

Course title	Graphs in the practice of decision making					ECTS code	14.3.EM.FZ.1532				
						ECTS credits	5				
						max. students	40				
Name of unit administrating study	KEiFPT	Field of study	MSG**	Field of specialisation	NONE;						
Teaching staff	Michał Suchanek, Ph.D. ; Beata Majecka, Habilitated doctor										
Number of hours											
Lectures	0	Classes	0	Tutorials	0	Laboratory	30	Seminars	0	Language classes	0
Forma aktywności							Year&Type of studies*	2 SS2,			
Hours with the participation of the academic teacher (including office hours, exams, others):						Semester:	3,				
Hours without the participation of the academic teacher (student's self-study, homeworks):						Type of course:	optional				
Total number of hours:						0	Language of instruction:	English			
Teaching form	in-class learning										
Teaching methods	Work in computer laboratories, Collaborating, group activities, Case studies, Lectures including multimodal presentations,										
Prerequisites (required courses and introductory requirements)											
Required courses	Microeconomics, Statistics, Econometrics										
Introductory requirements	The student should have the ability to identify decision problems in the course of running a company as well as be able to use the basic techniques of mathematics and statistics. The student should also be keen to explore the possibilities of using quantitative research in the practice of economy.										
Assessment method, forms and criteria											
Assessment method	Course completion (graded)										
Assessment criteria	The student is evaluated upon the basis of his presence and activity during the classes. The student is obliged to participate actively by solving decision problems with the use of acquired techniques										
Course objectives											
The objective of the course is to complement the implementation of selected learning objectives in terms of knowledge, skills and social competence as provided for economics and / or international economic relations study programmes.											
Learning outcomes											
Knowledge		The goal of the subject is for the student to acquire basic knowledge about the graph theory and its use in the decision making problems. The student acquires broad knowledge of the cause and effect relations in the economic systems. Furthermore, the student gains knowledge which helps him to identify, describe, define and optimise decision situations.									
Skills		The student acquires techniques which allow him to model and forecast complex economic problems. He gains the ability to foresee the consequences of their decisions thus being able to effectively plan ahead in the course of real economic problems.									
Attitudes		The student should learn how to transform knowledge and potential abilities into effective solutions. He acquires the ability to identify, diagnose and solve dilemmas. Hence he learns very precise techniques, which however, demand a high level of elasticity and the ability of creative thinking so as to simplify the real complex problems enough to be able to apply universal techniques.									
Course contents											
<ol style="list-style-type: none"> 1. Introduction to graphs 2. Paths, cycles, mazes, labyrinths 3. Scheduling as a technique of project management 4. Network analysis methods and their applications 5. Time-cost analysis methods and their applications in project management 6. Network planning 7. Network analysis methods in the operations management - product graphs 8. Decision tree technique in dynamic economic processes 											



9. Pseudo-AI network methods and their application in decision making

Recommended reading lists

R.J. Wilson, *Introduction to Graph Theory*, Longman, Cambridge 1996

M.E.J. Newman, *Networks: An Introduction*, Oxford University Press, Oxford 2010

Contact

m.suchanek@ug.edu.pl, ekobma@ug.edu.pl,

* SS1- undergraduate studies * SS2 - graduate studies * SDang - doctoral studies

** MSG - International Economic Relations