



## Subject card

Subject name and code	Fundamentals of Machine Design III, PG_00040070						
Field of study	Mechanical Engineering, Mechanical Engineering						
Date of commencement of studies	October 2020		Academic year of realisation of subject		2022/2023		
Education level	first-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	Part-time studies		Mode of delivery		at the university		
Year of study	3		Language of instruction		Polish		
Semester of study	6		ECTS credits		4.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Institute of Mechanics and Machine Design -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Janusz Musiał				
	Teachers		dr hab. inż. Janusz Musiał				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	15.0	30.0	0.0	45
	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	45		10.0		45.0	100
Subject objectives	Introduction students with phenomena resulting from the use of machines and devices. Acquisition of the ability to design mechanical structures.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_U11] is able to analyse the operation of devices and compare the construction solutions applying usage, safety, environmental, economic and legal criteria	The student is able to analyze and choose a design solution based on various criteria	[SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject
	[K6_U07] is able to design a typical construction of a mechanical device, component or a testing station using appropriate methods and tools, adhering to the set usage criteria	The student is able to design simple mechanical structures	[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools
	[K6_W08] possesses basic knowledge including the methodology of designing machine parts, mechanical devices, selection of construction materials, manufacturing and operation, with the lifetime cycle	The student has basic knowledge of machine design	[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge
	[K6_W04] possesses knowledge on mechanics, including the processes of modelling mechanical systems, statics, kinematics and dynamics of rigid objects and basic knowledge on vibrations	The student has basic knowledge of modeling mechanical systems	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects
	[K6_U03] is able to identify, formulate and develop the documentation of a simple design or technological task, including the description of the results of this task in Polish or in a foreign language and to present the results using computer software or other aiding tools	The student is able to document the design task	[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools
Subject contents	<p><b>The main program content of laboratory exercises:</b></p> <p>Research on the start-up time of the drive system of a working machine with a large mass moment of inertia. Determining the characteristics of a helical spring. Study of stiffness characteristics of pre-tensioned bolted joints. Vibrodiagnostics of rolling bearings. Research of the lubricating film of sliding bearings.</p> <p><b>The main program content of design exercises:</b></p> <p>Design of a simple machine (concepts, verification, calculations, assembly and working drawings).</p>		
Prerequisites and co-requisites	<p>engineering graphics,</p> <p>strength of materials</p> <p>mechanics</p>		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Laboratory tasks	100.0%	40.0%
	Design tasks	100.0%	60.0%
Recommended reading	Basic literature	<p>Series of scripts:</p> <p>R. Maciakowski, M. Dietrich and others: Lecture from PKM Series of textbooks Basics of Machine Design edited by Z. Osiński PWN AutoCAD/Inventor Design Guide L. Kurmaz: Fundamentals of Machine Design. Projects. PWN</p>	

	Supplementary literature	T. Dobrański Technical machine drawing. WNT  Nieżgódziński: Formulas, graphs and strength tables of the WNT.
	eResources addresses	Adresy na platformie eNauczanie: Podstawy Konstrukcji Maszyn III - projekt - Moodle ID: 29580 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=29580">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=29580</a>
Example issues/ example questions/ tasks being completed	gear transmission design	
Work placement	Not applicable	