



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Decision Aiding in Logistics [N2Trans1-LogTr>WDwL]

### Course

Field of study

Transport

Year/Semester

1/2

Area of study (specialization)

Logistics of Transport

Profile of study

general academic

Level of study

second-cycle

Course offered in

Polish

Form of study

part-time

Requirements

compulsory

### Number of hours

Lecture

9

Laboratory classes

0

Other

0

Tutorials

0

Projects/seminars

0

### Number of credit points

1,00

### Coordinators

dr inż. Hanna Sawicka

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### Lecturers

### Prerequisites

Knowledge: the student has a basic knowledge of transport, its role in the economy and society. Skills: the student is able to interpret phenomena occurring in organizations, formulate opinions, draw conclusions. Social competencies: the student is able to work in a group, shows independence in solving problems, acquiring and improving the knowledge.

### Course objective

Learning the concepts of decision aiding and making in the field of logistics, including decision problems, how to solve them and implement improvements in logistic companies.

### Course-related learning outcomes

Knowledge:

The student knows the development trends and the most important new achievements of means of transport and other selected related scientific disciplines.

The student has an advanced and a detailed knowledge of the processes occurring in the life cycle of transport systems.

The student has a basic knowledge of managing / running a business and individual entrepreneurship.

### Skills:

The student is able to use information and communication techniques applied in the implementation of projects in the field of transport.

The student is able - when formulating and solving engineering tasks - to integrate knowledge from various areas of transport (and, if necessary, also knowledge from other scientific disciplines) and apply a systemic approach, also taking into account non-technical aspects.

The student is able to interact in a team, assuming various roles in it.

### Social competences:

The student understands that in the field of transport engineering, knowledge and skills very quickly become obsolete.

The student is aware of the need to develop professional achievements and observe the rules of professional ethics.

The student understands the importance of popularizing activities regarding the latest achievements in the field of transport engineering.

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:

Activity during lectures, including participation in discussions and ongoing preparation for classes. Workshops consisting of team solving a given decision problem. Written test to verify the learning outcomes.

### Programme content

The course is composed of the following items:

1. Decision Situation.
2. Multiple Criteria Decision Aiding (MCDA).
3. Decision Aiding Methods.
4. Analysis of Selected MCDA Methods.
5. Algorithm for Selecting the MCDA Method to Solve a Decision Problem.

### Course topics

1. Reminder of key concepts related to the decision-making process; introduction to issues related to decision problems in logistics and how to solve them. Presentation of the main thematic areas and discussion of the detailed program of activities.
2. Decision problem analysis. The essence of decisions made in logistics. Basic entities involved in the decision-making process and their impact on the decision aiding process.
3. Types of decision problems in logistics, their essence and characteristics. Creating a mathematical model for the ranking problem, including evaluation criteria, a performance matrix and a model of decision maker's preferences.
4. Characteristics of various methodological trends in the area of decision aiding methods. Presentation of selected decision aiding methods.
5. Selection of the most suitable method allowing to solve a decision problem - basic stages.
6. The application of a selected method to solve a decision problem in a logistic company. Workshops.
7. Summary of lectures. Written test.

### Teaching methods

1. Problem lecture with a multimedia presentation.
2. Case study.

### Bibliography

Basic

1. Roy B.: Wielokryterialne wspomaganie decyzji. WNT, Warszawa, 1990.
2. Sawicka H.: Wspomaganie decyzji w logistyce. Materiały wykładowe, Politechnika Poznańska
3. Szapiro T. (red.): Decyzje menedżerskie z Excelem. Polskie Wydawnictwo Ekonomiczne, Warszawa,

2000.

4. Vincke P.: Multicriteria Decision-Aid. John Wiley & Sons, Chichester, 1992.

Additional

1. Belton V., Stewart T.J.: Multiple Criteria Decision Analysis. An Integrated Approach. Kluwer Academic Publishers, London, 2002.

2. Keeney R., Raiffa H.: Decisions with Multiple Objectives. Preferences and Value Tradeoffs. Cambridge University Press, Cambridge, 1993.

3. Lotfi V., Pegels C.: Decision Support Systems for Management Science / Operations Research. Irwin, Homewood-Boston, 1989.

4. Saaty T.L.: The Analytic Hierarchy Process: Planning, Priority Setting, Resource Allocation, Mc-Graw Hill, New York, 1980.

### Breakdown of average student's workload

	Hours	ECTS
Total workload	30	1,00
Classes requiring direct contact with the teacher	9	0,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	21	0,50