

## SYLLABUS

### *Introduction to Neuroscience*

University year 2025 - 2026

#### 1. Information regarding the programme

1.1. Higher education institution	Babeş-Bolyai University
1.2. Faculty	Faculty of Psychology and Educational Sciences
1.3. Department	Department of Psychology
1.4. Field of study	Psychology - Cognitive Sciences
1.5. Study cycle	Bachelor level
1.6. Study programme/Qualification	Psychologist
1.7. Form of education	Full-time studies

#### 2. Information regarding the discipline

2.1. Name of the discipline	<b>Introduction to neuroscience</b>			Discipline code	<b>PLE1105</b>		
2.2. Course coordinator	<b>Dr. Lavinia Carmen Uscătescu</b>						
2.3. Seminar coordinator	<b>Dr. Ana Maria Ichim</b>						
2.4. Year of study	<b>1</b>	2.5. Semester	<b>1</b>	2.6. Type of evaluation	<b>EV</b>	2.7. Discipline regime	<b>DD</b>

#### 3. Total estimated time (hours/semester of didactic activities)

3.1. Hours per week	<b>4</b>	of which: 3.2 course	<b>2</b>	3.3 seminar/laboratory	<b>2</b>
3.4. Total hours in the curriculum	<b>52</b>	of which: 3.5 course	<b>26</b>	3.6 seminar/laboratory	<b>26</b>
<b>Time allotment for individual study (ID) and self-study activities (SA)</b>					<b>hours</b>
Learning using manual, course support, bibliography, course notes (SA)					26
Additional documentation (in libraries, on electronic platforms, field documentation)					3
Preparation for seminars/labs, homework, papers, portfolios and essays					4
Tutorship					1
Evaluations					2
Other activities:					
<b>3.7. Total individual study hours</b>					<b>36</b>
<b>3.8. Total hours per semester</b>					<b>98</b>
<b>3.9. Number of ECTS credits</b>					<b>4</b>

#### 4. Prerequisites (if necessary)

4.1. curriculum	
4.2. competencies	

#### 5. Conditions (if necessary)

5.1. for the course	Online course conducted through the MS Teams platform.
5.2. for the seminar /lab activities	Room with at least 50 seats, computer and videoprojector.

#### 6. Specific competencies acquired <sup>1</sup>

<sup>1</sup> One can choose either competences or learning outcomes, or both. If only one option is chosen, the row related to the other option will be deleted, and the kept one will be numbered 6.

<b>Professional/essential competencies</b>	<p><b>Knowledge and understanding</b></p> <ul style="list-style-type: none"> <li>Understanding the place and role of neuroscience within the study of human behaviour</li> <li>Knowledge of fundamental aspects and the role of the neuroscience approach in psychology</li> <li>Characterization of the main neural principles and functional-anatomical structures and processes throughout life</li> <li>Understanding the neuroscience perspective on various behavioral functions and phenomena</li> </ul> <p><b>Explanation and interpretation</b></p> <ul style="list-style-type: none"> <li>Arguing the importance of the neuroscience in psychology</li> <li>Interpretation from a neuroscientific perspective of different phenomenal processes (e.g., seeing, hearing, motor control)</li> <li>Explaining and arguing the basic functioning principles of the healthy/typical brain</li> <li>Explaining principles related to brain development and plasticity throughout life</li> </ul> <p><b>Instrumental - applicative</b></p> <ul style="list-style-type: none"> <li>Learning the main concepts and principles that are necessary to understand the overall brain function</li> <li>Developing scientific communication skills as well as skills that are necessary to conduct a research project</li> </ul> <p><b>Attitude</b></p> <ul style="list-style-type: none"> <li>Manifestation of a positive and responsible attitude towards the(neuro)scientific field</li> <li>Cultivating a responsible attitude towards the research activity in the field</li> <li>Interest in personal development in the field.</li> </ul>
<b>Transversal competencies</b>	<ul style="list-style-type: none"> <li>Written and oral communication skills</li> <li>Relationship and teamwork skills</li> <li>Time management skills and the management of resources</li> <li>Competences in using scientific terminology in the field of neuroscience</li> <li>Competences for the interdisciplinary use of knowledge and terminology in the fields of neuroscience and psychology.</li> </ul>

### 7. Objectives of the discipline (outcome of the acquired competencies)

<b>7.1 General objective of the discipline</b>	<ul style="list-style-type: none"> <li>Familiarizing students with neuroscientific approach within the study of psychology</li> </ul>
<b>7.2 Specific objective of the discipline</b>	<ul style="list-style-type: none"> <li>Presentation of neuroscience as an impactful field in psychology</li> <li>Analysis of the place and role of neuroscience in human behavior</li> <li>Discussion of the main neural principles and functional-anatomical structures in neuroscience</li> <li>Neuroscientific approach to the human basic behaviors (e.g., seeing, hearing, moving)</li> <li>Presentation of a neuroscientific perspective on life-long development.</li> </ul>

