| The title of the course | Operations Research |
| --- | --- |
| Faculty | Faculty of Management and Transport |
| The level of studies | Bachelor Studies or Engineering Studies |
| Semester | Winter or summer |
| The form of classes and number of hours | 15 h |
| Classes conducted for Polish students. Erasmus students can join them | No |
| Language of instruction | English |
| The number of ECTS | 2 ECTS<br><br>Lectures and Exercises with the teacher 15h<br>Student's own work:<br>• Homeworks 25 h<br>• Preparation for the test 10 h<br>TOTAL: 50 h |
| Teacher | Jarosław Jabłonka, PhD |
| The aims of the course (maximum 500 characters) | The main aim of the course is to acquire skills in building linear models, analysing them and defining criteria and searching for optimal solutions with particular emphasis on practical applications. |
| The content of the course: main topics and key ideas | Linear Programming<br>Multiobjective Programming<br>Integer Programming<br>Graphs and Network Models (Shortest Route Problems, The Travelling Salesman and Chinese Postman Problems, Flows in Networks)<br>Location Models<br>Scheduling<br>Decision Analysis |
| Didactics methods | Lecture Method<br>Content-Focused Methods<br>Problem Solving Methods<br>Creative Thinking |
| Course requirements | No |
| Literature (basic and supplementary) | Eiselt H. A., Sandblom Carl-Louis, Operations Research. A Model-Based Approach, Springer-Verlag Berlin Heidelberg, 2010<br>Boffey T. B., Graph Theory in Operations Research, Red Globe Press London, 1982<br>Korshunov A. D., Discrete Analysis and Operations Research, Kluwer Academic Publishers, 1996<br>Murty Katta G., Case Studies in Operations Research. Applications of Optimal Decision Making, Springer Science+Business Media New York, 2015 |

| The effects of the education | Knowledge: |
| --- | --- |
| - **knowledge**<br>- **skills**<br>- **social competences** | A student knows and understands mathematical models for simple decision problems, knows and understands quantitative methods supporting decision making.<br><br>Skills:<br>A student is able to formulate a simple decision task, they can solve programming tasks, they uses a spreadsheet to solve and interpret solutions of optimization tasks.<br><br>Social competences:<br><br>A Student can organize his/her work, respecting ethical and professional standards. |