

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Mechanized road construction</b>		Code <b>1010102121010126032</b>
Field of study <b>Civil Engineering Second-cycle Studies</b>	Profile of study (general academic, practical) <b>(brak)</b>	Year /Semester <b>1 / 2</b>
Elective path/specialty <b>Roads and Highways</b>	Subject offered in: <b>Polish</b>	Course (compulsory, elective) <b>obligatory</b>
Cycle of study: <b>Second-cycle studies</b>	Form of study (full-time, part-time) <b>full-time</b>	
No. of hours Lecture: <b>30</b> Classes: <b>-</b> Laboratory: <b>-</b> Project/seminars: <b>30</b>		No. of credits <b>4</b>
Status of the course in the study program (Basic, major, other) <b>(brak)</b>		(university-wide, from another field) <b>(brak)</b>
Education areas and fields of science and art		ECTS distribution (number and %)
<b>Responsible for subject / lecturer:</b>		
dr inż. Jarosław Wilanowicz email: jaroslaw.wilanowicz@put.poznan.pl tel. 61-665-24-86 Faculty of Civil and Environmental Engineering Piotrowo street, 5		
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	K_W06. Student has knowledge of road design guidelines and related technical conditions. K_W07 i K_W09. Student knows the rules of the design and construction of road earthworks and road pavements. K_W10. Student has a basic knowledge concerning the design of road infrastructure, the organization and project management and knows the rules for drawing up the work schedule of building equipments.
2	<b>Skills</b>	K_U08. Student knows how to dimension the basic elements of the road and road pavement. K_U14. Student can execute a road project documentation at the preliminary design and a simple work schedule for building equipments. K_U21. Student can organize the operation of building machines on the site in accordance with the principles of technology of road works.
3	<b>Social competencies</b>	K_K01. Student can work independently. K_K06. Student is aware of the need to improve his professional skills. K_K10. Student follows the rules of ethics.
<b>Assumptions and objectives of the course:</b>		
1) Transfer of the theoretical and practical knowledge concerning the execution of the roads having regard to the principles of mechanization of works, the technology of execution of different types of works and the organization of their progress during the construction project. 2) Preparing the graduates to perform the technical functions in the planning, organization and executing of road building works.		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b>		
1. The student knows the rules of analysis of elements of any road facilities for the planning and organization of construction works. - [K_W02] 2. The student knows the characteristics and properties of various building machines and equipments, as well as the technology of mechanized road works.. - [K_W07] 3. The student has the advanced knowledge in the use and operation of machines for road works (efficiency, cost of work, time of execution). - [K_W10]		
<b>Skills:</b>		

1. The student knows how to classify road building works. - [K_U02]
2. The student can estimate the time and cost of road machines labor. - [K_U09]
3. The student knows how to plan the work of machines on the building site in accordance with the principles of the organization of road works and draw up a work schedule with their participation. - [K_U10]
4. The student is able to make the right choice of means of mechanization for maximum savings, minimum effort and the best quality of works. - [K_U13]
<b>Social competencies:</b>
1. Performing certain tasks the student can work independently, cooperate in a team and manage a team. - [K_K01]
2. The student isolated complements and extends knowledge of modern processes and technologies in road construction. - [K_K03]
3. The student follows the rules of ethics. - [K_K11]

**Assessment methods of study outcomes**

Student's knowledge is assessed based on a written exam, which takes place at a examination session after the end of semester.  
 The exam consists of three questions and takes 45 minutes.  
 Information about the form of the test and its duration shall be provided to students during the first lecture in the semester, and the exam date is set with the students at the end of the semester.  
 Student's skills are evaluated on the basis of performed project, and its qualitative assessment is based on essential and aesthetic performing of drawing and computational exercises (the subject and content of the project is given on the theme card).  
 Completion date of the project is the last design tutorial in the winter semester.

**Course description**

Introduction to the technology and organization of works. General information about the mechanization of road works (the essence of comprehensive mechanization, the concept of a set of machines, the principle of selection of machines to the set, the structures of sets of machines, the methods of evaluation of the comprehensive mechanization).  
 The time and the cost of works of the road machines. The basic indicators of mechanization. Planning of mechanization. The effectiveness of mechanization of the road works.  
 Technologies and organization of the earthworks and the pavement works. Principles of design of mechanization of the road works. Designing of the process of execution of works.

**Basic bibliography:**

1. Kaniewski J., Kietliński W. i inni. Technologia zmechanizowanych robót drogowych. Wyd. Politechniki Warszawskiej. Warszawa 1984.
2. Biruk S., Jaworski K. M., Tokarski Z. Podstawy organizacji robót drogowych. PWN. Warszawa 2009.
3. Martinek W., Tokarski Z., Chojnacki K. Organizacja budowy asfaltowych nawierzchni drogowych. PWN. Warszawa 2012.

**Additional bibliography:**

1. Jodłowski M. Operator maszyn do robót drogowych. Wyd. KaBe, Krosno 2003.
2. Matylla S. Technologia zmechanizowanych robót kolejowych. Wyd. Politechniki Poznańskiej. Poznań 1981.
3. Rolla St. Technologia robót w budownictwie drogowym (cz. 3). Wydawnictwa Szkolne i Pedagogiczne. Warszawa 1997.

**Result of average student's workload**

Activity	Time (working hours)
1. Direct participation of the student in the lectures.	30
2. Direct participation of the student in the design classes.	30
3. Additional consultation with the teacher.	3
4. Independent execution of the project.	25
5. Learning student to prepare himself to pass the exam.	23
6. Direct participation of the student in the writing exam.	1

**Student's workload**

Source of workload	hours	ECTS
Total workload	100	4
Contact hours	60	2
Practical activities	30	1