

## Tárgytematika / Course Description

### Bridge construction

NGM\_SE107\_1

**Tárgyfelelős neve /**

**Teacher's name:** dr. Teiter Zoltán

**Félév / Semester:** 2022/23/2

**Beszámolási forma /**

**Assesment:** Vizsga

**Tárgy heti óraszám /**

**Teaching hours(week):** 2/1/0

**Tárgy féléves óraszám /**

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

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### OKTATÁS CÉLJA / AIM OF THE COURSE

The aim of this module is to introduce students to the design and construction of bridges. This module covers the structural behavior of the main longitudinal and transverse bridge typologies, the fundamental design principles, and main construction procedures for short, medium and long span bridges.

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### TANTÁRGY TARTALMA / DESCRIPTION

This module is intended to cover:

- The structural behaviour for the main longitudinal (such as beams, arches, cable-stayed bridges, and suspension bridges) and transverse (such as beams, slabs, and box girders) bridge typologies.
- The knowledge of behavior of prestressed concrete composite bridge decks, and steel-concrete composite bridge decks.
- The aim and usage rules of different bridge components and elements (such as parapets, waterproofing, drainage, bearings, joints, abutments, piers, etc).
- The main bridge construction procedures.

On successfully completing this course unit, students should be able to

- recognize and interpret the structural system of bridges, understand the structural behaviour of the different longitudinal and transverse bridge types;
- select appropriate longitudinal and transverse schemes for particular cases;
- determine the actions to be considered for the design of a bridge according to Eurocodes;
- make difference among the types of bearings, joints, piers and abutments;
- identify the special construction methods.

#### **Week #01**

Introduction: getting acquainted, information about the subject

Lecture: History of bridges and used materials.

#### **Week #02**

Introduction: 1st homework

Lecture: Fundamentals I-II., Aesthetics

Group work

#### **Week #03**

Test #1

Lecture: Spans, types, cross-sections I

#### **Week #04**

Lecture: Spans, types, cross-sections II

**Week #05**

Lecture: The concrete in bridges

Group work

**Week #06**

Test #2

Lecture: The steel in bridges

**Week #07**

Introduction: 2nd homework

Lecture: Construction methods

**Week #08**

Test #3

Lecture: Presentation of homework I.

Group work

**Week #09**

Lecture: Bridge equipments; Dewatering

Group work

**Week #10**

Lecture: Eurocode, loads & actions on bridges, calculation

**Week #11**

Lecture: Presentation of homework II.

**Week #12**

Test #4

Lecture: Visiting the nearest bridge

**Week #13**

Lecture: Bridge types

**Additional week**

Guest lecturer

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## **SZÁMONKÉRÉSI ÉS ÉRTÉKELÉSI RENDSZERE / ASSESSMENT'S METHOD**

Assessments: coursework + examination

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## **KÖTELEZŐ IRODALOM / OBLIGATORY MATERIAL**

Bridge Engineering: Construction and Maintenance / ed by Wai-Fah Chen, Lian Duan, 2003

Bridge Engineering: Substructure Design / ed by Wai-Fah Chen, Lian Duan, 2003