Kielce University of Technology

FACULTY OF MANAGEMENT AND COMPUTER MODELLING

COURSE SPECIFICATION

Course code	full-time studies	**Z-ZB-E-402a**
	part-time studies	**-**
Course title in English	**Podstawy teorii decyzji**	
Course title in Polish	**Fundamentals of Decision Theory**	
Valid from academic year	**2025/2026**	

PLACEMENT IN THE TEACHING PROGRAM

Programme of study	**BUSINESS MANAGAMENT**
Level of education	**1st degree**
Studies profile	**academic**
Form and mode of study	**full-time programme**
Scope	**all**
Academic unit responsible for the course	**Department of Mathematics and Physics**
Course coordinator	**dr Monika Skóra**
Approved by	**dr hab. inż. Dariusz Bojczuk, prof. uczelni**

GENERAL CHARACTERISTIC OF THE COURSE

Teaching block		**Directional subject**
Course status		**Elective**
Language of instruction		**English**
Semester of delivery	full-time studies	**Semester IV**
	part-time-studies	**-**
Prerequisites		**NO**
Exam (YES/NO)		**NO**
ECTS		**2**

Method of conducting classes		lecture	classes	laboratory	project	other
Number of hours per semester	full-time	**15**		**15**		
	part-time					

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LEARNING OUTCOMES

Category	Outcome code	Course learning outcomes	Reference to the directional learning effect
Knowledge	W01	Is familiar with the techniques of data acquisition, collection, verification and reproduction, as well as mathematical description of the basic issues of the fundamentals of decision theory.	ZB1_W06 ZB1_W11
	W02	Has knowledge of decision support systems useful for formulating and solving issues in economics, management and logistics.	ZB1_W06
	W03	Knows how to build and solve simple mathematical models by analytical methods and by methods using available computer programs.	ZB1_W06 ZB1_W09
Skills	U01	Can plan research to collect selected data and information (market, financial, production organization, etc.) in the form of simple databases.	ZB1_U01
	U02	Knows how to use the collected data to address the problem at hand and fit the appropriate mathematical model.	ZB1_U01 ZB1_U05
	U03	He is able to make optimal decisions in analyzed problems and formulate assessments in the field of causes and effects of the course of economic phenomena and processes, assess the usefulness of typical mathematical methods and verify the choice of a given model or method of its solution.	ZB1_U01 ZB1_U05
Social competences	K01	He understands the necessity of intellectual development and improvement of his skills.	ZB1_K01 ZB1_K04
	K02	Can think, plan and act using optimization theory.	ZB1_K01

COURSE CONTENT

Method of conducting classes	Course content
lecture	Normative and descriptive approaches. Making optimal decisions based on the construction and solution of mathematical models . Decision models: linear, non-linear, continuous, discrete, stochastic, autonomous and non-autonomous with examples of their applications. Elements of game theory.
laboratory	Construction and solution of various linear problems using the simplex method and MS Excel with Solver add-in. Applications of dynamic and nonlinear programming.

METHODS FOR VERIFYING LEARNING OUTCOMES

Outcome code	Learning outcomes verification methods					
	Oral examination	Written examination	Test	Project	Report	Other
W01			X			X
W02			X			X
W03			X			X
U01						X
U02						X
U03						X
K01						X
K02						X

FORM AND CONDITIONS OF ASSESSMENT

Form of classes	Assessment type	Assessment Criteria
lecture	Credit with grade	Semester test.
laboratory	Credit with grade	Preparation and presentation of applications of selected models optimization and students' activity during shots.

STUDENT WORKLOAD

ECTS Balance							
No.	Activity type	Student workload					Unit
		full-time					
1.	Scheduled contact hours	W	C	L	P	S	h
		15	15				
2.	Other (consultations, exams)	2	2				h
3.	**Total number of contact hours**	34					h
4.	**Number of ECTS credits for contact hours**	1,4					ECTS
5.	**Number of hours of independent student work**	16					h
6.	**Number of ECTS points that a student obtains through independent work**	0,6					ECTS
7.	**Workload related to practical classes**	25					h
8.	**Number of ECTS credit points which a student receives for practical classes**	1,0					ECTS
9.	Total number of hours of a student's work	50					
10.	**ECTS credits for the course** *1 1 ECTS credit =25 student learning hours*	2					ECTS

W - LECTURE   C – CLASSES   L – LABORATORY   P- PROJECT   S – SEMINAR

READING LIST

1. Mateo S.C., Ramón J.(2015), Management science, operations research and project management, Farnham; Burlington: Gower Publishing Limited.
2. Manuel J., Sánchez S. (2022), Building and Solving Mathematical Programming Models: 50 Practical Examples, International Series in Operations Research & Management Science, 329, Springer.
3. Hillier F.S., Lieberman G.J. (2020), ISE Introduction to Operations Research, ISE HED IRWIN
4. INDUSTRIAL ENGINEERING, McGraw-Hill Education.