



## Subject card

Subject name and code	Environmental threats in mechanical and medical engineering, PG_00039404						
Field of study	Medical and Mechanical Engineering, Mechanical and Medical Engineering						
Date of commencement of studies	October 2020		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	4		Language of instruction		Polish		
Semester of study	7		ECTS credits		2.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Energy and Industrial Apparatus -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Bartosz Dawidowicz				
	Teachers		dr inż. Bartosz Dawidowicz				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	15.0	30
	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	30		3.0		17.0	50
Subject objectives	Presentation of basic knowledge about the essence of an environmental risks associated with mechanical - medical engineering. Presentation methods to counteract these threats, and to present selected examples neutralization and elimination of those risks.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K6_W12		The student is able to present the basic principles of operation and application of medical apparatus.		[SW1] Assessment of factual knowledge		
	K6_K02		Solves technical problems in accordance with the rules and professional ethics, knows what the consequences are. Solves problems in cooperation with other teams.		[SK5] Assessment of ability to solve problems that arise in practice		
	K6_K01		He can search and obtain the necessary information on the most modern technical solutions. Knows how to use the acquired information in the development and implementation of innovative technical solutions. He knows his competences and the value of engineering knowledge.		[SK5] Assessment of ability to solve problems that arise in practice		
	K6_U06		Solves technical problems in the field of medical engineering in accordance with the applicable rules, and performs economic analyzes in this area		[SU3] Assessment of ability to use knowledge gained from the subject		
Subject contents	Lecture: Hazards - basic concepts. The types of hazards. Sources, causes and origin of hazards. The influence of hazards of an environmental. Protection against hazards, personal protection, protection of equipment and facilities. Methods and apparatus for removal and neutralization of the effects of hazards. Measurement and monitoring of environmental pollution.						
Prerequisites and co-requisites	Knowledge of physics, mechanics. The basics of chemistry and biology.						

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Test	56.0%	100.0%
Recommended reading	Basic literature	1. Romanowska-Słomka I.: Zagrożenie biologiczne w służbie zdrowia. Wykazy. Charakterystyka. OSPiP, 2006. 2. Ranecki J.: Ratownictwo chemiczno- ekologiczne, SA PSP- Poznań, 1998. 3. Wojnarowski A, Obolewicz-Pietrusiak A.: Podstawy Ratownictwa Chemicznego, Warszawa 2001r. 4. Tomasz W. Grausz: Zagrożenia Czynniki Chemicznymi w Miejscu Pracy, Państwowa Inspekcja Pracy Główny Inspektorat Pracy, Warszawa 2013. 5. Izabela Waga: Zagrożenia czynnikami biologicznymi w miejscu pracy, Państwowa Inspekcja Pracy Główny Inspektorat Pracy, Warszawa 2013. 6. M. Janiak, A. Wójcik: Medycyna zagrożeń i urazów radiacyjnych, Wydawnictwo Lekarskie PZWL, Warszawa 2005.	
	Supplementary literature	Professional journals:  - Inżynieria Biomedyczna - <a href="http://www.inzynieria-biomedyczna.com">http://www.inzynieria-biomedyczna.com</a> - Zakażenia - <a href="http://mavipuro.pl/czasopisma/zakazenia-xxi-wieku">http://mavipuro.pl/czasopisma/zakazenia-xxi-wieku</a> - Nowiny Lekarskie - <a href="https://jms.ump.edu.pl/nowiny/authors.php?lang=pl">https://jms.ump.edu.pl/nowiny/authors.php?lang=pl</a> - Podstawy i Metody Oceny Środowiska Pracy - <a href="https://www.ciop.pl">https://www.ciop.pl</a> - Promotor BHP - <a href="https://promotor.elamed.pl">https://promotor.elamed.pl</a> - nature - <a href="https://www.nature.com">https://www.nature.com</a>  Diaries Set, Polish and European Standards, Regulation, Directives.	
	eResources addresses	Adresy na platformie eNauczanie: Zagrożenia środowiskowe w IMM (M:31694W0) - Moodle ID: 33826 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=33826">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=33826</a>	
Example issues/ example questions/ tasks being completed	1. Factors causing threat.  2. Examples of threats.  3. Methods of reducing the sources of danger  4. Measures to protect against threats.		
Work placement	Not applicable		