**SYLLABUS**

1. **Program details**

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| * 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 | BA |
| 1.6 Study program / Qualification | Psychology-Cognitive Science |
| 1.7. Classroom cod | **5niwcny** |

1. **Discipline details**

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| 2.1 Discipline name | | | *Introduction in Neuroscience* | | | | | |
| 2.2 Tenured teacher - course activities | | | Lecturer Dr. Michael-Bogdan MĂRGINEANU | | | | | |
| 2.3 Tenured teacher – seminar / laboratory activities | | | Drd. Larisa DINA | | | | | |
| 2.4 Study year | 1st | 2.5 Semester | | I | 2.6 Type of assessment | Exam | 2.7 Discipline regime | DO |

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

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| 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** | |

1. **Prerequisites (where necessary)**

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| 4.1 for curriculum | * N.A. |
| 4.2 for competencies | * N.A. |

1. **Conditions (where necessary)**

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| 5.1 for conducting the course | * Classroom/Aula with a video projector and internet connection Classroom cod: 5niwcny * Audio system with speakers |
| 5.2 for conducting the seminar/laboratory | * Laboratory with computers connected to the internet. Classroom cod:  **5niwcny** * Audio system with speakers |

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

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| Knowledge | *Working with fundamental concepts in the field of psychology and cognitive sciences:*  *a)* adapting terminology and communication strategies according to the targeted socio-professional categories. |
| Skills | *Critical assessment of problem situations and possible solutions in psychology:*  a) analysis and interpretation of empirical data, critical and constructive evaluation of one's own research and psychological evaluation approach, specific to cognitive sciences. |
| Responsibility and autonomy | *Graduates should be able to demonstrate that:*  a) have the ability to work independently (possibly with minimal guidance) to obtain information;  b) learned 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;  b) developed conscious and permanent self-control skills regarding the motivations for learning, by referring to one's own professional and personal development goals. |

