

Dec	General Review for Quiz 2	1. Freberg pp. 9-11
		2. Ward, <i>Student's Guide to Cognitive Neuroscience</i> , chapter 4
18,21	QUIZ 2.	
		Glutamate & GABA

Dec	Review (Neuroimaging)	Freberg pp. 101-104; 110-112
25,28	No Recitation	ACh, Monoamines

Dec	(Hanukkah Vacation)	

		Freberg pp. 105-110
1,4	Neuropeptides, Gases. Review	Drug Action, Pharmacokinetics & Pharmacodynamics
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Jan	Freberg pp. 113-115	Freberg pp. 115-126
	Psychoactive Drugs.	Hormones and Autonomic Nervous System
8,11	General Review for Quiz 3	-----
Jan	-----	Bear, Connors, & Paradiso, pp. 482-490 (see below*)
	Freberg pp. 128-133;135-137.	
15,18	QUIZ 3.	Coffee, Cigarettes, and Alcohol
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Jan	General Review for the Final Exam	Freberg pp. 126-128; 133-134
22,25	General Review for the Final Exam.	Laterality
	Make Up Quizzes (only for students with approval)	-----
Jan		Freberg pp. 443-456

*Bear, Mark F., Connors, Barry W., & Paradiso, Michael A. (2007). *Neuroscience: Exploring the brain*. 3rd ed. Baltimore, MD: Lippincott Williams & Wilkins.