



National Research University Higher School of Economics
Syllabus for the course «Cognitive psychology» for 37.03.01. «Психология», Bachelor of Science

Government of Russian Federation

Federal State Autonomous Educational Institution of High Education

«National Research University Higher School of Economics»

National Research University
High School of Economics
Department of Psychology

Syllabus for the course
«Cognitive psychology»
(Когнитивная психология)
for 2nd-year students

37.03.01. «Психология»,
Bachelor of Science

Authors:

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Approved by: Department of Psychology

Recommended by:

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1. Course Description

a. Title of a Course

“Cognitive psychology”

b. Pre-requisites

- Knowledge in history of psychology
- Basic knowledge in English

c. Course Type (compulsory, elective, optional)

Compulsory

d. Abstract

Cognitive psychology is a field studying the processes of acquiring, representation, storage, transformation, and use of information, knowledge, and experience. This part of course “Cognitive psychology” is devoted to high-level processes – memory, learning, thinking and decision making.

2. Learning objectives

The main goal of this course is to learn the basic studies in psychology of memory and thinking, the main theoretical models and the most important experimental studies in this field.

3. Learning Outcomes

Having taken this course you should:

- Have a knowledge of main concepts in psychology of memory and thinking
- Be able to carry out a research in the selected field
- Be able to choose a appropriate method for a research in the selected field
- Be able to interpret the results of the study in accordance with the theoretical prerequisites in the selected field

After completing the study of the discipline « Introduction to Cognitive Science » the student should have the following competences:

Competence	Code	Descriptors (indicators of achievement of the result)	Educative forms and methods aimed at generation and development of the competence
Able to identify the nature of scientific problems	CK-Б3	States the hypotheses in the areas of psychology of memory, learning,	Lectures, group discussions



Competence	Code	Descriptors (indicators of achievement of the result)	Educative forms and methods aimed at generation and development of the competence
in the professional field		thinking and decision making	
Able to carry out research activity, including problem analysis, setting goals and tasks, defining the object and the subject of the study, choice of study method and the assessment of it's qualities	СК-Б7	Defines the object and the subject of the study in areas of memory, learning, thinking and decision making. Chooses the method to study memory, learning, thinking and decision making corresponding to the research goals and tasks	Lectures, group discussions
Able to critically evaluate and rethink the experience (own and others'), to reflect the professional and social activity	СК-Б10	Critically evaluates theories and experiments in areas of memory, learning, thinking and decision making, finds strong and weak points of the theories	Lectures, group discussions
Able to plan and carry out psychological research, process the data, discuss and present its results.	ИК-5	Carries out the scientific research (planning, conducting, discussion) in areas of memory, learning, thinking and decision making	Lectures, group discussions

4. Place of the discipline in the Bachelor's program structure

The course «Cognitive Psychology» is core course taught in the second year of Bachelor's program «Psychology».

Knowledge and competence required to study the discipline:

- A good command of the English language
- A basic knowledge of the course “History of psychology”



- A basic knowledge of the course “Cognitive Psychology”, taught in the first year

Main competences developed after completing the study of this discipline can be used in studying of the following disciplines:

- Psychology of memory and learning
- Psychology of thinking, imagination and speech

5. Course Plan

№	Topic	Total hours	Contact hours		Independent students work
			Lectures	Seminars	
1.	The basics of memory. Sensory memory	11	2	2	7
2.	Short-term memory	11	2	2	7
3.	Working memory	11	2	2	7
4.	Episodic memory	11	2	2	7
5.	Semantic memory	11	2	2	7
6.	Learning	11	2	2	7
7.	The basics of thinking	14	1	4	9
8.	Problem solving	14	1	4	9
9.	Reasoning	10	1	2	7
10.	Probabilistic thinking and decision making	10	1	2	7
	Total:	114	16	24	74

6. Forms of control

Mid-term point is a **homework**, which requires reading the following article on visual working memory:



Luck, S. J., & Vogel, E. K. (2013). Visual Working Memory Capacity: From Psychophysics and Neurobiology to Individual Differences. *Trends in Cognitive Sciences*, 17(8), 391–400.

The assignment of this task is a multiple-choice test.

Independent students works assumes small tests held on seminar classes.

Type of control	Form of control	1 year				Parameters
		1	2	3	4	
Current (week)	Independent work	1	1			Tests on seminars reading
	Homework		1			Article analysis
Final	Exam		1			Test part (multiple choice test) + oral part (2 questions)

7. Reading List

a. Required

- Андерсон Д. Когнитивная психология. СПб.: Питер, 2002.
- Баддли А., Айзенк М., Андерсон М. Память. СПб: Питер, 2011. Дружинин В.Н. Экспериментальная психология: учебник для вузов. СПб.: Питер, 2006. – 320 с.
- Психология мышления / под ред. Ю.Б. Гиппенрейтер, В.Ф. Спиридонова, М.В. Фаликман, В.В. Петухова. М., 2008.
- Общая психология. Тексты: В 3 т. Т. 3: Субъект познания. Книги 1-3. / Отв. Ред. В.В. Петухов.

b. Optional

- Когнитивная психология памяти / под ред. У. Найссера, А. Хаймен. Прайм-Еврознак, 2005
- Спиридонов В. Ф. Психология мышления: решение задач и проблем. М. : Генезис, 2006.

