



Subject card

Subject name and code	Knowledge Bases, PG_00047884						
Field of study	Informatics						
Date of commencement of studies	October 2023	Academic year of realisation of subject			2025/2026		
Education level	first-cycle studies	Subject group			Optional subject group Subject group related to scientific research in the field of study		
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	3	Language of instruction			Polish		
Semester of study	6	ECTS credits			2.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Software Engineering -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Wojciech Waloszek					
	Teachers	dr inż. Wojciech Waloszek					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	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		18.0	50
Subject objectives	The goal of the course to familiarize the students with the notion of ontologies - formal specifications of various domain of interest - and to present them with techniques connected with semantic processing of Internet data (Semantic Web initiative).						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_W03] Knows and understands, to an advanced extent, the construction and operating principles of components and systems related to the field of study, including theories, methods and complex relationships between them and selected specific issues - appropriate for the curriculum	A Student explains basic rationale behind Description Logics and its relationship to First Order Logic A Student defines basic notions of Description Logics A Student presents assumptions behind Semantic Web initiative A Student demonstrates how to use basic Semantic Web standards			[SW1] Assessment of factual knowledge		
	[K6_W04] Knows and understands, to an advanced extent, the principles, methods and techniques of programming and the principles of computer software development or programming devices or controllers using microprocessors or programmable elements or systems specific to the field of study, and organisation of systems using computers or such devices	A Student formally verifies a model of some domain of interest. A Student designs ontology queries for a set of competency question. A Student designs RDF queries for processing graph-organized semantic data.			[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation		
Subject contents	1. Introduction to Knowledge Management 2. Methods of Knowledge Representation 3. First Order Logics and its Role in Knowledge Representation 4. Rules as Knowledge Representation Tools 5. Early Methods of Ontological Knowledge Representation 6. Semantic Web Initiative 7. RDF Graphs 8. OWL and its Sublanguages 9. Description Logics Basics 10. Review of Description Logics and Interpretations 11. Description Logics Ontologies 12. Ontology Engineering: Integrating OWL and Rules 13. Review of Ontology Engineering Issues						
Prerequisites and co-requisites							

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Test after lectures	50.0%	50.0%
	Practical exercise	50.0%	50.0%
Recommended reading	Basic literature	Franz Baader et al.: "The Description Logic Handbook: Theory, Implementation, and Applications", Cambridge University Press 2003. Steffen Staab, Rudi Studer: "Handbook on Ontologies", Springer-Verlag 2003. Ronald J. Brachman, Hector J. Levesque: "Knowledge Representation and Reasoning", Elsevier 2004.	
	Supplementary literature	No requirements	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	<p>Designing an exemplary ontology.</p> <p>Formulation of competency question and solving reasoning problems.</p> <p>Extraction of information from Wikipedia with use of SPARQL queries.</p>		
Work placement	Not applicable		