



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Building Prefabricated Elements

### Course

Field of study

Year/Semester

Building Engineering

1/2

Area of study (specialization)

Profile of study

CEM -Construction Engineering and Management

Level of study

Course offered in

Second-cycle studies

English

Form of study

Requirements

full-time

compulsory

### Number of hours

Lecture

Laboratory classes

Other (e.g. online)

15

Tutorials

Projects/seminars

15

### Number of credit points

2

### Lecturers

Responsible for the course/lecturer:

dr inż. Piotr Frąszczak

Responsible for the course/lecturer:

### Prerequisites

A student has the knowledge of general mechanics and strength of materials, basis of theory of reinforced concrete structures, knows analysis principles of simple and complex RC elements design. A student knows building standards and requirements concerning design of building structures and their elements.

### Course objective

The gaining of knowledge and skills design of prefabricated reinforced concrete elements

### Course-related learning outcomes

Knowledge

1. A student knows the basic design method of RC slab elements in RC structures
2. A student presents the design issues of spatial RC structures
3. A student knows the range applying of computers program needed to analyse and design RC structures.



### Skills

1. A student uses building standards of loads on building structures as well as in the static calculation and dimensioning of RC structures
2. A student is able to design RC slab structures with taken frames into consideration

### Social competences

A student understands the need for lifelong learning and knows how to interact in a group. He correctly identifies and resolves problems associated with his profession

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture - test checks the last class. Exercise design - execution of the project and its oral defense.

Grading scale:

- 5.0 - the student obtained more than 90% of the points in the colloquium or defense of the project,
- 4.5 - the student obtained from 80% to 90% of the points in the colloquium or project defense,
- 4.0 - the student obtained from 70% to 80% of the points in the colloquium or project defense
- 3.5 - the student obtained from 60% to 70% of the points in the colloquium or project defense,
- 3.0 - the student obtained from 50% to 60% of the points in the colloquium or project defense,
- 2.0 - the student obtained less than 50% of the points from the colloquium or project defense

### Programme content

#### Lecture

1. Prefabricated elements, advantages and disadvantages.
2. Method of designing and dimensioning prefabricated reinforced concrete based on Autodesk Robot Structural Analysis Professional
3. Design phases of prefabricated elements,
4. Basics of dimensioning of prestressed reinforced concrete elements

#### Projects

Prefabricated frame

### Teaching methods

Lectures illustrated with slides and films - problem lecture / seminar lecture / lecture with multimedia presentation. Design exercises - practical implementation of an engineering task.

### Bibliography



Basic

PN-EN 1992-1-1 Projektowanie konstrukcji z betonu.

PN-EN 1990 Podstawy projektowania konstrukcji

PN-EN 1991-1 Oddziaływania na konstrukcje

Starosolski W.: Konstrukcje żelbetowe według PN-B-03264:2002 i Eurokodu 2. PWN

Knauff M.: Obliczanie konstrukcji żelbetowych według Eurokodu, PWN Warszawa 2012

Additional

Łapko A., Jansen B.C.: Podstawy projektowania i algorytmy obliczeń konstrukcji żelbetowych, Arkady, Warszawa 2005

Knauff M., Golubińska A.: Tablice i wzory do projektowania konstrukcji żelbetowych z przykładami obliczeń, PWN, Warszawa 2013

**Breakdown of average student's workload**

	Hours	ECTS
Total workload	60	2,0
Classes requiring direct contact with the teacher	30	1,0
Student's own work (literature studies, preparation for tests, project preparation) <sup>1</sup>	30	1,0

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