

Concrete Structures 4

Subject area: Civil Engineering/Architecture

University:	CTU
Level:	MA all years
Teaching mode:	hybrid: some students participate online, other students attend real-life
Instructor(s):	Petr Stemberk

Short description

This course is focused on understanding the basic engineering principles necessary for effective design of general and advanced reinforced concrete structures. The student will gain skills of basic comprehension of static behavior of complex reinforced concrete structures, estimation of load-bearing capacity and subsequent precise design using static software, estimation of deformation of structures, non-linear assessment of reinforced concrete structures and probabilistic design approaches.

Full description

Contents of individual lectures are listed below:

- 1/ Review, materials, design and check of reinforced concrete structures for bending and shear
- 2/ Design of reinforced concrete slab for combination of bending and torsion moment at general point
- 3/ Design of reinforced concrete slab of general shape, punching shear
- 4/ Design of reinforced concrete wall of general shape
- 5/ Theory of plasticity and its application to reinforced concrete structures
- 6/ Deformations of reinforced concrete structures
- 7/ Analysis of reinforced concrete structures using static software
- 8/ Strut-and-Tie Models, principles and examples
- 9/ Non-linear analysis of reinforced concrete structures
- 10/ Probabilistic approaches to design of reinforced concrete structures
- 11/ Foundations and industrial reinforced concrete floors
- 12/ Advanced reinforced concrete structures
- 13/ Advanced reinforced concrete structures

Learning outcomes

- *Basic comprehension of static behaviour of complex reinforced concrete structures,
- *Estimation of load-bearing capacity and subsequent precise design using static software,
- *Estimation of deformation of structures,
- *Non-linear assessment of reinforced concrete structures, *Probabilistic design approaches.

Recommended in particular for students of the following study programmes

Civil Engineering

General information

Contact hours per week: 4

Total workload: 125 (in student hours for the whole course)

ECTS credits: 5

Language: English

Course start date: 20 February 2023

Course end date: 28 May 2023

Add. info about start date: Start course date refers to starting date of spring semester at CTU. Schedule will be available 1 or 2 weeks before semester starts.

Weekly teaching day/time:

Time zone: CET (Denmark, Germany, France, Netherlands, Switzerland, Czech Republic)

Further information:

Prerequisites: Fundamental of Reinforced Concrete Design

Activities and methods: Lectures, Group work, Practices, Exercises, Tutorial sessions

Presence on campus:

Final examination

Form: written

Date:

Location/format:

Re-sit possibility: yes

Transcript available: end of semester

Add. info/requirements:

Registration

To register for this course, follow the registration requirements of your **home university** as specified here: www.euroteq.eu/courses-registration.

Administration

Number of places:	10
Minimum participants:	5
Internal course code:	133CM04
Contact:	stemberk@fsv.cvut.cz

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