SYLLABUS

Name: ***Concrete Structures (BudAB>SI4CONSTR19)***
Name in Polish:
Name in English: ***Concrete Structures***

Information on course:

Course offered by department: Faculty of Civil Engineering
Course for department: Silesian University of Technology

Default type of course examination report:

EGZ

Language:

English

Course homepage:

https://platforma2.polsl.pl/rb/course/view.php?id=690

Short description:

The aim of the course is to teach knowledge connected with the basic types of reinforced concrete structures. The content of the study program includes
definition, classification, design rules, and procedures for the following reinforced concrete structural members: one-way and two-way slabs, beams, columns, foundations, beam-slab floors, flat floors, stairs, retaining walls, wall-beams. The project includes the design of the structural members of the beam-slab floor (slab, rib, binder, column, foundation) with the preparation of drawings.

Description:

LECTURES: 30h
1. Beam and slab floors: introduction, general arrangement, details, precast beam and slab floor.
2. One-way slabs: general description and types, behavior under load, design methods, details of reinforcement, special issues.
3. Beams: general description and types, behavior under load, design methods, details of reinforcement, special issues.
4. Columns: general description and types, behavior under load, design methods, details of reinforcement.
5. Foundations: general description and types, behavior under load and design metods (individual column footing, wall footing, combined footing, mat footing), details of reinforcement.
6. Two-way slabs: general description and types, behavior under load, design methods, details of reinforcement, special issues.
7. Flat floors: definition, general description, and types, general arrangement, behavior under load, design methods, details of reinforcement.
8. RC stairs: definition and types, behavior under load, design methods, and details of reinforcement (cantilever stairs, slab stairs, slab stairs with bearer, beam stairs, other stairs).
9. Retaining walls: general description and types, behavior under load, design methods (cantilever retaining wall, counterfort wall), details of reinforcement.
10. Wall beams: general description and types, behavior under load, design methods, details of reinforcement.

PRACTICAL CLASSES: 5h

PROJECT: 25h
Preliminary project of the beam-slab floor with the drawing in sale 1:100; calculation and drawing (scale 1:10) of the one-way slab, calculation and drawing (scale 1:10) of rib, calculation of binder, calculation and drawing (scale 1:10) of column and spot foundation.

Bibliography:

1) Starosolski W.: „Konstrukcje żelbetowe według Eurocodu 2 i norm związanych”, PWN 2013,
2) Kobiak J., Stachurski W.: „Konstrukcje żelbetowe”, Arkady 1991.
3) Limbrunner G. F., Aghayere A. O: Reinforced concrete design, Pearson, 2017.
4) Mosley W. H., Bungey J. H., Hulse R.: Reinforced concrete design to Eurocode 2, Macmillan Education, 2012.
5) O’Brien E., Dixon A., Sheils E.: Reinforced and Prestressed Concrete Design to EC2, CRC Press, 2012.

Learning outcomes:

KNOWLEDGE:
principles of construction, dimensioning, of construction reinforced concrete elements (K1A_W05)
standards and guidelines for the design of selected general buildings (K1A_W06)

SKILLS:
size selected structural elements and design simple reinforced concrete structures, as well as simple foundations (K1A_U04)
define computational models of computer analysis of structures, simulate various construction variants, perform static analysis, as well as critically evaluate the results of these analyzes (K1A_U02)

Assessment methods and assessment criteria:

PREREQUISITES: prior completion of the Concrete Structures course in semester 3

1) LECTURES
Completion of the lecture is based on a positive evaluation of the written exam.
A condition for a positive assessment is to obtain a minimum of grade 3.
Improvement of the test is possible once in the written form.

2) PROJECT
Performing 1 project.
Before taking the exam, it is required to obtain at least a grade 3 from the project.
Attending project consultation hours is obligatory.

Final grade: 60% - exam, 40%- project

To have partial grades transferred, students should contact their instructor within the first two weeks of the semester.

The syllabus is effective from the summer semester of the 2025/2026 academic year, and its content is not subject to change during the semester.

Element of course groups in various terms:

Course group description	First term	Last term
missing group description in English (BudAB-S1-2019-sem4)	2020/2021-L	

Course credits in various terms:

<without a specific program>

Type of credits	Number	First term	Last term
European Credit Transfer System (ECTS)	4	2020/2021-Z	