

**COURSE SPECIFICATION**

Course code	full-time programme:	M#2-S1-ME-601
	part-time programme:	
Course title in Polish	Podstawy konstrukcji maszyn III	
Course title in English	Machine Design III	
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 instruction		English
Semester of delivery	full-time programme	Semester VI
	part-time programme	
Pre-requisites		Machine Design II
Examination required (YES/NO)		YES
ECTS value		4

Mode of instruction		lecture	class	laboratory	project	seminar
No. of hours per semester	full-time programme	15			30	
	part-time programme					

LEARNING OUTCOMES



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 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
Skills	U01	Has the skills to apply the knowledge gained to design a new mechanical device and evaluate its properties.	MiBM1_U01
	U02	Is able to speak efficiently about mechanical devices enriching his descriptions with drawings, diagrams and calculations.	MiBM1_U07
	U03	Is able to use computer programs that make the work of a design engineer easier and faster.	MiBM1_U19
	U04	Is able to assess the impact of the selected material on the production costs of the element and its durability.	MiBM1_U18
Competence	K01	He is ready to acquire knowledge about mechanical devices from various sources (literature, Internet, specialists).	MiBM1_K01
	K02	Is prepared and ready to independently expand his knowledge of the construction and principles of operation of mechanical devices. He is aware of the opportunities to expand his knowledge provided by further study in mechanical engineering.	MiBM1_K03

COURSE CONTENT

Type of instruction lecture	Topics covered
lecture	Discussion of tooth failure in helical gears and strength assessment of gears. Parameters and design criteria of bevel gears. Parameters and design criteria of worm gears. Peculiar design solutions of gears. Applications, characteristics, structures, and strength analysis of belt gears. Applications, characteristics, structures, and strength analysis of chain gears.
project	The design of a two-stage mechanical transmission and technical documentation of the driver.

ASSESSMENT METHODS

Outcome	Methods of assessment (Mark with an X where applicable)
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code	Oral examination	Written examination	Test	Project	Report	Other
W01		X				
W02		X				
W03		X				
U01				X		
U02		X		X		
U03				X		
U04				X		
K01		X		X		
K02				X		

ASSESSMENT TYPE AND CRITERIA

Mode of instruction	Assessment type	Assessment criteria
lecture	examination assessment	A minimum of 50% for the examination.
project	non-examination assessment	Completion and defense of the project.

OVERALL STUDENT WORKLOAD

ECTS weighting												
No.	Activity type	Student workload										Unit
		full-time programme					part-time programme					
1.	Scheduled contact hours	L	C	Lb	P	S	L	C	L b	P	S	h
		15			30							
2.	Other contact hours (office hours, examination)	4			2							h
3.	Total number of contact hours	51										h
4.	Number of ECTS credits for contact hours	2,0										ECTS
5.	Number of independent study hours	49										h
6.	Number of ECTS credits for independent study hours	2,0										ECTS
7.	Number of practical hours	67										h
8.	Number of ECTS credits for practical hours	2,7										ECTS
9.	Total study time	100										h
10.	ECTS credits for the course 1 ECTS credit = 25-30 hours of study time	4										ECTS

READING LIST



Fundusze Europejskie
dla Rozwoju Społecznego



Rzeczpospolita
Polska

Dofinansowane przez
Unię Europejską



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



Politechnika Świętokrzyska
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WMiBM

Wydział Mechatroniki
i Budowy Maszyn