

SYLLABUS

1. Program details

1.1 Higher education institution	West University of Timișoara
1.2 Faculty / Department	Faculty of Sociology and Psychology
1.3 Department	Psychology
1.4 Field of study	Psychology
1.5 Cycle of studies	Bachelor's degree
1.6 Study program / Qualification	Psychology-Cognitive Science

2. Discipline details

2.1 Discipline name	Introduction to Neuroscience						
2.2 Tenured teacher - course activities	Lecturer Michael-Bogdan MĂRGINEANU, PhD						
2.3 Tenured teacher – seminar / laboratory activities	Larisa-Maria DINA, PhD candidate						
2.5 Study year	1st	2.5 Semester	I	2.6 Type of assessment	Exam	2.7 Discipline regime	DO
2.8 Google Classroom code	dfitytmh						

3. Estimated total time (hours per semester) of teaching activities

3.1 Number of hours per semester	4	Of which: 3.2 course	2	3.3 seminar/laboratory	2
3.4 Total hours from the curriculum	56	Of which: 3.5 course	28	3.6 seminar/laboratory	28
Time fund distribution:					hours
Study based on the textbook, course material, bibliography, and notes					30
Additional documentation in the library, on specialist electronic platforms / in the field					18
Preparing seminars/labs, homework, papers, portfolios, and essays					14
Tutoring					2
Examinations					4
Other activities					1
3.7 Total hours of individual study	69				
3.8 Total hours per semester	125				
3.9 Number of credits (ECTS)	5				

4. Prerequisites (where necessary)

4.1 for curriculum	• N.A.
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4.2 for competencies	<ul style="list-style-type: none"> N.A.
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5. Conditions (where necessary)

5.1 for conducting the course	<ul style="list-style-type: none"> Classroom/Aula with a video projector and internet connection Audio system with speakers
5.2 for conducting the seminar/laboratory	<ul style="list-style-type: none"> Laboratory with computers connected to the internet Audio system with speakers

6. Discipline objectives - expected learning outcomes to which the discipline's study and promotion contributes

Knowledge	<p><i>Students/graduates will be able to demonstrate:</i></p> <ul style="list-style-type: none"> Understanding of the main concepts, and methodologies used in the broad field of neuroscience; Knowledge of terminology and communication strategies according to the targeted socio-professional categories.
Skills	<p><i>Students/graduates will be able to demonstrate:</i></p> <ul style="list-style-type: none"> The ability to critically analyse and evaluate empirical data; The ability to engage in critical and constructive evaluation of one's own research and psychological evaluation approach, specific to neuroscience and cognitive sciences.
Responsibility and autonomy	<p><i>Students/graduates will be able to demonstrate:</i></p> <ul style="list-style-type: none"> The ability to work independently (with minimal guidance) to obtain information; The ability to learn the strategies of rigorous, efficient and responsible work, punctuality and personal responsibility for the result, based on the principles, norms and values of the code of professional ethics; The ability to reflect on the progress achieved in the learning process.

7. Contents

7.1 Course	Teaching methods	Observations
1. Introductory course	Presentation, discussion	<p>Overview of the course, its objectives, and evaluation means and standards.</p> <p>To read: Bear, M., Connors, B., & Paradiso, M. A. (2016). Neuroscience: Exploring the Brain. 4th edition. Wolters Kluwer. → Chapter 1. Past, Present, and Future.</p>

