

**Course Syllabus****I. General Information**

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|--|-------------------------------------|
| Course name  | <b>Biological bases of behavior</b> |
| Programme  | Psychology                          |
| Level of studies (BA, BSc, MA, MSc, long-cycle MA) | MA                                  |
| Form of studies (full-time, part-time)             | Full-time                           |
| Discipline   | Psychology                          |
| Language of instruction                            | English                             |

|                                       |                         |
|---------------------------------------|-------------------------|
| Course coordinator/person responsible | <b>dr Paweł Strózak</b> |
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| Type of class ( <i>use only the types mentioned below</i> ) | Number of teaching hours | Semester | ECTS Points |
|---|--------------------------|----------|-------------|
| lecture   | 30                       | I        | 7           |

|                       |  |
|-----------------------|--|
| Course pre-requisites | <ol style="list-style-type: none"> <li>1. Basic knowledge in biology, chemistry and physics;</li> <li>2. B2 English language skills</li> </ol> |
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**II. Course Objectives**

|    |   |
|----|---|
| 1. | Introducing the basic issues of biological mechanisms of animal and human behavior  |
| 2. | Disseminate knowledge of genetics, neurobiology, human anatomy and physiology   |
| 3. | Introduction to the problem of explaining human behavior in terms of genetic, physiological and neurobiological processes |

**III. Course learning outcomes with reference to programme learning outcomes**

| Symbol           | Description of course learning outcome  | Reference to programme learning outcome |
|------------------|---|---|
| <b>KNOWLEDGE</b> |   |   |
| W_01             | The student recognizes and explains the biological determinants of human and animal behavior, especially in terms of genetic, neurobiological and physiological processes leading to specific forms of behavior | K_W02                                   |
| W_02             | The student identifies and characterizes the links between psychology and biology; describes the genetic, physiological and neurobiological determinants of behavioral disorders and mental life                | K_W05                                   |
| <b>SKILLS</b>    |   |   |
| U_01             | The student selects theoretical knowledge from the sciences of the biological basis of behavior to analyze and interpret human behavior   | K_U01                                   |

|                            |  |       |
|----------------------------|--|-------|
| U_02                       | The student verifies the biological causes of human behavior, predicts their consequences, and outlines opportunities for positive change in these behaviors                       | K_U11 |
| <b>SOCIAL COMPETENCIES</b> |  |       |
| K_01                       | The student recognizes and expresses critical opinions towards those views and practices in the field of psychology that ignore the biological predisposition to certain behaviors | K_K01 |
| K_02                       | The student recognizes the advantages of leading a healthy lifestyle and is oriented towards caring for people's psychophysical comfort  | K_K05 |

#### IV. Course Content

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| <ol style="list-style-type: none"> <li>1. Introduction: biological psychology and behavioral neuroscience; different perspectives to understand behavior; brain and behavior</li> <li>2. The basic principles of inheritance: pre-Mendelian ideas on heredity; Mendelian inheritance; Mendelian principles in human genetics</li> <li>3. The science of genetics: chromosomes and DNA; transcription, translation and the genetic code; genes and genomics</li> <li>4. Behavioral genetics: disentangling nature and nurture; the adoption and the twin methods; heritability of psychological traits</li> <li>5. Neurophysiology: brain and the encephalization quotient; nerve cells and glial cells; synapses and synaptic transmission</li> <li>6. Psychopharmacology: neurotransmitters; drug effects on synaptic transmission; neuroactive drugs</li> <li>7. Anatomy of the nervous system: neuroanatomical terminology; central and peripheral nervous system; spinal cord; brain and cerebral cortex</li> <li>8. Methods of brain research: single and multi-cell recordings; electroencephalography (EEG) and magnetoencephalography (MEG); brain-computer interfaces (BCI); transcranial magnetic stimulation (TMS); tomographic methods (fMRI, PET, fNIRS)</li> <li>9. Perception: vision; hearing; the mechanical senses (balance, touch, and pain); the chemical senses (taste and smell)</li> <li>10. Action: motor behavior and motor control; neuromuscular hierarchical systems; brain disorders disrupting movement</li> <li>11. Sexual behavior: evolutionary, hormonal, and neural bases of reproductive behavior; sexual differentiation; human sexual orientation</li> <li>12. Internal regulation: homeostasis and allostasis; thermoregulation; fluid regulation; food and energy regulation</li> <li>13. Biological rhythms and sleep: circadian, infradian, and ultradian rhythms; sleep stages and sleep patterns; sleep functions</li> <li>14. Emotional behavior: theories of emotions; bodily responses to emotional stimuli; aggression and stress</li> <li>15. Psychopathology: schizophrenia; depression and bipolar disorder; anxiety disorders</li> </ol> |
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#### V. Didactic methods used and forms of assessment of learning outcomes

