# COURSE DESCRIPTION CARD - SYLLABUS

Course name
Concrete structures II [N1Bud1>KB2]

## Course

Field of study
Civil Engineering

Year/Semester
4/7

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
part-time

Requirements
compulsory

## Number of hours

Lecture
20

Laboratory classes
20

Other (e.g. online)
0

Tutorials
10

Projects/seminars
0

## Number of credit points

4,00

## Coordinators

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## Lecturers

## Prerequisites

Knowledge: Student has knowledge of: general mechanics and strength of materials, basis of theory of concrete structures, knows analysis principles of simple and complex RC elements design. Students knows building standards and requirements concern design of building structures and their elements. Skills: Students can estimate and report permanent and variable load acting on the building structures. Students can classify building structures, design RC structure elements and choose analytical or numerical solution of engineering problems. Social competencies: Students can estimate and report permanent and variable load acting on the building structures. Students can classify building structures, design RC structure elements and choose analytical or numerical solution of engineering problems.

## Course objective

The aim of the subject is to teach students how to according to obligatory standards calculate concrete and reinforced concrete simple and complex RC structures working in different ways.

## Course-related learning outcomes

Knowledge:
1. A student has knowledge concerns loads of structures and their combinations - [K_W05]

2. A student can calculate internal forces to design concrete structures - [K_W05]
3. A student knows rules of calculation of RC sections in complex state of loading - [K_W03, K_W08]
4. A student knows rules of designing selected monolith RC structures - [K_W07]

Skills:
1. A student can set down loads of structures and find negative load combinations case. - [K_U05, K_U02]
2. A student can calculate frames, foundations, stairs, two-way slabs, slabs supported by beams, retaining walls - [K_U02, K_U05]
3. A student can design reinforcement of selected monolith RC elements and structures - [K_U01, K_U08]

Social competences:
1. A student understand the need for lifelong learning; able to inspire and organize the learning process of others - [K1_K06]
2. A student able to interact and work in a group - [K1_K01]
3. A student correctly identifies and resolves dilemmas associated to his profession - [K1_K07]

## Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:
Lectures - test in written form - 1,5h
Exercises classes - test in written form (1,5h - per semester)
Design classes - evaluation of individual student projects combined with an oral defense of the thesis, test in the exercises (1 per semester - 1.5 hours)
test in the lectures. (1 per semester - 1.5 hours)
The evaluation scale:
more than 100 excellent
91-100 very good (5)
81 - 90 good plus (4,5)
71 - 80 Good (4)
61 - 70 is sufficient plus (3,5)
51 - 60 satisfactory (3)
insufficient under 50 (2)

## Programme content

LECTURES
The lecture program includeded the principles of calculating and constructing typical reinforced concrete structures.
CLASSES AND PROJECT - in accordance with the lecture program

## Course topics

One-way column - supported slab with beams
Two-way slabs
Concrete stairs
Footings and foundations. Mat foundations.
Retaining walls
Frames

## Teaching methods

Lecture - multimedia presentations, calculations and examples- conventional method (blackboard and chalk)
Classes and projects - multimedia presentations, calculations and examples- conventional method (blackboard and chalk), tutorial

## Bibliography

Basic
1. PN-EN 1992-1-1 Eurokod 2. Projektowanie konstrukcji z betonu. Część 1-1: Reguły ogólne i reguły dla budynków.
2. Knauff M.: Obliczanie konstrukcji żelbetowych według Eurokodu, PWN Warszawa 2019
3. Knauff M., Golubińska A.: Tablice i wzory do projektowania konstrukcji 2012
4. Starosolski W.: Konstrukcje żelbetowe według PN-B-03264:2002 i Eurokodu 2. PWN 2011-2019
5. Grabiec K.: Konstrukcje betonowe. PWN 1996
6. . Kobiak J., Stachurski W.: Konstrukcje żelbetowe. Arkady 1990
Additional
1. Sekcja Konstrukcji Betonowych KILiW PAN Podstawy projektowania konstrukcji żelbetowych i sprężonych według Eurokodu 2. Dolnośląskie Wydawnictwo Edukacyjne 2006
2. Mosley B., Bungey J., Hulse R.: Reinforced concrete design to Eurocode 2, Palgrave Macmillan New York 2009.

## Breakdown of average student's workload

| | Hours | ECTS |
|---|---|---|
| Total workload | 100 | 4,00 |
| Classes requiring direct contact with the teacher | 46 | 2,00 |
| Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation) | 54 | 2,00 |