2. Morphology of the human nervous system I: The central nervous system (CNS)	Lecture and discussion	<p>To read: Squire, L. R., Berg, D., Bloom, F. E., du Lac, S., Ghosh, A., Spitzer, N.C. (2014). Fundamental Neuroscience: fourth edition. → Chapter 2. Basic Plan of the Nervous System.</p> <p>Bear, M., Connors, B., & Paradiso, M. A. (2016). Neuroscience: Exploring the Brain. 4th edition. Wolters Kluwer. → Chapter 7. The structure of the Nervous system.</p> <p>Marieb, E. N., Hoehn, K. (2012). Human Anatomy & Physiology. 9th edition. Pearson. → Chapter 12. The Central Nervous System.</p>
3. Morphology of the human nervous system II: The peripheral nervous system (PNS)	Lecture and discussion	<p>To read: Squire, L. R., Berg, D., Bloom, F. E., du Lac, S., Ghosh, A., Spitzer, N.C. (2014). Fundamental Neuroscience. 4th edition. Elsevier. → Chapter 2. Basic Plan of the Nervous System.</p> <p>Bear, M., Connors, B., & Paradiso, M. A. (2016). Neuroscience: Exploring the Brain. 4th edition. Wolters Kluwer. → Chapter 7. The structure of the Nervous system.</p> <p>Marieb, E. N., Hoehn, K. (2012). Human Anatomy & Physiology. 9th edition. Pearson. → Chapter 13. The Peripheral Nervous System and Reflex Activity.</p>
4. Neurons and Glia: morphological and functional characteristics	Lecture and discussion	<p>To read: Bear, M., Connors, B., & Paradiso, M. A. (2016). Neuroscience: Exploring the Brain. 4th edition. Wolters Kluwer. → Chapter 2. Neurons & Glia.</p> <p>Marieb, E. N., Hoehn, K. (2012). Human Anatomy & Physiology. 9th edition. Pearson. → Chapter 11. Fundamentals of the Nervous System and Nervous Tissue.</p>
5. Synaptic transmission, neural activity and energetic demands	Lecture and discussion	<p>To read: Bear, M., Connors, B., & Paradiso, M. A. (2016). Neuroscience: Exploring the Brain. 4th edition. Wolters Kluwer. → Chapter 6. Neurotransmitter Systems.</p> <p>Pinel, J. P., & Barnes, S. (2018). Biopsychology. Pearson. → Chapter 4. Neural Conduction and Synaptic Transmission, p. 77-85.</p>

		Squire, L. R., Berg, D., Bloom, F. E., du Lac, S., Ghosh, A., Spitzer, N.C. (2014). Fundamental Neuroscience. 4 th edition. Elsevier. → Chapter 12. Brain Energy Metabolism.
6. The visual, gustatory, olfactory, and auditory systems	Lecture and discussion	To read: Pinel, J. P., & Barnes, S. (2017). Biopsychology. 10 th edition. Pearson. → Chapter 6. The Visual System: How We See. → Chapter 7. Mechanisms of Perception: Hearing, Touch, Smell, Taste, and Attention: How You Know the World Marieb, E. N., Hoehn, K. (2012). Human Anatomy & Physiology. 9 th edition. Pearson. → Chapter 15. The Special Senses.
7. Methods of studying the nervous system	Lecture and discussion	To read: Pinel, J. P., & Barnes, S. (2017). Biopsychology. 10 th edition. Pearson. → Chapter 5. The Research Methods of Biopsychology.
8. The motor system, the somatic sensory system and integration of sensory information	Lecture and discussion	To read: Pinel, J. P., & Barnes, S. (2017). Biopsychology. 10 th edition. Pearson. → Chapter 8. The Sensorimotor System: How You Move. Squire, L. R., Berg, D., Bloom, F. E., du Lac, S., Ghosh, A., Spitzer, N.C. (2014). Fundamental Neuroscience. 4 th edition. Elsevier. → Chapter 27. Fundamentals of Motor Systems. Bear, M., Connors, B., & Paradiso, M. A. (2016). Neuroscience: Exploring the Brain. 4 th edition. Wolters Kluwer. → Chapter 12. The Somatic Sensory System.
9. The limbic system and brain mechanisms of emotion and addiction	Lecture and discussion	To read: Bear, M., Connors, B., & Paradiso, M. A. (2016). Neuroscience: Exploring the Brain. 4 th edition. Wolters Kluwer. → Chapter 18. Brain Mechanisms of Emotion. Squire, L. R., Berg, D., Bloom, F. E., du Lac, S., Ghosh, A., Spitzer, N.C. (2014). Fundamental Neuroscience. 4 th edition. Elsevier. → Chapter 41. Reward, Motivation and Addiction.
10. The molecular mechanisms of learning and memory	Lecture and discussion	To read: Bear, M., Connors, B., & Paradiso, M. A. (2016). Neuroscience: Exploring the

