MODULE SPECIFICATION

Module code	
Module title in Polish	**Podstawy fotogrametrii**
Module title in English	**Principles of Photogrammetry**
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	**Beata Hejmanowska, PhD hab., Eng., Professor of the University**
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 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	**4**

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

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

semester					

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C. LEARNING OUTCOMES AND ASSESSMENT METHODS

Module aims	The aim of the module is to familiarize students with basic knowledge on utilizing photogrammetric methods in geomatics. Students become acquainted with basic knowledge on image deformations and the methods of correcting them. Another aim of the module is to acquaint students with theoretical fundamentals and teach practical skills.

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 on obtaining photogrammetric images.	l/l/p	GiK_W19	T1 A_W03 T1 A_W05 T1 A_W07
W_02	A student has basic knowledge on the sources of errors of photogrammetric images.	l/l/p	GiK _W02	T1 A_W01 T1 A_W03
W_03	A student has basic knowledge on geometrical correction of photogrammetric images.	l/l/p	GiK _W02	T1 A_W01 T1 A_W03
U_01	A student has practical knowledge on assessing geometrical quality of photographs.	l/p	GiK _U04 GiK _U17	T1A_U01, T1A_U06 T1A_U08 T1A_U14
U_02	A student has practical skills of creating orthophotomaps.	l/p	GiK _U04 GiK _U17	T1A_U01, T1A_U06 T1A_U08 T1A_U14
K_01	A student has knowledge on legal aspects of photogrammetric applications.	l/l/p	GiK _K05	T1A_K02
K_02	A student understands the role of photogrammetric products in decision-making.	l/l/p	GiK _K06	T1A_K03

Module content:

1. Topics to be covered in the lectures

No.	Topics	Module outcome code
1.	Utilising photogrammetry and photgrammetric products as a source of input data for the Geographic Information System.	W_01 K_01
2-3.	Coordinate systems and transformation of coordinate systems. A picture as a middle projection. Image geometry. Calculating scale.	W_01 W_02
4-5.	The analysis of geometric errors of aerials pictures. Internal and external absolute picture orientation. The equation of colinearity. Creating othophotomaps. A numerical terrain model.	W_02 W_03
6-8.	Creating a stereoscopic model on the basis of two aerial pictures.	W_03 K_01 K_02

2. Topics to be covered in the classes

No.	Topics	Module outcome

		code
1-2	The analysis of geometrical quality of photogrammetric pictures and teledetection images.	W_01 W_02 W_03 U_01
3-5	Simple measurements on pictures.	U_01 U_02
6-7	Creating a 3D model.	U_01 U_02 K_01 K_02

3. Topics to be covered in project assignments

No.	Topics	Module outcome code
1-3	The analysis of geometrical deformations on an aerial picture.	W_02 W_03 U_01
4-7	Creating a photomap and orthophotomap.	W_01 U_02 K_01 K_02

Assessment methods

Module outcome code	Assessment methods *(Method of assessment; for module skills – reference to specific project, laboratory and similar tasks)*
Gik_W_01	A test, assessing reports
GiK_W_02	A test, assessing reports
GiK_W_03	A test, assessing reports
GiK _U_01	A test, assessing reports
GiK _U_02	A test, assessing reports
GiK _K_01	Observing a student's involvement during the classes and a discussion during the classes
GiK _K_02	Observing a student's involvement during the classes and a discussion during the classes

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	**15**
6	Contact hours: meetings with a project module leader	**5**
7	Contact hours: attendance at an examination	**2**
8		
9	**Number of contact hours**	**55** *(sum)*
10	**Number of ECTS credits for contact hours** *(1 ECTS credit =25-30 hours of study time)*	**2.2**
11	Private study hours: background reading for lectures	**10**
12	Private study hours: preparation for classes	**-**
13	Private study hours: preparation for tests	**10**
14	Private study hours: preparation for laboratories	**10**
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	**15**
18	Private study hours: preparation for an examination	**-**
19		
20	**Number of private study hours**	**45** *(sum)*
21	**Number of ECTS credits for private study hours** *(1 ECTS credit =25-30 hours of study time)*	**1.8**
22	**Total study time**	**100**
23	**Total ECTS credits for the module** *(1 ECTS credit =25-30 hours of study time)*	**4**
24	**Number of practice-based hours** *Total practice-based hours*	**55**
25	**Number of ECTS credits for practice-based hours** *(1 ECTS credit =25-30 hours of study time)*	**2.2**

E. READING LIST

References	
Module website	