### 8. Content

<b>8.1 Course</b>	<b>Teaching methods</b>	<b>Remarks</b>
The replicability crisis in Cognitive Neuroscience	Interactive lecture, exemplification, case study, guided discovery	
Introduction and Brief History		
Nervous system structure and organization		
Nervous system development		
Neural signalling 1		
Neural signalling 2		
Nervous system anatomy		
Visual Neuroscience		
Auditory Neuroscience		
Movement, motor control and motor learning		

The chemical senses: smell and taste		
Touch and pain perception		
Multisensory integration and interoception		

## Bibliography

### Required reading

- National Academies of Sciences, Engineering, and Medicine. (2019). Reproducibility and Replicability in Science. Washington, DC: The National Academies Press. → Chapter 3. Understanding Reproducibility and Replicability.
- Bear, M., Connors, B., & Paradiso, M. A. (2016). Neuroscience: Exploring the Brain. → Chapter 1. Past, Present, and Future.
- Howard-Jones, P. A. (2014). Neuroscience and education: myths and messages. Nature Reviews Neuroscience, 15(12), 817-824.
- Bear, M., Connors, B., & Paradiso, M. A. (2016). Neuroscience: Exploring the Brain. → Chapter 2. Neurons & Glia.
- Pinel, J. P., & Barnes, S. (2021). Biopsychology. Pearson.. → Chapter 4. Neural Conduction and Synaptic Transmission.
- Pinel, J. P., & Barnes, S. (2021). Biopsychology. Pearson.. → Chapter 4. Neural Conduction and Synaptic Transmission.
- Bangalore, L. (2007). Brain development. Infobase Publishing. → Chapter 3. Neurogenesis: Birth, Migration, and Differentiation of Neurons.
- Bear, M., Connors, B., & Paradiso, M. A. (2016). Neuroscience: Exploring the Brain. → Chapter 7. The structure of the Nervous system
- Bear, M., Connors, B., & Paradiso, M. A. (2016). Neuroscience: Exploring the Brain. → Chapter 7 Appendix. An Illustrated Guide to Human Neuroanatomy.
- Pinel, J. P., & Barnes, S. (2021). Biopsychology. Pearson.Chapter 3. Anatomy of the Nervous system
- Pinel, J. P., & Barnes, S. (2021). Biopsychology. Pearson.Chapter 6. The visual system.
- Bear, M., Connors, B., & Paradiso, M. A. (2016). Neuroscience: Exploring the Brain. → Chapter 11. The Auditory and Vestibular Systems.
- Bear, M., Connors, B., & Paradiso, M. A. (2016). Neuroscience: Exploring the Brain. → Chapter 14. Brain Control of Movement.
- Martin, G.N. (2013). The Neuropsychology of Smell and Taste. → Chapter 1. Smell and taste: An introduction to the psychology of chemosensation.
- Olman, C. (2022). Introduction to Sensation and Perception. → Part II. Somatosensation.  
<https://pressbooks.umn.edu/sensationandperception/>
- Stein, B. E., Stanford, T. R., & Rowland, B. A. (2014). Development of multisensory integration from the perspective of the individual neuron. Nature Reviews Neuroscience, 15(8), 520–535.

### Recommended reading

- Poldrack, R. A., Baker, C. I., Durnez, J., Gorgolewski, K. J., Matthews, P. M., Munafò, M. R., Nichols, T. E., Poline, J.-B., Vul, E., & Yarkoni, T. (2017). Scanning the horizon: towards transparent and reproducible neuroimaging

research. *Nature Reviews Neuroscience*, 18(2), 115–126.

