GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

| | | | |
|---|---|---|---|
| Subject name and code | Production Processes - Methods of Decision Making, PG_00070258 | | |
| Field of study | Electrical Engineering, Automation, Robotics and Control Systems | | |
| Date of commencement of studies | February 2026 | Academic year of realisation of subject | 2026/2027 |
| Education level | second-cycle studies | Subject group | |
| Mode of study | Full-time studies | Mode of delivery | at the university |
| Year of study | 2 | Language of instruction | Polish |
| Semester of study | 3 | ECTS credits | 3.0 |
| Learning profile | general academic profile | Assessment form | assessment |
| Conducting unit | Department of Intelligent and Decision Support Systems -> Faculty of Electrical and Control Engineering -> Faculties of Gdańsk University of Technology | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr hab. inż. Robert Piotrowski | |
| | Teachers | | |

**Lesson types**

| Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
|---|---|---|---|---|---|---|
| Number of study hours | 15.0 | 0.0 | 30.0 | 0.0 | 0.0 | 45 |

E-learning hours included: 0.0

**Learning activity and number of study hours**

| Learning activity | Participation in didactic classes included in study plan | Participation in consultation hours | Self-study | SUM |
|---|---|---|---|---|
| Number of study hours | 45 | 5.0 | 25.0 | 75 |

**Subject objectives**

The aim of the course is for students to master selected issues of optimisation and decision support in manufacturing processes.

**Learning outcomes**

| Course outcome | Subject outcome | Method of verification |
|---|---|---|
| [K7_W06] has an extended knowledge of the design of automation components and devices, control and decision support systems control and decision support systems and complex mechatronic systems | | |
| [K7_U03] is able to prepare and deliver a presentation on the results of an engineering task and own research | | |
| [K7_U04] has the ability for self-directed learning in order to improve his/her professional qualifications, and is able to identify directions for further learning | | |
| [K7_U07] is able to use analytical, simulation and experimental methods to formulate and solve engineering tasks and simple research problems in the field of automation and robotics | | |

<table>
<tr><td>Subject contents</td><td>Course content – lecture<br><br>1. General information<br>2. Decision models for discrete processes<br>3. Discrete programming integer<br>4. Discrete programming binary<br>5. Network programming<br>6. Transport issues and the travelling salesman problem<br>7. Summary<br><br>Course content – laboratory<br><br>1. Discrete manufacturing processes: examples and modelling<br>2. Integer programming<br>3. Binary programming<br>4. Decision support methods network issues<br>5. Transport issues and the travelling salesman problem</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Laboratory</td><td>50.0%</td><td>30.0%</td></tr>
<tr><td>Colloquium 2</td><td>50.0%</td><td>35.0%</td></tr>
<tr><td>Colloquium 1</td><td>50.0%</td><td>35.0%</td></tr>
</table>
</td></tr>
<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>Trzaskalik T. Wprowadzenie do badań operacyjnych z komputerem. Wydanie 3. Wydawnictwo PWE, Warszawa 2024.<br><br>Praca zbiorowa (red. Sikora W.). Badania operacyjne. Wydawnictwo PWE, Warszawa 2018.<br><br>Cormen T.H., Leiserson Ch.,E. Rivest R., Stein C. Wprowadzenie do algorytmów. Wydanie 7. Wydawnictwo PWN, Warszawa 2012 (tłumaczenie).<br><br>Deo N. Teoria grafów i jej zastosowania w technice i informatyce. Wydawnictwo PWN, Warszawa 1980 (tłumaczenie).<br><br>Praca zbiorowa (red. Trocki M.). Nowoczesne zarządzanie projektami. Wydawnictwo PWE, Warszawa 2012.</td></tr>
<tr><td>Supplementary literature</td><td>Durlik I. Inżynieria zarządzania część I. Strategie organizacji produkcji, nowe koncepcje zarządzania. Wydanie 7 uzupełnione. Wydawnictwo Placet, Warszawa 2007.<br><br>Jędrzejczyk Z., Kukuła K., Skrzypek J., Walkosz A. Badania operacyjne w przykładach i zadaniach. Wydanie 7. Wydawnictwo PWN, Warszawa 2015.<br><br>Wilson R.J. Wprowadzenie do teorii grafów. Wydanie 2. Wydawnictwo PWN, Warszawa 2012 (tłumaczenie).</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
</table>
</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>What is the difference between an Eulerian cycle and a Hamilton cycle in a graph?</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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