



MODULE SPECIFICATION

Module code	
Module title in Polish	Geodezja 1
Module title in English	Surveying Engineering 1
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	
Organisational unit responsible for module delivery	The Department of Geotechnical Engineering, Geomatics and Waste Management
Module co-ordinator	Igor Romaniszyn, PhD, Eng.
Approved by:	Ryszard Florek-Paszowski, 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 / summer)
Pre-requisites	None (module codes / module names)
Examination required	Yes (yes / no)
ECTS credits	3

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

Mode of instruction	lectures	classes	laboratories	project	others
Total hours per semester	30	15			



C. LEARNING OUTCOMES AND ASSESSMENT METHODS

Module aims	The aim of the module is to familiarise students with basic knowledge on legal and technological fundamentals which concern surveying and cartography. Students are acquainted with basic notions, definitions, methods, and techniques of land survey and height measurements as well as with the methods of preparing surveying observations and preparing land survey and height map.
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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 has basic knowledge as regards the construction and principle of operation as regards surveying devices.	l/c	GiK_W07	T1A_W02; T1A_W04; T1A_W06
W_02	A student has basic knowledge as regards legal and technological fundamentals of taking land survey and height measurements (together with preparing a land survey and height map).	l/c	GiK_W09	T1A_W03
W_03	A student knows the methods of surveying observations which are indispensable to determine the coordinates of the surveyed points.	l/c	GiK_W03	T1A_W01, T1A_W04, T1A_W07
U_01	A student can obtain information on establishing, measuring, and calculating geodetic controls (which are included in binding legal regulations); a student can assess this information and utilise it in practice.	l/c	GiK_U01	T1A_U01
U_02	A student is capable of independent preparation for laboratory classes (terrain works) with the following methods: control, grid levelling, dispersed points, traverse, pole, tests, and examinations.	c	GiK_U02	T1A_U01, T1A_U05
U_03	A student can design a geodetic control, take its measurement, interpret measurement results, and draw conclusions.	l/c	GiK_U14	T1A_U08
K_01	A student understands the necessity and knows the possibility of continuous education and raising his/her professional qualifications (which result from the changes in regulations as well as technology changes applied in land survey and height measurements).	l/c	GiK_K01	T1A_K01
K_02	A student is aware of the responsibility connected with making surveying works; a student is also able to apply the principles of professional ethics.	l/c	GiK_K02	T1A_K01, T1A_K02, T1A_K05, T1A_K07
K_03	A student can co-operate and work in a team during the completion of land survey and height measurements; a student is also able to prepare a base map.	c	GiK_K07	T1A_K03

Module content:

1. Topics to be covered in the lectures

No.	Topics	Module outcome code
1	The definition and tasks of surveying as science and technology. Legal fundamentals which	W_02



	regulate surveying in Poland. The uniformity of surveying works.	
2	The principles of surveying calculations and recording measurement and calculation results.	W_02
3	A base map. A diagram of creating a base map (a technological cycle).	W_02
4	The characteristics of subsequent stages of surveying works as regards the technological cycle.	W_02
5	A map – its definition and features. Gauss-Krüger cartographic projection.	W_02, K_01
6	Spatial reference points in Poland. Uklad 2000 and Kronsztad 86 Systems.	W_02, K_01
7	Land survey and height measurement control. Projecting and stabilising land survey and height control.	W_02, U_03, K_01
8	The definitions of the measured values in surveying horizontal and vertical angles, lengths, azimuth, and length differences. Measurement methods of these values.	W_02, U_03, K_01
9	Measuring terrain details (land survey and height).	W_02, U_03, K_01
10	Measurement methods – orthogonal, polar, levelling dispersed points, grid, sections, and tacheometry.	W_02, U_03, K_01
11	Coordinate calculus. Calculating coordinates of points in polygonal traverses.	W_02, W_03, U_03, K_01
12	Calculating the height in level circuits.	W_02, W_03, U_03, K_01
13	Contouring.	W_02, W_03, U_03, K_01
14	Calculating areas from coordinates.	W_02, W_03, K_01, K_03
15	Base analogue mapping.	W_02, W_03, U_03, K_01

2. Topics to be covered in the classes

No.	Topics	Module outcome code
1	Measurement units of values measured and determined in surveying (angles, length, areas, volumes, and weight). Recalculating units. The principles of surveying calculations – Krylov-Bradis rules.	W_02,W_03, U_01,U_03, K_03,
2	Work on a base map – reading a map (conventional signs), determining coordinates from a map, determining length.	W_02,W_03, U_01,U_03, K_03,
3	Determining terrain points from data read from a map. Applying terrain details on a map from details measured in terrain.	W_02,W_03, U_01,U_03, K_03,
4	Calculating values measured on a map and in terrain (angles and length). Calculating mean values and errors from multiple measurements.	W_02,W_03, U_01,U_03, K_01
5	Calculating the coordinates of polygonal traverses and details for the polar method.	W_02,W_03, U_01,U_03, K_01
6	Calculating the coordinates of polygonal traverses and details for the orthogonal method.	W_02,W_03, U_01,U_03, K_01
7	Calculating areas from coordinates.	W_02,W_03, U_01,U_03, K_01
8	A credit.	W_02,W_03, U_01,U_03, 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 W_02, W_03	An examination
U_01, U_02, U_03	Completing measurement tasks
W_02, W_03, U_03	A final test
K_01, K_02, K_03	Observing a student's involvement during calculation tasks and terrain measurements. Controlling and consulting measurement operators.

D. STUDENT LEARNING ACTIVITIES

ECTS summary		
	Type of learning activity	Student's workload
1	Contact hours: participation in lectures	30
2	Contact hours: participation in classes	15
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	2
8		
9	Number of contact hours	50 <i>(sum)</i>
10	Number of ECTS credits for contact hours <i>(1 ECTS credit = 25-30 hours of study time)</i>	2
11	Private study hours: background reading for lectures	5
12	Private study hours: preparation for classes	5
13	Private study hours: preparation for tests	5
14	Private study hours: preparation for laboratories	
15	Private study hours: writing reports	5
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	5
19		
20	Number of private study hours	25 <i>(sum)</i>
21	Number of ECTS credits for private study hours <i>(1 ECTS credit = 25-30 hours of study time)</i>	1
22	Total study time	75



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>	0
25	Number of ECTS credits for practice-based hours <i>(1 ECTS credit =25-30 hours of study time)</i>	0

E. READING LIST

References	
Module website	