



Dofinansowane przez Unię Europejską



# **COURSE SPECIFICATION**

Course code	full-time programme:	M#2-S1-ME-402				
	part-time programme:					
Course title in Polish	Podstawy konstrukcji maszyn I					
Course title in English	Machine Design I					
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 Machine Design and Machining
Course leader	dr hab. inż. Jarosław Gałkiewicz, 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 instruct	ion	English			
Semester of	full-time programme	Semester IV			
delivery	part-time programme				
Pre-requisites		Engineering Drawing, Fundamentals of Machining			
Examination required (YES/NO)		NO			
ECTS value		2			

Mode of instruction		lecture	class	laborator y	project	seminar
No. of hours	full-time programme	30				
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 knowledge of the advanced vocabulary necessary to describe the components of mechanical devices and explain the principles of their operation. Understands the operating principles of typical mechanical devices and how to drive them.	MiBM1_W06		
	W02	Knows the advanced engineering methods and tools used in the design of mechanical devices.	MiBM1_W09		
	W03	Knows and understands the principles of designing typical mechanical equipment and selecting standardized machine components.	MiBM1_W15		
	U01	Has the skills to apply the knowledge gained to design a new mechanical device and evaluate its properties.	MiBM1_U01		
Skills	U02	Is able to speak efficiently about mechanical devices enriching his descriptions with drawings, diagrams and calculations.	MiBM1_U07		
	U03	Is able to assess the impact of component fatigue on the planned service life of the entire product and its operating costs.	MiBM1_U18		
	K01	Is ready to critically evaluate the impact of the designed device on human safety and the environment.	MiBM1_K02		
Competence	K02	K02 Is ready to consciously apply the principles of design, especially those affecting the ethical aspects of design that shape the ethos of the engineer.			

# **COURSE CONTENT**

Type of instruction lecture	Topics covered
lecture	The explanation of the essence of the subject and the basic principles of mechanical machine design. Explanation of how to perform strength calculations in terms of static loads. Analysis of the fatigue process with elements of fracture mechanics. Structural materials used in mechanical engineering and their properties. Characteristics of detachable joints.

#### ASSESSMENT METHODS

Outcome	Methods of assessment (Mark with an X where applicable)								
code	Oral examination	Written examination	Test	Project	Report	Other			
W01			Х						
W02			Х						
W03			Х						
U01			Х						
U02			Х						



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U03		Х		
K01		Х		
K02		Х		

#### ASSESSMENT TYPE AND CRITERIA

Mode of Assessment type		Assessment criteria					
lecture	non-examination assessment	The pass mark is a minimum of 50% of points for the final in-class test.					

## OVERALL STUDENT WORKLOAD

	ECTS weighting											
			Student workload									Unit
No.	Activity type	full-time					part-time					
			pro	gram	me			pro	gran	nme		
1	1. Scheduled contact hours	L	С	Lb	Ρ	S	L	С	Lb	Ρ	S	h
••		30										
2.	Other contact hours (office hours, examination)	2	2								h	
3.	Total number of contact hours	32								h		
4.	Number of ECTS credits for contact hours	1,3									ECTS	
5.	Number of independent study hours	18							h			
6.	Number of ECTS credits for independent study hours		0,7							ECTS		
7.	Number of practical hours	0								h		
8.	Number of ECTS credits for practical hours	0,0								ECTS		
9.	Total study time	50								h		
10.	ECTS credits for the course 1 ECTS credit = 25-30 hours of study time		2					ECTS				

## **READING LIST**

1. L. W. Kurmaz, Projektowanie węzłów i części maszyn, Wydawnictwo Politechniki Świętokrzyskiej, Kielce 2007

2. E. Guliński Podstawy Konstrukcji Maszyn. Część I, Wydawnictwo Politechniki Świętokrzyskiej, Skrypt nr 130, Kielce 1989

3. E. Guliński Podstawy Konstrukcji Maszyn. Część II, Wydawnictwo Politechniki Świętokrzyskiej, Skrypt nr 174, Kielce 1989

4. M. Dietrich, Podstawy Konstrukcji Maszyn, Wydawnictwa Naukowo- Techniczne, Warszawa 2006

5. E. Mazanek Przykłady obliczeń z podstaw konstrukcji maszyn, Wydawnictwa Naukowo-Techniczne, Warszawa 2005

6. V. B. Bhandari, Design of Machine Elements, Tata McGraw Hill Education Private Limited, 2010 7. R. G. Budynas, J. K. Nisbett, Shigley's Mechanical Engineering Design, McGraw-Hill Education, 2015

8. J. M. Gere, B. J. Goodno, Mechanics of Materials, Eighth Edition, SI, Cengage Learning, 2013



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