



## Subject card

Subject name and code	SURVEYING OF THE MONITORING OF CONSTRUCTIONS A, PG_00044851						
Field of study	Geodesy and Cartography						
Date of commencement of studies	October 2021	Academic year of realisation of subject			2023/2024		
Education level	first-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	3	Language of instruction			Polish		
Semester of study	6	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Katedra Wytrzymałości Materiałów -> Faculty of Civil and Environmental Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Marek Jasina				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	15.0	0.0	15.0	0.0	45
	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	45		6.0		24.0	75
Subject objectives	Obtain the knowledge to design a structural health monitoring system with use of geodetic displacement measurements and special sensing technologies.						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	[K6_U09] can design geodetic monitoring of engineering structures and carry out measurements with at least two methods, taking into account statics and dynamics of construction		Student exhibits practical knowledge about measurement systems and devices used in structural health monitoring systems for civil structures. Student designs a health monitoring system taking into account the issues of static and dynamic response of a civil engineering objects like bridges, dams, towers, arenas (halls), embankments, buildings etc.			[SU1] Assessment of task fulfilment	
	[K6_W11] understands the concepts and has in-depth knowledge in the field of geodetic building monitoring, extended with basic knowledge in the field of statics and dynamics of engineering structures		Student has knowledge of methods used for the implementation of geodetic service engineering structures, ability to perform displacement measurements.			[SW1] Assessment of factual knowledge	
Subject contents	Mathematical models used for structure displacement determination. Physical conditions for identification of the reference system. Relationships between displacements and the reference system. Overview of the measurement technology for structural health monitoring system (SHM). Presentation of the selection rules of measurement points location on civil structures. Continuous condition monitoring based on measurement data. Presentation of measured and numerical data in communication panels of SHM system.						
Prerequisites and co-requisites							
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	project		40.0%		100.0%		

Recommended reading	Basic literature	<p>1. Prószyński W., Kwaśniak M., 2006, Podstawy geodezyjnego wyznaczania przemieszczeń. Pojęcia i elementy metodyki.</p> <p>2. Wilde K., i inni: System ciągłej obserwacji stanu technicznego hali Olivia w Gdańsku. Inżynieria i Budownictwo, 10, 2009.</p> <p>3. Wilde, K.: Możliwości zastosowania systemów monitoringu technicznego w infrastrukturze elektroenergetycznej. Acta Energetica, 2009/02, str. 107-114.</p>
	Supplementary literature	Not applicable
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	<p>Describe the choice of measurement technology for a given civil engineering structure?</p> <p>Develop a project of structural health monitoring system for a given civil engineering structure.</p>	
Work placement	Not applicable	