



Subject card

Subject name and code	Fundamentalsla of Machines Design 2, PG_00042065						
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		Polish		
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. Michał Wodtke				
	Teachers		dr hab. inż. Michał Wodtke dr inż. Leszek Dąbrowski mgr inż. Marek Łubniewski dr inż. Katarzyna Zasińska				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	15.0	0.0	30
	E-learning hours included: 0.0						
	Additional information: Lectures will be conducted as remote classes (15 hours). Project classes (15) are planned to be conducted as a traditional personal meetings.						
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		5.0		40.0	75
Subject objectives	Familiarization with phenomena in technical systems, especially in machine elements or sub-assemblies. Familiarization with calculation models for construction of machines. Familiarization with elements and assembles commonly used in machines, especially with structure and operation principles of shafts and axles, bearings, clutches, brakes and mechanical transmissions and springs.						
	Skill to construct simple machine elements and simple mechanical systems. Familiarization with basics of project methodology.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	K6_U01	The student obtains information from various sources, integrates and interprets it, draws conclusions. The student has the ability to self-study.	[SU2] Assessment of ability to analyse information [SU5] Assessment of ability to present the results of task [SU4] Assessment of ability to use methods and tools
	K6_W04	Student uses rules of designing and constructing assemblies commonly used in machinery. Student prepares preliminary project of a simple mechanical device with driving system. Student formulates the need, creates concepts and defines requirements. Student selects assessment criteria. Student chooses the best concept. Student analyses and selects suitable computational models and methods. Student selects standardised elements of driving system. Student creates a technical documentation. Student formulates conclusions to his project.	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects
Subject contents	LECTURE: recommendations for the design of shafts and axles, selection of standardised elements to be installed on them. Rolling bearings - selection. Fatigue strength. Elements of driving system (couplings, mechanical gear transmissions). Flexible elements. PROJECT: preliminary project of a simple mechanical device. Formulating the need, creating concepts, defining requirements, creating assessment criteria, selecting the best concept. Selection of standardised elements. Creating engineering documentation.		
Prerequisites and co-requisites	Mathematics, Physics, Engineering graphics, Mechanics, Strength of materials, Materials science, Technology, Metrology, Machine science, Machine design I.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Test of the qualifying classes	50.0%	30.0%
	Project	50.0%	70.0%
Recommended reading	Basic literature	1. Kochanowski R.: Wały i osie - Wykład z Podstaw Konstrukcji Maszyn z ćwiczeniami rachunkowymi. Wyd. Politechniki Gdańskiej. 2. Maciakowski R., Majewski W.: Sprzęgła - Wykład z Podstaw Konstrukcji Maszyn z ćwiczeniami rachunkowymi. Wyd. Politechniki Gdańskiej. 3. Kochanowski M.: Podstawy konstrukcji maszyn z rysunkiem technicznym. Wyd. Politechniki Gdańskiej. Gdańsk 1998.	
	Supplementary literature	1. Druet K., Kochanowski M., Romanowski P.: Łożyska toczne. Wyd. Politechniki Gdańskiej. 2. Sikora J., Maciakowski R.: Przekładnie zębate – geometria i kinematyka zazębienia - Wykład z Podstaw Konstrukcji Maszyn z ćwiczeniami rachunkowymi. Wyd. Politechniki Gdańskiej. 3. Praca zbiorowa: Wykład z Podstaw Konstrukcji Maszyn z ćwiczeniami rachunkowymi - zbiór skryptów. Wyd. Politechniki Gdańskiej.	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	Engineering calculations for immediate and fatigue strength. Calculation of the safety coefficient. Assortment of roller bearings. Start-up of the driving system with the friction coupling. Calculation of the connections journal-hub. Constructing of the shaft or the axle. Calculation of the screw system (bolts, nuts, etc.). Calculation of the welded connections.		
Work placement	Not applicable		