תאריך:_____

סילבוס - תוכנית הוראה לקורס

נוירוכימיה של סינפסות

דוד זאדה | המרכז למדעי המוח

Synaptic neurochemistry | 862759501

Course Type: Lecture + Discussion
Credits: 2
Academic Year: תשפה 2025-2026
Semester: A
Day and Time: Monday, 10:00–11:30
Office Hour: Monday, 11:30
Instructor Email: itschad@biu.ac.il
Course Website: ___

סוג הקורס:	שיעור+דיון
היקף נ"ז:	2
שנת לימודים:	תשפ"ה
סמסטר:	א'
יום ושעה	שני 10:00-11:30
שעת קבלה:	שני 11:30
מייל מרצה:	itschad@biu.ac.il
קישור לאתר למדה:	___

Course Description and Learning Objectives

Course Summary:

The course explores the molecular and chemical mechanisms of neural communication at synapses and examines how these processes shape brain function and behavior.
In the first part, fundamental principles of synaptic neurochemistry will be presented, including neurotransmitters and their release mechanisms, ionotropic and metabotropic receptors, synaptic plasticity, and the roles of major neuromodulators.
The second part will focus on recent research advances through reading and discussing contemporary papers on topics such as the balance between excitatory and inhibitory synapses and its relation to neuropsychiatric disorders, the roles of neuropeptides and glial cells in synaptic communication, key proteins involved in synaptic plasticity and developmental disorders, cutting-edge technologies for studying synapses (such as optogenetics, fluorescent sensors, and high-resolution imaging), and the transition from molecular understanding to network connectivity.

GOALS

1. Students will describe current advances in the field of synaptic neurochemistry.
2. Students will define an open research question in the field.
3. Students will explain a scientific paper related to recent developments in the field.

The course is designed in an interactive format that encourages critical discussion, collaboration, and creative thinking. It will include short frontal lectures, student presentations of scientific papers, and group discussions centered around open questions.

		comments	TOPIC	#
			Introduction to Synaptic Neurochemistry	1
			Ionotropic and Metabotropic Receptors and Neuropeptides	2
			Current Methods and Innovative Tools	3
			Roles of Glia in the Synapse	4
			Inhibitory vs. Excitatory Synapses	5
			Synapses and Circadian thyrthm	6
			Other Structures for Neural Transmission	7
			Clinical / Translational Applications	8
			Presentation of a recent papers – Lecturer	9
			Presentation of a recent papers – Students	10

			Presentation of a recent papers – Students	11
			Presentation of a recent papers – Students	12
			Presentation of a recent papers – Students	13

**The syllabus is subject to change depending on the pace of progress and the effectiveness of learning.*

Final Grade

Weight in Final Grade	**Description of Assessment Components**
50%	Presentation
50%	Final Exam

Course Requirements

- Presentation of one or more scientific papers during class meetings.
- Mandatory attendance in group sessions to ensure effective discussion.
- Final exam.