

## Tárgytematika / Course Description Reinforced Concrete Structures

EKNB\_SETA045

Tárgyfelelős neve /

Teacher's name: dr. Szép János

Félév / Semester: 2023/24/1

Beszámolási forma /

Assesment: Vizsga

Tárgy heti óraszám /

Teaching hours(week): 2/1/0

Tárgy féléves óraszám /

Teaching hours(sem.): 0/0/0

### OKTATÁS CÉLJA / AIM OF THE COURSE

The subject continues to build on the foundations of the **Engineering Structures 2** subject. The objective of the course is to understand the constructions and structural behavior of reinforced concrete structures, to learn the basics of their design, pre-fabrication and execution. Regarding the construction, sizing, production and installation of modern reinforced concrete support structures. Modern computer programs (FEA, CAD) play an important role in acquiring the theoretical and practical knowledge of the subject.

### TANTÁRGY TARTALMA / DESCRIPTION

1. *Repetition Behavior of bent-sheared structural elements: Stress states (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>) of reinforced concrete structural elements.*
2. *Making 2D reinforced concrete plans with software (formwork plan, reinforcing plan)*
3. *Check and design of bent-sheared structural elements in Ultimate Limit States*
4. *Using FEM software for structural analysis*
5. *Compressed reinforced concrete structural elements – Moment – Normal force capacity diagram*
6. *The Serviceability Limit State of reinforced concrete structures – calculation SLS manually and software,*
7. *Midterm them written test*
8. *Student midterm presentation*
9. *Exposed concrete structures*
10. *Prefabricated concrete and semi prefabricated concrete*
11. *Prestressed reinforced concrete structures*
12. *Complex modeling of buildings*
13. *Consultation*
14. *Student final presentation*

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## SZÁMONKÉRÉSI ÉS ÉRTÉKELÉSI RENDSZERE / ASSESSMENT'S METHOD

Semester task, signature

The task during the semester, making a complex structural analysis of a chosen reinforced concrete building and a detailed static calculation and plans (formwork reinforcement) of three different structural elements (surface structure (floor, wall), bar structure (column, beam), staircase) must be prepared.

The semester ends with student presentations about the completed work. The condition for signing is continuous consultation (min. 6 sessions), mid-term and final presentation, and completion of statical documentation. A maximum of 100 points can be obtained for the task.

Exam

During the exam, the student receives three theoretical questions as well as questions related to their own task. Based on the answers, 0-100 points are available for the exam.

Subject grade depending on the total score:

0-110 points: insufficient

110-129 points: sufficient

130-149 points: medium

150-169 points: good

170-200 points: excellent

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## KÖTELEZŐ IRODALOM / OBLIGATORY MATERIAL

[Bhatt, Prab](#), [MacGinley, T.J.](#), [Choo, Ban Seng](#) : Reinforced Concrete Design to Eurocodes : Design Theory and Examples

Deák-Draskóczy-Dulácska-Kolár-Visnovitz: Vasbeton szerkezetek - Tervezés az Eurocode alapján, Artifex Kiadó 2016, ISBN: 9789637727078

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## AJÁNLOTT IRODALOM / RECOMMENDED MATERIAL

