

Course Syllabus

Title of the course	Когнитивная психология (преподается на английском языке) Cognitive Psychology				
Title of the Academic Programme	Bachelor's Programme 'Sociology and Social Informatics'				
Type of the course	Elective				
Prerequisites	Psychology				
ECTS workload	6				
Total indicative study hours	Directed Study	Self-directed study	Total		
	48	180	228		
Course Overview	<p>Every day our mind performs incredibly complex computations. It helps us to make sense out of sensory information, memorize different things, learn new concepts and categories, make decisions and creatively solve problems. All these topics are studied by cognitive psychology. The course is designed for students that already have basic knowledge in psychology and want to deepen their understanding of human cognition. Students will learn about the most influential theories and empirical studies of perception, attention, memory, learning, thinking, and consciousness. Seminar activities designed to develop critical thinking and communication competence, while group projects and home assignments promote the ability to apply knowledge to real-life problems.</p>				
Intended Learning Outcomes (ILO)	<p>Students will be able:</p> <ul style="list-style-type: none"> ● describe major concepts in cognitive psychology; ● to analyze and critically evaluate theories and empirical studies in cognitive psychology; ● to understand the connection between basic and applied research in cognitive psychology; ● to apply major concepts and theories of cognitive psychology to real-life problems. 				
Teaching and Learning Methods	<p>The course consists of lectures (22 hours) and seminars (26 hours). Seminars involve group discussions and debates, short presentations, and analytical tasks.</p> <p>Self-directed studies (180 hours) include:</p> <ul style="list-style-type: none"> ● reading for seminars; ● group presentations preparation; ● two group projects; ● exam preparation. 				
Content and Structure of the Course					
№	Topic	Total	Directed Study		Self-directed Study
			Lectures	Tutorials	
1	Cognitive Psychology: Introduction & Historical Overview	28	4	4	20
2	Attention. Sensation & Perception	28	4	4	20

3	Memory	48	4	4	40
4	Knowledge & Decision-Making	28	4	4	20
5	Thinking, Language, & Intelligence	28	4	4	20
6	Consciousness. Human vs. Artificial Intelligence	44	0	4	40
7	Modern Trends in Cognitive Psychology	24	2	2	20
Total study hours		228	22	26	180
Indicative Assessment Methods and Strategy	<p>The final grade is based on the:</p> <ul style="list-style-type: none"> ● seminar participation (40%) ● group projects (30%) ● exam test (30%) <p>All through the course 10-point grading system with arithmetic mean calculation is used. None of the assessment elements is blocking. Retake conditions are described in the Assessment Criteria section.</p>				
Readings / Indicative Learning Resources	<p><u>Mandatory</u></p> <ul style="list-style-type: none"> ● Reisberg, D. (Ed.). (2013). <i>The Oxford handbook of cognitive psychology</i>. Oxford University Press. https://proxylibrary.hse.ru:4334/view/10.1093/oxfordhb/9780195376746.001.0001/oxfordhb-9780195376746 ● Weisberg, R. W., & Reeves, L. M. (2013). <i>Cognition: From memory to creativity</i>. https://ebookcentral.proquest.com/lib/hselibrary-ebooks/reader.action?docID=1120937&ppg=2 <p><u>Optional</u></p> <ul style="list-style-type: none"> ● Levitin, D. J. (Ed.). (2002). <i>Foundations of cognitive psychology: core readings</i>. MIT press. https://ebookcentral.proquest.com/lib/hselibrary-ebooks/detail.action?docID=3338824 ● Grondin, S. (2016). <i>Psychology of perception</i>. Switzerland: Springer. https://proxylibrary.hse.ru:2120/10.1007/978-3-319-31791-5 ● Chalmers, D. J. (1996). <i>Conscious mind: In search of a fundamental theory</i>. https://ebookcentral.proquest.com/lib/hselibrary-ebooks/detail.action?docID=272854 ● Dennett, D. C. (2005). <i>Sweet dreams: Philosophical obstacles to a science of consciousness</i>. https://ebookcentral.proquest.com/lib/hselibrary-ebooks/detail.action?docID=3338494 				
Indicative Self-Study Strategies	Type		+/-	Hours	
	Reading for seminars (lecture materials, mandatory and optional resources)		+	70	
	Assignments for seminars / tutorials / labs		+	40	
	E-learning / distance learning (MOOC /		-	-	

