General information	Subject title, code and credit hours	CPSY540, Neuroscience in Clinical Neuroscience, 3 KU/6 ECTS
	Department	Psychology
	Program (bachelor's and master's degree)	Master
	Associated Term	Spring 2026
	Instructor	Elkhan Yusifov
	E-mail:	Elkhan.yusifov@khazar.org Elkhan.yusifov@usz.ch
	Phone	
	Lecture room/Schedule	Online
	Consultations	After classes
Prerequisites	-	
Language	English	
Course	Mandatory	
References and sources	- Bear, M. F., Connors, B. W., & Paradiso, M. A. (2015). *Neuroscience: Exploring the brain* (4th ed.). Wolters Kluwer. - Purves, D., Augustine, G. J., Fitzpatrick, D., Hall, W. C., LaMantia, A.-S., Mooney, R. D., Platt, M. L., & White, L. E. (2017). *Neuroscience* (6th ed.). Oxford University Press. - Kandel, E. R., Koester, J. D., Mack, S. H., & Siegelbaum, S. A. (2021). *Principles of neural science* (6th ed.). McGraw-Hill Education. - Gazzaniga, M. S., Ivry, R. B., & Mangun, G. R. (2018). *Cognitive neuroscience: The biology of the mind* (5th ed.). W. W. Norton & Company.	
Course description	This course explores the intersection of neuroscience and clinical practice, focusing on the neural mechanisms underlying a variety of neurological and psychiatric disorders. Students will gain an understanding of the brain's structure and function, as well as how dysfunctions in these areas contribute to conditions such as stroke, epilepsy, Alzheimer's disease, and mood disorders. The course emphasizes the importance of neuroimaging techniques, neurophysiology, and molecular biology in diagnosing and treating patients. Key topics include neural plasticity, brain injury, neurodegeneration, and neurodevelopmental disorders.	
Course objectives	This course aims to provide students with a comprehensive understanding of the neuroscientific foundations of clinical psychology. Students will explore brain structure and function, neurotransmission, neurodevelopment, and neuroimaging techniques, with a focus on their relevance to mental health disorders and therapeutic interventions. Through critical analysis of scientific literature, experimental design, and case studies, students will develop skills in scientific reasoning, evidence-based argumentation, and presentation. The course also introduces cutting-edge approaches in neuroscience, such as neuropsychiatric research, molecular analysis, and emerging technologies in clinical applications. By the end of the course, students will be able to critically evaluate neuroscientific research, apply key concepts to clinical psychology, and effectively communicate their findings in both written and oral formats. This course aims to provide students with a deep understanding of the neuroscientific principles underlying clinical psychology while developing critical academic and research skills. By the end of the course, students will: **Gain fundamental knowledge in neuroscience**	

	Understand core concepts in neuroanatomy, neurophysiology, and neurochemistry. Explore how neuroscience informs clinical psychology and mental health disorders. **Learning cutting-edge approaches in neuroscience** Examine modern research techniques such as neuroimaging, molecular analysis, and experimental design in clinical neuroscience. Discuss the latest advancements in neuropsychiatry and emerging technologies. **Improve literature research skills** Develop the ability to critically analyze and synthesize scientific literature in neuroscience. Enhance proficiency in reading, summarizing, and interpreting research articles. **Develop critical thinking and scientific argumentation** Foster analytical skills to evaluate neuroscientific evidence and its clinical applications. Strengthen the ability to construct well-supported arguments and critiques in neuroscience research. **Enhance presentation and communication skills** Build confidence in presenting complex scientific concepts to peers. Learn how to communicate neuroscientific findings effectively through written and oral formats.
Learning outcomes	➢ Demonstrate a strong understanding of fundamental neuroscience concepts relevant to clinical psychology, including brain function, neurotransmission, and neurodevelopment. ➢ Critically analyze and interpret scientific literature in neuroscience and its application to clinical settings. ➢ Apply experimental design principles and research methodologies used in clinical neuroscience studies. ➢ Evaluate the role of neuroimaging and molecular analysis techniques in understanding mental health disorders. ➢ Develop scientific reasoning and argumentation skills to assess neuroscientific findings and their implications for clinical practice. ➢ Present research findings effectively through oral and written communication. ➢ Explore and discuss emerging technologies and advancements in neuroscience with clinical applications. ➢ Strengthen independent learning, teamwork, and problem-solving abilities in the context of neuroscience research.

