COURSE DESCRIPTION CARD - SYLLABUS

Course name
Operational research
Course

Field of study
Managemant and production engineering
Area of study (specialization)

Level of study
First-cycle studies
Form of study
part-time

Year/Semester
3/5
Profile of study
general academic
Course offered in
Polish
Requirements
compulsory

Number of hours

Lecture
10
Tutorials
10
Laboratory classes
Projects/seminars
Other (e.g. online)

Number of credit points
3

Lecturers

Responsible for the course/lecturer:
PhD Piotr Rejmenciak

email: piotr.rejmenciak@put.poznan.pl

ph. +48 61 665 28 39

Faculty of Automatic Control, Robotics and Electrical Engineering

Piotrowo 3A, 61-138 Poznań

Responsible for the course/lecturer:

Prerequisites
Basic knowledge of mathematics - calculus.

Course objective

To familiarize students with the scope and purpose of building mathematical models, creating and solving simple examples related to making optimal decisions in business management

Course-related learning outcomes

Knowledge

1. The student should be able to characterize the basic issues of linear programming, transport and network issues
2. The student should be able to describe the basic algorithms for solving the problems of: linear, transport and network programming. Identify tasks that can be described / solved by means of transport networks

Skills

1. The student should be able to describe a decision problem using a mathematical model
2. The student should be able to use an appropriate algorithm to find optimal solutions to basic problems described by a mathematical model

Social competences

1. The student is aware of the fact that with the help of a mathematical apparatus it is possible to optimize activities in the field of production preparation

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:
Written tests assessing the practical ability to solve problems.
3: 41-60%
3.5: -70%
4: -80%
4.5: -90%
5: -100%

Programme content

Mathematical programming: linear programming and simplex algorithm. Networks: algorithm for finding shortest path and maximum flow. Transportation problem.

Teaching methods

Lecture – presentation, examples counted on the board.
Exercises – problems counted on the board

Bibliography

Basic

1. Kukuła (red.), Badania operacyjne w przykładach i zadaniach, PWN, Warszawa 2004r

2. Z. Jędrzejczyk, K. Kukuła, J.Skrzypek, A. Walkosz, „Badania operacyjne w przykładach i zadaniach”, PWN, 2004,

Additional

1. Edmund Ignasiak, „Badania operacyjne” PWE 2001,

2. Simmonard L. Programowanie Liniowe, PWN, Warszawa 1969

Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,0
Classes requiring direct contact with the teacher	30	1,5
Student's own work (literature studies, preparation for laboratory classes/~~tutorials,~~ preparation for tests/~~exam~~, ~~project preparation~~) [1]	45	1,5

1 delete or add other activities as appropriate