STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Construction and maintenance of roads**		Code **1010101161010123858**
Field of study **Civil Engineering First-cycle Studies**	Profile of study (general academic, practical) **(brak)**	Year /Semester **3 / 6**
Elective path/specialty **-**	Subject offered in: **Polish**	Course (compulsory, elective) **elective**
Cycle of study: **First-cycle studies**	Form of study (full-time,part-time) **full-time**	
No. of hours Lecture: **30** Classes: **15** Laboratory: **-** Project/seminars: **15**		No. of credits **5**
Status of the course in the study program (Basic, major, other) **(brak)**	(university-wide, from another field) **(brak)**	
Education areas and fields of science and art		ECTS distribution (number and %)

Responsible for subject / lecturer:

dr inż. Jaroslaw Wilanowicz
email: jaroslaw.wilanowicz@put.poznan.pl
tel. 61-665-24-86
Faculty of Civil and Environmental Engineering
ul. Piotrowo 5 60-965 Poznań

Responsible for subject / lecturer:

dr inż. Andrzej Pożarycki
email: andrzej.pozarycki@put.poznan.pl
tel. 61 647-58-17
Faculty of Civil and Environmental Engineering
ul. Piotrowo 5, 60-965 Poznań

Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	K_W02 - The student has a basic knowledge in the field of road construction (Soil mechanics, Technology of road materials and Basic of road construction) K_W05 - The student knows the basic methods, techniques, tools and materials used in solving simple engineering tasks. K_W06 - The student has a basic knowledge necessary to understand the social, economic and legal conditions of engineering activity.
2	**Skills**	K_U01 ? The student can make an identification and formulate the specification of simple engineering tasks of a practical nature. K_U05 - The student can obtain information from literature, databases and other sources, integrate the received information, make their interpretation, and draw conclusions. K_U09 - The student can make a critical analysis of the methods of operation and evaluate the existing technical solutions.
3	**Social competencies**	K_K01 - The student can work independently and collaborate as a team on a designated task. K_K02 - The student can properly identify the priorities for implementation of the task specified by himself or others.

Assumptions and objectives of the course:

Transfer of the engineering knowledge within the scope of design and construction technology of the road pavements, creation of skills for solving tasks related to the maintenance of roads, both in terms of the current maintenance as well as the system maintenance and develop skills of their application in practice.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. The student knows the overall technical specifications concerning the road investment works and the technical requirements WT-2010. - [K_W06]
2. The student knows the basic construction technologies of individual structure courses of the road pavement. - [K_W09]]
3. The student knows the methods of assessment of the technical condition of the road pavements, shoulders and drainage, and the methods of road management - [K_W14]
4. The student knows the issues of the current and system maintenance of the technical condition of the elements included in the total land requirement and the technical specifications for road maintenance works - [K_W15]

Skills:

1. The student is able to classify the pavement structure. - [K_U01]

2. The student can use of the overall technical specifications to create the detailed technical specifications for road pavement works. - [K_U05]

3. The student can define tasks within the scope of the current road maintenance and pavement management systems and appoint a global assessment of the technical condition of the road pavement construction. - [K_U16]

Social competencies:

1. The student understands the need for learning all his life, can inspire and organize the learning process to others - [K_K03]

2. The student can formulate opinions on the technical and technological processes in road construction - [K_K07]

3. The student understands the need to forward knowledge on the technical condition of road pavements and inform the public in a sufficiently convincing manner as the failure or delay of intended pavement maintenance works could affect adversely the condition and usability of the road network - [K_K08]. - [K_K08]

Assessment methods of study outcomes

Suitable execution of the project within the scope of the technology of road pavement construction, the maintenance of roads and the assessment of technical condition of road pavements.

Suitable execution of the project within the scope of dimensioning the geometric components of road intersections and passing the classes in writing.

Written exam. Information about the exam questions and the form of exam is passed on to students during the first lecture.

Number of points - the rating

from 90 to 100 - very good

from 80 to 90 - good plus

from 70 to 80 - good

from 60 to 70 - sufficient plus

from 50 to 60 - sufficient

below 50 ? insufficient

Course description

Characteristics of road traffic. The technical requirements that the road pavements should be correspond to.

Configurations (layouts) of the road courses. Methods of strengthening of the road subgrade.

Wet mix macadam. Soil stabilization with binders. Road foundations. Technologies of road pavements construction of the bituminous mixtures. Factors having an effect on compaction of coated materials (blacktops). Technologies of road pavements construction from the drystone and gravel, sett paving, concrete block paving, paving stones. Technologies of construction of the road concrete pavements. Technologies of construction of the footway and cycle track pavements. Principles of making acceptances of road works.

Bases of maintenance of roads. Tasks of the road manager. Current maintenance. Spring, summer, autumn and winter maintenance. Pavement management systems (PMS). System of assessment of the technical condition of road pavements SOSN. System of assessment of the shoulders and drainage SOPO.

Maintenance system of road pavements in informatics system of road network management. Presentation of the street network management system for Poznań city.

Basic bibliography:

1. Overall technical specifications concerning the road investment works and the road maintenance works. The collective work. Branżowy Zakład Doświadczalny Budownictwa Drogowego i Mostowego, GDDKiA, Warszawa, 1998-2012

2. Piłat J., Radziszewski P., Asphalt concrete pavements, Wyd. Komunikacji i Łączności, Warszawa 2004

3. Szydło A., Road concrete pavements, Polski Cement sp. z o.o., Kraków 2004

Additional bibliography:

1. Szrajber J., - the collective work - Instruction of assessment of the economic efficiency for the road and bridge projects, Instytut Badawczy Dróg i Mostów, Warszawa, 2007

2. Błażejowski K., Styk S., Technology of the bituminous layers, WKŁ, Warszawa 2009. 3. Technical Requirements WT 2010, GDDKiA Warszawa 2010

3. Technical Requirements WT 2010, GDDKiA, Warszawa 2010.

Result of average student's workload

Activity	Time (working hours)

1. Participation in the lectures	30
2. Participation in the classes	15
3. Participation in the projects	15
4. Performance of projects and the consultations	30
5. Preparing to pass the classes	10
6. Exam Preparation.	25

Student's workload		
Source of workload	**hours**	**ECTS**
Total workload	125	5
Contact hours	60	2
Practical activities	65	2