



Subject card

Subject name and code	Machine Design 3, PG_00042104						
Field of study	Power Engineering, Power Engineering, Power Engineering, Power Engineering, Power 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	Full-time studies	Mode of delivery			at the university		
Year of study	3	Language of instruction			English		
Semester of study	5	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Machine Design and Vehicles -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Jacek Łubiński					
	Teachers	dr hab. inż. Jacek Łubiński					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	0.0	30.0	0.0	30
	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	30	7.0		38.0		75
Subject objectives	Training in the design of simple components of machines. The goal of the course is to further develop the capacity of participants to use the knowledge and skills in technical mechanics, materials science and machine design.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K6_W04	Consolidated knowledge and skills in practical use of technical mechanics, materials science and machine design.			[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge		
	K6_U01	Improved capacity to seek, analyze and accumulate technical information, especially on construction materials, standardised components of machines, industry standards and calculation methods, and the criteria of the evaluation of the design work.			[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task [SU2] Assessment of ability to analyse information		
Subject contents	A design task which, when fully realised, is sufficient to produce a design documentation of simple machine components/sub-assemblies, based on the following, general agenda: <ul style="list-style-type: none">• assessment of design requirements corresponding to the subject of the task,• establishment of the basic technical parameters of the object being designed,• collection of design input data on the basis of technical catalogues, industry standards, engineering handbooks etc. as required to complete the task,• selection of mathematical analysis methods and criteria of the evaluation of the correct completion of each stage of the job,• realisation of the technical calculations; evaluation of the results and correction of the design parameters (e.g. material grade, allowable stress, load conditions and calculated stress, compliance of dimensions amongst the components of the machine part/sub-assembly),• compilation of a clear, communicative and complete report, containing information on the methodology and course of engineering calculations, sources of technical information, results of the technical/design analysis and the assessment of the correctness of the work completed,• completion of a graphical design project (technical drawings: assembly and detailed) as developed in the analytical section of the work.						

Prerequisites and co-requisites	Completed courses in technical mechanics and materials science (batchelor level), and <i>Engineering Graphics, Machine Design 1</i> , and <i>Machine Design 2</i> for the global course speciality of <i>Energy Technologies</i> .		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	design excercise	55.0%	100.0%
Recommended reading	Basic literature	Machine Design Handbook (preferrably an European release) Fundamentals of Machine Design (preferrably an European release) Industry standards on engineering graphics and technical drawing, standardised machine components (e.g. threaded bolts) Manufacturers' catalogues as available on the market to the general public Engineering Graphics handbook (preferrably an European release)	
	Supplementary literature	The Fabric of Reality, David Deutsch A Brief History of Time, Stephen Hawking The Axemaker's Gift, James Burke, Robert Ornstein Catch 22, Joseph Heller The Trial, Franz Kafka Animal Farm, George Orwell	
	eResources addresses	Adresy na platformie eNauczanie: Machine Design 3, PG_00042104 - Moodle ID: 26642 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=26642	
Example issues/ example questions/ tasks being completed	The design of a machine shaft accordingly to a given schematic sketch and design requirements, along with the selection of roller element bearings The design of a welded holder/lug, along with the selection of the set of bolts affixing the holder to its anchoring point		
Work placement	Not applicable		