



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Technology of Road Works

### Course

Field of study

Year/Semester

Civil Engineering

2/3

Area of study (specialization)

Profile of study

Road, bridge and railway engineering

general academic

Level of study

Course offered in

Second-cycle studies

polish

Form of study

Requirements

full-time

compulsory

### Number of hours

Lecture

Laboratory classes

Other (e.g. online)

15

0

0

Tutorials

Projects/seminars

0

30

### Number of credit points

3

### Lecturers

Responsible for the course/lecturer:

Responsible for the course/lecturer:

dr inż. Jarosław Wilanowicz

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Faculty of Civil and Transport Engineering

Piotrowo street, 5, 60-965 Poznań

### Prerequisites

**KNOWLEDGE:** Student has knowledge of road design guidelines and related technical conditions. Student knows the rules of the design and construction of road earthworks and road pavements. 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.

**SKILLS:** Student knows how to dimension the basic elements of the road and road pavement. Student can execute a road project documentation at the preliminary design and a simple work schedule for building equipments. Student can organize the operation of building machines on the site in accordance with the principles of technology of road works.



**SOCIAL COMPETENCES:** Student can work independently. Student is aware of the need to improve his professional skills. Student follows the rules of ethics.

### Course objective

- 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.

### Course-related learning outcomes

#### Knowledge

Know in detail the rules of design, construction and operation of selected road building units.

Have advanced and detailed knowledge of the theoretical principles of structure analysis and optimization as well as design of selected road building units.

Have structured and theoretically based knowledge of the processes in the full life cycle of road building structures and their management rules. They also know and understand the need for systematic evaluation and maintenance of road machines condition.

#### Skills

Are able to prepare an introductory economic analysis of proposed solutions and undertaken engineering activities; can prepare a work schedule; are able to manage building processes.

Are able to obtain information from literature, databases and other properly selected information sources; can integrate the obtained information, interpret and evaluate it as well as draw conclusions, formulate, justify and present opinions.

Can make plans autonomously, carry out lifelong learning processes and direct others in this respect; can apply the obtained knowledge into building engineering in order to communicate with different target groups using specialized terminology.

Are able to prepare and analyse the energy balance of a selected building unit, match the materials and technologies to perform traditional, ecological, sustainable and energy-saving constructions in complex conditions.

#### Social competences

Take responsibility for the reliability of working results and their interpretation.

Are ready to autonomously complete and broaden (extend) knowledge in the field of modern processes and technologies of building engineering.



Can realise that it is necessary to improve professional and personal competence; are ready to critically evaluate the knowledge and received content.

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Student's knowledge is assessed by means of a written test, which takes place in the last class before the end of the semester.

The test consists of 3 questions and a duration of 45 minutes.

Information about the form and time of test and its duration is given to students at the first lecture in 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 semester.

### Programme content

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.

### Teaching methods

Lecture with multimedia presentation.

Design exercises - discussion of technical details regarding the subject and content of the project.

Consultation of the project with the student.

### Bibliography

Basic

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

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.

**Breakdown of average student's workload**

	Hours	ECTS
Total workload	90	3,0
Classes requiring direct contact with the teacher	45	1,5
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) <sup>1</sup>	45	1,5

<sup>1</sup> delete or add other activities as appropriate