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| Course title | | Managerial Decisions in Logistics | | | | | | ECTS code | | 14.3.EE.SZ.3572 | | |
| | | | | | | | | ECTS credits | | 2 | | |
| Name of unit administrating study | | KL | | Field of study | | Economics | | Field of specialisation | | L&M; | | |
| Teaching staff | | Leszek Reszka, Associate Professor | | | | | | | | | | |
| 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: | | obligatory | | | |
| Total number of hours: | | | | | | | 0 | | Language of instruction: | | English | |
| Teaching form | | in-class learning | | | | | | | | | | |
| Teaching methods | | Activating methods in training classes, Work in computer laboratories, Lectures including multimodal presentations, Case studies, Collaborating, group activities, | | | | | | | | | | |
| Prerequisites (required courses and introductory requirements) | | | | | | | | | | | | |
| Required courses | | Logistics and Mobility Modelling | | | | | | | | | | |
| Introductory requirements | | Basic logistics knowledge | | | | | | | | | | |
| Assessment method, forms and criteria | | | | | | | | | | | | |
| Assessment method | | Course completion (graded) | | | | | | | | | | |
| Assessment criteria | | <p>Student's work during the course is observed on an ongoing basis by the teacher, and constitutes, in addition to the project and the test, the basis for the final mark of the course.</p> <p>The project concerns the use of the presented methods of decision support optimization in logistics for a company.</p> | | | | | | | | | | |
| Course objectives | | | | | | | | | | | | |
| The aim of the course is to familiarize students with methods of decision-making support used in logistics and to acquire practical skills in their use. | | | | | | | | | | | | |
| Learning outcomes | | | | | | | | | | | | |
| Knowledge | | E2_W06 | | Student knows methods and tools of modelling logistics decision-making situations. | | | | | | | | |
| | | E2_W08 | | Student has deepened knowledge of logistics processes in enterprises. | | | | | | | | |
| Verification of learning outcomes - Knowledge | | | | | | | | | | | | |
| Outcomes | | written exam | oral exam | test | essay/paper /portfolio | tasks/ homeworks | individual presentation | group presentation | classroom activities | classroom discussion | individual project | group project |
| E2_W06 | | | | X | | | | | X | | | X |
| E2_W08 | | | | X | | | | | X | | | X |
| Skills | | <p>E2_U04 The student is able to model complex logistics processes with the use of methods and quantitative tools created by the economic sciences.</p> <p>E2_U13 The student is able to cooperate and work in a team, taking various roles in it, including a leading role.</p> | | | | | | | | | | |
| Verification of learning outcomes - Skills | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| Outcomes | written exam | oral exam | test | essay/paper /portfolio | tasks/ homeworks | individual presentation | group presentation | classroom activities | classroom discussion | individual project | group project |
|----------|--------------|-----------|------|------------------------|------------------|-------------------------|--------------------|----------------------|----------------------|--------------------|---------------|
| E2_U04 | | | | | | | | X | | | |
| E2_U13 | | | | | | | | X | | | X |

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| Attitudes | E2_K03 | The student inspires and organizes the preparation of economic projects. | | | | | | | | | |
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Verification of learning outcomes - Attitudes

| Outcomes | written exam | oral exam | test | essay/paper /portfolio | tasks/ homeworks | individual presentation | group presentation | classroom activities | classroom discussion | individual project | group project |
|----------|--------------|-----------|------|------------------------|------------------|-------------------------|--------------------|----------------------|----------------------|--------------------|---------------|
| E2_K03 | | | | | | | | | | | X |

Course contents

- 1. Managerial decision-making process in logistics**
- Areas of managerial decision-making in logistics
 - Optimization versus sub-optimization
 - Decision-making process in a company
 - Models in a company
 - Types of models
 - Examples of models
 - Decision models
 - Components of a decision model
 - Stages of decision model building
 - Example of an optimization model construction
- 2. Theory of linear programming**
- Features of linear programming models
 - Construction of a logistics optimization model
 - The algorithm of using the SOLVER tool
 - Possibilities of using the SOLVER tool
- 3. Examples of linear programming models**
- Optimal selection of the product range
 - Linear programming in integers
 - Other possible constraints in linear programming
 - The mixture problem
 - Graphical method for solving a linear programming model
 - Duality in linear programming
 - The transportation model
 - Balanced and unbalanced transportation problem
 - The blocked road problem in a transportation problem
 - Transshipment model
 - Assignment problem
- 6. The theory of network programming**
- Selected concepts of graph theory
 - Graphical illustration of a graph
- 7. Examples of network programming models**
- Transportation model with transshipments

- Shortest route model
- Equipment exchange model
- Maximum flow model

Recommended reading lists

Obligatory readings:

- A. Yalaoui, Hi.Chehade, F. Yalaoui, L. Amodeo: Optimization of Logistics (ISTE), Kindle Edition 2013
- S. G.Powell, K. R.Bake: Management Science: The Art of Modeling with Spreadsheets, John Wiley and Sons, 2010
- G. J. Plenert: Supply Chain Optimization through Segmentation and Analytics (Resource Management), CRC Press, 2014
- G. D.Eppen, F. J.Gould, C. P.Schmidt, J. H.Moore, L. R.Weatherford: Introductory Management Science Decision Modelling with Spreadsheets. Prentice Hall, New Jersey 1998.

Facultative readings:

- L. Reszka: Decision Making Process in the Management of Logistics Support System [in:] C. Mańkowski, L. Reszka (ed.): Modelowanie procesów i systemów logistycznych, cz. XXII Wydawnictwo Uniwersytetu Gdańskiego, Gdańsk 2021, s. 167-176
- L.Reszka: Multicriteria optimization methods in logistics on the example of warehouse location, "Journal of Positive Management", vol. 9, nr 3/2018, Toruń 2018, ISSN: 2083-103X, p. 3-16
- L. Reszka: The Applicability of the Simos' Method to Determination of Weights In Optimal Multicriteria Decision Making in Logistics [W:] M. Chaberek, L. Reszka (ed.): Modelling of Logistics Processes and Systems, part XVII Research Journal of the University of Gdańsk Transport Economics and Logistics vol. 66. Gdańsk University Press, Gdańsk 2017, ISSN: 2544-3224, e-ISSN 2544-3232, p. 81-88

Contact

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

** MSG - International Economic Relations