

# Course syllabus

Course title	<b>Modern neuroscience of consciousness</b>
Instructor(s)	Anna Anzulewicz, Ph.D.
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Affiliation	University of Warsaw
Course format	seminar
Number of hours	30 hours
Number of ECTS credits	<b>3 ECTS credits</b>
Brief course description	<p>Consciousness, formerly seen as something private and accessible, was the domain of philosophers for many centuries. In the last few decades, interest in consciousness research flourished, providing us with answers not only about the nature of consciousness, but also about its neural correlates, and the relationship between consciousness and various cognitive processes. During the course, students should become familiar with the most important theories and paradigms used in consciousness research.</p>
Full course description	<p>The course is a comprehensive introduction to the modern neuroscience of consciousness. Instead of focusing on popular philosophical theories of consciousness, the course tackles empirical problems related to studying subjective experience.</p> <p>During the course, students should become familiar with the most important topics discussed in consciousness research, including: cognitive theories of consciousness, neural correlates of consciousness, animal consciousness, awareness scales, the relationship between consciousness and various cognitive (attention, memory, cognitive control) and emotional processes, and free will.</p> <p>The participants will also design and present their own experiment tackling one of the research problems in the field of the scientific study of consciousness.</p>
Learning outcomes	<p>Knowledge:</p> <ul style="list-style-type: none"><li>• student understands the cognitive and neural underpinnings of consciousness (K_W08)</li></ul>

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- student knows both classic and modern methods of consciousness research (K\_W12)

Skills:

- student is able to analyse the results of scientific studies in the field of consciousness, using basic methods and tools (K\_U04)
- student is able to critically analyse and evaluate the results of scientific research (K\_U05)
- student is able to communicate test results in oral form (K\_U06)

Social competence:

- student understands the need to constantly update her/his knowledge (K\_K04)
- student knows how to initiate, prepare and lead a discussion; is able to participate in the discussion in a constructive way; respectfully listens to the opinions of other people (K\_K06)

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Learning activities  
and teaching methods

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List of topics/classes  
and bibliography

The following topics will be discussed:

1. How to study consciousness scientifically?

Blackmore, S. (2011). *Consciousness. An introduction*. Oxford University Press - Section 1

2. The easy, the hard and the real problem of consciousness

Seth, A.K. (2010). The grand challenge of consciousness. *Frontiers in Psychology*, 1(5):1-2.

3. Modern perspective on consciousness. Cognitive theories of consciousness.

Crick, F. & Koch, C. (2003). A framework for consciousness. *Nature Neuroscience*, 6, 119–126.

4. Neural correlates of consciousness I

Koch, C., Massimini, M., Boly, M. & Tononi (2016). Neural correlates of consciousness: progress and problems. *Nature Reviews Neuroscience*, 17, 307–321

Blackmore, S. (2011). *Consciousness. An introduction*. Oxford University Press - Section 6

5. Neural correlates of consciousness II

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Lamme, V.A. (2010). How neuroscience will change our view on consciousness. *Cognitive Neuroscience*, 1(3), 204–220.

6. Measuring conscious content: consciousness scales

Timmermans, B. & Cleeremans, A. (2015). How can we measure awareness? An overview of current methods. In M. Overgaard (ed.), *Behavioural Methods in Consciousness Research*. Oxford: Oxford University Press.

7. How rich is consciousness? Partial awareness hypothesis

Kouider et al. (2010). How rich is awareness. The partial awareness hypothesis. *Trends in Cognitive Sciences*, 14(7):301-7.

8. Shades of experience - is consciousness dichotomous or gradual?

Windey, B., & Cleeremans, A. (2015). Consciousness as a graded and an all-or-none phenomenon: A conceptual analysis. *Consciousness and Cognition*, 35:185-91.

Sergent, C., & Dehaene, S. (2004). Is consciousness a gradual phenomenon? Evidence for an all-or-none bifurcation during the attentional blink. *Psychological Science*, 15, 720–728.

9 Attention and consciousness I

Simons, D.J. & Rensink, R.A. (2005). Change blindness: Past, present, and future. *Trends in Cognitive Sciences*, 9: 16–20.

10. Attention and consciousness II

Serences, J.T. & Kastner, S. (2014). A Multi-level account of selective attention. In: A.C. Nobre, & S. Kastner (eds.). *The Oxford Handbook of Attention*, Oxford: OUP.

11. Attention and consciousness III

Lamme, V. A. (2003). Why visual attention and awareness are different. *Trends in Cognitive Sciences*, 7, 12–18.

12. Consciousness and memory

Zhang, W. & Luck, S.J. (2009). Sudden Death and Gradual Decay in Visual Working Memory. *Psychological Science*, 20(4): 423–428.

13. Consciousness and action - predictive coding approach

Hohwy, J. (2012). Attention and conscious perception in the hypothesis testing brain. Attention and consciousness in different senses, *Frontiers in Psychology*, 3: 96.

14. Consciousness and body - illusions and sensory substitution

Blanke, O., Slater, M. & Selino, A. (2015). Behavioral, Neural, and Computational Principles of Bodily Self-Consciousness, *Neuron*, 88(1), p. 145-166.

15. Who is in charge? Free will and artificial consciousness

Lavazza, (2016). Free Will and Neuroscience: From Explaining Freedom Away to New Ways of Operationalizing and Measuring It. *Frontiers in Human Neuroscience*, <https://doi.org/10.3389/fnhum.2016.00262>

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Additional reading:

Block, N. (2009). Comparing the Major Theories of Consciousness, in: M. Gazzaniga (ed.) *The Cognitive Neurosciences IV*, MIT Press.

Block, N. (2007). Overflow, access and attention. *Behavioural and Brain Sciences*. 30, 530–542.

Cavanna, A.E., Nani, A., Blumenfeld, H., & Laureys, S. (eds) (2013). *Neuroimaging of consciousness*. Berlin: Springer.

Crick, F. & Koch, C. (2003). A framework for consciousness. *Nature Neuroscience*. 6, 119–126.

Klink, P.C., Self, M.W., Lamme, V.A., & Roelfsema, P.R. (2015). *Theories and methods in the scientific study of consciousness. The Constitution of Phenomenal Consciousness: Towards a Science and Theory*, (ed. S. Miller), Advances in Consciousness Research. John Benjamins Publishing Company.

Koch, C. (2004). *The quest for consciousness: A neurobiological approach*. Englewood, CO: Roberts and Company Publishers.

Overgaard, M. (2015). *Behavioural Methods in Consciousness Research*. Oxford: Oxford University Press

Velmans, M. & Schneider, S. (eds.) (2007). *The Blackwell companion to consciousness*. Oxford: Blackwell.

Assessment methods  
and criteria

Class activity - frequent participation in class discussions, students can also prepare short (15-20 min) presentations - 30%

Written assignment - An essay (approx. 5 pages) written on the basis of topics undertaken during classes (research on the use of knowledge in the field of awareness, structure, coherence and clarity of the message, a critical approach to metro stations presented during classes) - 40%

Test - 30%

completion of an introductory course in scientific research methodology

Attendance rules

Attendance - two unexcused absences are allowed, in the case of a greater number of absences (both excused and unexcused), it will be the delivery of a written work related to the subject of the classes as materials

Prerequisites

None.

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**Academic honesty**

Students must respect the principles of academic integrity. Cheating and plagiarism (including copying work from other students, internet or other sources) are serious violations that are punishable and instructors are required to report all cases to the administration.

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**Remarks**

Any remarks you would like students to know

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