

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 Machin	Department of Machine Design and Vehicles -> Faculty of Mechanical Engineering and Ship T					ing and Ship To	echnology	
Name and surname	Subject supervisor		dr hab. inż. Jacek Łubiński						
of lecturer (lecturers)	Teachers		dr hab. inż. Ja	dr hab. inż. Jacek Łubiński					
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM	
of instruction	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 classes includ plan	n didactic led in study	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: assessment of design requirements corresponding to the subject of the task, establishement of the basic technical parameters of the object being designed, collection of design input data on the basis of techical 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</i> , <i>Machine Design 1</i> , and <i>Machine Design 2</i> for the global course speciality of <i>Energy Technologies</i> .					
Assessment methods	Subject passing criteria	Passing threshold	Percentage of the final grade			
and criteria	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=26				
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					