



Subject card

Subject name and code	Diagnostics of building structures, PG_00045870						
Field of study	Civil Engineering						
Date of commencement of studies	February 2025		Academic year of realisation of subject		2025/2026		
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		
Semester of study	2		ECTS credits		2.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Building Structures and Material Engineering -> Faculty of Civil and Environmental Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Łukasz Skarżyński				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	15.0	0.0	0.0	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		2.0		3.0	50
Subject objectives	The aim of the course is to acquire knowledge about diagnostics of the engineering structures and to use the results for structure analysis.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_W02] knows principles of analysis, design and dimensioning of complex constructions and its elements	Student has general knowledge in the subject area.	[SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects
	[K7_K01] is aware of necessity of professional competences improvement; obeys the professional ethics code	Student has general knowledge in the subject area.	[SK3] Assessment of ability to organize work [SK5] Assessment of ability to solve problems that arise in practice [SK1] Assessment of group work skills
	[K7_U02] can design and dimension complex steel, concrete (including reinforced), wood and masonry constructions and its details	Student has general knowledge in the subject area.	[SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task
	[K7_W16] knows methods of diagnostics of engineering objects, has knowledge about different kinds of defects in constructions and its reasons; knows means of fixing and reinforcing of constructions.	Student has comprehensive knowledge of the structure condition assessment and knows popular methods of repair and strengthening.	[SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects
	[K7_U16] is able to estimate the technical condition of engineering object; can interpret the results of constructions and materials examination;	Student has comprehensive knowledge of the structure condition assessment on the basis of diagnostic methods.	[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task
Subject contents	1. Introduction to structure diagnostics 2. Morphology of cracks. 3. Destructive and non-destructive diagnostic methods. 4. Using the results of diagnostic tests to analyse the structure. 5. Test load.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Project	50.0%	40.0%
	Colloquium	50.0%	60.0%

Recommended reading	Basic literature	<p>1. Maślowski E., Spiżewska D.: Wzmacnianie konstrukcji budowlanych. Arkady 1999.</p> <p>2. Małyszko L., Orłowicz R.: Konstrukcje murowe zarysowania i naprawy. Wydawnictwo Uniwersytetu Warmińsko-Mazurskiego w Olsztynie 2000.</p> <p>3. Konstrukcje murowe Lech Rudziński Politechnika Świętokrzyska 2006.</p> <p>4. Naprawy Elementów Budowlanych w budynkach mieszkalnych realizowanych metodami uprzemysłowionymi. Inwestprojekt Łódź 1994.</p> <p>5. Trwałość i skuteczność napraw obiektów budowlanych. Dolnośląskie Wydawnictwo Edukacyjne 2007.</p> <p>6. Mitel A., Stachurski W., Suwalski J.: Awarie konstrukcji betonowych i murowych. Arkady 1973.</p> <p>7. Materiały Konferencyjne: Warsztat Pracy Projektanta Konstrukcji WPPK. Ustroń-Wisła-Szczyrk 1998-2008.</p> <p>8. Materiały informacyjne firm zajmujących się opracowywaniem i wdrażaniem nowych rozwiązań technologicznych oraz konstrukcyjno-materiałowych w budownictwie ogólnym.</p>
	Supplementary literature	No requirements.
	eResources addresses	Adresy na platformie eNauczanie:
	Example issues/ example questions/ tasks being completed	<p>1. Assessment of the bearing capacity of a retaining wall on the basis of diagnostic tests and numerical FEM calculations.</p> <p>2. Assessment of the bearing capacity of a reinforced concrete ceiling on the basis of diagnostic tests and numerical FEM calculations.</p> <p>3. Assessment of the bearing capacity of stairs on the basis of diagnostic tests and numerical FEM calculations.</p>
Work placement	Not applicable	

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