Subject card

Subject name and code	Intelligent Information Retrieval, PG_00054370
Field of study	Informatics, Biomedical Engineering, Biomedical Engineering, Biomedical Engineering

Date of commencement of studies	February 2025	Academic year of realisation of subject	2025/2026
Education level	second-cycle studies	Subject group	Optional subject group Specialty 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	1	Language of instruction	Polish
Semester of study	2	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	exam

Conducting unit	Department of Computer Architecture -> Faculty of Electronics, Telecommunications and Informatics

Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Julian Szymański
	Teachers	dr hab. inż. Julian Szymański

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	30.0	0.0	45
	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	45	6.0	24.0	75

Subject objectives	introduction to natural language processing information retrieval machine learning in text categorization technikues

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_U08] while identifying and formulating engineering tasks specifications and solving these tasks, can: - apply analytical, simulation and experimental methods, - notice their systemic and non-technical aspects, - make a preliminary economic assessment of suggested solutions and engineering work	student knows how to built text correction methods	[SU1] Assessment of task fulfilment
	[K7_U43] can apply information technologies in market economy and information society conditions as well as algorithmize and computerize cognitive and decision-making processes in other areas of knowledge	student knows how search engine works	[SU1] Assessment of task fulfilment
	[K7_K02] is ready to provide critical evaluation of received content and to acknowledge the importance of knowledge in solving cognitive and practical problems	student knows data reduction techncs	[SK3] Assessment of ability to organize work
	[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	studen knows text representation methods	[SW1] Assessment of factual knowledge

Subject contents	1. Pass conditions 2. Informatic and cognitive science 3. Intelligence, service, information - terms definitions 4. Text representation, VSM 5. Text classification - Naive bayes 6. Text classification - SVM 7. Dimension reduction 8. PCA Algorithm 9. SVD Algorithm and application to LSI 10. Web search engines architectire 11. Google and PageRank algorithm 12. HITS algorithm 13. Text clusterization 14. Natural language processing tools 15. Lexical sources: Wordnet 16. Knowledge representation methods 17. Description logic as ontology language 18. Final exam

Prerequisites and co-requisites	

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Written exam	50.0%	50.0%
	Project	50.0%	50.0%

Recommended reading	Basic literature	Mieczysław Alojzy Kłopotek, "Inteligentne wyszukiwarki internetowe" Akademicka Oficyna Wydawnicza EXIT, Warszawa 2001 Ricardo Baeza-Yates Berthier Ribeiro-Neto Modern Information Retrieval
	Supplementary literature	FABRIZIO SEBASTIANI Machine Learning in Automated Text Categorization. S. Brin, L. Page The anatomy of a large-scale hypertextual Web search engine
	eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	search engine architecture multidimensional scalling text klassification with SVM

Work placement	Not applicable

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