

# Tadeusz Kosciuszko Cracow University of Technology

## Course Card

Faculty of Civil Engineering

Field of study: Civil Engineering

Study profile: general academic

Study form: full-time

Field of study code: BUD

Study cycle: 1st

Specialty: no specialty

### 1 COURSE INFORMATION

Course name	Projektowanie dróg samochodowych
Course name in English	Road Design
Course code	WIL BUD oIS C38 24/25
Course category	Basic
No. of ECTS points	5.00
Semester	5

### 2 CLASS TYPE, NUMBER OF HOURS ACCORDING TO THE STUDY PLAN

Semester	Lecture	Class exercise	Laboratory	Computer lab	Design exercise	Seminar
5	45	0	0	0	30	0

### 3 COURSE OBJECTIVES

**Objective 1** Transfer of knowledge in the basics of road geometric design with the design determinants

**Objective 2** Preparation for designing of less complicated elements of road infrastructure

## 4 PREREQUISITES IN TERMS OF KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1 knowledge of infrastructure designing determinants resulting from transportation planning and land development principles

## 5 LEARNING OUTCOMES

LO1 **Knowledge** of basic legal requirements and technical criteria for the geometric design of roads and intersections

LO2 **Knowledge** of designing techniques of roads and intersections

LO3 **Skills** of using standards, guidelines and instructions in the design of road infrastructure

LO4 **Skills** ability of independent analysis of determinants of geometric design and selection of appropriate solutions

LO5 **Skills** ability to solve problems connected with roads drainage

LO6 **Knowledge** ability to independently complement and extend knowledge in the field of road design

## 6 COURSE CONTENT

Design exercise		
No.	Subject matter of the course Detailed description of thematic blocks	No. of class hours
<b>P1</b>	Conceptual design of road section in two variants with the choice of geometrical alignment and calculations necessary for their dimensioning. Selection of crosssection type. Detailed design solution for the selected element from the project - intersection, culvert, transition curve. Technical escription preparation including design determinants and justification of the solutions	30

Lecture		
No.	Subject matter of the course Detailed description of thematic blocks	No. of class hours
<b>L1</b>	The classification of roads and streets with its formal and technical determinants, indicators describing the road network, basic road design parameters and their determination.	3
<b>L2</b>	Designing determinants resulting from the mechanics of movement criteria, road safety, cost and environmental requirements.	6
<b>L3</b>	Vertical and horizontal alignment roads - elements and the basic of design criteria. Detailed principles of design: straight, curves, transition curves, elements of vertical alignment, alignment coordination. Homogeneity assessment of geometric horizontal alignment.	6
<b>L4</b>	Elements of cross-section roads and their imensioning, shaping the road ramps.	3

Lecture		
No.	Subject matter of the course Detailed description of thematic blocks	No. of class hours
<b>L5</b>	Earthworks operations, calculation of earth-moving asses and designing of earth movements.	3
<b>L6</b>	Classification of road intersections, the basic design requirements, criteria for selecting intersection type, the elements of specific solutions for channelized intersections.	6
<b>L7</b>	Elements of road drainage - the types and usage objectives. Characteristics of rainfall and etermination of calculated water runoff for imensioning drainage road facilities.	3
<b>L8</b>	Dimensioning of open channels. Water discharge, taking into account environmental considerations. Streets and squares drainage	4
<b>L9</b>	Road culverts, designing and construction.	2
<b>L10</b>	Subsoil drainage system, typical design solutions.	2
<b>L11</b>	Parking and service roads to the buildings	4
<b>L12</b>	Traffic organization and control measures. Traffic calming measures	3

## 7 TEACHING TOOLS

N1 Lectures

N2 Project exercises

## 8 Student workload

Activity form	Number of hours of activity
<b>Hours realized in contact with the teacher</b>	
Hours resulting from the study plan	75
Consultation hours	10
Exams and tests during session	3
<b>Hours of autonomous student work</b>	
Preparing for classes, studying literature	30
Developing results	0
Preparing of reports, projects presentations, discussion	30
<b>Total number of hours devoted to the subject</b>	<b>148</b>
Total number of ECTS points	5.00

## 9 Methods of grading

### Partial grades

F1 Individual project

### Summary grade

P1 Final exam

### Conditions for passing the course

L1 Mandatory participation in design classes, positive mark from final exam, pass project by checking the knowledge during the consultation and confirming the correctness of the project implementation by the supervisor

### Assessment of activity without teacher participation

B1 Assessment of the discussion on individual project

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