	LMS)		
	Fieldwork	-	-
	Project work	+	40
	Other (please specify)	-	-
	Preparation for the exam	+	30
Academic Support for the Course	Academic support for the course is provided via LMS, where students can find: guidelines and recommendations for doing the course; guidelines and recommendations for self-study; samples of assessment materials		
Facilities, Equipment and Software	PC (or a laptop), projector, whiteboard		
Course Instructor	Roman Vadimovich Tikhonov, Yanina Aleksandrovna Ledovaya		

Intended Learning Outcomes (ILO) Delivering

Programme ILO(s)	Course ILO(s)	Teaching and Learning Methods for delivering ILO(s)	Indicative Assessment Methods of Delivered ILO(s)
Demonstrate the ability to formulate goals of the research and to find the ways to complete them	Describe major concepts in cognitive psychology. Analyze and critically evaluate theories and empirical studies in cognitive psychology	Lectures, seminar in-class activities, discussions, and debates	Seminar assignments, in-class participation
Demonstrate the ability to participate in research and consulting activities	Understand the connection between basic and applied research in cognitive psychology	Seminar in-class activities and group projects	Seminar assignments, in-class participation
Demonstrate the ability to planning and implementation of project activities in the field of public opinion research, marketing, management, business	Apply major concepts and theories of cognitive psychology to real-life problems	Group projects	Group projects

Course Content

Topic 1. Cognitive Psychology: Introduction & Historical Overview

Lecture 1. Introduction to the cognitive approach in psychology

- Cognitive psychology as a part of cognitive science. Mind as an information processor.
- Cybernetics (Wiener). Shannon's theory of information.
- Interdisciplinary nature of cognitive studies.
- Research methods and directions in cognitive psychology.

Lecture 2. History of cognitive psychology

- Historical roots of cognitive psychology. Structuralism (Wundt). Functionalism (James). Gestalt psychology.
- Behaviorism and the "cognitive revolution".
- Symbolic approach (Newell & Simon). Connectionism (Rumelhart & McClelland). Modular approach (Fodor).

Seminars 1-2. Fundamental vs. applied cognitive studies

Home assignment (individual): read the recommended materials about Fitts' law, Tolman's experiments, and task analysis method.

Seminar assessment method: short test + in-class participation.

- Applied cognitive research as the application of cognitive theories. In-class assignment: brainstorming on Fitts' law (1954) and its applications in human-computer interaction.
- Basic and applied studies as independent ways of research (Tolman's experiments vs. applied studies of human factors). Basics of task analysis method. |Practical group assignment: use the task analysis method to identify human-related errors.
- Applied studies as use-inspired basic research that grows from hypotheses about real-world problems.

Topic 2. Attention. Sensation & Perception

Lecture 3. Attention

- Interrelation between attentional, sensory, and perceptual processes.
- Inattention blindness. Change blindness.
- Divided and selective attention.
- Theories of selective attention. Theories of early/late selection. Attenuator theory of attention. Central capacity theory of attention.

Lecture 4. Sensation and perception

- Types of sensations. Distant vs. contact senses. General vs. special senses.
- Perceptual organization (Gestalt laws). Perceptual constancy. Perceptual set.
- Top-down vs. Bottom-up processing. Crossmodality of perception: The McGurk effect.

Seminars 3-4. Illusions. Constructivist vs. ecological theories of visual perception

Home assignment (groups of 2-3 students): Read recommended literature about direct and indirect theories of perception. Prepare a 5-minute presentation about an illusion or a visual perception effect that serves as an evidence for one of the theories.

Seminar assessment method: presentation + in-class participation.

General discussion about theories of visual perception. Gregory's (indirect, constructivist, top-down) theory of perception. Gibson's (direct, ecological, bottom-up) theory of perception.

Topic 3. Memory

Lecture 5. Memory processes and systems. Multi-store memory model

- Memory processes (encoding, storage, and retrieval).
- Multi-store memory model (Atkinson & Shiffrin). Sperling's experiments on sensory memory. The difference between short-term memory and working memory. Structure of long-term memory (E. Tulving).

Lecture 6. Memory errors and distortions

- Theories of forgetting (displacement, trace decay, repression, interference).
- Eyewitness testimony. Types and major studies of memory distortions. Verbal overshadowing effect. False memories. DRM illusion.