8. Grading system

The formula for the **cumulative rate** is as follows:

$$O_{cum.} = 0.6 \times O_{current} + 0.4 \times O_{auditory}$$

Current rate assumes homework and students independent work evaluated with tests. The formula of current rate is as follows:

$$O_{current} = 0.6 \times O_{homework} + 0.4 \times O_{independent\ work}$$



Auditory rate assumes tests on seminar classes, attendance on seminar classes and participating in discussions. The formula of auditory rate is as follows:

$$O_{auditory} = 0.2 \times attendance + 0.8 \times discussions$$

The formula for the **total rate** is as follows:

$$O_{total} = 0.6 \times O_{cum} + 0.4 \times O_{exam}$$

The cumulative rate, the exam rate and the total rate are rounded.

9. Guidelines for knowledge assessment

Final Exam includes test (0.4) and oral (0.6) parts. The test has adapting assessment system.

At the retake the student does not have the opportunity to earn additional points for the current control rate. The first retake is held by the teacher responsible for discipline. The final rate takes into account the cumulative rate for the current control, independent work and activity.

The second retake is held in presence of the commission consisting of at least three teachers, the final rate takes into account the cumulative rate for the current control, independent work and activity.

Table of Grade Accordance

Ten-point Grading Scale	Five-point Grading Scale	
1 - very bad 2 - bad 3 - no pass	Unsatisfactory - 2	FAIL
4 - pass 5 - highly pass	Satisfactory - 3	PASS
6 - good 7 - very good	Good - 4	
8 - almost excellent 9 - excellent 10 - perfect	Excellent - 5	

10. Methods of Instruction

Lectures, seminars, group discussions

11. Special Equipment and Software Support (if required)



The course requires a laptop, projector, and acoustic systems.

12. Course content

Topic 1. The basics of memory. Sensory memory

1. Definition of memory. Kinds of memory.
2. The main studies of sensory memory. Sperling experiment. Time of storage and span of sensory memory.
3. The main models of memory: Norman & Waugh, Atkinson–Shiffrin, etc.

References

1. Баддли А., Айзенк М., Андерсон М. Память. СПб: Питер, 2011. С. 16-38 (1-3)

Topic 2. Short-term memory

1. The basics of short-term memory. Short-term memory span (Miller, Luck & Vogel). Time of storage in short-term memory.
2. The main studies of short-term memory.

References

1. Баддли А., Айзенк М., Андерсон М. Память. СПб: Питер, 2011. С. 39-67 (1-2)

Topic 3. Working memory

1. The basics of working memory. The differences between short-term memory and working memory.
2. The main studies of working memory. Models of working memory: Baddeley & Hitch (1974, 2000), Cohen.

References

1. Баддли А., Айзенк М., Андерсон М. Память. СПб: Питер, 2011. С. 68-104 (1-2)

Topic 4. Episodic memory

1. The basics of long-term memory. The relations between short-term and long-term memory. Kinds of long-term memory.
2. Episodic memory. Bartlett's studies. The concept of schema.



3. The levels of processing model of memory (Craik and Lockhart).

References

1. Баддли А., Айзенк М., Андерсон М. Память. СПб: Питер, 2011. С. 137-163 (1-3)

Topic 5. Semantic memory

1. The concept of semantic memory. The relations between semantic and episodic memory.
2. The main models of semantic memory. Hierarchical network model of semantic memory (Collins & Quillian). Spreading activation model of semantic memory (Collins & Loftus).
3. The concept of schema. Kinds of schemas.

References

1. Баддли А., Айзенк М., Андерсон М. Память. СПб: Питер, 2011. С. 164-193 (1-3)

Topic 6. Learning.

1. Definition of learning. Learning and memory. Types of leaning. Stages of learning. The learning curve. The problem of transfer.
2. Thorndike's laws of learning: law of effect, law of exercise, law of readiness, law of associative shifting.
3. The problem of learning in N.A. Bernstein's "non-classical physiology". The "reflex circle" and the levels of motion construction.

References

1. Андерсон Д. Когнитивная психология. СПб.: Питер, 2002. С. 273-274 (1)
2. Вудвортс Р. Кривая научения. Перенос и эффекты переноса. // Общая психология. Тексты: В 3 т. Т. 3: Субъект познания. Книга 3. / Отв. Ред. В.В. Петухов. С. 103-111 (1)
3. Гиппенрейтер Ю.Б. Введение общую психологию. Любое издание. Лекция 9 (3)
4. Глейтман Г., Фридлунд А., Райсберг Д. Основы психологии. СПб.: Речь, 2001. с. 142-160 (1,2)
5. Норман Д. Научение и приобретенное мастерство. // Общая психология. Тексты: В 3 т. Т. 3: Субъект познания. Книга 3. / Отв. Ред. В.В. Петухов. С. 131-138 (1)



6. Румельхарт Д., Норман Н. Наращивание, настройка и перестройка: три способа обучения. Общая психология. Тексты: В 3 т. Т. 3: Субъект познания. Книга 3. / Отв. Ред. В.В. Петухов. С. 140-142 (1)

Topic 7. The basics of thinking.

