COURSE DESCRIPTION CARD

<table>
<tr><td colspan="10">Faculty of Civil Engineering and Environmental Sciences</td></tr>
<tr><td>Field of study</td><td colspan="6"></td><td colspan="2">Degree level and programme type</td><td></td></tr>
<tr><td>Specialization/ diploma path</td><td colspan="6"></td><td colspan="2">Study profile</td><td>Academic profile</td></tr>
<tr><td rowspan="2">Course name</td><td colspan="6" rowspan="2">Soil mechanics</td><td colspan="2">Course code</td><td>IS-FCEE-00045-1W</td></tr>
<tr><td colspan="2">Course type</td><td>Erasmus</td></tr>
<tr><td rowspan="2">Forms and number of hours of tuition</td><td>L</td><td>C</td><td>LC</td><td>P</td><td>SW</td><td>FW</td><td>S</td><td>Semester</td><td>winter</td></tr>
<tr><td>30</td><td></td><td>30</td><td></td><td></td><td></td><td></td><td>No. of ECTS credits</td><td>5</td></tr>
<tr><td>Entry requirements</td><td colspan="9">Mathematics, Engineering geology and petrography, Strength of materials</td></tr>
<tr><td>Course objectives</td><td colspan="9">Skill in subsoil identification and its evaluation for building and road foundation. Knowledge and ability to evaluate physical and mechanical parameters of the soil. Calculation of construction foundation settlement and stability of slopes.</td></tr>
<tr><td>Course content</td><td colspan="9">Lecture: Soil science elements. Soil properties. The study of physical and mechanical characteristics of soil. In situ tests. The mechanisms of soil failure. Hypotheses of strength. The flow of water in the soil. Filtration. Consolidation. Freeze elevation and breakthroughs. Slope Stability. Soil compaction. The stresses in the subsoil and the settlement of the building. Soil pressure and passive pressure.
Laboratory classes: Macroscopic evaluation and soil classification. Grain-size analysis including mechanical and hydrometer analysis. Determining density, dry density and specific gravity of the soil. Porosity and void ratio. Minimum and maximum void ratio. Density index. Determining plastic limit, plasticity index and liquid limit. Passive capillarity. Permeability test. Compaction test (moisture-density relation) and degree of compaction. Soil compressibility and consolidation test. Direct shear test.</td></tr>
<tr><td>Teaching methods</td><td colspan="9">laboratory tests, teamwork</td></tr>
<tr><td>Assessment method</td><td colspan="9">lecture – written exam, laboratory classes – execution of the lab tests, evaluation of the reports, evaluation of the homework, two written tests</td></tr>
<tr><td>Symbol of learning outcome</td><td colspan="7">Learning outcomes</td><td colspan="2">Reference to the learning outcomes for the field of study</td></tr>
<tr><td>LO1</td><td colspan="7">Student identifies physical and mechanical parameters of soil.</td><td colspan="2">K_B1_W01, K_B1_W03, K_B1_U04, K_B1_U12</td></tr>
<tr><td>LO2</td><td colspan="7">Student describes water flow in soil and phenomena connected with it.</td><td colspan="2">K_B1_U04, K_B1_U06</td></tr>
<tr><td>LO3</td><td colspan="7">Student estimates settlement of the building, stability of slopes and embankments.</td><td colspan="2">K_B1_W03, K_B1_U02</td></tr>
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LO4	Students examines certain physical and mechanical parameters of soil.	K_B1_W03, K_B1_W04
LO5	Student defines usability of soil as a building material for embankments.	K_B1_W04
LO6	Student uses the Internet and other databases	K_B1_U12
LO7	Student is able to work in a team.	K_B1_K02
Symbol of learning outcome	**Methods of assessing the learning outcomes**	**Type of tuition during which the outcome is assessed**
LO1	Written exam, preparation for the lab classes	L, LC
LO2	Written exam, preparation of the homework	L, LC
LO3	Written exam, preparation of the homework	L, LC
LO4	Execution of theoretical preparation for implementing exercises (first theoretical part of report) and writing research reports (second conclusive part of the report)	LC
LO5	Correction and defence of the results of laboratory tests.	LC
LO6	Written exam, assessment of the reports, two written tests.	L, LC
LO7	Assessment of the in-class teamwork	LC
Student workload (in hours)		**No. of hours**
Calculation	lecture attendance	30
	participation in classes, laboratory classes, etc.	30
	preparation for classes, laboratory classes, projects, seminars, etc.	30
	working on projects, reports, etc.	15
	participation in student-teacher sessions related to the classes/seminar/project	5
	implementation of project tasks	-
	preparation for and participation in exams/tests	25
Quantitative indicators	**HOURS**	**No. of ECTS credits**
Student workload – activities that require direct teacher participation	67	2,6
Student workload – practical activities	83	3,3
Basic references	1. Lancellotta R.: Geotechnical engineering. Balkema A.A./ Rotterdam / Brookfield, 1995. 2. Knapett J.A., Craig R.F.: Craig's soil mechanics. Spon Press, London and New York, 8th ed., 2012. 3. Powrie W.: Soil mechanics. Concept and applications. Crs Press, 3rd ed., 2014.	
Supplementary references	4. EN 1997-2:2004 Eurocode 7. 5. Atkinson J.H.: The mechanics of soils and foundations. Taylor and Francis, New York, 2007.	
Organisational unit conducting the course	**Department of Geotechnics and Structural Mechanics**	**Date of issuing the programme**
Author of the programme	**Assoc. Prof. Katarzyna Zabielska-Adamska, PhD, DSc, Eng**	**30.03.2021**

L – lecture, C – classes, LC – laboratory classes, P – project, SW – specialization workshop, FW - field work, S – seminar