Seminars 5-6. Project presentations. Applying memory principles to a practical problem.

Group project #1 (groups of 2-4 students): find or develop a solution for a real-life case that requires an understanding of how memory works.

Make a 10 min. presentation that contains:

- 1) a real-life case description;
- 2) practical problems and how they related to memory processes;
- 3) a description of your solution;
- 4) scientific evidence and justification of the proposed solution;
- 5) examples and demonstration of your solution.

Classroom discussion of the presented projects.

Seminar assessment method: in-class participation.

Topic 4. Knowledge & Decision-Making

Lecture 7. Knowledge and mental representation

- Learning. Classical and operant conditioning. Schedules of reinforcement. Knowledge transfer. Mental representation and learning.
- Concepts and Categories. Exemplar vs. Prototype theories of concept representation.
- Implicit learning and unconscious knowledge.

Lecture 8. Judgments and decision-making

- Judgment under uncertainty. Heuristics and biases. Representativeness. Availability. Anchoring.
- Description-experience gap in decision-making.
- Ecological rationality approach. The adaptive toolbox metaphor.

Seminars 7-8. Debates. Biases and Heuristics in human decision-making

Home assignment: read the recommended literature and formulate arguments on the topic "Can we rely on heuristics and eliminate cognitive biases at the same time". You will be randomly divided into four teams: two groups ("Government") will advocate for banning cognitive biases (and heuristics as well). Two other teams ("Opposition") will oppose such decision and promote heuristics as a good basis for decision-making.

Seminar assessment method: short test + in-class participation.

Debates and general discussion about biases and heuristics in human decision-making.

Topic 5. Thinking, Language, & Intelligence

Lecture 9. Thinking

- Thinking as problem solving.
- Stages of cognitive development.
- Conceptual thinking and its characteristics.

Lecture 10. Language and speech

- Speech and thinking.
- Joint attention hypothesis of language acquisition (Tomasello).
- Biolinguistic theory of universal grammar (Chomsky).
- Linguistic relativity hypothesis.

Seminars 9-10. Intelligence: Theories and measurement

- Theories and models of intelligence.
- IQ and IQ tests.
- Cognitive styles.
- Thinking and IQ testing lab.

Seminar assessment method: short test + in-class participation.

Topic 6. Consciousness. Human vs. Artificial Intelligence

Seminars 11-12. Project presentations. Can machines become conscious? Defining criteria for consciousness.

Group project #2 (groups of 2-4 students): find or develop a critical test that allows to evaluate if an artificial intelligent system is conscious. Make a 10 min. presentation that contains:

- 1) description and your analysis of relevant literature on the topic;
- 2) your definition of consciousness;
- 3) a set of minimal requirements for a conscious AI;
- 4) a scientific (observable) way to test consciousness;
- 5) examples and demonstration of the criteria or the test itself.

Classroom discussion of the presented projects.

Seminar assessment method: in-class participation.

Topic 7. Modern Trends in Cognitive Psychology

Lecture 11. Modern topics in cognitive psychology

- Neuronal basis of cognition.
- Cultural cognitive psychology.
- Moral judgment.
- Embodied cognition phenomena and the role of conceptual metaphor in abstract thinking.

Seminar 13. Jeopardy game on general knowledge in cognitive psychology

Individual home assignment:

- 1) Read all your lecture notes and recommended literature to prepare for the Jeopardy!
- 2) Choose **one** of the categories and prepare 3-5 questions for your classmates (you will not be able to answer your own questions). Example question: "This type of learning occurs unintentionally without awareness of what was learned". Answer: implicit learning.

Categories of questions:

- Basics & history of cognitive psychology

- Attention, sensation, and perception
- Memory
- Knowledge & Decision-Making
- Thinking, language, and intelligence
- Consciousness
- Modern topics in cognitive psychology

Seminar assessment method: in-class participation.

Assessment Methods and Criteria

Assessment Methods

Types of Assessment	Forms of Assessment	Modules			
		1	2	3	4
Formative Assessment	Seminar participation	*	*		
	Project #1	*			
	Project #2		*		
Summative Assessment	Exam		*		

Assessment Criteria

Seminar participation assessment criteria

Each seminar students get a grade for seminar participation. Depending on the seminar content, one of three grading methods are used:

1. Short test (50%) + in-class participation (50%).
2. Presentation (50%) + in-class participation (50%).
3. In-class participation (100%).

