EXPLORATION OF INTERNET RESOURCES

Faculty of Computer Science				
Study programme:	**Computer Science**		Degree level:	**Engineer's degree full-time programme**
Specialization	**---**		Diploma path:	**2026/2027W - 2026/2027S**
Module name:	**Exploration of Internet Resources** (Eksploracja zasobów internetowych)			
Module type:	**obligatory**	**Semester: 1**	ECTS:**4**	Module ID:**FCS-00104**
No. of hrs in semester:	Lecture (L) - **15** Classes(C) - **0** Specialization workshop (SW) - **30** Project (P) - **0** Laboratory classes (LC) - **0** Seminar (S) - **0**			
Prerequisites	-			

Aims and objectives:	To familiarise students with a purpose of web data analysis. To learn about common decision-making and information systems using web data. To use available libraries in the Python/Java/C# languages to create decision-making and information systems. Reference to the SFIA standard: Data science DATS - level 2 Programming/software development PROG - level 3		
Forms of teching activities::	lecture, specialization workshop,	Assessment:	Evaluation must be relevant to the intended learning outcomes:
			Lecture: written test. Specialized workshop: Evaluation of reports and projects carried out in groups
Module content:	Lecture: Introduction to the problem of web data analysis Specifics of web data: semantic, usage data Specifics of web data: semantic, usage data Review and analysis of working systems: classification-based systems Review and analysis of working systems: clustering-based systems Review and analysis of working systems: recommendation systems Performance evaluation of decision/information systems: offline evaluation Performance evaluation of decision/information systems: online evaluation Analysis of sample data and their specifics. Review of off-the-shelf libraries for decision/information system implementation Presentation of intelligent systems selected from the literature/market Presentation of intelligent systems selected from the literature/market Written test Specialized workshop: Analysis of features and purpose of working systems based on web data Analysis of sample data and their specifics. Selection of a repository Review of ready-made libraries and evaluation of their capabilities Classification-based systems Clustering-based systems Recommendation-based systems Evaluation of systems Use of ready-made libraries to implement a decision/information system Preparation of project assumptions: data, block diagram, assumed algorithms, verification scheme Project Project Project Project Project presentation Evaluation of the projects		
Teaching methods:	simulation, project method, programming, brainstorming, case method, informative lecture,		

Learning outcomes

Symbol	Specify min. 4, max. 8 learning outcomes in the following order: knowledge – skills – competence. Each learning outcome must be verifiable	Reference to the programme learning outcomes of education
E1	the types and possibilities of using web-based intelligent systems	INF1_W09 INF1_W10 INF1_W14
E2	to select an appropriate AI algorithm for the problem under consideration and use it in his application	INF1_U02 INF1_U04 INF1_U07
E3	evaluate the performance of the created system using the indicators used for this purpose	INF1_U07 INF1_U10
E4	use existing software libraries to create your own system	INF1_U04 INF1_U10 INF1_U11 INF1_U13
No. of learning outcome	Methods of assessing the learning outcome	Type of teaching activities (if more than one) during which the outcome is assessed

E1	written test	L	
E2	Preparation of reports; implementation of projects	Sw	
E3	Preparation of reports; implementation of projects	Sw	
E4	Preparation of reports; implementation of projects	Sw	
Student's workload (in hours)	**1** - Attendance at lectures	None	15
	2 - Attendance at project classes	None	30
	3 - individual substantive support of the learning process, participation in credits organized outside the schedule of classes	None	4
	4 - Preparing to pass a lecture	None	10
	5 - Compilation of results and report	None	10
	6 - implementation of the project	None	31
		TOTAL:	**100**
Quantitative indicators	Student's workload - activities that require direct teacher participation: (1)+(2)+(3)	49	**ECTS** 2.0
	Student's workload connected with practical classes (2)+(3)+(4)+(6)+(5)	85	3.4
Basic references:	1. S. Owen, R. Anil, T. Dunning, E. Friedman, Mahout in Action, Manning Publications, 2011 - free electronic copy 2. https://mahout.apache.org//		
Further reading	https://towardsdatascience.com/introduction-to-recommender-systems-6c66cf15ada		
Unit:	Department of Information Systems and Computer Networks	Lecturer/ instructor	dr inż. Urszula Kużelewska
Date of issuing the programme:	30th March 2026	Author of the programme:	dr inż. Urszula Kużelewska

L - lecture, C - classes, LC - laboratory classes, P-project, SW - specialization workshop, S - seminar