



Subject card

Subject name and code	Soil mechanics and soil science, PG_00042617						
Field of study	Environmental Engineering						
Date of commencement of studies	October 2021		Academic year of realisation of subject			2022/2023	
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	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						
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_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			[SK2] Assessment of progress of work	
	[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			[SW1] Assessment of factual knowledge	

Subject contents	<p>Lectures:</p> <p>1. Introduction to soil mechanics</p> <p>2. Water in soil</p> <p>3. Filtration. Freezing of soils</p> <p>4. Stresses in soil</p> <p>5. Compressability of soil</p> <p>6. Strength of soils -- shear strength</p> <p>7. Bearing capacity of shallow foundations</p> <p>8. Consolidation</p> <p>9. Lateral stresses in soil: earth pressure</p> <p>10. Geotechnical failures. Soil reinforcement</p> <p>11. Stability of slopes</p> <p>Laboratory classes:</p> <p>1. Macroscopic tests on coarse soils and on fine soils</p> <p>2. Physical quantities of coarse soils</p> <p>3. State of coarse soils -- density index</p> <p>4. State of fine soils -- consistency limits</p> <p>5. Filtration</p> <p>6. Granulometric curve of a coarse soil</p> <p>7. Experiment with the Proctor apparatus</p> <p>8. Experiments with the oedometer</p> <p>9. Soil strength testing using the triaxial apparatus and the direct shear apparatus</p> <p>Auditorial classes:</p> <p>1. Physical quantities of soils</p> <p>2. Water flow in soil</p> <p>3. Stresses</p> <p>4. Shear strength</p> <p>5. Earth pressure</p>														
Prerequisites and co-requisites	Basic knowledge of classical mechanics, mathematics, geology														
Assessment methods and criteria	<table><tr><td>Subject passing criteria</td><td>Passing threshold</td><td>Percentage of the final grade</td></tr><tr><td>auditorial classes passed</td><td>100.0%</td><td>0.0%</td></tr><tr><td>laboratory work passed</td><td>100.0%</td><td>50.0%</td></tr><tr><td>test</td><td>45.0%</td><td>50.0%</td></tr></table>			Subject passing criteria	Passing threshold	Percentage of the final grade	auditorial classes passed	100.0%	0.0%	laboratory work passed	100.0%	50.0%	test	45.0%	50.0%
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Recommended reading	<table><tr><td>Basic literature</td><td colspan="2">Arnold Verruijt, Soil Mechanics, TU Delft, 2012</td></tr><tr><td>Supplementary literature</td><td colspan="2">Braja M. Das, Fundamentals of Geotechnical Engineering, Cengage Learning, 2012</td></tr><tr><td>eResources addresses</td><td colspan="2">Adresy na platformie eNauczanie:</td></tr></table>			Basic literature	Arnold Verruijt, Soil Mechanics, TU Delft, 2012		Supplementary literature	Braja M. Das, Fundamentals of Geotechnical Engineering, Cengage Learning, 2012		eResources addresses	Adresy na platformie eNauczanie:				
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Example issues/ example questions/ tasks being completed	<p>Lectures:</p> <p>Give a typical value of particle density of soil</p> <p>Name the basic law describing the shear strength of soil</p> <p>What quantities are used in Darcy's Law?</p> <p>Laboratory:</p> <p>To perform every test in the laboratory. Prepare a lab report for each test. Test.</p> <p>Auditorial classes:</p> <p>Prepare and present vertical stress values in the soil profile attached</p>														
Work placement	Not applicable														