



MODULE SPECIFICATION

Module code	
Module title in Polish	Podstawy miernictwa górniczego i tuneli
Module title in English	Principles of Mining and Tunnel Surveying
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	Engineering Surveys (graduation path)
Organisational unit responsible for module delivery	The Department of Geotechnical Engineering, Geomatics and Waste Management
Module co-ordinator	Prof. Jacek Szewczyk, PhD hab., Eng.
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 6
Semester in the academic year in which the module is taught	summer semester (winter semester/summer semester)
Pre-requisites	None (module code/module title, where appropriate)
Examination required	no (Yes/No)
ECTS credits	1

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

Mode of instruction	lectures	classes	laboratories	project	others
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Politechnika Świętokrzyska

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Total hours per semester	15				
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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 as regards mining surveying. Students become acquainted with basic notions, definitions, methods, and techniques concerning topographic surveys together with the methods of preparing surveying observations applied in mining surveying and underground engineering.
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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 on the Surveying and Mining Law as well as executive directives in terms of legal and technological fundamentals of realising topographic surveys to prepare mining maps.	I	GiK_W09	T1A_W03
W_02	A student knows and is able to define surveying works while creating surveying maps together with basic measurement methods in underground mining enterprises and tunnels.	I	GiK_W03 GiK_W10	T1A_W01, T1A_W04, T1A_W07
W_03	A student is familiar with survey methods and the methods of preparing surveying observations which are necessary for determining coordinates of the measured control network points and terrain details.	I	GiK_W03	T1A_W01, T1A_W04, T1A_07
U_01	A student is capable of obtaining information on establishing, measuring, and calculating control networks in mining enterprises and tunnels (which are included in the binding legal regulations).	I	GiK_U01	T1A_U01
U_02	A student is capable of making basic surveying calculations for the needs of surveying handling as regards boring underground mine workings and creating mining maps; a student can also interpret their results.	I	GiK_U14	T1A_U08
K_01	A student understands the necessity and knows the possibilities of continuous education which result from the changing regulations as well as technologies applied in topographic surveys.	I	GiK_K01	T1A_K01
K_02	A student is aware of the necessity of self-betterment.	I	GiK_K02	T1A_K01, T1A_K02, T1A_K05, T1A_K07

Module content:

1. Topics to be covered in the lectures

No.	Topics	Module outcome code
1 - 3	The definition and tasks of mining surveying as a science and technology. legal fundamentals regulating the tasks of mining surveying in Poland (the Surveying and Mining Law). Main types of surveying works in mining surveying and tunnelling. Situational orientation of underground excavations (the setting out and gyroscopic method).	W_01 W_03 U_01 K_01
4 - 6	Height orientation of underground excavations (the methods with the use of a mine tape and electrooptical rangefinders. Determining the directions of boring excavations (vertical and horizontal). Classical and laser methods.	W_01 U_01
7 - 9	Geodetic control network in mining excavations (topographic one). Designing and stabilising a	W_01



	control network. The specificity and measurement methods of angles, lengths, and height differences in underground excavations. A detailed image (methods).	W-02 U_01 U_02 K_01 K_02
10 - 12	Trenchless technologies. The examples of surveys in mining and underground engineering (the Warsaw Underground and the English Channel).	W_02, U_01, U_02 K_01
13 - 15	Mining maps. Special issues.	W_01 W-02 U_01 K_01 K_02

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, U_01, U_02	Obtaining a credit.
K_01, K_02	Observing a student's involvement during the lectures.

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	
4	Contact hours: attendance at office hours (2-3 appointments per semester)	2
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	17 <i>(total)</i>
10	Number of ECTS credits for contact hours <i>(1 ECTS credit = 25-30 hours of study time)</i>	0.68
11	Private study hours: background reading for lectures	4



12	Private study hours: preparation for classes	
13	Private study hours: preparation for tests	
14	Private study hours: preparation for laboratories	4
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	
18	Private study hours: preparation for an examination	
19		
20	Number of private study hours	8 <i>(total)</i>
21	Number of ECTS credits for private study hours <i>(1 ECTS credit = 25-30 hours of study time)</i>	0.32
22	Total study time	25
23	Total ECTS credits for the module <i>(1 ECTS credit = 25-30 hours of study time)</i>	1
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	<ol style="list-style-type: none">1. Proceedings of ISM (International Society for Mine Surveying) International Congresses, 1969 – 2013. Internet resources:2. LEICA TMS (Tunnel Measurement System) – http://www.Leica-geosystems.com3. www.alptransit.ch
Module website	