| Symbol    | Didactic methods<br><i>(choose from the list)</i> | Forms of assessment<br><i>(choose from the list)</i> | Documentation type<br><i>(choose from the list)</i> |
|-----------|---|--|---|
| KNOWLEDGE |   |  |   |

|                            |  |   |  |
|----------------------------|--|---|--|
| W_01                       | Conventional lecture                               | Written exam  | Evaluated exam sheet                                     |
|                            | Conversational lecture with discussion             | Written exam  | Evaluated exam sheet                                     |
| W_02                       | Conventional lecture                               | Written exam  | Evaluated exam sheet                                     |
|                            | Conversational lecture with discussion             | Written exam  | Evaluated exam sheet                                     |
| <b>SKILLS</b>              |  |   |  |
| U_01                       | Discussion of issues using multimedia presentation | Written exam  | Evaluated exam sheet                                     |
| U_02                       | Discussion of issues using multimedia presentation | Written exam  | Evaluated exam sheet                                     |
| <b>SOCIAL COMPETENCIES</b> |  |   |  |
| K_01                       | Discussion   | Listening to students' comments and arguments during discussion | Active participation in the discussion noted on the list |
| K_02                       | Discussion   | Listening to students' comments and arguments during discussion | Active participation in the discussion noted on the list |

#### VI. Grading criteria, weighting factors

Evaluation criteria for the written exam: **Unsatisfactory** (0%-50%); **Satisfactory** (52,5%-60%); **Satisfactory+** (62,5%-70%); **Good** (72,5%-80%); **Good+** (82,5%-90%); **Excellent** (92,5%-100%)

#### VII. Student workload

|  |                 |
|--|-----------------|
| Form of activity                           | Number of hours |
| Number of contact hours (with the teacher) | 30 h (teaching) |
| Number of hours of individual student work | 180 h           |

#### VIII. Literature

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| Basic literature   |
| <ol style="list-style-type: none"> <li>1. Kalat, J. W. (2018). <i>Biological Psychology. 13th Edition</i>. Cengage Learning.</li> <li>2. Knopik, V. S., Neiderhiser, J. M., DeFries, J. C., Plomin, R. (2016). <i>Behavioral Genetics. 7th Edition</i>. Worth.</li> <li>3. Ward, J. (2020). <i>The Student's Guide to Cognitive Neuroscience. Fourth Edition</i>. Routledge.</li> </ol>  |
| Additional literature  |
| <ol style="list-style-type: none"> <li>1. Breedlove, M., Watson, N. (2020). <i>Behavioral Neuroscience. 9th Edition</i>. Oxford University Press.</li> <li>2. Snustad, P.D., Simmons, M. J. (2015). <i>Principles of Genetics. 7th Edition</i>. Wiley.</li> <li>3. Watson, J. D., Berry, A., Davies, K. (2017). <i>DNA. The Story of the Genetic Revolution</i>. Knopf.</li> <li>4. Plomin, R. (2019). <i>Blueprint: How DNA makes us who we are</i>. The MIT Press.</li> <li>5. Sapolsky, R. M. (2017). <i>Behave: The Biology of Humans at Our Best and Worst</i>. Penguin Press.</li> </ol> |