Syllabus of an educational component of a degree programme

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| Name of unit conducting a component  | *Doctoral School of Social Sciences*  |
| Name of an educational component  | Nowe trendy w badaniach mózgu New trends in research concerning the brain  |
| Language of education  | English  |
| Goals of education  | Students learn current knowledge regarding important aspects of contemporary cognitive neuroscience. They learn a number of most influential publications, that became crucual for setting up research perspectives. Students are also taught to make a synthesis and critically analyse scientific texts.  |
| Learning outcomes of an educational component  | W1 knows and understands - to the extent that revisions of existing paradigms - the global achievements of social sciences covering theoretical foundations and general issues as well as selected specific issues specific to new trends in brain research W2 knows and understands the main new development trends in brain research W3 knows and understands modern brain research methodology U1 is able to use knowledge from various fields of science, primarily in the area of social sciences, to creatively identify, formulate and innovate solving complex psychological problems by undertaking research tasks in the field of brain research U2 is able to use methodological knowledge in research, and in particular: define the purpose and object of research, formulate a research hypothesis, develop research methods, techniques and tools, and apply them creatively, infer based on research results in the field of brain research K1 is ready to critically assess the achievements of neuropsychology and its own contribution to the development of this discipline; K2 is ready to recognize the importance of knowledge in solving theoretical and practical problems in neuropsychology   |

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| Verification methods and assessment criteria of learning outcomes obtained by students  | a grade for an oral presentation of a relevant scientific topic and leading the discussion. a grade for an essay.  |
| Type of an educational component (obligatory/optional)  |   |
| Year of study  | 1st  |
|  Semester  | winter  |
| Name and surname of the coordinator of a component and/or person/s conducting a component  | dr hab. Mirosław Wyczesany  |
| Name and surname of person/s conducting an examination or granting credit in the case when this sposóis other person than conducting a component  | dr hab. Mirosław Wyczesany  |
| Manner of completion  | seminar  |
| Preliminary and additional requirements  | biological psychology course or similar  |
| Type and number of hours of courses requiring direct participation of academic staff and students, if in a given component such courses are included  | course – 30 h (10x3)  |
| Number of ECTS credits assigned to a component  | 2 ECTS  |
| Balance of ECTS credits  | Classes: 30 hours  Student's own work: * preparing for classses - 15 hours
* preparing for exam – 15 h

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| Applied teaching methods  | presentation of texts, discussion, lecture  |
| Form and conditions of passing a component, including conditions of allowing to take an examination, as well as form and conditions of passing each type of courses included in a given component  | presence 80% min. oral presentation (graded): student will present a relevant scientific topic and lead the discussion. each student will be required to write an essay (3-4 pages, about 1500 words) that reviews and discusses one of the topics from the course.  |

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| Content of an educational module (with division into forms of courses completion)  | The course presents selected issues in contemporary neuroscience. The choice of lectures is based on their relevance and the fact that they often questioned traditional views on functioning of our brain.  1. Neuroimaging methods. What actually brain activation is?
2. Amygdala and the dual roads hypothesis.
3. Broca and Wernicke – is it really so simple?
4. Neural representation of objects
5. The attentive brain
6. Modelling the mind
7. Neural correlates of consciousness
8. Emotion and the prefrontal cortex
9. Machine learning
10. Summary
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| List of basic as well as supplementary literature, knowledge of which is required in order to pass a given component  | 1. Logothetis NK et al. (2001). Neurophysiological investigation of the basis of the fMRI signal

Nature 412. Logothetis, NK (2008). What we can do and what we cannot do with fMRI. Nature 453 1. Pessoa L, Adolphs R (2010). Emotion processing and the amygdala: from a'low road'to'many roads' of evaluating biological significance. *Nature reviews neuroscience*, *11*(11), 773.
2. Mesulam MM, et al. (2015). The Wernicke conundrum and the anatomy of language comprehension in primary progressive aphasia. *Brain*, *138*(8), 2423-2437. Tremblay P, Dick AS. (2016). Broca and Wernicke are dead, or moving past the classic model of language neurobiology. *Brain and language*, *162*, 60-71.
3. Quiroga, R. Q. (2016). Neuronal codes for visual perception and memory. *Neuropsychologia*, *83*, 227241.
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|  | 1. Corbetta, M, & Shulman GL (2002). Control of goaldirected and stimulus-driven attention in the brain. *Nature reviews neuroscience*, *3*(3), 201.

Vossel S, Geng JJ, Fink GR (2014). Dorsal and ventral attention systems: distinct neural circuits but collaborative roles. *The Neuroscientist*, *20*(2), 150-159. 1. Lake BM, et al. (2017). Building machines that learn and think like people. Behavioral and brain sciences, 40.
2. Koch C et al. (2016). Neural correlates of consciousness:

progress and problems. *Nature Reviews Neuroscience*, *17*(5), 307. 1. Dixon ML, Thiruchselvam R, Todd R, Christoff K. Emotion and the prefrontal cortex: an integrative review. Psychological bulletin. 2017 Oct;143(10):1033.
2. Akbari H et al. (2019). Towards reconstructing intelligible speech from the human auditory cortex. *Scientific reports*, *9*(1), 874.

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