



## Subject card

Subject name and code	Tribology, PG_00057396						
Field of study	Mechanical Engineering						
Date of commencement of studies	February 2023	Academic year of realisation of subject			2023/2024		
Education level	second-cycle studies	Subject group			Optional subject group 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	1	Language of instruction			Polish some materials in English		
Semester of study	2	ECTS credits			4.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Zakład Konstrukcji Maszyn i Inżynierii Medycznej -> 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. Leszek Dąbrowski				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	30.0	0.0	0.0	60
	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	60		8.0		32.0	100
Subject objectives	Presenting knowledge concerning friction and wear with a special emphasis on modern bearing systems. In addition presenting the scientific methods used in friction and wear assessment						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_U06] when solving engineering problems on design, technology and operation of machines is able to assess and classify typical methods and tools, define systemic and ex-technical aspects using modern calculating methods and design tools or modifying the current ones		The student is able to use contemporary knowledge to arrange the experiment to monitor machine operation		[SU1] Assessment of task fulfilment		
	[K7_W07] possesses profound knowledge on the diagnostics and monitoring of the condition of devices, assemblies and technical systems, as well as measurement methods of process and operation control		The student is acquainted with contemporary knowledge concerning friction wear and machine bearing systems		[SW1] Assessment of factual knowledge		
	[K7_W05] possesses profound knowledge on the operation of complex systems and mechanical devices, including process equipment		The student is acquainted with contemporary knowledge concerning machine operation, including the wear and durability issues		[SW1] Assessment of factual knowledge		

Subject contents	<p>Fundamentals of friction and wear</p> <p>Sliding bearing systems - theory and practice</p> <p>Bearing materials and lubricants including the unconventional ones</p> <p>rolling element bearings - theory and advanced issues of application</p> <p>Environmental issues in tribology</p>		
Prerequisites and co-requisites	completed course of Machine Design		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	written exam	50.0%	50.0%
	laboratory	100.0%	50.0%
Recommended reading	Basic literature	A Stolarski Tribology in Machine Design	
	Supplementary literature	Barwell Bearing systems	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	<p>bearing alloys</p> <p>Problems of using water as a lubricant</p> <p>Form od failures of REB</p> <p>Application of polymers in bearings</p>		
Work placement	Not applicable		