GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Introduction to cognitive science, PG_00045307
Field of study	Data Engineering

Date of commencement of studies	October 2023	Academic year of realisation of subject	2024/2025
Education level	first-cycle studies	Subject group	Optional subject group Humanistic-social subject group
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	English
Semester of study	4	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment

Conducting unit	Department of Social Sciences and Philosophy -> Faculty of Management and Economics

Name and surname of lecturer (lecturers)	Subject supervisor	dr Mateusz Bonecki
	Teachers	dr Mateusz Bonecki

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	30.0	0.0	0.0	0.0	30
	E-learning hours included: 0.0						

Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
	Number of study hours	30	2.0	43.0	75

Subject objectives	During the classes students will learn how the interdisciplinary project of the cognitive sciences was created and what are its basic paradigms. Fundamental problems within this field of inquiry will be discussed along with the most typical attempts at solving them.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_W11] has knowledge of the role of man in social structures and the impact of their decisions on economic situation of business entities	Student knows the history of cognitive science, its basic paradigms and assumptions.	[SW1] Assessment of factual knowledge
	[K6_K05] understands the need for self-improvement through systematic acquisition of knowledge and skills.	Student is able to present the latest trends and developments in cognitive science.	[SK2] Assessment of progress of work
	[K6_U14] can apply knowledge from the field of humanities or social sciences to solve problems.	Student is able to analyze and explain away given problem within the framework of a given research perspective.	[SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools

Subject contents	1. The specifity of explaining in cognitive science. What is explanation? Competence and realization, functional and mechanistic explanation.
	2. Symbolic computation. Newell's and Simon's GPS as a model of cognition.
	3. Neurologically inspired computation. Marr's theory of vision, three levels of explanation.
	4. Numerologically inspired computations. Connectionist model of learning of English verbs in the past tense by Rumelhart and McClleland.
	5. Dynamic systems in explanation of children' developmental processes (Thelen, Smith).
	6. Probabilistic models (Bayesian models) of human rationality (Oaksford, Chater).
	7. Logic and thinking: Wason's selection task from the perspective of non-monotonic logics.
	8. Behavioral or cognitive robotics? Phonotaxis of crickets modelled by a robot.
	9. Explanatory role of representation. Classical approach.
	10. Explanatory role of representation. Imagery debate.
	11. Explanatory role of representation. Connectionism.
	12. Explanatory role of representation. Behavioral robotics.
	13. Simulations, computations, modelling. Chinese room. Artificial Intelligence.
	14. Modelling in cognitive science. Explanatory pluralism.

Prerequisites and co-requisites	

Assessment methods and criteria			
	Subject passing criteria	Passing threshold	Percentage of the final grade
	Active participation	40.0%	30.0%
	Final test	50.0%	70.0%

Recommended reading	Basic literature	1. JOHNSON-LAIRD, P., 1999, Komputer a umysł. Wstęp do nauk poznawczych, przeł. P. Jaśkowski, Protext, Poznań.
		2. PINKER, S., 2002, Jak działa umysł, przeł. M. Koraszewska, KiW, Warszawa.
		3. URCHS, M., 2009, O procesorach i procesach myślowych. Elementy kognitywistyki, Wydawnictwo UMK, Toruń.
		4. CLARK, A., 2001, Mindware: An Introduction to the Philosophy of Cognitive Science, Oxford University Press, Oxford.

	Supplementary literature	1. E. Feigenbaum i J. Feldman, Maszyny matematyczne a myślenie, PWN, Warszawa.
		2. John Searle, Umysły, mózgi i programy, w: B. Chwedeńczuk (red.), Filozofia umysłu, Warszawa 1995.
		3 .R. Piłat, Czym jest świadomość, Warszawa 1993.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Enumerate and discuss basic theories of mind
	Discuss the problem of representation in cognitive sciences
	What is the emobodied cognition?
	Discuss the probabilistic model of cognition.
Work placement	Not applicable

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