

MODULE SPECIFICATION

Module code	
Module title in Polish	Engineering Soil Science
Module title in English	Engineering Soil Science
Module running from the academic year	2016/2017

A. MODULE IN THE CONTEXT OF THE PROGRAMME OF STUDY

Field of study	Civil Engineering
Level of qualification	First cycle <i>(first cycle, second cycle)</i>
Studies profile	Academic <i>(academic/practical)</i>
Mode of study	Full-time <i>(full-time / part-time)</i>
Specialism	
Organisational unit responsible for module delivery	The Department of Geotechnical and Hydraulic Engineering
Module co-ordinator	Tomasz Kozłowski, PhD hab., Eng.
Approved by	Marek Iwański, Professor

B. MODULE OVERVIEW

Module type	Core module <i>(core/programme-specific/elective HES*)</i>
Module status	Compulsory module <i>(compulsory / non-compulsory)</i>
Language of module delivery	English
Semester in the programme of study in which the module is taught	Semester 5
Semester in the academic year in which the module is taught	Winter semester <i>(winter / summer)</i>
Pre-requisites	None <i>(module code/module title, where appropriate)</i>
Examination required	No <i>(yes / no)</i>
ECTS credits	3

Mode of instruction	lectures	classes	laboratories	project	others
Total hours per semester	15				

* elective HES – elective modules in the Humanities and Economic and Social Sciences

C. LEARNING OUTCOMES AND ASSESSMENT METHODS

Module aims	The aim of the module is to familiarise students with the fundamentals of the mechanics concerning engineering soil science (particularly with the applied specialist terminology). The syllabus of the module covers classification systems of soils applied in the EU and the USA; granulometric composition, plastic and mechanical properties, primary stresses, the stability of buttresses and slopes (together with the theory of thrust and resistance).
--------------------	--

Module outcome code	Module learning outcomes	Mode of instruction (l/c/lab/p/ others)	Corresponding programme outcome code	Corresponding discipline-specific outcome code
W_01	A student is knowledgeable about the genesis of solids and the fundamentals of genetic classification.	l	B_W03 B_W11	T1A_W01 T1A_W02 T1A_W03 T1A_W04 T1A_W07 T1A_W08
W_02	A student has general knowledge as regards physical and mechanical properties of soil as a multi-phase centre.	l	B_W03 B_W11	T1A_W01 T1A_W02 T1A_W03 T1A_W04 T1A_W07 T1A_W08
W_03	A student is familiar with soil classification systems.	l	B_W03 B_W11	T1A_W01 T1A_W02 T1A_W03 T1A_W04 T1A_W07 T1A_W08
W_04	A student knows the fundamentals of soil physicochemistry as well as the structure and properties of clay minerals.	l	B_W03 B_W11	T1A_W01 T1A_W02 T1A_W03 T1A_W04 T1A_W07 T1A_W08
W_05	A student is familiar with the laws ruling infiltration and capillary rise.	l	B_W03 B_W11	T1A_W01 T1A_W02 T1A_W03 T1A_W04 T1A_W07 T1A_W08
W_06	A student knows the principles of calculating prime effective and total stresses as well as porous pressure values.	l	B_W03 B_W06 B_W11	T1A_W01 T1A_W02 T1A_W03 T1A_W04 T1A_W06 T1A_W07 T1A_W08
W_07	A student is acquainted with the theory of thrust and resistance.	l	B_W03 B_W06 B_W11	T1A_W01 T1A_W02 T1A_W03 T1A_W04 T1A_W06 T1A_W07 T1A_W08
U_01	A student can identify soil on the basis of particle-size distribution and the data concerning state.	l	B_U04 B_U17 B_U28	T1A_U01 T1A_U02 T1A_U03 T1A_U04 T1A_U05 T1A_U06 T1A_U08 T1A_U13 T1A_U14
U_02	A student can calculate the necessary physical parameters on the basis of the existing relationships and definitions.	l	B_U03 B_U17 B_U18 B_U28	T1A_U01 T1A_U03 T1A_U04 T1A_U05