		Brain. 4 th edition. Wolters Kluwer. → Chapter 25. Molecular Mechanisms of Learning and Memory. Pinel, J. P., & Barnes, S. (2017). Biopsychology. 10 th edition. Pearson. → Chapter 11. Learning, Memory, and Amnesia: How Your Brain Stores Information.
11. The second brain: the enteric nervous system and the gut-brain connection	Lecture and discussion	To read: Anderson, S.C., Cryan, J.F., Dinan, T.G. (2019). The Psychobiotic Revolution: Mood, Food, and the New Science of the Gut-Brain Connection. National Geographic Society.
12. The neuroscience of stress and feeding behavior	Lecture and discussion	To read: Pinel, J. P., & Barnes, S. (2017). Biopsychology. 10 th edition. Pearson. → Chapter 17. Biopsychology of Emotion, Stress, and Health: Fear, the Dark Side of Emotion → Chapter 12. Hunger, Eating, and Health: Why Do Many People Eat Too Much?
13. Neurodegeneration and neural regeneration	Lecture and discussion	To read: Pinel, J. P., & Barnes, S. (2017). Biopsychology. 10 th edition. Pearson. → Chapter 10. Brain Damage and Neuroplasticity: Can the Brain Recover from Damage? Squire, L. R., Berg, D., Bloom, F. E., du Lac, S., Ghosh, A., Spitzer, N.C. (2014). Fundamental Neuroscience. 4 th edition. Elsevier. → Chapter 43. Cognitive Development and Aging.
14. Mental illnesses: cellular and molecular insights	Lecture, case studies and discussion	To read: Bear, M., Connors, B., & Paradiso, M. A. (2016). Neuroscience: Exploring the Brain. 4 th edition. Wolters Kluwer. → Chapter 22. Mental Illness.

Fundamental bibliography:

Students will be offered access to the essential reading via Google Classroom.

Bear, M., Connors, B., & Paradiso, M. A. (2016). Neuroscience: Exploring the Brain. 4th edition. Wolters Kluwer.

Squire, L. R., Berg, D., Bloom, F. E., du Lac, S., Ghosh, A., Spitzer, N.C. (2014). Fundamental Neuroscience. 4th edition. Elsevier.

Pinel, J. P., & Barnes, S. (2017). Biopsychology. 10th edition. Pearson

Recommended reading:

Marieb, E. N., Hoehn, K. (2021). Human Anatomy & Physiology: ninth edition.

