GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Advanced Foundations , PG_00049205		
Field of study	Civil Engineering		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2024/2025
Education level	second-cycle studies	Subject group	Obligatory subject group in the field of study Subject group related to scientific research in the field of study
Mode of study	Part-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	1	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Geotechnics, Geology and Marine Civil Engineering -> Faculty of Civil and Environmental Engineering		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Adam Krasiński	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	20.0	0.0	0.0	0.0	35

E-learning hours included: 0.0

Adresy na platformie eNauczanie:

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	35	5.0	60.0	100

Subject objectives

Acquisition of knowledge and skills in the field of construction and design of foundations for advanced and specialized building structures. Understanding modern methods of foundation design using computer methods. Acquisition of the ability to identify significant geotechnical problems. Preparation for independent work as an engineer in execution and design fields.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U14] is able to plan and to interpret the geotechnical investigatons, to analyse the foundation stability; can design direct and deep foundations in complex soil conditions for complcated statical and dynamical loads	Student can interpret the results of geotechnical tests and use them in calculating and analyzing of geotechnical constructions and foundations of advanced building objects.	[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject
[K7_W02] knows principles of analysis, design and dimensioning of complex constructions and its elements	The student knows the principles of analysis, construction and dimensioning of complex geotechnical constructions and foundations of building structures.	[SW1] Assessment of factual knowledge
[K7_U02] can design and dimension complex steel, concrete (including reinforced), wood and masonry construtions and its details	Student can design shallow and deep foundations of advanced civil engineering structures.	[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject

Subject contents

Geotechnical design, geotechnical categories, methods of geotechnical design.
Foundations of bridges and viaducts.
Modern technologies and the solution of pile foundations.
Advanced pile capacity tests.
Housings of deep excavations and multi-storey underground of buildings.
Raft and piled raft foundations.
Foundation of high and heavy industrial buildings.
Strengthening the subsoil under construction embankments.

Prerequisites and co-requisites	Completion of courses: - soil mechanics - foundations - general mechanics - technical drawing - fundamentals of general construction, reinforced concrete and steel structures.
Assessment methods and criteria	

Subject passing criteria	Passing threshold	Percentage of the final grade
Colloquium of lectures	55.0%	45.0%
Passing exercises	55.0%	45.0%
Activity at lectures	0.0%	10.0%

Recommended reading	Basic literature	1. Wiłun Z., Zarys geotechniki, WKŁ, Warszawa, 2004 2. Jarominiak A.,: Lekkie konstrukcje oporowe, Warszawa, WKŁ, 2000 3. Gwizdała K., Fundamenty palowe. T1. 2011, T2. 2013, PWN Warszawa 4. M. Kosecki: Statyka ustrojów palowych. PZITB O/Szczecin, 2006. 5. Puła O., Rybak C., Sarniak W.: Fundamentowanie. Projektowanie posadowień. DWE, Wrocław 1999
	Supplementary literature	1. Starosolski W., Konstrukcje żelbetowe, T2., PWN, Warszawa 1996 2. Normy polskie i Eurokod 7 3. Czasopisma: Inżynieria Morska i Geotechnika, "Geoinżynieria", Inżynieria i Budownictwo
	eResources addresses	
Example issues/ example questions/ tasks being completed	Types of soil conditions and geotechnical categories. Generalized Winkler's ground substrate model. Calculation of foundation slabs on elastic soilbed. Determination of subsidence characteristics of a single pile and pile group The mechanism of the grouting action under the base of bored pile. Mechanism of cooperation of a pile-pile foundation with a ground substrate. The principle of deep excavation wall calculation.	
Work placement	Not applicable	