

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Diagnostic of Pavement		Code 1010125121010121018
Field of study Transportation Engineering Extramural Second-	Profile of study (general academic, practical) general academic	Year /Semester 1 / 2
Elective path/specialty Road Engineering	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: Second-cycle studies	Form of study (full-time, part-time) part-time	
No. of hours Lecture: 15 Classes: - Laboratory: - Project/seminars: 15		No. of credits 3
Status of the course in the study program (Basic, major, other) major		(university-wide, from another field) from field
Education areas and fields of science and art technical sciences Technical sciences		ECTS distribution (number and %) 3 100% 3 100%
Responsible for subject / lecturer: dr inż. Agnieszka Płatkiewicz email: agnieszka.platkiewicz@put.poznan.pl tel. 061 6652-486 Faculty of Civil and Environmental Engineering ul. Piotrowo 5 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Basic knowledge of road engineering. Knowledge of developmental trends and new achievements in the field of road engineering The essential knowledge for understanding the social, economic and legal considerations of engineering
2	Skills	The ability to identify and formulate the specifications of simple engineering tasks specific for road engineering The ability to acquire information from literature, databases and other sources and to integrate obtained data. The ability to interpret and draw conclusions The ability to critically analyze and to evaluate of existing road construction technologies
3	Social competencies	The ability to work independently and in a team The awareness of the non-technical effects of engineering activities, including its impact on the environment and responsibility for the decisions
Assumptions and objectives of the course: The knowledge of the analysis, design and use of engineering structures The ability to identify and solve significant problems concerning the pavement diagnostics Acquiring the ability self-study of new problems and to solve them while conducting research work		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. The student has knowledge of the external and the technological factors affecting the road pavement condition - [K_W07]		
2. The student has knowledge of methods and systems of assessment of road pavement condition - [K_W10, K_W19]		
3. The student knows the prediction methods of the road pavement condition - [K_W04, K_W19]		
4. The student knows the current laws concerning roads pavement diagnostics - [K_W17, K_W19]		
Skills:		
1. The student is able to identify the road pavement faults and determine the probable cause of them - [K_U12]		
2. The student is able to determine repair needs of road pavement and suggest the proper maintenance works for roads - [K_U12, K_U13]		
3. The student is able to predict the change in time of the parameter describing the pavement condition - [K_U13]		
Social competencies:		

1. The student is able to work independently and as a team on the specific task - [K_K01]
2. The student is able to formulate opinions on the pavement diagnostics, technical and technological processes in the road engineering - [K_K07]
3. The student understands the need to sharing knowledge on the road pavement condition and to educate the society in the field road pavements management systems - [K_K08]

Assessment methods of study outcomes

Lectures - students' knowledge is assessed on the basis of a written exam which takes place during last lecture (according to the timetable). The exam consists of 4 questions and lasts 30 minutes.

Students are informed about exam's date, form and time during the first lecture.

Grading scale:

- 16 points - A (very good)
- 14-15 points - B (good plus)
- 12-13 points - C (good)
- 10-11 points - D (satisfactory plus)
- 8-9 points - E (satisfactory)
- below 8 points - F (fail)

Projects - students' skills are assessed on the basis of a projects which must be handed on last classes. The projects must be done according to the topic assigned during the first classes. The projects are assessed in terms of content and aesthetics.

Course description

Lectures:

1. Kinds and aims of the road pavement diagnostics.
2. Factors influencing the road pavement condition.
3. Genesis of the road pavement faults.
4. Diagnosis of the road pavement technical condition.
5. Prediction of the road pavement condition.
6. Diagnostics of roads pavement in the existing legislation.
7. Assessment systems of pavement condition - SOSN i i SOSN-B
8. Assessment system of roadsides and drainage condition - SOPO and system HDM-4

Projects:

Part I - description of the road pavement faults, which affect the given parameter of the technical road pavement condition with giving the probable causes of their origin (genesis)

Part II - term of the class of the road pavement condition for the given parameter and identification of the required repairs for the given section of road (diagnosis)

Part III - appointment of trend model of changes of the given parameter and choice of the term of repair (prediction)

Basic bibliography:

1. Sztukiewicz R., Diagnostyka warstwy wierzchniej podatnej nawierzchni drogowej, Drogownictwo, 1991, nr 7-8, s.113-115.
2. Płatkiewicz A., Sztukiewicz R., Zastosowanie metody prognozowania szeregów czasowych do przewidywania zmian równości poprzecznej nawierzchni asfaltowej, Pięćdziesiąta Konferencja Naukowa KILiW PAN - KN PZITB, Krynica 2004, t. V, s. 217 - 224
3. Rydzewski P., Sztukiewicz R., Diagnoza nawierzchni jako podstawa wyboru zabiegów utrzymaniowych, Autostrady, Nr 5/2007, s. 110-113.
4. Płatkiewicz A., Sztukiewicz R., Określenie horyzontu prognozy dla wybranych modeli zmian równości poprzecznej nawierzchni asfaltowej, Zeszyty Naukowe Politechniki Gdańskiej, Nr 603/2006, Pięćdziesiąta Druga Konferencja Naukowa KILiW PAN - KN PZITB, Gdańsk-Krynica 2006, t. IV, s. 239-245

Additional bibliography:

1. Sztukiewicz R., Rydzewski P., Diagnoza nawierzchni w systemie wspomaganie zarządzania siecią ulic miasta Poznania, Zeszyty Naukowe Politechniki Gdańskiej,
2. Sztukiewicz R., Rydzewski P., Diagnostyka nawierzchni w systemie wspomaganie zarządzania siecią ulic, Polski Kongres Drogowy, 2006, s. 259-266.

Result of average student's workload

Activity		Time (working hours)
1. Participation in lecture		15
2. Participation in projects		15
3. Participation in consultation		5
4. Project realization		20
5. Preparation for the exam		20
Student's workload		
Source of workload	hours	ECTS
Total workload	75	3
Contact hours	35	1
Practical activities	40	1