STUDY MODULE DESCRIPTION FORM

Name of the module/subject		Code
Mathematical Decision Making		**1011102211010346436**
Field of study	Profile of study (general academic, practical)	Year /Semester
Safety Engineering - Full-time studies - Second-	**(brak)**	**1 / 1**
Elective path/specialty	Subject offered in:	Course (compulsory, elective)
Ergonomics and Work Safety	**Polish**	**obligatory**
Cycle of study:	Form of study (full-time,part-time)	
Second-cycle studies	**full-time**	
No. of hours		No. of credits
Lecture: **15** Classes: **30** Laboratory: **-** Project/seminars: **-**		**4**
Status of the course in the study program (Basic, major, other)	(university-wide, from another field)	
(brak)	**(brak)**	
Education areas and fields of science and art		ECTS distribution (number and %)
the sciences		**4 100%**
Mathematical sciences		**4 100%**

Responsible for subject / lecturer:

dr Piotr Rejmenciak
email: piotr.rejmenciak@put.poznan.pl
tel. +48 61 665 2812
Faculty of Electrical Engineering
ul. Piotrowo 3A, 60-965 Poznań

Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Students have knowledge of mathematics, particularly calculus and algebra.
2	**Skills**	Students can determine the extremes of functions of one variable, compute the partial derivatives, operate on matrices. Students can check the basic properties of the relationship.
3	**Social competencies**	Students are eager to learn.

Assumptions and objectives of the course:

The aim of the course is to familiarize students with the different methods that help in making the best decisions.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. Students know and understand methods to make optimal decisions. - [K2A-W01, K2A-W04]
2. Students know a mathematical model and the optimization criterion for the real issues. - [K2A-W01, K2A-W04]

Skills:

1. Students are able to formulate a mathematical model of linear and nonlinear programming problems. - [K2A-U1-5, K2A-U10, K2A-U12, K2A-U18]
2. Students can discuss the real issues of the optimal solution for any changes in the input data. - [K2A-U1-5, K2A-U10, K2A-U12, K2A-U18]
3. Students can analyze the decision problem in terms of expectations for the results obtained and the amount of work needed to receive. - [K2A-U1-5, K2A-U10, K2A-U12, K2A-U18]

Social competencies:

1. Students understand the need and knows the possibilities of lifelong learning. - [K2A-K1, K2A-K3]
2. Students see the opportunity to use the learned knowledge into practice. - [K2A-K1, K2A-K3]

Assessment methods of study outcomes

Formative assessment:

a) In regards to classes: on the basis of two written tests.

b) Regarding lectures: on the basis of oral or written assignments relating to the material covered during current or previous lectures.

Collective assessment:

a) In respect to classes:receive 51% of the total points is equivalent to completing the exercise, the assessment "change" every 10 percentage points.

b) Considering lectures: the average of formative marks.

Course description

? Mathematic programming

? Network algorithms: determination of the shortest path in the graph, determination of the maximum flow in the transport network

? Transport Problems

? Games

? Rough set theory;

? Relations: orders

? Fuzzy set theory

Basic bibliography:

Additional bibliography:

Result of average student's workload

Activity	Time (working hours)
1. Participation in lectures	15
2. Participation in exercises	30
3. Consultation	5
4. Preparing for training	15
5. Preparing for colloquia	20

Student's workload

Source of workload	hours	ECTS
Total workload	85	4
Contact hours	50	2
Practical activities	50	2