7.2 Seminar / laboratory	Teaching methods	Observations
1. Introductory seminar	Presentation, discussion	Overview of the seminars, types of activities and requirements, evaluation means and standards. Introduction to critical reading and evaluation (linked to the journal club presentations in Week 14)
2. Nervous system development	Presentation Discussion Exemplification	Pinel, J. P., & Barnes, S. (2017). Biopsychology. 10 th edition. Pearson. → Chapter 9. Development of the Nervous System: From Fertilized Egg to You Squire, L. R., Berg, D., Bloom, F. E., du Lac, S., Ghosh, A., Spitzer, N.C. (2014). Fundamental Neuroscience. 4 th edition. Elsevier. → Chapter 21. Early Experience and Sensitive Periods.
3. Reflexes	Presentation Discussion Exemplification Group activities	Squire, L. R., Berg, D., Bloom, F. E., du Lac, S., Ghosh, A., Spitzer, N.C. (2014). Fundamental Neuroscience. 4 th edition. Elsevier. → Chapter 27. Fundamentals of Motor Systems.
4. Neurotransmitter systems	Presentation, discussion Group activities	Bear, M., Connors, B., & Paradiso, M. A. (2016). Neuroscience: Exploring the Brain. 4 th edition. Wolters Kluwer. → Chapter 6. Neurotransmitter Systems.
5. Neurophysiology Virtual Lab: action potentials	Presentation Discussion Exemplification Demonstration	https://phet.colorado.edu/sims/html/neuron/latest/neuron_en.html
6. Recording nerve and brain activity: methods overview	Presentation Discussion Exemplification	Symms, M., Jäger, H. R., Schmierer, K., & Yousry, T. A. (2004). A review of structural magnetic resonance neuroimaging. <i>Journal of Neurology, Neurosurgery & Psychiatry</i> , 75(9), 1235-1244.
7. Manipulating nerve and brain activity: old and new technologies	Presentation Discussion Exemplification	Pinti, P., Tachtsidis, I., Hamilton, A., Hirsch, J., Aichelburg, C., Gilbert, S., & Burgess, P. W. (2020). The present and future use of functional near-infrared spectroscopy (fNIRS) for cognitive neuroscience. <i>Annals of the New York Academy of Sciences</i> , 1464(1), 5-29. Gui, X. U. E., Chuansheng, C. H. E. N., Zhong-Lin, L. U., & Qi, D. O. N. G. (2010). Brain imaging techniques and their applications in decision-making research. <i>Xin li xue bao. Acta psychologica Sinica</i> , 42(1), 120.
8. Practical session (EEG/fNIRS/other nerve and brain activity recording method)	Exemplification	

9. Senses and emotions: the neural circuitry	Presentation Discussion Exemplification	Bear, M., Connors, B., & Paradiso, M. A. (2016). Neuroscience: Exploring the Brain. 4 th edition. Wolters Kluwer. → Chapter 18. Brain Mechanisms of Emotion. Pinel, J. P., & Barnes, S. (2017). Biopsychology. 10 th edition. Pearson. → Chapter 7. Mechanisms of Perception: Hearing, Touch, Smell, Taste, and Attention: How You Know the World
10. Learning and memory	Presentation Discussion Exemplification	Squire, L. R., Berg, D., Bloom, F. E., du Lac, S., Ghosh, A., Spitzer, N.C. (2014). Fundamental Neuroscience. 4 th edition. Elsevier. → Chapter 48 - Learning and Memory: Brain Systems
11. Brain rhythms, sleep and coma	Presentation Discussion Exemplification	Pinel, J. P., & Barnes, S. (2017). Biopsychology. 10 th edition. Pearson. → Chapter 14. Sleep, Dreaming, and Circadian Rhythms: How Much Do You Need to Sleep?
12. The neuroendocrine axes and behavior	Presentation Discussion	Squire, L. R., Berg, D., Bloom, F. E., du Lac, S., Ghosh, A., Spitzer, N.C. (2014). Fundamental Neuroscience. 4 th edition. Elsevier. → Chapter 38. Neuroendocrine Systems.
13. Neural architecture of language and speech	Presentation Discussion Group activities	Bear, M., Connors, B., & Paradiso, M. A. (2016). Neuroscience: Exploring the Brain. 4 th edition. Wolters Kluwer. → Chapter 20. Language. Pinel, J. P., & Barnes, S. (2017). Biopsychology. 10 th edition. Pearson. → Chapter 16. Lateralization, Language, and the Split Brain: The Left Brain and the Right Brain
14. Journal club presentations	Group activity Presentation	

Fundamental bibliography:

Students will be offered access to the essential reading via Google Classroom.

Bear, M., Connors, B., & Paradiso, M. A. (2016). Neuroscience: Exploring the Brain. 4th edition. Wolters Kluwer.

Gui, X. U. E., Chuansheng, C. H. E. N., Zhong-Lin, L. U., & Qi, D. O. N. G. (2010). Brain imaging techniques and their applications in decision-making research. Xin li xue bao. Acta psychologica Sinica, 42(1), 120.

Squire, L. R., Berg, D., Bloom, F. E., du Lac, S., Ghosh, A., Spitzer, N.C. (2014). Fundamental Neuroscience. 4th edition. Elsevier.