Short tests

- Short tests are based on the reading materials provided by e-mail at least 1 week before the seminar.
- Tests contain from 5 to 10 questions (every correct answer gives 1 or 2 points) with a total score of 10 points. Test grade equals the total score.

Example question:

Simple strategies that are used for making judgments and decisions are called:

- A) Cognitive biases
- B) Heuristics
- C) Framing effects
- D) Anchoring effects

Presentations

Presentation grade (0-10) is **the sum** of grades of 4 evaluation criteria: content, structure, oral and visual presentation, interaction with audience. Topics of the presentations, requirements and recommendations will be provided by e-mail at least 1 week before the seminar.

Assessment Criteria
<p>Content of the presentation (0-3)</p> <ul style="list-style-type: none"> ● Demonstrated knowledge of the relevant scientific literature ● Able to focus on the most important information ● Provided convincing arguments and well-grounded conclusions
<p>Structure (0-3)</p> <ul style="list-style-type: none"> ● Clearly stated goals linked to the seminar's topic ● Appropriate timing ● The presentation has all of the necessary structure elements (according to the assignment); logical structure
<p>Oral and visual presentation (0-2)</p> <ul style="list-style-type: none"> ● Presentation style (appropriate volume, clear pronunciation, gestures) ● Use of visual aids (whiteboard, slides)
<p>Interaction with audience (0-2)</p> <ul style="list-style-type: none"> ● Broad background knowledge ● Able to facilitate the discussion and respond to questions and criticism

In-class participation

Grades	Assessment Criteria
«Excellent» (8-10)	A critical analysis which demonstrates original thinking and shows strong evidence of preparatory research and broad background knowledge.
«Good» (6-7)	Shows strong evidence of preparatory research and broad background knowledge. Excellent oral expression.
«Satisfactory» (4-5)	Satisfactory overall, showing a fair knowledge of the topic, a reasonable standard of expression. Some hesitation in answering follow-up questions and/or gives incomplete or partly irrelevant answers.
«Fail» (0-3)	Limited evidence of relevant knowledge and an attempt to address the topic. Unable to offer relevant information or opinion in answer to follow-up questions.

Seminar class absence and retakes

- Students are responsible for notifying the teacher of their absence due to an extenuating circumstance or illness prior to the missed class (by email or in person).
- Classes missed due to illness or an extenuating circumstance are excluded from the calculation of accumulated grade.
- Students who missed more than 12 seminar hours due to illness or an extenuating circumstance have to provide home assignments for missed seminars in a written form not later than 2 weeks before the final examination.
- Assignments, requirements and recommendations are provided individually by email upon request from the student.

In-class participation part of the grade is not the subject to retakes. Seminar grades for tests and presentations can be improved at the beginning of the next seminar by giving a short presentation (the topic must be agreed with the teacher in advance). Retakes allowed within 15-day period after the seminar (at the next seminar).

Group projects (class presentations)

There are two group projects in the course. Students present the results of their project during seminar classes (see the “Course content” section). Students that were absent during the project presentation have to provide the results of the project in a form of a written report (up to 3 pages). The structure of the written report is similar to the structure of the presentation (see below).

Grades	Assessment Criteria
«Excellent» (8-10)	A well-structured, analytical presentation of project work. Shows strong evidence and broad background knowledge. In a group presentation all members contribute equally and each contribution builds on the previous one clearly; Answers to follow-up questions reveal a good range and depth of knowledge beyond that covered in the presentation and show confidence in discussion.
«Good» (6-7)	Clearly organized analysis, showing evidence of a good overall knowledge of the topic. The presenter of the project work highlights key points and responds to follow up questions appropriately. In group presentations there is evidence that the group has met to discuss the topic and is presenting the results of that discussion, in an order previously agreed.
«Satisfactory» (4-5)	Takes a very basic approach to the topic, using broadly appropriate material but lacking focus. The presentation of project work is largely unstructured, and some points are irrelevant to the topic. Knowledge of the topic is limited and there may be evidence of basic misunderstanding. In a group presentation, most of the work is done by one or two students and the individual contributions do not add up.
«Fail» (0-3)	Fails to demonstrate any appropriate knowledge.

