



Subject card

| | | | | | | | |
|---|--|--|--|-------------------------------------|--|------------|-----|
| Subject name and code | Production Processes - Methods of Decision Making, PG_00031755 | | | | | | |
| Field of study | Automation, Robotics and Control Systems | | | | | | |
| Date of commencement of studies | February 2023 | | Academic year of realisation of subject | | 2023/2024 | | |
| 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 | | 4.0 | | |
| Learning profile | general academic profile | | Assessment form | | assessment | | |
| Conducting unit | Department of Control Systems Engineering -> Faculty of Electrical and Control Engineering | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | | dr hab. inż. Robert Piotrowski | | | | |
| | Teachers | | | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 30.0 | 0.0 | 30.0 | 0.0 | 0.0 | 60 |
| | 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 | 60 | | 5.0 | | 35.0 | 100 |
| Subject objectives | The aim of the course is to familiarise students with selected issues of optimisation and decision support in manufacturing processes. | | | | | | |
| Learning outcomes | Course outcome | | Subject outcome | | Method of verification | | |
| | K7_U04 | | Students will be able to select an optimisation method for a specific type of industrial process. | | [SU1] Assessment of task fulfilment | | |
| | K7_U03 | | The student is able to find optimal solutions for network issues, e.g. transport problems, minimum roads. | | [SU5] Assessment of ability to present the results of task | | |
| | K7_W06 | | The student knows optimisation methods for decision support in industrial processes. | | [SW3] Assessment of knowledge contained in written work and projects | | |
| | K7_W11 | | The student is able to implement optimisation methods for discrete, binary and network problems in a computer environment, e.g. Matlab | | [SW3] Assessment of knowledge contained in written work and projects | | |
| | K7_U07 | | Students will be able to solve optimization tasks (discrete and binary). | | [SU3] Assessment of ability to use knowledge gained from the subject | | |
| Subject contents | General information Decision models for discrete processes Discrete integer programming Discrete-time binary programming Network programming Transport issues and the traveling salesman problem Summary | | | | | | |
| Prerequisites and co-requisites | None | | | | | | |

| | | | |
|---------------------------------|--|--|-------------------------------|
| Assessment methods and criteria | Subject passing criteria | Passing threshold | Percentage of the final grade |
| | Colloquium 1 | 50.0% | 35.0% |
| | | 50.0% | 30.0% |
| | Colloquium 2 | 50.0% | 35.0% |
| Recommended reading | Basic literature | <p>Cormen T.H., Leiserson Ch.,E. Rivest R., Stein C. <i>Wprowadzenie do algorytmów</i>. Wydanie 7. PWN, Warszawa 2012 (tłumaczenie).</p> <p>Deo N. <i>Teoria grafów i jej zastosowania w technice i informatyce</i>. PWN, Warszawa 1980 (tłumaczenie).</p> <p>Praca zbiorowa (red. Sikora W.). <i>Badania operacyjne</i>. PWE, Warszawa 2008.</p> <p>Sysło M.M., Deo N., Kowalik J.S. <i>Algorytmy optymalizacji dyskretnej</i>. PWN, 1999.</p> <p>Trzaskalik T. <i>Wprowadzenie do badań operacyjnych z komputerem</i>. Wydanie 2. PWE, Warszawa 2008.</p> <p>Zorychta K., Ogryczak W. <i>Programowanie liniowe i całkowitoliczbowe</i>. WNT, 1981.</p> | |
| | Supplementary literature | <p>Chen D.-S., Batson R.G., Dang Y. <i>Applied Integer Programming: Modeling and Solution</i>. John Wiley&Sons, 2010.</p> <p>Williams H.P. <i>Model Building in Mathematical Programming</i>. 4th edition. John Wiley&Sons, 1999.</p> <p>Williams H.P. <i>Model Solving in Mathematical Programming</i>. John Wiley&Sons, 1993.</p> | |
| | eResources addresses | Adresy na platformie eNauczanie: | |
| | Example issues/ example questions/ tasks being completed | What is the difference between the Euler cycle and the Hamilton cycle in a graph ? | |
| Work placement | Not applicable | | |