



Dofinansowane przez Unię Europejską



COURSE SPECIFICATION

Course code	full-time programme: M#2-S1-ME-110				
	part-time programme:				
Course title in Polish	Maszynoznawstwo				
Course title in English	Theory of Machines				
Valid from (academic year)	2024/2025				

GENERAL INFORMATION

Programme of study	MECHANICAL ENGINEERING
Level of qualification	first-cycle
Type of education	academic
Mode of study	full-time programme
Specialism	all
Department responsible	Department of Maintenance, Laser and Nanoscale Technologies
Course leader	Dr inż. Piotr Kurp
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	full-time programme	Semester I				
delivery	part-time programme					
Pre-requisites						
Examination required (YES/NO)		NO				
ECTS value		1				

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

LEARNING OUTCOMES



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





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Category of outcome	Outcome code	Course learning outcomes	Corresponding programme outcome code	
Knowledge	W01	Has in-depth knowledge of the nomenclature, construction, principles of operation of various types of machines, mechanical and mechatronic devices, determining the basic parameters of their operation, propulsion sources and fuels used, as well as technical solutions used in various areas of mechanics and machine design.	MiBM1_W06	
	W02	Has detailed knowledge about design of various types of systems for processing and shaping materials (using machining, plastic processing, laser, plasma and other technologies).	MiBM1_W07	
	K01	Is ready to critically evaluate his knowledge and the need to obtain new information both from the literature and from experts in the field of mechanics and machine construction.	MiBM1_K01	
Competence	K02	Independently supplements and expands his knowledge in the field of mechanics and machine design, and takes a critical approach to his knowledge. Understands the need and knows the possibilities of continuous improvement (second and third cycle studies, postgraduate studies, courses) aimed at improving professional, personal and social competences.	MiBM1_K03	
	K03	Is ready to fulfill professional roles related to the field of study in mechanics and machine construction, to follow ethical principles, and cares about the achievements and traditions of the profession.	MiBM1_K06	

COURSE CONTENT

Type of instruction lecture	Topics covered
lecture	Machines and civilization - classification of machines and their role in the modern world, loads on machine elements, machine operating parameters and its efficiency, phases of machine operation. Machine parts nodes - bearings. Technological machines for material processing (lathes, milling machines, drilling machines, presses and bending machines, laser and plasma devices, etc.), design elements of selected machines, basics of operation, design solutions. Steam boilers - heat balance and boiler operation, types of boilers, boiler construction elements (furnaces, heaters, superheaters, auxiliary devices). Steam engines, action and reaction steam turbines, turbine operating parameters. Thermal power plants, power plants and combined heat and power plants, hydroelectric power plants, wind power plants, operational elements. Combustion engines - general classification, engine power and efficiency. Power supply and timing systems for piston engines - operation, design solutions (vortex, piston, cam, etc.).

ASSESSMENT METHODS



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Outcome code	Methods of assessment (Mark with an X where applicable)									
	Oral examination	Written examination	Test	Project	Report	Other				
W01			Х							
W02			Х							
K01						Х				
K02						Х				
K03						Х				

ASSESSMENT TYPE AND CRITERIA

Mode of instruction	Assessment type	Assessment criteria
lecture	non-examination assessment	Obtaining at least 50% of points in the written test at the end of course.

OVERALL STUDENT WORKLOAD

ECTS weighting												
			Student workload									Unit
No.	Activity type	full-time				part-time						
			C	Lb	Р	S	L	C	Lb	Р	S	
1.	Scheduled contact hours	15										h
2.	Other contact hours (office hours, examination)	2	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									ECTS	
9.	Total study time	25						h				
10.	ECTS credits for the course 1 ECTS credit = 25-30 hours of study time					•	1					ECTS

READING LIST

- 1.W. Biały, Podstawy maszynoznawstwa, Wydawnictwo WNT Warszawa 2017
- 2. J. Kijewski, A. Miller, K. Pawlicki, T. Szok, Maszynoznawstwo, WSiP Warszawa 2011
- 3. A. Heim, Podstawy maszynoznawstwa, Politechnika Łódzka, 2002

4. J. J. Uicker Jr; G. R. Pennock; J. E. Shigley, Theory of Machines and Mechanisms, Oxford University Press, 2016



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- 5. R. S. Khurmi, J. K. Gupta, Theory of Machines, Eurasia Publishing House, 2005
- 6. T. Bevan, Theory of Machines, Pearson Education India, 2009

