

MODULE SPECIFICATION

Module code	
Module title in Polish	Specjalne technologie w drogownictwie
Module title in English	Special Technologies in Road Construction
Module running from the academic year	2016/2017

A. MODULE IN THE CONTEXT OF THE PROGRAMME OF STUDY

Field of study	Civil Engineering
Level of qualification	First cycle <i>(first cycle, second cycle)</i>
Studies profile	Academic <i>(academic/practical)</i>
Mode of study	Full-time <i>(full-time / part-time)</i>
Specialism	
Organisational unit responsible for module delivery	The Department of Transportation Engineering
Module co-ordinator	Anna Chomicz-Kowalska, PhD, Eng.
Approved by	Marek Iwański, Professor

B. MODULE OVERVIEW

Module type	Core module <i>(core/programme-specific/elective HES*)</i>
Module status	Compulsory module <i>(compulsory / non-compulsory)</i>
Language of module delivery	English
Semester in the programme of study in which the module is taught	Semester 4
Semester in the academic year in which the module is taught	Summer semester <i>(winter / summer)</i>
Pre-requisites	None <i>(module code/module title, where appropriate)</i>
Examination required	No <i>(yes / no)</i>
ECTS credits	3

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

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

C. LEARNING OUTCOMES AND ASSESSMENT METHODS

Module aims	The aim of the module is to acquaint students with knowledge as regards modern technologies utilised in road construction as well as materials applied to manufacture mixes for layers concerning road surface.
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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 geosynthetics as well as biodegradable materials; a student also knows their division and application.	l/p	B_W18	T1A_W02 T1A_W03 T1A_W04 T1A_W05 T1A_W07 T1A_W08
W_02	A student knows the principles and technologies of repairing road surface.	l	B_W13	T1A_W02 T1A_W03 T1A_W06 T1A_W08
W_03	A student knows the principles of designing bituminous mixes.	l	B_W12	T1A_W02 T1A_W04 T1A_W05 T1A_W03 T1A_W07
W_04	A student knows the fundamentals of dimensioning and constructing cross sections of roads as well as the structure of road surface.	p	B_W09	T1A_W03 T1A_W07
W_05	A student is familiar with materials used to make bituminous mixes.	l	B_W18	T1A_W02 T1A_W03 T1A_W04 T1A_W05 T1A_W07 T1A_W08
U_01	A student can discuss loads interacting with road embankment.	p	B_U03	T1A_U08 T1A_U013
U_02	A student can use basic norms as well as catalogues connected with road construction.	l/p	B_U13	T1A_U05 T1A_U07 T1A_U11 T1A_U15 T1A_U16
U_03	A student can design the structures of flexible and semi-rigid surface.	l/p	B_U14	T1A_U03 T1A_U04 T1A_U05 T1A_U14 T1A_U16
U_04	A student can identify surface and assess it with respect to conditions it form as regards the foundation of road objects.	l/p	B_U17	T1A_U08 T1A_U13 T1A_U14
K_01	A student can work individually.	p	B_K01	T1A_K03 T1A_K01 T1A_K04
K_02	A student is responsible for the reliability of the obtained results.	p	B_K02	T1A_K02 T1A_K05 T1A_K07
K_03	A student formulates conclusions and describes the results of his/her own work.	p	B_K04	T1A_K01 T1A_K07

Module content:

1. Topics to be covered in the lectures

No.	Topics	Module outcome code
1-2	The application of geosynthetics in road surface construction.	W_01
3-4	Special biodegradable materials applied in ground works	W_01 U_04
5-6	Asphalt modified bonding agents. The classification of polymers. Asphalt modifiers and stabilisers. The characteristics of asphalt emulsion. Modified asphalt emulsions.	W_05 U_02
7-8	Special asphalt tests and bituminous mixes according to the SHRP program. Designing asphalt concrete with the Superpave method.	W_03 W_05 U_02 U_03
9-10	The technologies of surface repairs. Thin "hot" and "cold" coatings.	W_02 W_05 U_02
11-13	Special road surfaces. The characteristics of drainage surface, compact asphalt, stone mastic asphalt (SMA), and open-graded asphalt.	W_03 W_05 U_02 U_03
14-15	Special technologies of recycling road surface.	W_02 W_03 W_05 U_02 U_03

2. Topics to be covered in the classes
3. Topics to be covered in the laboratories
4. Topics to be covered in the projects

Project number	Topics	Module outcome code
1	Road embankment on low-bearing soil reinforced with a geosynthetic.	W_01 U_01 U_02 K_01 K_03
2	Designing drainage (drainage of a road on a subgrade with given granulation.	W_01 U_02 U_04 K_01 K_02
3	Designing flexible and semi-rigid surface structure according to the "Catalogue of typical structure of susceptible and semi-rigid surfaces."	W_04 W_05 U_02 U_03 U_04 K_01 K_03

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 and a project
W_02	A test
W_03	A test
W_04	A test and a project
W_05	A test
U_01	A test and a project
U_02	A project
U_03	A test and a project
U_04	A test and a project
K_01	A test and a project
K_02	A test and a project
K_03	A project

C. STUDENT LEARNING ACTIVITIES

ECTS summary		
	Type of learning activity	Study time/ credits
1	Contact hours: participation in lectures	30
2	Contact hours: participation in classes	
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	15
6	Contact hours: meetings with a project module leader	2
7	Contact hours: attendance at an examination	2
8		
9	Number of contact hours	52 <i>(total)</i>
10	Number of ECTS credits for contact hours <i>(1 ECTS credit =25-30 hours of study time)</i>	2.1
11	Private study hours: background reading for lectures	5
12	Private study hours: preparation for classes	
13	Private study hours: preparation for tests	
14	Private study hours: preparation for laboratories	
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	10
18	Private study hours: preparation for an examination	8
19		
20	Number of private study hours	23 <i>(total)</i>
21	Number of ECTS credits for private study hours <i>(1 ECTS credit =25-30 hours of study time)</i>	0.9
22	Total study time	75
23	Total ECTS credits for the module	3

	<i>(1 ECTS credit =25-30 hours of study time)</i>	
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>	