				T1A_U06 T1A_U08 T1A_U13 T1A_U14
U_03	A student knows the principles of calculating prime effective and total stresses as well as porous pressure values in the simplest cases.	I	B_U17 B_U18 B_U28	T1A_U01 T1A_U03 T1A_U04 T1A_U05 T1A_U06 T1A_U07 T1A_U08 T1A_U11 T1A_U13 T1A_U14 T1A_U16
U_04	A student is able to obtain information on engineering soil science and soil mechanics from literature, databases and other properly selected sources in English.	I	B_U28 B_U29	T1A_U01 T1A_U03 T1A_U04 T1A_U05 T1A_U06 T1A_U07 T1A_U10
K_01	A student is aware of the necessity to raise his/her professional and personal competences.	I	B_K03	T1A_K01 T1A_K05 T1A_K06
K_02	A student is communicative in multimedia presentations.	I	B_K04	T1A_K01 T1A_K07

Module content:

1. Topics to be covered in the lectures

No.	Topics	Module outcome code
1	Origin of soils.	W_01 U_04 K_01 K_02
2	Clay minerals.	W_04 U_04 K_01 K_02
3	Clay-water interaction	W_04 U_04 K_01 K_02
4	Weight-volume relationships.	W_02 U_01 U_02 U_04 K_01 K_02
5	Soil-particle size.	W_02 W_03 U_01 U_04 K_01 K_02
6	Soil plasticity.	W_03 W_04 U_01 U_02 U_04 K_01 K_02
7	Structure, fabric, and the microstructure of soils.	W_04 U_04 K_01 K_02
8	The classification of soils.	W_03

		U_01 U_02 U_04 K_01 K_02
9	The flow of water in Soils. Capillarity.	W_02 W_05 U_03 U_04 K_01 K_02
10	Effective stress concepts.	W_06 U_03 U_04 K_01 K_02
11	Compressibility of soils.	W_02 U_04 K_01 K_02
12	Shear strength of soils.	W_02 U_04 K_01 K_02
14	Lateral Earth pressure.	W_07 U_04 K_01 K_02

2. Topics to be covered in the classes
3. Topics to be covered in the laboratories
4. Topics to be covered in the projects

Assessment methods

Module outcome code	Assessment methods <i>(Method of assessment; for module skills – reference to specific project, laboratory and similar tasks)</i>
W_01	A test
W_02	A test
W_03	A test
W_04	A test
W_05	A test
W_06	A test
W_07	A test
U_01	A test
U_02	A test
U_03	A test
U_04	A test

C. STUDENT LEARNING ACTIVITIES

ECTS summary		
	Type of learning activity	Study time/ credits
1	Contact hours: participation in lectures	15
2	Contact hours: participation in classes	
3	Contact hours: participation in laboratories	

4	Contact hours: attendance at office hours (2-3 appointments per semester)	3
5	Contact hours: participation in project-based classes	
6	Contact hours: meetings with a project module leader	
7	Contact hours: attendance at an examination	3
8		
9	Number of contact hours	21 <i>(total)</i>
10	Number of ECTS credits for contact hours <i>(1 ECTS credit =25-30 hours of study time)</i>	0.8
11	Private study hours: background reading for lectures	15
12	Private study hours: preparation for classes	
13	Private study hours: preparation for tests	20
14	Private study hours: preparation for laboratories	
15	Private study hours: writing reports	
16	Private study hours: preparation for a final test in laboratories	
17	Private study hours: preparation of a project/a design specification	
18	Private study hours: preparation for an examination	20
19		
20	Number of private study hours	55 <i>(total)</i>
21	Number of ECTS credits for private study hours <i>(1 ECTS credit =25-30 hours of study time)</i>	22
22	Total study time	76
23	Total ECTS credits for the module <i>(1 ECTS credit =25-30 hours of study time)</i>	3
24	Number of practice-based hours <i>Total practice-based hours</i>	3
25	Number of ECTS credits for practice-based hours <i>(1 ECTS credit =25-30 hours of study time)</i>	0.1