GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Soil mechanics and soil science, PG_00042617		
Field of study	Environmental Engineering		
Date of commencement of studies	October 2020	Academic year of realisation of subject	2021/2022
Education level	first-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	2	Language of instruction	Polish
Semester of study	3	ECTS credits	5.0
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 inż. Krzysztof Szarf	
	Teachers	dr inż. Witold Tisler dr inż. Krzysztof Szarf	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	5.0	15.0	0.0	0.0	35

E-learning hours included: 0.0

Adresy na platformie eNauczanie:
Mechanika Gruntów i Gruntoznawstwo - niestacjonarne zima 2021/2022 - Moodle ID: 13593
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=13593

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	6.0	85.0	126

Subject objectives

The aim of the class is to teach the students basics of soil mechanics and soil classification.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W04] possesses elementary knowledge in the field of land mechanics, ground science, land reclamation and geotechnics; has basic knowledge about the composition of air, water and soil, environmental pollution and processes responsible for their formation and ways to reduce them, knows the principles and organization of sustainable water management	Student learnt soil mechanics in the scope of the course Student learnt soil classification in the scope of the course Student is knowledgeable about geotechnical problems	
[K6_K01] can think and act in a creative and enterprising way; can set priorities for the implementation of an individual or group task; understands the need for continuous training and professional responsibility for their activities and team	Student is aware of the role of soil in the engineering tasks Student is able to work in the laboratory in a team	

<table>
<tr><td>Subject contents</td><td>Lectures:
1. Introduction to soil mechanics
2. Water in soil
3. Filtration. Freezing of soils
4. Stresses in soil
5. Compressability of soil
6. Strength of soils -- shear strength
7. Bearing capacity of shallow foundations
8. Consolidation
9. Lateral stresses in soil: earth pressure
10. Geotechnical failures. Soil reinforcement
11. Stability of slopes
Laboratory classes:
1. Macroscopic tests on coarse soils and on fine soils
2. Physical quantities of coarse soils
3. State of coarse soils -- density index
4. State of fine soils -- consistency limits
5. Filtration
6. Granulometric curve of a coarse soil
7. Experiment with the Proctor apparatus
8. Experiments with the oedometer
9. Soil strength testing using the triaxial apparatus and the direct shear apparatus

Auditorial classes:

1. Physical quantities of soils

2. Water flow in soil

3. Stresses

4. Shear strength

5. Earth pressure</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Basic knowledge of classical mechanics, mathematics, geology</td></tr>
<tr><td>Assessment methods and criteria</td><td><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>auditorial classes passed</td><td>100.0%</td><td>0.0%</td></tr>
<tr><td>test</td><td>45.0%</td><td>50.0%</td></tr>
<tr><td>laboratory work passed</td><td>100.0%</td><td>50.0%</td></tr>
</table></td></tr>
<tr><td>Recommended reading</td><td><table>
<tr><td>Basic literature</td><td>Arnold Verruijt, Soil Mechanics, TU Delft, 2012</td></tr>
<tr><td>Supplementary literature</td><td>Braja M. Das, Fundamentals of Geotechnical Engineering, Cengage Learning, 2012</td></tr>
<tr><td>eResources addresses</td><td>Mechanika Gruntów i Gruntoznawstwo - niestacjonarne zima 2021/2022 - Moodle ID: 13593
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=13593</td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td>Lectures:
Give a typical value of particle density of soil
Name the basic law describing the shear strength of soil
What quantities are used in Darcy's Law?

Laboratory:
To perform every test in the laboratory. Prepare a lab report for each test. Test.

Auditorial classes:

Prepare and present vertical stress values in the soil profile attached</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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