1. **Contents**

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| 7.1 Course | Teaching methods | Observations |
| 1. Introductory course | Presentation, discussion | Overview of the course, its objectives, and evaluation means and standards.  To read: Bear, M., Connors, B., & Paradiso, M. A. (2016). Neuroscience: Exploring the  Brain. 4th edition. Wolters Kluwer. → Chapter 1. Past, Present, and Future. |
| 2. Morphology of the human nervous system I: The central nervous system (CNS) | Lecture and discussion | 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.  Bear, M., Connors, B., & Paradiso, M. A. (2016). Neuroscience: Exploring the  Brain. 4th edition. Wolters Kluwer. → Chapter 7. The structure of the Nervous system.  Marieb, E. N., Hoehn, K. (2012). Human Anatomy & Physiology. 9th edition. Pearson. → Chapter 12. The Central Nervous System. |
| 3. Morphology of the human nervous system II: The peripheral nervous system (PNS) | Lecture and discussion | 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.  Bear, M., Connors, B., & Paradiso, M. A. (2016). Neuroscience: Exploring the  Brain. 4th edition. Wolters Kluwer. → Chapter 7. The structure of the Nervous system.  Marieb, E. N., Hoehn, K. (2012). Human Anatomy & Physiology. 9th edition. Pearson. → Chapter 13. The Peripheral Nervous System and Reflex Activity. |
| 4. Neurons and Glia: morphological and functional characteristics | Lecture and discussion | To read: Bear, M., Connors, B., & Paradiso, M. A. (2016). Neuroscience: Exploring the  Brain. 4th edition. Wolters Kluwer. → Chapter 2. Neurons & Glia.  Marieb, E. N., Hoehn, K. (2012). Human Anatomy & Physiology. 9th edition. Pearson. → Chapter 11. Fundamentals of the Nervous System and Nervous Tissue. |
| 5. Synaptic transmission, neural activity and energetic demands | Lecture and discussion | To read: Bear, M., Connors, B., & Paradiso, M. A. (2016). Neuroscience: Exploring the  Brain. 4th edition. Wolters Kluwer. → Chapter 6. Neurotransmitter Systems.  Pinel, J. P., & Barnes, S. (2018). Biopsychology. Pearson. → Chapter 4. Neural  Conduction and Synaptic Transmission, p. 77-85.  Squire, L. R., Berg, D., Bloom, F. E., du Lac, S., Ghosh, A., Spitzer, N.C. (2014). Fundamental Neuroscience. 4th 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.10th 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. 9th edition. Pearson. → Chapter 15. The Special Senses. |
| 7. The motor system and sensorimotor control | Lecture and discussion | To read: Pinel, J. P., & Barnes, S. (2017). Biopsychology.10th 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. 4th edition. Elsevier. → Chapter 27. Fundamentals of Motor Systems. |
| 8. The somatic sensory system and integration of sensory information | Lecture and discussion | To read: Bear, M., Connors, B., & Paradiso, M. A. (2016). Neuroscience: Exploring the  Brain. 4th 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. 4th 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. 4th 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. 4th edition. Wolters Kluwer. → Chapter 25. Molecular Mechanisms of Learning and Memory.  Pinel, J. P., & Barnes, S. (2017). Biopsychology.10th 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.10th 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.10th 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. 4th 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. 4th edition. Wolters Kluwer. → Chapter 22. Mental Illness. |
| *Fundamental bibliography:*  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: nineth 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. |
| 2. Neurotransmitter systems | Presentation, discussion  Group activities | Bear, M., Connors, B., & Paradiso, M. A. (2016). Neuroscience: Exploring the  Brain. 4th edition. Wolters Kluwer. → Chapter 6. Neurotransmitter Systems. |
| 3. Nervous system development | Presentation  Discussion  Exemplification | Pinel, J. P., & Barnes, S. (2017). Biopsychology.10th 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. 4th edition. Elsevier. → Chapter 21. Early Experience and Sensitive Periods. |
| 4. Neurophysiology Virtual Lab: action potentials | Presentation  Discussion  Exemplification  Demonstration |  |
| 5. 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. 4th edition. Elsevier. → Chapter 27. Fundamentals of Motor Systems. |
| 6. Recording nerve and brain activity: methods overview | Presentation  Discussion  Exemplification | The Wyss Center, https://wysscenter.ch/advances |
| 7. Manipulating nerve and brain activity: old and new technologies | Presentation  Discussion  Exemplification | The Wyss Center, https://wysscenter.ch/advances |
| 8. Journal club presentations | Group activities |  |
| 9. Brain rhythms, sleep and coma | Presentation  Discussion  Exemplification | Pinel, J. P., & Barnes, S. (2017). Biopsychology.10th edition. Pearson. → Chapter 14. Sleep, Dreaming, and Circadian Rhythms: How Much Do You Need to Sleep? |
| 10. Neural architecture of language and speech | Presentation  Discussion  Group activities | Bear, M., Connors, B., & Paradiso, M. A. (2016). Neuroscience: Exploring the  Brain. 4th edition. Wolters Kluwer. → Chapter 20. Language.  Pinel, J. P., & Barnes, S. (2017). Biopsychology.10th edition. Pearson. → Chapter 16. Lateralization, Language, and the Split Brain: The Left Brain and the Right Brain |
| 11. Senses and emotions: the neural circuitry | Presentation  Discussion  Exemplification | Bear, M., Connors, B., & Paradiso, M. A. (2016). Neuroscience: Exploring the  Brain. 4th edition. Wolters Kluwer. → Chapter 18. Brain Mechanisms of Emotion.  Pinel, J. P., & Barnes, S. (2017). Biopsychology.10th edition. Pearson. → Chapter 7. Mechanisms of Perception: Hearing, Touch, Smell, Taste, and Attention: How You Know the World |
| 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. 4th edition. Elsevier. → Chapter 38. Neuroendocrine Systems. |
| 13. Journal club presentations | Group activities |  |
| 14. Summary seminar | Knowledge synthesis  Discussion |  |
| *Fundamental bibliography:*  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 | | |

1. **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**

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| 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. |

1. **Assessment**

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| 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 13 of the semester. | 10% (between 0 and 10 points) |
| 9.6 Minimum performance standard | | | |
| The final grade will be calculated based on the total number of points cumulated during the semester, based on the following point intervals:  91 points or more: 10  Between 81 and 90 points: 9  Between 71 and 80 points: 8  Between 61 and 70 points: 7  Between 51 and 60 points: 6  Between 41 and 50 points: 5  Between 31 and 40 points: 4  Between 21 and 30 points: 3  Between 11 and 20 points: 2  Below 11 points: 1  The minimum required grade to pass this course is: 5  Additional specifications:  The same form of evaluation is kept in the outstanding sessions and re-assessment for grade increase.  Students who wish to be re-assessed for grade increase will attend a written exam with multiple-choice questions from the whole subject matter. The presentation mark (oral exam) remains unchanged. | | | |

Date of completion: Tenure teacher:

18.05.2023 Lect. dr. Michael-Bogdan MĂRGINEANU

Date of approval in department Department Director

Prof. univ. dr. Delia VÎRGĂ