Pinel, J. P., & Barnes, S. (2017). Biopsychology. 10th edition. Pearson

Pinti, P., Tachtsidis, I., Hamilton, A., Hirsch, J., Aichelburg, C., Gilbert, S., & Burgess, P. W. (2020). The present and future use of functional near-infrared spectroscopy (fNIRS) for cognitive neuroscience. *Annals of the new York Academy of Sciences*, 1464(1), 5-29.

Symms, M., Jäger, H. R., Schmierer, K., & Yousry, T. A. (2004). A review of structural magnetic resonance neuroimaging. *Journal of Neurology, Neurosurgery & Psychiatry*, 75(9), 1235-1244

8. Correlation of discipline contents with the expectations of the representatives of the epistemic community, professional associations and representative employers in the field related to the program

The proposed course offers fundamental scientific knowledge of nervous system structure and physiology, necessary to understand higher brain functions, the delivered content being based on the most relevant and up-to-date literature. The course also enables students to develop research interests in the field of neuroscience and gain knowledge about tools and skills that can be employed in research endeavors.

9. Assessment

Activity type	9.1 Assessment criteria	9.2 Assessment methods	9.3 Weight of final mark
9.4 Course	Written exam	The exam will contain multiple-choice items. This exam takes place at the end of the semester, during the official examination period.	60% (between 0 and 60 points)
9.5 Seminar / laboratory	Written exam	The exam will contain multiple-choice items. This exam takes place at the end of the semester, during the official examination period.	30% (between 0 and 30 points)
	Presentation (Oral exam)	A list of topics for the presentations will be provided in week 1 of the semester. The presentation will be evaluated during week 14 of the semester.	10% (between 0 and 10 points)
9.6 Minimum performance standard			
<p>The final grade will be calculated based on the total number of points cumulated during the semester, based on the following point intervals:</p> <p>95 points or more: 10 Between 85 and 95 points: 9 Between 75 and 85 points: 8 Between 65 and 75 points: 7 Between 55 and 65 points: 6 Between 45 and 55 points: 5 Between 35 and 45 points: 4 Between 25 and 35 points: 3 Between 15 and 25 points: 2 Below 15 points: 1</p> <p>The minimum required grade to pass this course is: 5 (overall and in each of the three assessments). Students unable to complete the oral presentation can submit a 1,000-word essay on a topic relating to the content taught during the seminars. Students unable to sit the two exams during the first examination period will have the opportunity to re-sit in the second examination period.</p>			

Students with no class attendance will have to enroll for the class again in the coming semesters.

Use of Generative Artificial Intelligence (genAI) Tools

Within this course, the use of genAI tools (e.g., ChatGPT, Gemini, Claude, Copilot, etc.) is permitted only under the conditions set by the course/seminar instructor and in compliance with academic integrity regulations.

Permitted uses: brainstorming ideas, support with drafting and structuring, translations, language revisions, generating images, graphics, diagrams, illustrations, video or audio materials, avatars, and other digital objects, exclusively for educational purposes.

Prohibited uses: fully generating assignments (essays, reports, projects) or presenting content created by genAI as entirely one's own work.

For any assignment (essay, portfolio, project, etc.), students are required to complete a transparency declaration form (available on the course platform). This document must state:

- the tool used and its version,
- the type of support provided by genAI,
- how the content was verified and integrated.

Failure to declare the use of genAI will be considered a violation of academic integrity regulations and will be treated according to UVT's rules.

Students are responsible for:

- verifying the accuracy and relevance of generated content,
- respecting confidentiality and copyright,
- critically and personally integrating the results obtained with genAI.

The details regarding the application of these usage conditions will be presented and discussed during the first lecture/seminar.

Date of completion:
15.09.2025

Tenure teacher
Michael-Bogdan MĂRGINEANU, PhD
Lecturer

Date of approval in department

Head of Department
Delia VÎRGĂ, PhD
Professor