

**SYLLABUS AND COURSE REQUIREMENTS  
2020/2021. II. SEMESTER**

<i>Title</i> <b>Steel Structures 2</b>	
<i>Course code</i>	<b>MSB380ANEP</b>
<i>Weekly hours: lect/pract/lab</i>	<b>1 / 2 / 0</b>
<i>Credit points</i>	<b>4</b>
<i>Curriculum(s)/ type</i>	<b>Civil Engineering BSc./ obligatory</b>
<i>School</i>	<b>English</b>
<i>Requirement</i>	<b>exam</b>
<i>Registration semester</i>	<b>spring semester</b>
<i>Pre-requirement(s)</i>	<b>MSB379ANEP Steel Structures 1.</b>
<i>Gestor Department(s)</i>	<b>Department of Civil Engineering</b>
<i>Responsible and lecturers</i>	<b>Dr. Attila FÜLÖP associate professor</b>

**INTRODUCTION, LEARNING OUTCOMES**

The goal of the semester is that the students should learn the conventional steel structures, and should be able to solve the design of the execution drawings independently

**CONTENT**

**General Course Description and Main Content:** Design of steel beams: classification, design of class 4 sections subjected to bending. Design of steel beams: stability design, lateral torsional buckling, shear buckling. Design of bar elements subjected to normal force and bending (N+M). Stability design of bar elements subjected to normal force and bending (N+M). Bolted and welded connections of steel bar elements subjected to normal force and bending. Application of component method at bolted connections. Global analysis of steel bar elements. Application of first and second order analysis. Imperfections. Coupled steel columns under compression. Plastic analysis of steel elements

**Lecture and Practice:**

1. Introduction.
2. Design of steel beams: classification, design of class 4 sections subjected to bending.
3. Design of steel beams: stability design, lateral torsional buckling, shear buckling.
4. Design of bar elements subjected to normal force and bending (N+M)
5. Stability design of bar elements subjected to normal force and bending (N+M)
6. Bolted and welded connections of steel bar elements subjected to normal force and bending.
7. Application of component method at bolted connections.
8. Global analysis of steel bar elements.

9. Application of first and second order analysis. Imperfections.
10. Coupled steel columns under compression.
11. Plastic analysis of steel elements
12. Exam

## EVALUATION AND GRADING

**Attendance:** Attending is required all classes. In case of unexcused absence from more than 30% of the total number of lessons will be grounds for failing the class. To be in class at the beginning time and stay until the scheduled end of the lesson is required, tardiness of more than 20 minutes will be counted as an absence. In the case of an illness or family emergency, the student must present a valid excuse, such as a doctor's note.

**Signature / Grading:** The exam grade is based on a semester project (steel deck) 50 %, homework samples 45% and attendance 5%. Details is discussed on the practice.

### Grading Scale:

- 0 – 50 % failed (1)
- 51 – 62 % passed (2)
- 63 – 75% satisfactory (3)
- 76 – 87 % good (4)
- 88 – 100 % excellent (5)

## RECOMMENDED READINGS

- [1st] Alexander Reichel, Peter Ackermann, Alexander Hentschel, Anette Hochberg, *Building with Steel*, 2007.
- [2nd] Iványi, M. - Skaloud, M.: *Stability Problems of Steel Structures (in English) CISM Courses and Lectures No 323*, International Centre for Mechanical Sciences, SPRINGER - Verlag, Wien - New York, 1992, p. 415.
- [3rd] Iványi, M. - Skaloud, M.: *Steel Plated Structures (in English)*, CISM Courses and Lectures No 358, International Centre for Mechanical Sciences, SPRINGER - Verlag, Wien - New York, 1995, p. 373.
- [4th] Iványi, Miklós: *ORTHOTROPIC STEEL BRIDGES. Theory, Design and Construction (in English)* Helsinki Technical University, Laboratory of Bridge Engineering, TKK-SRT-33 Műegyetemi Kiadó, Budapest, 2003, p. 323.
- [5th] Iványi, Miklós - Iványi, Péter: *EUROCODE Manual: Design of Multi-storey Steel Buildings (in English-Hungarian)* POLLACK PRESS, Pécs, 2008, p. 380.
- [6th] Iványi, M. Miklós - Bancila, Radu - Iványi, Péter - Iványi, Miklós: *Stability and Ductility of Planar Plated Steel Structures (in English)* POLLACK PRESS, Pécs, 2010, p.305.
- [7th] Iványi, M. Miklós - Iványi, Miklós - Iványi, Péter: *Multi-Storey Steel Frames with Semi-Rigid Connections. Experimental Analysis (in English)* POLLACK PRESS, Pécs, 2011, p. 175.
- [8th] Iványi, M. Miklós - Iványi, Miklós: *Refurbishment of Steel Bridges (in English)* POLLACK PRESS, Pécs, 2011, p. 107.
- [9th] Iványi, M. Miklós - Iványi, Miklós: *Plastic Design of Steel Structures (in English)* POLLACK PRESS, Pécs, 2013, p. 157.

SCHEDULE

	TEACHING PERIOD, TEACHING WEEKS															EXAM PERIOD					
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	1.	2.	3.	4.	5.	
2020/2021. II. SEMESTER																					
<b>Number of Lecture and Practice</b>	1	2	3	4	4	5	5	6	7		8	9	10	11							
<b>Exams</b>																					
<b>Homework</b>		x					x								x						
<b>Signature and midsemester grade</b>															sig n.						
<b>Planned exam time</b>																					

4<sup>th</sup> February 2021.

**Dr. Attila FÜLÖP**

responsible lecturer