Example topics for the Group project #1:

- Criminal law. Improving witness testimony: cognitive interviewing.
- Education. Mnemonic techniques to prepare for an exam.
- Languages. Mnemonic techniques to learn foreign languages.
- Marketing. Creating a memorable video advertisement.
- Marketing. Creating a memorable outdoor advertisement.

Recommended structure of the presentation for the Group project #1:

- 1) a real-life case description;
- 2) practical problems and how they related to memory processes;
- 3) a description of your solution;
- 4) scientific evidence and justification of the proposed solution;
- 5) examples and demonstration of your solution.

Example topics for the Group project #2:

1. Consciousness as conversational behavior. Turing test (Chatbots). Chinese room argument.
2. Consciousness as general intelligence. Evolutional perspective (adaptability). Zombie argument.
3. Consciousness as free will (acts, goals, plans). Freewill and determinism paradox. WestWorld TV show example.

4. Consciousness as subjective experience. Embodiment of cognition. Mary's room argument.
5. Consciousness as self-awareness and awareness of others. Theory of mind and metacognition.

Recommended structure of the presentation for the Group project #2:

- 1) description and analysis of relevant literature on the topic;
- 2) definition of consciousness;
- 3) a set of minimal requirements for a conscious AI;
- 4) a scientific (observable) way to test consciousness;
- 5) examples and demonstration of the criteria or the test itself.

Group project (retake in a written form) or a written assignment

Grades	Assessment Criteria
«Excellent» (8-10)	Has a clear argument, which addresses the topic and responds effectively to all aspects of the task. Fully satisfies all the requirements of the task; rare minor errors occur.
«Good» (6-7)	Responds to most aspects of the topic with a clear, explicit argument. Covers the requirements of the task; may produce occasional errors.
«Satisfactory» (4-5)	Generally addresses the task; the format may be inappropriate in places; display little evidence of (depending on the assignment): independent thought and critical judgement include a partial superficial coverage of the key issues, lack critical analysis, may make frequent errors.
«Fail» (0-3)	Fails to demonstrate any appropriate knowledge.

Exam test

The exam test conducted in a computer-based format (in person). Distant testing is not provided. The test consists of 40 multiple-choice questions evaluated equally with one or multiple correct answers. It is forbidden to use any reference materials or class notes during the examination.

Exam test can be retaken only if the student missed it due to an extenuating circumstance or illness.

Criteria for evaluating the exam test:

% of correct answers	points
95-100	10
85-94	9
75-84	8
65-74	7
55-64	6
45-54	5
35-44	4
25-34	3
15-24	2
5-14	1
0-4	0

Recommendations for students about organization of self-study

Self-study is organized in order to:

- Systemize theoretical knowledge received at lectures;
- Extending theoretical knowledge;
- Learn how to use legal, regulatory, referential information and professional literature;
- Development of cognitive and soft skills: creativity and self-sufficiency;
- Enhancing critical thinking and personal development skills;
- Development of research skills;
- Obtaining skills of efficient independent professional activities.

Self-study, which is not included into a course syllabus, but aimed at extending knowledge about the subject, is up to the student's own initiative. A teacher recommends relevant resources for self-study, defines relevant methods for self-study and demonstrates students' past experiences. Tasks for self-study and its content can vary depending on individual characteristics of a student. Self-study can be arranged individually or in groups both offline and online depending on the objectives, topics and difficulty degree. Assessment of self-study is made in the framework of teaching load for seminars or tests.

In order to show the outcomes of self-study it is recommended:

- Make a plan for 3-5 presentation which will include topic, how the self-study was organized, main conclusions and suggestions and its rationale and importance.
- Supply the presentation with illustrations. It should be defined by an actual task of the teacher.

Special conditions for organization of learning process for students with special needs

The following types of comprehension of learning information (including e-learning and distance learning) can be offered to students with disabilities (by their written request) in accordance with their individual psychophysical characteristics:

1. *for persons with vision disorders:* a printed text in enlarged font; an electronic document; audios (transferring of learning materials into the audio); an individual advising with an assistance of a sign language interpreter; individual assignments and advising.
2. *for persons with hearing disorders:* a printed text; an electronic document; video materials with subtitles; an individual advising with an assistance of a sign language interpreter; individual assignments and advising.
3. *for persons with muscle-skeleton disorders:* a printed text; an electronic document; audios; individual assignments and advising.