



MODULE SPECIFICATION

Module code	
Module title in Polish	Podstawy nauk o Ziemi
Module title in English	Fundamentals of Earth Sciences
Module running from the academic year	2016/2017

A. MODULE IN THE CONTEXT OF THE PROGRAMME OF STUDY

Field of study	Surveying and Cartography
Level of qualification	first cycle (first cycle, second cycle)
Programme type	academic (academic/practical)
Mode of study	full-time (full-time/part-time)
Specialism	All
Organisational unit responsible for module delivery	The Department of Geotechnical Engineering, Geomatics and Waste Management
Module co-ordinator	Maciej Hajdukiewicz, PhD
Approved by:	Ryszard Florek-Paszkowski, PhD, Eng.

B. MODULE OVERVIEW

Module type	core module (core/programme-specific/elective HES*)
Module status	compulsory module (compulsory/optional)
Language of module delivery	English
Semester in the programme of study in which the module is taught	semester 1
Semester in the academic year in which the module is taught	winter semester (winter semester/summer semester)
Pre-requisites	None (module code/module title, where appropriate)
Examination required	No (yes / no)
ECTS credits	2

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

Mode of instruction	lectures	classes	laboratory	project	other
Total hours per semester	15	15			

C. LEARNING OUTCOMES AND ASSESSMENT METHODS



Module aims	The aim of the module is to familiarise students with the systematics and basic concepts of earth sciences together with their mutual relations. Other aims include the role of surveying and cartography in the system of earth sciences; basic information on the properties of the Earth (the elements of motion, the structure, division, and classification of environment, the processes shaping the environment of the Earth, i.e. metrological, hydrological, and geomorphological).
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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 on earth sciences, which is useful to formulate and solve basic issues connected with surveying and cartography.	l	GiK_W15 GiK_W08 GiK_W03 GiK_W14	T1A_W01 T1A_W02 T1A_W03 T1A_W04 T1A_W05 T1A_W07 T1A_W08
W_02	A student has knowledge on theoretical fundamentals of defining and realising astronomical, surveying, and cartographic coordinate systems in terms of determining the dimensions and elements of Earth movements.	l	GiK_W01 GiK_W10 GiK_W13	T1A_W03, T1A_W04, T1A_W05, TA1_W07
U_01	A student is familiar with the methods of searching information included in various bibliographical and Internet sources; a student can also assess this information and use it in practice.	l/c	GiK_U03 GiK_U05	T1A_U01 T1A_U02 T1A_U05
U_02	A student can independently prepare for tests and examinations.	l/c	GiK_U01	T1A_U01
U_03	A student can convert coordinates between geographical and equatorial equinox coordinates.	c	GiK_U10	T1A_U07, T1A_U08
K_01	A student is aware of the necessity of self-betterment.	l/c	GiK_K02 GiK_K03	T1A_K01 T1A_K02 T1A_K05 T1A_K07

Module content:

1. Topics to be covered in the lectures
2. Topics to be covered in the laboratories

Topics to be covered in the lectures

No.	Topics	Module outcome
1	The systematics of earth sciences. The relationship between earth sciences. The position of the Earth in the solar system. The shape and dimensions of the Earth.	W_01 W_02
2	The consequences of the position and movements of the Earth for the processes taking place in the geographical environment.	W_01 W_02 U_01 U_03



		K_01
3	The geomorphology of Earth surface. Geomorphological processes: weathering, erosion, fluvial and aeolian processes.	W_01
4	The geomorphology of the surface of the Earth. Geomorphological processes: glacial, karstic, and morphological activity of seas and oceans.	W_01 U_01 U_02 K_01
5	Hydrology. The occurrence, role, and circulation of water on the Earth; the issues concerning engineering hydrology.	W_01 U_02
6	Climatology: the impact of water on the climate; basic issues concerning climatology and meteorology.	W_01 W_02 U_01 U_02 K_01
7	Atmosphere in relationship to economy; the impact of the structure of atmosphere on electromagnetic radiation flow; climate zones in relation to the zones of occurrence as regards other phenomena; agrometeorology; air pollution.	W_01 W_02 U_01 U_02 K_01

Topics to be covered in the laboratories

No.	Topics	Module outcome
1	Coordinate systems (geographical and equatorial equinox). Calculating longitude and latitude on the basis of the height and the zenith time of celestial bodies.	U_01, U_03 K_01
2	Geomorphological analysis: concave and convex forms, the map of slopes, exposition, recognizing forms and morphology types; determining the watershed (individual work and a report).	U_01, U_02 K_01
3	Geomorphological and hydrological analyses for the drainage area: hydro- and morphometric parameters, the Horton-Srahler number, geomorphological analysis on the basis of geological structure (a geological map) – individual work and a report.	U_01, U_02 W_01
4	The analysis of the soil profile, the analysis of the soil-agricultural map (individual work and a report).	U_01, W_01, U_02
5	Preparing maps of polygons as regards precipitation and isohyets; calculating a means value of precipitation for the drainage area; discussing planimetric methods (individual work and a report).	U_02, W_01 K_01
6	The elements of engineering hydrology: calculating the flow, and the coefficient of drain for the drainage area (individual work and a report).	U_02, W_01 K_01

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
U_01	a test; completing tasks during classes
U_02	a test; completing tasks during classes
U_03	a test; completing tasks during classes
K_01	Observing a student's involvement during the classes, a discussion during the classes

D. STUDENT LEARNING ACTIVITIES

ECTS credit points		
	Type of learning activity	Study time/ credits
1	Contact hours: Participation in lectures	15
2	Contact hours: Participation in classes	15
3	Contact hours: Participation in laboratories	-
4	Contact hours: Participation in tutorials (2-3 times per semester)	4
5	Contact hours: Participation in project classes	-
6	Contact hours: Project tutorials	-
7	Contact hours: Participation in an examination	-
8	Contact hours: Participation in a final test on classes	2
9	Number of contact hours	36 <i>(total)</i>
10	Number of ECTS credits for contact hours <i>(1 ECTS credit = 25-30 hours of study time)</i>	1,44
11	Private study hours: background reading for lectures	6
12	Private study hours: preparation for classes	2
13	Private study hours: preparation for tests	-
14	Private study hours: preparation for laboratories	-
15	Private study hours: writing reports	3
16	Private study hours: preparation for a final test in laboratories	-
17	Private study hours: preparation of a project/a design specification	-
18	Preparing for an examination	3
19	Preparing questionnaires	
20	Number of private study hours	14 <i>(sum)</i>
21	Number of ECTS credits for private study hours <i>(1 ECTS credit = 25-30 hours of study time)</i>	0,56
22	Total study time	50
23	Total ECTS credits for the module <i>(1 ECTS credit = 25-30 hours of study time)</i>	2
24	Number of practice-based hours <i>Total practice-based hours</i>	-
25	Number of ECTS credits for practice-based hours <i>(1 ECTS credit = 25-30 hours of study time)</i>	-

E. READING LIST



Politechnika Świętokrzyska

WYDZIAŁ INŻYNIERII ŚRODOWISKA, GEOMATYKI I ENERGETYKI

References	<ol style="list-style-type: none">1. Gregory K.J., Goudie A.S., <i>The SAGE Handbook of Geomorphology</i>, SAGE Publications Ltd, 20112. Maidment D.R. (ed.), <i>Handbook of hydrology</i>, McGraw-Hill, inc., 19933. Foth, H. D.: <i>Fundamentals of Soil Science</i>. Sixth Edition. — John Wiley and Sons, New York—Santa Barbara—London—Sydney—Toronto, 1978
Module website	