



COURSE SPECIFICATION

Course code	full-time programme:	M#2-S2-ME-107
	part-time programme:	
Course title in Polish	Zastosowania sztucznej inteligencji	
Course title in English	Applications of Artificial Intelligence	
Valid from (academic year)	2024/2025	

GENERAL INFORMATION

Programme of study	MECHANICAL ENGINEERING
Level of qualification	second-cycle
Type of education	academic
Mode of study	full-time programme
Specialism	all
Department responsible	Department of Mechatronics and Weapons Engineering
Course leader	dr hab. Jakub Takosoglu, prof. PŚk
Approved by	dr hab. Jakub Takosoglu, prof. PŚk, Dean of the Faculty of Mechatronics and Mechanical Engineering

COURSE OVERVIEW

Course type	programme-specific	
Course status	compulsory	
Language of instruction	English	
Semester of delivery	full-time programme	Semester I
	part-time programme	Semester I
Pre-requisites		
Examination required (YES/NO)	NO	
ECTS value	1	

Mode of instruction		lecture	class	laboratory	project	seminar
No. of hours per semester	full-time programme	15				
	part-time programme					

LEARNING OUTCOMES





Category of outcome	Outcome code	Course learning outcomes	Corresponding programme outcome code
Knowledge	W01	The student has structured advanced knowledge in the field of mechatronics, as well as detailed knowledge of computer science, electrical engineering, electronics, and automation necessary to formulate and solve problems related to the use of artificial intelligence in everyday life, industrial applications, and nontechnical aspects.	MiBM2_W03 MiBM2_W04
Skills	U01	The student can consciously use artificial intelligence methods and tools in the area of mechanics and machine construction in the presentation of work results.	MiBM2_U02
	U02	The student is able to properly obtain information from literature, databases, and other sources in various languages regarding artificial intelligence, perform in-depth critical analysis, synthesis and creative interpretation, and draw conclusions regarding the applications of artificial intelligence.	MiBM2_U03
Competence	K01	The student is ready to comply with ethical principles when using the capabilities of artificial intelligence related to the field of mechanics and machine construction studies.	MiBM2_K05

COURSE CONTENT

Mode of instruction	Topics covered
lecture	Definition and history of artificial intelligence. Basic concepts and techniques related to artificial intelligence. Examples of applications of artificial intelligence in everyday life, in aspects related to technology and industry, and non-technical aspects. Software supported by artificial intelligence.

ASSESSMENT METHODS

Outcome code	Methods of assessment					
	Oral examination	Written examination	Test	Project	Report	Other
W01			X			
U01			X			
U02			X			
K01						X

ASSESSMENT TYPE AND CRITERIA

Mode of instruction	Assessment type	Assessment criteria
lecture	non-examination assessment	Positive completion of the final test. Obtaining at least 50% of the points.

OVERALL STUDENT WORKLOAD

ECTS weighting





No.	Activity type	Student workload										Unit
		full-time programme					part-time programme					
		L	C	Lb	P	S	L	C	Lb	P	S	
1.	Scheduled contact hours	15										h
2.	Other contact hours (office hours, examination)	2										h
3.	Total number of contact hours	17										h
4.	Number of ECTS credits for contact hours	0,7										ECTS
5.	Number of independent study hours	8										h
6.	Number of ECTS credits for independent study hours	0,3										ECTS
7.	Number of practical hours	0										h
8.	Number of ECTS credits for practical hours	0,0										ECTS
9.	Total study time	25										h
10.	ECTS credits for the course <i>1 ECTS credit = 25-30 hours of study time</i>						1					ECTS

READING LIST

- Russell S., Norvig P.: Artificial Intelligence: Modern Approach, 2002.
- Luger G. F.: Artificial Intelligence, 5th ed, Addison Wesley, 2005.
- Winston P.: Artificial Intelligence 3rd ed, Addison Wesley, 1992.
- Nilsson N. J.: Principles of Artificial Intelligence, Palo Alto, CA, 1980.
- Rich E., Knight K.: Artificial Intelligence, McGraw Hill Inc, 1991.
- Newell A.: Unified Theories of Cognition, Harvard Uni. Press, 1990.
- Wolkenhauer O.: Fuzzy Mathematics in Systems Theory and Data Analysis. John Wiley & Sons, Inc., New York 2001.
- Thiele H.: Einführung in die Fuzzy Logik. Universität Dortmund, 1995.
- Spooner J. T., Maggiore M., Ordonez R., Passino K. M.: Stable Adaptive Control & Estimation For Nonlinear Systems-Neural & Fuzzy. John Wiley & Sons, Inc., New York 2002.
- Rao V. B.: C++ Neural Networks and Fuzzy Logic. IDG Books Worldwide, Inc. 1995.
- McNeill F. M., Thro E.: Fuzzy Logic A Practical Approach. Academic Press, Inc., USA 1994.
- Kasabov N. K.: Foundations of Neural Networks, Fuzzy Systems, and Knowledge Engineering. Massachusetts Institute of Technology, Massachusetts Institute of Technology, USA 1996.
- Lakhmi C. Jain, N.M. Martin, Fusion of Neural Networks, Fuzzy Systems and Genetic Algorithms Industrial Applications.
- Nikola K. Kasabov, Foundations of Neural Networks, Fuzzy Systems, and Knowledge Engineering.
- Riechmann T.: Genetic Algorithms and Economic Evolution, 1998.
- Ross T. J.: Fuzzy logic with engineering applications, John Wiley & Sons, 2010.
- Bin Sulaiman R., Kareem A., Intimate Relation With Robot and Impacts on Humanity, 2018, <https://ssrn.com/abstract=3260277>, (dostęp: 18. czerwca 2024).
- Darling K., „Who’s johnny?” Anthropomorphic framing in human-robot interaction, integration, and policy, [w:] Robot Ethics 2.0, P. Lin, G. Bekey, K. Abney, R. Jenkins (red.), Oxford University Press, 2017, <http://dx.doi.org/10.2139/ssrn.2588669> (dostęp: 18. czerwca 2024).
- Boden, M. A., Artificial Intelligence: A Very Short Introduction, Very Short Introductions, Oxford Academic, 2018, <https://doi.org/10.1093/actrade/9780199602919.001.0001> (dostęp: 18. czerwca 2024).





Fundusze Europejskie
dla Rozwoju Społecznego



Rzeczpospolita
Polska

Dofinansowane przez
Unię Europejską



20. Ryland, H.: It's Friendship, Jim, but Not as We Know It: A Degrees-of-Friendship View of Human–Robot Friendships. *Minds & Machines* 31, pp. 377–393, 2021, <https://doi.org/10.1007/s11023-021-09560-z> (dostęp: 18. czerwca 2024).



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*Projekt „Dostosowanie kształcenia w Politechnice
Świętokrzyskiej do potrzeb współczesnej gospodarki”
nr FERS.01.05-IP.08-0234/23*

WMiBM

Wydział Mechatroniki
i Budowy Maszyn