



Subject card

Subject name and code	INTERACTIVE DECISION MAKING, PG_00059993						
Field of study	Environmental Engineering						
Date of commencement of studies	February 2023	Academic year of realisation of subject			2022/2023		
Education level	second-cycle studies	Subject group			Obligatory subject group in the field of study Humanistic-social subject group		
Mode of study	Full-time studies	Mode of delivery			e-learning		
Year of study	1	Language of instruction			English		
Semester of study	1	ECTS credits			2.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Building Engineering -> Faculty of Civil and Environmental Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Anna Jakubczyk-Gałczyńska					
	Teachers	mgr inż. Agata Siemaszko					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	15.0	0.0	0.0	0.0	30
	E-learning hours included: 30.0						
Additional information: The course is conducted in the form of b-learning. As part of the course, there will be on-line sessions with experts, i.e.: supervision inspectors, works managers, designers, construction practices. Educational materials in the form of video recordings in Polish will be presented. The advantages of such a solution include: an innovative approach to student education, access to classes from anywhere in the world, development of international cooperation among course participants, as well as increasing the development and creative thinking of students. Educational activities are complemented by conversation classes with experts in various fields related to civil engineering.							
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		5.0		20.0	55
Subject objectives	Students study about the methods used for interactive analysis and solving decision-making problems in contemporary projects, including: selection of optimal actions under uncertainty, negotiations and designing based on the information value of monitoring systems. The intention is to improve student skills in the use of software based on artificial intelligence and to acquire project management competence by students, which enables them to actively participate in project implementation and act as a leader during teamwork.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	K7_W04	<ul style="list-style-type: none"> - Student is able to identify the engineering problem and knows the basic techniques of its solution, and is able to combine various techniques into interdisciplinary issues. - Student is able to use in practice modern tools supporting a strategic approach in solving engineering problems - Student knows the modeling methods used to analyze and solve interactive decision problems in modern engineering projects (e.g. SWOT, PHA, Bayesian networks and the basics of Artificial Intelligence). 	[SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects
	[K7_K71] is able to explain the need to apply knowledge from humanistic, social, economic or legal sciences in order to function in a social environment	<ul style="list-style-type: none"> - Student is able to analyze the risk occurring in engineering practice, is able to manage the investor's and contractor's risk in environmental engineering issues. - Student is able to work independently and in a group in solving selected organizational problems in construction. - Student is able to establish cooperation with experts, respects their experience, understands the need to constantly improve professional qualifications and observe the rules of professional ethics.understands the need to constantly improve professional qualifications and observe the rules of professional ethics. 	[SK2] Assessment of progress of work [SK5] Assessment of ability to solve problems that arise in practice
	[K7_U71] is able to apply knowledge from humanistic, social, economic or legal sciences in order to solve problems	<ul style="list-style-type: none"> - Student is able to use the knowledge to solve decision-making problems in the field of environmental engineering using appropriate methods and computer programs. - Student is able to indicate the optimal variant of the project. 	[SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools
	[K7_K82] is equipped to participate actively in lectures, seminars and laboratory classes conducted in foreign language	- Student knows industry terms in English, can use specialized terminology in engineering.	[SK4] Assessment of communication skills, including language correctness
	[K7_W71] has general knowledge in humanistic, social, economic or legal sciences, including their fundamentals and applications	- Student is able to work independently and as a team in solving practical problems in the field of environmental engineering.	[SW1] Assessment of factual knowledge
Subject contents	The schedule provides for the discussion of the following methodologies based on artificial intelligence:- Learning Bayesian Networks (LBN).- Artificial Neural Networks (ANN)- Machine Learning, including e.g. Support Vectors Machine (SVM)On-line meetings with experts: a group of engineers, supervision inspectors and construction practitioners are planned in order to acquire and train the skills of creating decision-making models.		
Prerequisites and co-requisites	Knowledge about methods used in practice to manage engineering projects.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Exercise task	60.0%	50.0%
	Egzamin pisemny	60.0%	50.0%

Recommended reading	Basic literature	<p>Steele, Stefánsson, Decision Theory. Stanford Encyclopedia of Philosophy [online], CSLI, Stanford University, 16 grudnia 2015.</p> <p>C.L. Pritchard, Risk management in projects. Theory and practice. Management Training & Development Center, WIG-PRESS, Warszawa 2002.</p> <p>N. Fenton, M. Neil, Risk Assessment and Decision Analysis with Bayesian Networks, CRC Press, ISBN: 9781439809105, 2012.</p> <p>U. B. Kjaerulff, A.L. Madsen, Bayesian Networks and Influence Diagrams. A Guide to Construction and Analysis. Springer Science+Business Media, LLC, 2008.</p>
	Supplementary literature	Project Management Institute: <i>A guide to the Project Management Body of Knowledge (PMBOK GUIDE)</i> 5th Edition, 2013.
	eResources addresses	<p>Podstawowe</p> <p>https://enauczanie.pg.edu.pl/moodle/course/view.php?id=25591 - Course</p> <p>Adresy na platformie eNauczanie:</p> <p>Interactive Decision Making, Environmental Engineering, 2022/2023 (summer semester) - Moodle ID: 25591</p> <p>https://enauczanie.pg.edu.pl/moodle/course/view.php?id=25591</p>
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	