1. Two definitions of thinking. Types of thinking. Thinking and speech.
2. Objective and subjective structure of the task. The concept of the schematic anticipation (O. Selz).
3. The problem of thinking in cultural-historical approach (L.S. Vygotsky). Scientific and everyday concepts. The study of concept formation.
4. The problem of thinking in activity theory (A.N. Leontiev). The concept of un verbalized operational meaning. O.K. Tichomirov's studies.

References

1. Выготский Л.С. Мышление и речь. // Психология мышления / под ред. Ю.Б. Гиппенрейтер, В.Ф. Спиридонова, М.В. Фаликман, В.В. Петухова. М., 2008. С. 490-508 (1)
2. Выготский Л.С. Развитие научных и житейских понятий в детском возрасте. // Общая психология. Тексты: В 3 т. Т. 3: Субъект познания. Книга 1. / Отв. Ред. В.В. Петухов. С.412-421 (3)
3. Выготский Л.С., Сахаров Л.С. Исследование образования понятий: методика двойной стимуляции. // Психология мышления / под ред. Ю.Б. Гиппенрейтер, В.Ф. Спиридонова, М.В. Фаликман, В.В. Петухова. М., 2008. С. 530-538 (3)
4. Петухов В.В. Психология мышления. М.: Издательство Московского университета, 1987. С. 5-13 (1), 30-34 (2)
5. Тихомиров О.К. Исследование мыслительного процесса объективными методами. Общая психология. Тексты: В 3 т. Т. 3: Субъект познания. Книга 2. / Отв. Ред. В.В. Петухов. С.504-528 (4)

Topic 8. Problem solving.

1. The concept of insight. Insight and non-insight problems. The most important insight problems: 9 dots problem, 6 sticks problem, candle problem, two ropes problem.
2. Insight studies in Gestalt psychology. Studies on animals (V. Köler) and on humans (K. Duncker). The concept of functional fixedness.
3. Problem space theory (A. Newell, H. Simon). The concept of mental operators.



4. The representational change theory of insight (G. Knoblich, S. Ohlsson).
Constraint relaxation and chunk decomposition in insight problem solving.
5. Problem solving by experts and novices. The role of heuristics in problem-solving.

References

1. Кёлер В. Исследование интеллекта человекоподобных обезьян. // Психология мышления / под ред. Ю.Б. Гиппенрейтер, В.Ф. Спиридонова, М.В. Фаликман, В.В. Петухова. М., 2008. С. 341-351 (2)
2. Кноблих Г., Олссон С., Рэни Г. Исследование решения «инсайтных» задач с использованием регистрации движений глаз. // Когнитивная психология: история и современность. Хрестоматия. Под ред. М.В. Фаликман и В.Ф. Спиридонова. М., 2011. С. 361-367 (4)
3. Ньюэлл А., Саймон Г. Движение в пространстве задачи. // Психология мышления / под ред. Ю.Б. Гиппенрейтер, В.Ф. Спиридонова, М.В. Фаликман, В.В. Петухова. М., 2008. С.138-148 (3)
4. Петухов В.В. Психология мышления. М.: Издательство Московского университета, 1987. С.38-43 (2)
5. Спиридонов В.Ф. Задачи, эвристики, инсайт и другие непонятные вещи. // Логос. 2014. № 1. С. 97-108 (1-5)

Topic 9. Reasoning

1. Induction. Confirmation bias
2. Deduction. The types of syllogisms. Wason's selection task. Mental models theory (Johnson-Laird).

References

1. Андерсон Д. Когнитивная психология. СПб.: Питер, 2002. С. 305-330 (1, 2)
2. Джонсон-Лэйд Ф. Дедуктивное мышление: теория ментальных моделей. Психология мышления / под ред. Ю.Б. Гиппенрейтер, В.Ф. Спиридонова, М.В. Фаликман, В.В. Петухова. М., 2008. С.170-181 (2)

Topic 10. Probabilistic thinking and decision making

1. Probabilistic thinking. Representativeness and availability heuristics. Lawyer-and-engineer problem, Linda task, etc. Probability conjunction fallacy.
2. Decision making. Prospect theory of decision making (Kahneman & Tversky). The framing effect in decision making.



References

1. Андерсон Д. Когнитивная психология. СПб.: Питер, 2002. С. 331-336 (1, 2)
2. Канеман Д. Модели ограниченной рациональности: вклад психологии в поведенческую экономику. // Когнитивная психология: история и современность. Хрестоматия. Под ред. М.В. Фаликман и В.Ф. Спиридонова. М., 2011. С. 368-383 (1)

13. Educational Technology

The following educational technologies are used in the study process:

- Lectures involving continuous use of multimedia presentations, demonstrations and movies
- Self-study of required readings
- Discussion and analysis of topics in the group

14. Equipment

The course requires a laptop, projector, and acoustic systems.