



MODULE SPECIFICATION

Module code	
Module title in Polish	Geodezja i fotogrametria
Module title in English	Surveying and Photogrammetry
Module running from the academic year	2016/2017

A. MODULE IN THE CONTEXT OF THE PROGRAMME OF STUDY

Field of study	Environmental Engineering
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, Geomatics and Waste Management
Module co-ordinator	Ryszard Florek Paszkowski, PhD, Eng.
Approved by:	Lidia Dąbek, PhD hab., Professor of the University

B. MODULE OVERVIEW

Module type	core module (core/programme-specific/elective HES*)
Module status	compulsory module (compulsory/optional)
Language of module delivery	Polish, English
Semester in the programme of study in which the module is taught	semester 3
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



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



C. LEARNING OUTCOMES AND ASSESSMENT METHODS

Module aims	The aim of the module is to prepare a graduate for full co-operation with surveying services handling the branch, i.e. environmental engineering with the knowledge of basic issues concerning surveying and photogrammetry (with the use of new techniques and technologies of surveying work).
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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 familiar with the principles of law determining the field of co-operation between surveying services and a graduate.	I	IŚ_W04	T1A_W02 T1A_W07
W_02	A student is familiar with basic surveying activities made with classical surveying instruments.	II	IŚ_W04	T1A_W02 T1A_W07
W_03	A student knows the principles of coordinate calculus while creating a map background. Moreover, a student knows the methods of surveying surface area.	II	IŚ_W04	T1A_W02 T1A_W07
W_04	A student knows surveying studies: maps and documentation drafts. Furthermore, a student knows the process of creating maps with traditional and computer methods.	II	IŚ_W02 IŚ_W05	T1A_W02, T1A_W07 T1A_W05
W_05	A student knows the notions of realisation and inventory of a building structure. A student knows what kind of surveying works must be completed in particular stages of the investment process.	I	IŚ_W04	T1A_W02 T1A_W07
W_06	A student knows basis photogrammetric studies and the possibilities of applying them in investment planning.	II	IŚ_W04	T1A_W02 T1A_W07
U_01	A student can read surveying maps and utilise them in designing.	II	IŚ_U10	T1A_U02; T1A_U03 T1A_U05 T1A_U07 T1A_U15;
U_02	A student can make basic surveys with the use of a tape measure, range finder, theodolite, tacheometer, leveller, and GPS.	I	IŚ_U03 IŚ_U10	T1A_U02; T1A_U03 T1A_U05 T1A_U07 T1A_U08 T1A_U15;
U_03	A student can calculate the coordinates of a point on the basis of surveys. Moreover, a student can calculate surface areas with various methods.	II	IŚ_U10	T1A_U02; T1A_U03 T1A_U05 T1A_U07 T1A_U15;
U_04	A student can chart a topographic map on the basis of his/her surveys.	II	IŚ_U10	T1A_U02; T1A_U03 T1A_U05 T1A_U07 T1A_U15;;
K_01	A student can work on his/her own and in a team. A student can organise the work of a team which will realise a give task. In addition, a student can divide	I	IŚ_K01 IS_K05	T1A_K03 T1A_K04



	work among team members on tasks according to their competences.			
K_02	A student is responsible for the reliability of the obtained results.	I	IŚ_K02	
K_03	A student can assess survey results and formulate appropriate conclusions.	I	IŚ_K07	

Module content:

1. Topics to be covered in the lectures

No.	Topics	Module outcome code
1.	Discussing the syllabus concerning the lectures. Basic notions and definitions concerning surveying and cartography. Legal fundamentals of the completed surveying works. Surveying and cartographic service. The types of surveying studies.	W_01 U_01
2.	Linear surveys. Direct and indirect surveys of length. Setting out straight lines.	W_02 U_02
3.	Theodolite and angle measurement. The structure of theodolite, geometric conditions of theodolite. The methods of surveying horizontal angles.	W_02 U_02
4.	Surveys of situational details. The orthogonal methods, the polar method, the method of angular and linear indents, GPS methods.	W_02 U_02
5.	The elements of the coordinate calculus. Surveying coordinate system.	W_03 U_03
6.	Height surveys. The structure of a leveller, surveying conditions of a leveller. Surveys with the geometric levelling methods (frontwards and from the middle).	W_02 U_02
7.	Tacheometry (topographic surveys).	W_02 U_02
8.	Cartographic preparation of survey results.	W_04 U_04
9.	Calculating surface area. The analytical and graphical methods. Measuring surface areas on rasters.	W_03 U_03
10.	The stages of the investment process. Realisation and inventory.	W_05
11.	The elements of photogrammetry and remote sensing.	W_06
12.	A final test.	W_01 W_02 W_03 W_04 W_05 W_06

2. Topics to be covered in the classes

3. Topics to be covered in the laboratories

No.	Topics	Module outcome code
1.	Familiarising students with the syllabus of laboratory classes. Familiarising students with the catalogue of conventional signs applied in on maps according to the K-1 technical instruction. Reading maps.	U_01 W_04
2.	Setting out straight lines length survey.	W_02 U_02 K_01
3.	Theodolite. Surveying a horizontal angle.	T1A_K02;



		T1A_K05
4.	Surveying field situational details.	T1A_K07
5	The coordinate calculus.	W_03 U_03 K_02 K_03
6	A leveller. Geometric levelling.	W_02 U_02 K_01
7	Tacheometry. Charting. Calculating surface area.	W_02 U_02 U_03 U_04 K_01 K_02
9	Photogrammetry and remote sensing.	W_06 U_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
W_03	A test
W_04	A test
W_05	A test
W_06	A test
U_01	A test and a report
U_02	A report
U_03	A test and report
U_04	A test and report
K_01	A report
K_02	A report
K_03	A report



D. 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	15
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	
8		
9	Number of contact hours	33 <i>(total)</i>
10	Number of ECTS credits for contact hours <i>(1 ECTS credit = 25-30 hours of study time)</i>	1,32
11	Private study hours: background reading for lectures	2
12	Private study hours: preparation for classes	
13	Private study hours: preparation for tests	
14	Private study hours: preparation for laboratories	5
15	Private study hours: writing reports	5
16	Private study hours: preparation for a final test in laboratories	2
17	Private study hours: preparation of a project/a design specification	2
18	Private study hours: preparation for an examination	
19		
20	Number of private study hours	17 <i>(total)</i>
21	Number of ECTS credits for private study hours <i>(1 ECTS credit = 25-30 hours of study time)</i>	0,68
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>	27
25	Number of ECTS credits for practice-based hours <i>(1 ECTS credit = 25-30 hours of study time)</i>	1,08

E. READING LIST

References	<ol style="list-style-type: none"> 1. Duggal S K : <i>Surveying Vol II, 4e</i>, Tata McGraw-Hill Education. Paul Wolf, Bon DeWitt, Benjamin Wilkinson. 2. Paul Wolf, Bon DeWitt, Benjamin Wilkinson: <i>Elements of Photogrammetry with Application in GIS, Fourth Edition</i>, McGraw Hill Professional, 2013. 3. Satheesh Gopi, R. Sathikumar, N. Madhu : <i>Advanced Surveying: Total Station, Gis and Remote Sensing</i>, Lulu Press, 2014. 4. Satheesh Gopi: <i>Global Positioning System: Principles And Applications</i>,
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	Tata McGraw-Hill Education, 2005. 5. Srivastava G.S. : <i>An Introduction to Geoinformatics</i> , McGraw-Hill Education, 2014.
Module website	