- Feinberg, T. E., & Farah, M. J. (2005). A Historical Perspective on Cognitive Neuroscience. In M. J. Farah & T. E. Feinberg (Eds.), *Patient-based approaches to cognitive neuroscience* (pp. 3–20). The MIT Press.
- Pinel, J. P., & Barnes, S. (2021). *Biopsychology*. → Chapter 1. *Biopsychology as a Neuroscience*.
- Menassa, D. A., & Gomez-Nicola, D. (2018). Microglial dynamics during human brain development. *Frontiers in Immunology*, 9, 1014.
- Schwiening, C. J. (2012). A brief historical perspective: Hodgkin and Huxley. *The Journal of Physiology*, 590(Pt 11), 2571.
- Bear, M., Connors, B., & Paradiso, M. A. (2016). *Neuroscience: Exploring the Brain*. → Chapter 5. *Synaptic transmission*.
- Aloe, L. (2004). Rita Levi-Montalcini: the discovery of nerve growth factor and modern neurobiology. *Trends in Cell Biology*, 14(7), 395-399.
- Bystron, I., Blakemore, C., & Rakic, P. (2008). Development of the human cerebral cortex: Boulder Committee revisited. *Nature Reviews Neuroscience*, 9(2), 110-122.
- Stiles, J., & Jernigan, T. L. (2010). The basics of brain development. *Neuropsychology Review*, 20(4), 327-348.
- Purves, D., ..., & White, L. (2018). *Neuroscience*. → Appendix, *Survey of Human Neuroanatomy*.
- Purves, D., ..., & White, L. (2018). *Neuroscience*. → Atlas, *The Human Central Nervous System*.
- Zilles, K., & Amunts, K. (2010). Centenary of Brodmann's map—conception and fate. *Nature Reviews Neuroscience*.
- Kandel, E. R. (2009). An introduction to the work of David Hubel and Torsten Wiesel. *The Journal of Physiology*, 587(12), 2733–2741.
- Wurtz, R. H. (2009). Recounting the impact of Hubel and Wiesel. *The Journal of Physiology*, 587(12), 2817–2823.
- Sutter, M.L. & Shamma, S.A. (2011). The Relationship of Auditory Cortical Activity to Perception and Behavior. In Winer, J.A., Schreiner, C.E. (Eds.), *The auditory cortex* (pp. 617–641). Springer.
- Kim, H. E., Avraham, G., & Ivry, R. B. (2021). The psychology of reaching: action selection, movement implementation, and sensorimotor learning. *Annual Review of Psychology*, 72, 61.
- Bremner, A. J., & Spence, C. (2017). The Development of Tactile Perception. *Advances in child development and behavior*, 52, 227–268.
- Olofsson, J. K., & Freiherr, J. (2019). Neuroimaging of smell and taste. *Handbook of clinical neurology*, 164, 263–282.
- Yeomans, J. S., Li, L., Scott, B. W., & Frankland, P. W. (2002). Tactile, acoustic and vestibular systems sum to elicit the startle reflex. *Neuroscience and biobehavioral reviews*, 26(1), 1–11.
- Noppeney, U. (2020). Multisensory Perception: Behavior, Computations, and Neural Mechanisms. In Poeppel, D., Mangun, G.R. & Gazzaniga, M.S. (Eds.), *The Cognitive Neurosciences* (pp. 141–149). The MIT Press.

8.2 Seminar / laboratory	Teaching methods	Remarks
The seminar will closely follow and build on the lecture topics.	Lecture, student presentation, group work, case study, guided discovery, and engagement with contemporary experimental research.	The seminar will offer an in-depth exploration of the topics covered by the lectures and will offer students the opportunity to develop their group work and presentation skills. In addition, the seminar is designed to foster critical thinking in modern neuroscience.




**9. Corroborating the content of the discipline with the expectations of the epistemic community, professional associations and representative employers within the field of the program**

<ul style="list-style-type: none"> <li>The lecture and seminar cover central topics in the field of Neuroscience, based on the most recent results in the literature. The content aligns to the curriculum taught at all universities in Romania and abroad for this discipline.</li> <li>The lecture and seminar are designed to equip students with the knowledge and critical thinking skills that will enable them to pursue a research-focused career.</li> </ul>
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**10. Evaluation**

Activity type	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Percentage of final grade
10.4 Course	Critical thinking skills and integration of theoretical knowledge	Written exam	50%
10.5 Seminar/laboratory		Written exam	50%
10.6 Minimum standard of performance			
<ul style="list-style-type: none"> <li>Students must obtain at least 50 points (out of 100 maximum) on the final exam to pass.</li> </ul>			

**11. Labels ODD (Sustainable Development Goals)<sup>2</sup>**

	General label for Sustainable Development							
								

<sup>2</sup> Keep only the labels that, according to the [Procedure for applying ODD labels in the academic process](#), suit the discipline and delete the others, including the general one for *Sustainable Development* – if not applicable. If no label describes the discipline, delete them all and write „Not applicable.”.

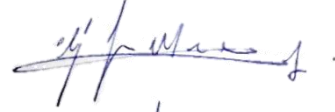


Date:  
26/11/2025

Signature of course coordinator

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Signature of seminar coordinator



Date of approval:  
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Signature of the head of department

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