



Subject card

Subject name and code	Artificial intelligence in production control and management, PG_00059488						
Field of study	Management and Production Engineering						
Date of commencement of studies	February 2024		Academic year of realisation of subject			2023/2024	
Education level	second-cycle studies		Subject group			Obligatory subject group in the field of study Subject group related to scientific research in the field of study	
Mode of study	Full-time studies		Mode of delivery			at the university	
Year of study	1		Language of instruction			Polish	
Semester of study	1		ECTS credits			4.0	
Learning profile	general academic profile		Assessment form			exam	
Conducting unit	Faculty of Ocean Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Stefan Dzionk				
	Teachers		dr inż. Aleksander Mroziński				
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		10.0		40.0	110
Subject objectives	Acquisition of the ability to use computer tools to use algorithms based on artificial intelligence, especially Data Mining problems, preprocessing real data. Acquisition of the ability to search for information about modern solutions in production management systems, development of the assessment of artificial intelligence methods. Organization of research on this knowledge, calculation of the results of analyzes and the use of medical tools						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_U04] is able to plan and carry out experiments, including measurements and computer simulations, interpret the obtained results and extract conclusions; can use analytical, simulation and experimental methods to formulate and solve engineering tasks	shaping the ability to work independently and assessing the development of artificial intelligence methods	[SU2] Assessment of ability to analyse information [SU5] Assessment of ability to present the results of task [SU4] Assessment of ability to use methods and tools
	[K7_W04] has an organized knowledge of the life cycle of devices, facilities and technical systems, has an extensive knowledge of management.	expanding knowledge about the latest solutions used in production management systems,	[SW3] Assessment of knowledge contained in written work and projects
	[K7_W01] knows and understands to a greater extent selected issues in the field of management and quality sciences and mechanical engineering, their location in the field of social sciences and engineering and technical sciences, as well as relationships with related disciplines, and sees the possibility of applying the knowledge in practice	expanding knowledge about the latest solutions used in production management and control, supported by artificial intelligence methods, e.g. data mining algorithms	[SW1] Assessment of factual knowledge
	[K7_K02] is aware of the importance and understanding of non-technical aspects and effects of engineering activities, including its impact on the environment, and the related responsibility for decisions made demonstrates knowledge of actions to reduce risk and anticipate the social impact of engineering and manufacturing activities	acquisition of non-technical awareness, application of data mining and analysis algorithms based on artificial intelligence methods, project implemented in group tasks	[SK1] Assessment of group work skills
	[K7_U01] can obtain information from literature, databases and others sources, also in English or another foreign language recognized as the language of international communication in a given engineering discipline; is able to integrate the obtained information, interpret it, as well as draw conclusions and formulate and justify opinions.	expanding one's own knowledge about the methods of artificial intelligence and the possibilities of its use	[SU5] Assessment of ability to present the results of task
Subject contents	<p>Introduction to data mining Initial processing of real data Exploratory data analysis (Ms Excel, R) Statistical approach to estimation and prediction (Ms Excel, R) K-means algorithm (Ms Excel, R) Hierarchical clustering and k-means (Ms Excel, R) Association rules (Ms Excel, R) Creating documentation (Ms Word) Real data analysis (Ms Excel, R) creating a model of evaluation determinants (Ms Excel) A priori algorithm (Ms Excel, R)</p>		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	implementation of tasks	60.0%	50.0%
	the presentation	60.0%	50.0%

Recommended reading	Basic literature	<p>Odkrywanie wiedzy z danych: wprowadzenie do eksploracji danych Informatyka - Zastosowania Autor Daniel T. Larose Wydawca Wydawnictwo Naukowe PWN, 2013 ISBN 8301171839, 9788301171834</p> <p>Data Mining the Web: Uncovering Patterns in Web Content, Structure, and Usage Autorzy Daniel T. Larose, Zdravko Markov 2007</p> <p>Przewodnik po pakiecie R Przemysław Biecek Oficyna Wydawnicza GiS, Wydawca Oficyna Wydawnicza GiS, 2017 ISBN 8362780444, 9788362780440, 2017</p> <p>Knowledge of classical and intelligent methods and tools to support transport systems and the principle of integration of transport systems Duncan W.R.: <i>A Guide to the Project Management Body of Knowledge</i>. U.S.A. Project Management Institute. 1996. PMBok 2000, <i>A Guide to the Project Management Body of Knowledge</i>, Project Management Institute, Newtown Square Pennsylvania 2000</p>
	Supplementary literature	Data Mining and Predictive Analytics Daniel T. Larose John Wiley & Sons, 19 lut 2015 - 824
	eResources addresses	Adresy na platformie eNauczanie:
	Example issues/ example questions/ tasks being completed	Proszę zastosować algorytm A-priori i przeprowadzić analizę otrzymanych reguł asocjacyjnych dla wybranego zestawu danych
Work placement	Not applicable	