Teaching methods		
	Lecture	+
	Group discussion	+
	Classroom activity	+
	Cases analyzing	+

Assessment			
	Components	**Date**	**Perc. (%)**
	Midterm exam	Week 9	30%
	Homework	During semester	15%
	Presentation	During semester	15%
	Final exam	June	30%

	Attendance	During semester	10%
	Total		100%
Rules (educational policy and behavior)	➢ Participation To be prepared to classes, be active during class, ask questions about the topic in discussions and make logical comments according to the topic. Currently, it is important to respect the opinions of other group members, not to divide their words, listen carefully, ask questions and make comments. ➢ Homework Students are expected to complete in-class and after-class homeworks. Each homework will evaluate students' attention and quality of learning. ➢ Individual work and presentation Presentations should be consistent with interactive learning methods and should be research-based. During the presentation, details such as conveying information, the content of the presentation, the organization of the presentation, capturing the audience, referring to recent literature will be taken into consideration. Presentations can be presented as individual work. *Individual work grading category and criteria* ➢ Organization The presentation is appropriate for the topic and audience. The information is presented in a logical sequence. References are included ➢ Content Introduction is attention-getting, lays out the problem very well, and establishes a framework for the rest of the presentation. The presentation contains accurate information. The material included is relevant to the overall purpose of the presentation. There is an obvious conclusion summarizing the research. ➢ Presentation Presenters maintain appropriate eye contact with the audience and are appropriately animated (e.g., gestures, moving around, etc.). The presenter uses a clear, audible voice. Good language skills and pronunciation are used. Visual aids are well prepared, informative, effective, and not distracting. Length of presentation is within the assigned time limits. Information was well communicated. Rules: 1. Each lesson requires a creative approach and activity. 2. During the lesson, it is forbidden to disrupt the lesson process, make unethical actions, conduct inappropriate and unauthorized discussions, use a mobile phone, listening device and radio, and engage in other activities not related to that lesson. 3. Attendance. 4. Participation of students in all classes is important. If the student is unable to attend classes due to certain reasons (illness, family situation, etc.), then he should inform the dean of the faculty about this. A student who does not attend more than 25% of the total hours of study in the subject is not allowed to take the exam. 5. Lateness to class and other class violations. 6. Late homework submissions will be penalized for a 10% day, unless prior approval is granted.

	7. Any form of plagiarism will result in a zero for the assignment and possible further disciplinary action.

Tentative schedule		
Week	**Topic**	**Textbook**
1.	Introduction: Understanding scientific literature	Neuroscience: Exploring the Brain (4th ed.) – Bear, M. F., Connors, B. W., & Paradiso, M. A. (Chapter 1)
2.	Introduction to neuroscience	Neuroscience: Exploring the Brain (4th ed.) – Bear, M. F., Connors, B. W., & Paradiso, M. A. (Chapter 1)
3.	Development of the nervous system	Neuroscience: Exploring the Brain (4th ed.) – Bear, M. F., Connors, B. W., & Paradiso, M. A. (Chapter 2)
4.	Design of scientific experiments	Neuroscience: Exploring the Brain (4th ed.) – Bear, M. F., Connors, B. W., & Paradiso, M. A. (Chapter 2)
5.	Molecular neuroscience and neurochemistry	Neuroscience: Exploring the Brain (4th ed.) – Bear, M. F., Connors, B. W., & Paradiso, M. A. (Chapter 2)
6.	Presentation 1	Principles of Neural Science (6th ed.) – Kandel, E. R., Koester, J. D., Mack, S. H., & Siegelbaum, S. A. (Chapter 1)
7.	Model organisms: animal models to understand humans	Neuroscience: Exploring the Brain (4th ed.) – Bear, M. F., Connors, B. W., & Paradiso, M. A. (Chapter 3)
8.	Advances in imaging & molecular techniques	Neuroscience: Exploring the Brain (4th ed.) – Bear, M. F., Connors, B. W., & Paradiso, M. A. (Chapter 3)
9.	**Midterm exam**	
10.	Neuroanatomy and brain functions	Neuroscience: Exploring the Brain (4th ed.) – Bear, M. F., Connors, B. W., & Paradiso, M. A. (Chapter 4)
11.	Neuropsychiatry and behavioral studies	Neuroscience: Exploring the Brain (4th ed.) – Bear, M. F., Connors, B. W., & Paradiso, M. A. (Chapter 4)
12.	Presentation 2	Principles of Neural Science (6th ed.) – Kandel, E. R., Koester, J. D., Mack, S. H., & Siegelbaum, S. A. (Chapter 3)
13.	Neurocognitive Disorders and Dementia	Neuroscience: Exploring the Brain (4th ed.) – Bear, M. F., Connors, B. W., & Paradiso, M. A. (Chapter 5)
14.	Emerging Technologies in Clinical Neuroscience	Neuroscience: Exploring the Brain (4th ed.) – Bear, M. F., Connors, B. W., & Paradiso, M. A. (Chapter 5)
15.	Preparation for the Final Exam	
16.	**Final exam**	