



Subject card

Subject name and code	Basics of Machine Construction, PG_00039823							
Field of study	Materials Engineering, Materials Engineering, Materials Engineering							
Date of commencement of studies	October 2021		Academic year of realisation of subject		2023/2024			
Education level	first-cycle studies		Subject group		Obligatory subject group 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	6		ECTS credits		2.0			
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 inż. Katarzyna Zasińska					
	Teachers		dr inż. Katarzyna Zasińska mgr inż. Marek Łubniewski mgr inż. Małgorzata Kasprolewiec					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar		
	Number of study hours	15.0	0.0	15.0	0.0	0.0		
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		SUM		
	Number of study hours	30		1.0		50		
Subject objectives	The aim of the subject is achieved for students basis of machine design, construction and maintenance.							
Learning outcomes	Course outcome		Subject outcome		Method of verification			
	K6_W05		A student analyzes phenomena in elements of machines. A student creates and applies relevant theoretical models which are necessary to design machines. A student achieves basis of machine design (criteria of judgment, concepts, judgment and choice of best solution etc.) A student gains skills of planning and supervising maintenance tasks to ensure reliable maintenance of machines and devices.		[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge			
	K6_K01		A student identifies phenomena occurring in the components of machines, obtains information from sources of literature, integrates them, draws appropriate conclusions, is able to carry out the selection of basic machine elements of machinery using engineering calculation models calculation models.		[SK1] Assessment of group work skills [SK5] Assessment of ability to solve problems that arise in practice [SK4] Assessment of communication skills, including language correctness			
	K6_U03		A student analyzes phenomena in elements of machines. A student creates and applies relevant theoretical models which are necessary to design machines. A student has general knowledge in fields of construction, work, application and design of elements and assemblies.		[SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment			

Subject contents	<p>LECTURE Designing of objects and processes as a basic element of engineering. Describing and analysing of the problem, searching of the best solution - methods and techniques. Designing of elements of machines with use of strength criteria - engineering calculations. Methods of judgments and solutions. Simulations and optimizations in designing. Methods of analyses of kinematic models. Algorithms of designing. Modern tools for designing machines - CAD 2D and 3D. Calculation of welded elements and fastener.</p> <p>LABORATORY Engineering calculations. Static calculations. Safety factor. Fasteners. Welded elements - calculations and optimization. Screw elements. Preloaded elements. Characteristics of elastic elements and springs. Springs, elastomers. Shafts and axes: modelling and optimisation. Comparison of friction and shape fasteners.</p>									
Prerequisites and co-requisites	1. Knowledge in field of Engineering drawing 2. Knowledge in field of Mechanics 3. Knowledge in field of Strength of materials 4. Knowledge in field of Metrology 5. Knowledge in field of Materials Science									
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="446 496 790 530">Subject passing criteria</th><th data-bbox="790 496 1133 530">Passing threshold</th><th data-bbox="1133 496 1486 530">Percentage of the final grade</th></tr> </thead> <tbody> <tr> <td data-bbox="446 530 790 563">Project</td><td data-bbox="790 530 1133 563">56.0%</td><td data-bbox="1133 530 1486 563">50.0%</td></tr> <tr> <td data-bbox="446 563 790 601">Midterm colloquium</td><td data-bbox="790 563 1133 601">56.0%</td><td data-bbox="1133 563 1486 601">50.0%</td></tr> </tbody> </table>	Subject passing criteria	Passing threshold	Percentage of the final grade	Project	56.0%	50.0%	Midterm colloquium	56.0%	50.0%
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Project	56.0%	50.0%								
Midterm colloquium	56.0%	50.0%								
Recommended reading	<p>Basic literature</p> <ul style="list-style-type: none"> 1. Siwek B.: Połączenia spawane, zgrzewane, lutowane i klejone - Wykład z Podstaw Konstrukcji Maszyn z ćwiczeniami rachunkowymi. Wyd. Politechniki Gdańskiej. 2. Maciąkowski R.: Połączenia śrubowe - Wykład z Podstaw Konstrukcji Maszyn z ćwiczeniami rachunkowymi. Wyd. Politechniki Gdańskiej. 3. Maciąkowski R., Majewski W.: Połączenia wału z piastą - Wykład z Podstaw Konstrukcji Maszyn z ćwiczeniami rachunkowymi. Wyd. Politechniki Gdańskiej. 4. Kochanowski R.: Wały i osie - Wykład z Podstaw Konstrukcji Maszyn z ćwiczeniami rachunkowymi. Wyd. Politechniki Gdańskiej. 5. Maciąkowski R., Majewski W.: Sprzęgła - Wykład z Podstaw Konstrukcji Maszyn z ćwiczeniami rachunkowymi. Wyd. Politechniki Gdańskiej. 6. Kochanowski M.: Podstawy konstrukcji maszyn z rysunkiem technicznym. Wyd. Politechniki Gdańskiej, Gdańsk 1998.7. Druet K., Kochanowski M., Romanowski P.: Łożyska toczne. Wyd. Politechniki Gdańskiej. <p>Supplementary literature</p> <ul style="list-style-type: none"> 1. Podstawy Konstrukcji Maszyn. Cykl monografii wydawanych przez PWN. <p>eResources addresses</p> <p>Adresy na platformie eNauczanie:</p>									
Example issues/example questions/tasks being completed										
Work placement	Not applicable									