



Subject card

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| Subject name and code | INTERACTIVE DECISION MAKING, PG_00059993 | | | | | | |
| Field of study | Environmental Engineering | | | | | | |
| Date of commencement of studies | October 2023 | Academic year of realisation of subject | | | 2023/2024 | | |
| Education level | second-cycle studies | Subject group | | | Obligatory subject group in the field of study Humanistic-social subject group | | |
| Mode of study | Full-time studies | Mode of delivery | | | e-learning | | |
| Year of study | 1 | Language of instruction | | | English | | |
| Semester of study | 1 | ECTS credits | | | 2.0 | | |
| Learning profile | general academic profile | Assessment form | | | assessment | | |
| Conducting unit | Department of Building Engineering -> Faculty of Civil and Environmental Engineering | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr inż. Anna Jakubczyk-Galczyńska | | | | | |
| | Teachers | mgr inż. Agata Siemaszko dr inż. Anna Jakubczyk-Galczyńska | | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 15.0 | 15.0 | 0.0 | 0.0 | 0.0 | 30 |
| E-learning hours included: 30.0 | | | | | | | |
| 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 | 30 | 5.0 | | 20.0 | 55 | |
| Subject objectives | Students study about the methods used for interactive analysis and solving decision-making problems in contemporary projects, including: selection of optimal actions under uncertainty, negotiations and designing based on the information value of monitoring systems. The intention is to improve student skills in the use of software based on artificial intelligence and to acquire project management competence by students, which enables them to actively participate in project implementation and act as a leader during teamwork. | | | | | | |

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| Learning outcomes | Course outcome | Subject outcome | Method of verification |
| | [K7_W71] has general knowledge in humanistic, social, economic or legal sciences, including their fundamentals and applications | - Student is able to work independently and as a team in solving practical problems in the field of environmental engineering. | [SW1] Assessment of factual knowledge |
| | [K7_K82] is equipped to participate actively in lectures, seminars and laboratory classes conducted in foreign language | - Student knows industry terms in English, can use specialized terminology in engineering. | [SK4] Assessment of communication skills, including language correctness |
| | [K7_U71] is able to apply knowledge from humanistic, social, economic or legal sciences in order to solve problems | - Student is able to use the knowledge to solve decision-making problems in the field of environmental engineering using appropriate methods and computer programs. - Student is able to indicate the optimal variant of the project. | [SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject |
| | [K7_K71] is able to explain the need to apply knowledge from humanistic, social, economic or legal sciences in order to function in a social environment | - Student is able to analyze the risk occurring in engineering practice, is able to manage the investor's and contractor's risk in environmental engineering issues. - Student is able to work independently and in a group in solving selected organizational problems in construction. - Student is able to establish cooperation with experts, respects their experience, understands the need to constantly improve professional qualifications and observe the rules of professional ethics. understands the need to constantly improve professional qualifications and observe the rules of professional ethics. | [SK5] Assessment of ability to solve problems that arise in practice [SK2] Assessment of progress of work |
| K7_W04 | - Student is able to identify the engineering problem and knows the basic techniques of its solution, and is able to combine various techniques into interdisciplinary issues. - Student is able to use in practice modern tools supporting a strategic approach in solving engineering problems - Student knows the modeling methods used to analyze and solve interactive decision problems in modern engineering projects (e.g. SWOT, PHA, Bayesian networks and the basics of Artificial Intelligence). | [SW3] Assessment of knowledge contained in written work and projects [SW2] Assessment of knowledge contained in presentation | |
| Subject contents | The schedule provides for the discussion of the following methodologies based on artificial intelligence:- Learning Bayesian Networks (LBN).- Artificial Neural Networks (ANN)- Machine Learning, including e.g. Support Vectors Machine (SVM)On-line meetings with experts: a group of engineers, supervision inspectors and construction practitioners are planned in order to acquire and train the skills of creating decision-making models. | | |
| Prerequisites and co-requisites | Knowledge about methods used in practice to manage engineering projects. | | |
| Assessment methods and criteria | Subject passing criteria | Passing threshold | Percentage of the final grade |
| | Egzamin pisemny | 60.0% | 50.0% |
| | Exercise task | 60.0% | 50.0% |

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| Recommended reading | Basic literature | <p>Steele, Stefánsson, Decision Theory. Stanford Encyclopedia of Philosophy [online], CSLI, Stanford University, 16 grudnia 2015.</p> <p>C.L. Pritchard, Risk management in projects. Theory and practice. Management Training & Development Center, WIG-PRESS, Warszawa 2002.</p> <p>N. Fenton, M. Neil, Risk Assessment and Decision Analysis with Bayesian Networks, CRC Press, ISBN: 9781439809105, 2012.</p> <p>U. B. Kjaerulff, A.L. Madsen, Bayesian Networks and Influence Diagrams. A Guide to Construction and Analysis. Springer Science+Business Media, LLC, 2008.</p> |
| | Supplementary literature | Project Management Institute: <i>A guide to the Project Management Body of Knowledge (PMBOK GUIDE)</i> 5th Edition, 2013. |
| | eResources addresses | Adresy na platformie eNauczanie: |
| Example issues/ example questions/ tasks being completed | | |
| Work placement | Not applicable | |