



Subject card

Subject name and code	Modelling the NET, PG_00048251						
Field of study	Informatics						
Date of commencement of studies	February 2023	Academic year of realisation of subject			2023/2024		
Education level	second-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	2	Language of instruction			Polish		
Semester of study	3	ECTS credits			4.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Department of Algorithms and Systems Modelling -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Krzysztof Manuszewski					
	Teachers	dr hab. inż. Michał Małafiejski					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	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	8.0		62.0	100	
Subject objectives	An analysis of the social networks based on the graph model. Implementation of the selected elements of a web search. Implementation of some algorithms for clustering or categorization.Ability to apply hidden Markov models.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K7_W03] Knows and understands, to an increased 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.	The student gets acquainted with the models of communication on the Internet and its social aspects.			[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge		
	[K7_W01] Knows and understands, to an increased extent, mathematics to the extent necessary to formulate and solve complex issues related to the field of study.	A student can develop and implement a simple search engine of online resources, including a web robot.			[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge		

Subject contents	<p>Introduction to social networks</p> <p>Web graph</p> <p>Introduction to search engines</p> <p>Analysis of the content of document</p> <p>Information extraction, categorization and clustering</p> <p>Link analysis</p> <p>Modeling and understanding human behaviour on the Web</p> <p>Hidden Markov models</p>			
Prerequisites and co-requisites				
Assessment methods and criteria	Subject passing criteria		Passing threshold	Percentage of the final grade
	Lecture	50.0%	100.0%	
Recommended reading	Basic literature	<p>P. Baldi, P. Frasconi, P. Smyth: Modeling the Internet and the Web, Wiley 2003.</p> <p>Mark Stamp, Revealing Introduction to Hidden Markov Models, Department of Computer Science, San Jose State University (2012)</p> <p>Andrew Y. Ng, Alice X. Zheng, Michael I. Jordan, Stable Algorithms for Link Analysis, Computer Science Division U.C. Berkeley</p>		
	Supplementary literature	Lawrence R. Rabiner, A tutorial on hidden markov models and selected applications in speech recognition, Proc. of the IEEE, vol. 77, no. 2, (1989)		
	eResources addresses	Adresy na platformie eNauczenie:		
Example issues/ example questions/ tasks being completed	-			
Work placement	Not applicable			