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	Technologia konstrukcji sprężonych i prefabrykowanych
Course name in English	Technology of Prestressed and Precast Constructions
Course code	WIL BUD oIS D56 24/25
Course category	Przedmioty profilowe
No. of ECTS points	2.00
Semester	6

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

Semester	Lecture	Class exercise	Laboratory	Computer lab	Design exercise	Seminar
6	15	0	0	0	15	0

3 COURSE OBJECTIVES

Objective 1 Provide basic knowledge on the concept of prestressing, advantages and requirements

Objective 2 Provide a fundamental knowledge on the design and production procedures of PC members

Objective 3 Provide basic knowledge on the technology of precast structures

Objective 4 Provide fundamental information on the production of precast members

4 PREREQUISITES IN TERMS OF KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1 Must be previously completed: Structural mechanics

2 Must be previously completed: Resistance of materials

3 Must be previously completed: Technical drawing and computer graphics

4 Must be previously completed: Building materials

5 Must be previously completed: Concrete technology

6 Must be previously completed: Concrete structures

5 LEARNING OUTCOMES

LO1 Knowledge of the principal features of the prestressed and precast elements and structures

LO2 Knowledge of materials, equipment, conditions of works execution and detailing

LO3 Knowledge Ability of simplified verification of the limit states

LO4 Skills Ability of the formulation of connection models for precast members

LO5 Knowledge Awareness of the responsibility of the designer and constructor of prestressed and precast concrete structures

6 COURSE CONTENT

Lecture		
No.	Subject matter of the course Detailed description of thematic blocks	No. of class hours
L1	Concept of prestressing, advantages and disadvantages, pre-tensioning and post-tensioning, requirements, examples of PC structures	2
L2	Materials and technology of prestressing, anchorages	2
L3	Losses of the prestressing force, their relation to technology, simplified design stress equations for edges	2
L4	Stress verification in materials, ultimate limit states, serviceability limit states,	2
L5	Design and construction of anchorage and end zones, technology of grouting	2
L6	Concept of precast members structures, examples, concept of typization,	2
L7	Design and technology of production of precast members load situations for slabs, beams, columns, foundations	2
L8	Design and technology of connections execution	1

Design exercise		
No.	Subject matter of the course Detailed description of thematic blocks	No. of class hours
P1	Design of a precast element of a simply supported beam or slab with special focus on technology of production	15

7 TEACHING TOOLS

N1 Lectures

N2 Discussion

N3 Multimedia presentations

N4 Practical design

8 Student workload

Activity form	Number of hours of activity
Hours realized in contact with the teacher	
Hours resulting from the study plan	30
Consultation hours	5
Exams and tests during session	5
Hours of autonomous student work	
Preparing for classes, studying literature	5
Developing results	0
Preparing of reports, projects presentations, discussion	15
Total number of hours devoted to the subject	**60**
Total number of ECTS points	2.00

9 Methods of grading

Partial grades

F1 Individual project

F2 Test

F3 Colloquium

Summary grade

P1 Weighted average of the midterm tests grades

Conditions for passing the course

L1 All midterm parts of the project must be approved in time, all midterm tests must be passed before the termination of the lectures period in order to qualify for the final exam

L2 The written exam consists of two parts: theoretical test and design problems to solve