Faculty of Civil and Environmental Engineering					
Study programme:	**Landscape Architecture**		Degree level: full-time/part-time programme:	**Bachelor's degree**	
Specialization	**Modelling of green areas**		Diploma path:	**-**	
Module name:	**Soil science**				
Module type:	**obligatory/elective**	Semester: **3**	ECTS **4**	Module ID:	**AK1323**
No. of hrs in semester:	L - 30 C -	LC- 30 P-	SW-	S-	
Prerequisites:	*Complete with prerequisites or "-"*	Ecology, Phisiography I, Phisiography II			
Teaching methods:	lecture, laboratory class	*Assessment:*	*Evaluation must be relevant to the intended learning outcomes*		
		lecture - written exam, laboratory class - evaluation of reports, verification of preparation for classes, tests			
Aims and objectives:	To familiarize students with the origin, structure, properties, and production capacity of the soil. Showing the relationship between soil and other elements of the natural environment. Familiarization with the scheme of Polish soil classification, methods of assessment of the value and relevance of agricultural soils and soils mapping rules.				
Module content:	Introduction to the science of soil: basic definitions, history of soil science, soil science as basic and applied science and its links with other areas of knowledge. The formation of soil, physical and chemical weathering. Factors and processes of soil formation. Soils morphology. Basic physical properties of the soil. Grain size distribution of soil. Water properties of soils. Water sorption curve. Soil air and soil temperature. Soil colloids and their properties. Soil sorption complex. The chemical properties of soils. Soil organic matter. Soil microorganisms and their role in the functioning of soils. Abundance and fertility of soils. The content of basic nutrients in the soil. Polish soil taxonomy - the main soil types. Usable classification and useful agricultural complexes. Soil cartography.				

Learning outcomes	*Write min. 4, max. 8 learning outcomes in the following order: knowledge - skills - competences. Each learning outcome must be verifiable.*	*Relevance to the programme learning outcomes*
LO1	student: discusses the basic concepts and research methods in the field of soil science	K_W01
LO2	describes the structure, physical properties, chemical and biological soil	K_W04
LO3	can analyze the phenomena and processes occurring in the soil and connect them with other elements of the natural environment	K_U04
LO4	is able to obtain information from various sources, including literature and the Internet, to draw conclusions and formulate opinions	K_U03

LO5	can use a variety of cartographic materials, including soil and agricultural maps	K_U06	
LO6	is able to work in a group, taking in the different roles	K_K03	
LO7			
LO8			
student workload	lecture attendance	15 x 2h	30
	preparation for and participation in exams/tests		34
	participation in classes, laboratory classes, etc.	15 x 2h	30
	preparation for classes, laboratoratory classes, projects, seminars, etc.		5
	work on projects, reports, etc.		5
	participation in student-teacher sessions related to the class / seminar / project		5
	implementation of project tasks		
		TOTAL:	109
quantitative indicators	Student workload - activities that require direct teacher participation	69h	ECTS
			3
	Student workload - practical skills activities	55h	2
basic references:	*1) Zawadzki S. (red.), Gleboznawstwo. PWRiL. Warszawa 2009; 2) Bednarek R., Dziadowiec H., Pokojska U., Prusinkieiwcz. Badania ekologiczno-gleboznawcze. PWN. 2011; 3) Greinert A. Przewodnik do ćwiczeń z gleboznawstwa i ochrony gleb. Wyd. Politechniki Zielonogórskiej. Zielona Góra1998; 4) Mocek A.,Drzymała S.,Maszner P. Geneza, analiza i klasyfikacja gleb. Wydaw. AR w Poznaniu. Poznań 2010; 5) Systematyka gleb Polski. 2011. Roczniki gleboznawcze. 62 (3);*		
supplementary references:	*1) Konecka-Betley K., Czępińska - Kamińska D., Janowska E., Systematyka i kartografia gleb. Brożek S., Zwydak M., 2003; 2) Atlas gleb leśnych Polski. Centrum Informacyjne Lasów Państwowych. Warszawa; 3) Bednarek R., Charzyński P., Pokojska U. Klasyfikacja zasobów glebowych świata.Toruń. Uniwersytet Mikołaja Kopernika 2003; 4) Ostrowska A., Gawliński S., Szczubiałka Z. Metody analizy i oceny właściwości gleb i roślin. Instytut Ochrony Środowiska. Warszawa 1991; 5) Sapek A., Sapek B. Metody analizy chemicznej gleb organicznych. Instytut Melioracji i Użytków Zielonych. Falenty 1997;*		

learning outcomes	*methods of assessing learning outcomes*	type of class (if more than one) where the outcomes are assessed
LO1	written pass a lecture, lab reports, test	L, LC
LO2	written pass a lecture, lab reports, test	L, LC
LO3	written pass a lecture, lab reports, test	L, LC
LO4	lab reports, test	LC
LO5	lab reports	LC
LO6	lab reports	LC

LO7			
LO8			
Department:	Department of Environmental Protection and Management	Group instructors:	prof. dr hab. Henryk Banaszuk dr inż. Robert Czubaszek
Date:	27.02.2012 r.	Coordinator:	prof. dr hab. Henryk Banaszuk dr inż. Robert Czubaszek

L - lecture C - class LC - laboratory class P-project
SW - specialization workshop S - seminar