



## Subject card

Subject name and code	Special drivers, PG_00024955						
Field of study	Medical and Mechanical Engineering, Mechanical and Medical Engineering						
Date of commencement of studies	October 2020		Academic year of realisation of subject		2022/2023		
Education level	first-cycle studies		Subject group				
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		3.0		
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		prof. dr hab. inż. Michał Wasilczuk				
	Teachers		dr inż. Grzegorz Rotta				
			dr inż. Krzysztof Druet				
			mgr inż. Katarzyna Mazur				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	8.0	0.0	0.0	23
	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	23		5.0		47.0	75
Subject objectives	Acquainting students with special - mechanical, hydraulic and pneumatic transmission systems.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K7_U08						
	K7_W08						
	K7_U06						
	K6_U07		The student is able to make a critical analysis of the existing technical solutions.		[SU3] Assessment of ability to use knowledge gained from the subject		
	K6_W13		The student has knowledge of selected issues related to the application of mechanical engineering in medicine.		[SW1] Assessment of factual knowledge		
	K6_K01		The student knows the level of their competences and their limitations in performing professional tasks.		[SK3] Assessment of ability to organize work [SK5] Assessment of ability to solve problems that arise in practice		
	K6_W04		The student has knowledge of selected technologies in the field of medical engineering.		[SW1] Assessment of factual knowledge		
	K6_W07		The student has knowledge of designing technical devices.		[SW1] Assessment of factual knowledge		

Subject contents	Lecture:Function of transmission systems. New methods of the assortment of roller bearings. New types of rollerbearings.Magnetic field assisted bearings. Magnetic fluids in bearings and sealing. Homokinetic couplings. Electricclutches and brakes. Continuous variable transmission. Planetary gears. Strain wave gearing. The Cyclodrive. Untypical planetary mechanisms. Hydraulic and pneumatic drives.Laboratory:Evaluation of the starting time of the driving system containing the great mass moment of inertia.Reciprocating motion tribometer. Checking of contact marks on teeth of the hypoid gear. The assembly anddisassembly of the technical device.		
Prerequisites and co-requisites	Knowledge in machine design, hydraulics, pneumatics, electrotechnology, electronics, automation.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Laboratory exercises	100.0%	50.0%
	Test	60.0%	50.0%
Recommended reading	Basic literature	Burcan J.: Łożyska wspomagane polem magnetycznym. W-wa: WN-T,Fundacja "Książka Naukowo-Techniczna" 1996.Muller L.: Przekładnie obiegowe. PWN 1983.General Catalogue. School edition. SKF 2003.Podstawy Konstrukcji Maszyn. Cykl monografii wydawanych przezPWN.Wykład z Podstaw Konstrukcji Maszyn z Ćwiczeniami Rachunkowymi -skrypty PG, wyd. PG	
	Supplementary literature	Company literature (catalogues), also the web pages.	
	eResources addresses	Adresy na platformie eNauczanie: napędy specjalne - Moodle ID: 30385 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=30385">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=30385</a>	
Example issues/ example questions/ tasks being completed	Mechanical characteristics of standard engines and milles.Functions of driving systems.Principles of the assortment of roller bearings.Roller bearing about 4 degrees of freedom.Magnetic bearing and sealing.Manners of the join of noncoaxial shafts (changeable tilt angle).Electric clutches and brakes.Examples of construction of the continuous variable transmission.Planet gears and mechanisms.The merits and demerits of different mechanical transmission systems.Control of the hydraulic or pneumatic drive.Evaluation of the starting time of the driving system.Friction under reciprocating motion.Regulation of contact of teeth in the hypoid gear.The assembly and disassembly of the technical device.		
Work placement	Not applicable		