GDAŃSK UNIVERSITY OF TECHNOLOGY

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 2023	Academic year of realisation of subject	2022/2023
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 inż. Tacjana Niksa-Rynkiewicz	
	Teachers	dr inż. Tacjana Niksa-Rynkiewicz	

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_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
[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_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_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_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	[SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task [SU2] Assessment of ability to analyse information

Subject contents

Introduction to data miningInitial processing of real dataExploratory 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)

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
the presentation	60.0%	50.0%
implementation of tasks	60.0%	50.0%

Recommended reading	Basic literature	Odkrywanie wiedzy z danych: wprowadzenie do eksploracji danych *Informatyka - Zastosowania*AutorDaniel T. Larose WydawcaWydawnictwo Naukowe PWN, 2013 ISBN8301171839, 9788301171834 Data Mining the Web: Uncovering Patterns in Web Content, Structure, and Usage Autorzy Daniel T. Larose, Zdravko Markov 2007 Przewodnik po pakiecie R Przemysław Biecek Oficyna Wydawnicza GiS.WydawcaOficyna Wydawnicza GiS, 2017ISBN8362780444, 9788362780440, 2017 Knowledge of classical and intelligent methods and tools to support transport systems and the principle of integration of transport systemsDuncan W.R.: *A Guide to the Project Management Body of Knowledge.* U.S.A. Project Management Institute. 1996.PMBok 2000, *A Guide to the Project Management Body of Knowledge*, Project Managemant Institute, Newtos Square Pennsylvania 2000
	Supplementary literature	Data Mining and Predictive Analytics Daniel T. LaroseJohn Wiley & Sons, 19 lut 2015 - 824
	eResources addresses	Adresy na platformie eNauczanie: Sztuczna inteligencja w sterowaniu i zarządzaniu produkcją ZiIP II 2023 stacjonarny (PG_00059488) - Moodle ID: 28815 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=28815
Example issues/ example questions/ tasks being completed	Proszę zastosować algorytm A-priori i przeprowadzić analizę otrzymanych reguł asocjacyjnych dla wybrango zestawu danych	
Work placement	Not applicable	