SYLLABUS AND COURSE REQUIREMENTS
2022/2023. I. SEMESTER

Title	**Steel Structures 1.**
Course code	**MSB397ANEP**
Weekly hours: lect/pract/lab	**2 / 2 / 0**
Credit points	**4**
Curriculum(s)/ type	**Civil Engineering BSc./ obligatory**
School	**full time**
Requirement	**exam**
Registration semester	**autumn semester**
Pre-requirement(s)	**MSB401MNEP Strength of materials 1., MSB378MNEP Basics of structural design**
Gestor Department(s)	**Department of Civil Engineering**
Responsible and lecturers	**Dr. Attila FÜLÖP associate professor**

COURSE DESCRIPTION

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.

SYLLABUS

1. GOALS AND OBJECTIVES

This subject aims to provide a theoretical and practical knowledge necessary for the design, production and mounting of steel structures used in engineering and includes the following topics: definition, types and division of steel structures, their advantages and disadvantages; design principles and methodology; Eurocode 3; components of steel bars, basic materials, different joints; compressed bars; design of trusses; relationship between the built environment and steel structures; modelling steel materials; design principles; process of planning steel structures; structural bars: classification, structural design, limit states, standard dimensions; bars and beams subject to eccentric tension or compression; bolted, riveted and welded joints: classification, technology and application; design, application and dimensioning of simple structures, latticed and solid-web girders, split-section beams; stability limit states of structural bars, turning out and plate buckling; effects of

strength and stability on the behaviour of structural bars, design principles; structural design, behaviour and dimensioning of beam-to-beam and beam-to-column joints; classification, application and construction principles of complex steel structures; harmonising the design of steel structures and artistic viewpoints. To complete the course students must be able to create a technically and aesthetically suitable solution for building with steel structures.

2. COURSE CONTENT

	TOPICS
LECTURE + PRACTICE	1. *Introduction. Course description. Orientation.* 2. *Introduction, Eurocode 3* 3. *Definition, types and division of steel structures, their advantages and disadvantages, modelling steel materials.* 4. *Components of steel bars, basic materials, different joints.* 5. *Design of trusses, compressed bars, structural bars: classification, structural design, limit states, standard dimensions.* 6. *Bars and beams subject to eccentric tension or compression.* 7. *Bolted, riveted and welded joints: classification, technology and application.* 8. *Structural design, behaviour and dimensioning of beam-to-beam and beam-to-column joints.* 9. *Process of planning steel structures: design, application, design principles and methodology.* 10. *Dimensioning of simple structures, latticed and solid-web girders, split-section beams.* 11. *Effects of strength and stability of the behaviour of structural bars, design principles.* 12. *Stability limit states of structural bars, turning out and plate buckling.* 13. *Classification, application and construction principles of complex steel structures.*

3. ASSESSMENT AND EVALUATION

Attendance: In accordance with the Code of Studies and Examinations of the University of Pécs, Article 45 (2) and Annex 9. (Article 3) a student may be refused a grade or qualification in the given full-time course if the number of class absences exceeds 30% of the contact hours stipulated in the course description. 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.

Method for monitoring attendance

attendance sheet

Mid-term assessments, performance evaluation and their weighting as a pre-requisite for taking the final exam

Type	Assessment	*Weighting as a proportion of the pre-requisite for taking the exam*
1. ***home assignment (project documentation)***	*max 90 points*	*90 %*
2. ***attendance***	*max 10 points*	*10 %*

Requirements for the end-of-semester signature

mid-term assessment of 40%

Re-takes for the end-of-semester signature (PTE TVSz 50§(2))

The specific regulations for grade betterment and re-take must be read and applied according to the general Code of Studies and Examinations the assignment to be submitted can be repeated/improved each once every semester, and the home assignments can be repeated/improved at least once in the first two weeks of the examination period.

Type of examination *(written, oral): written*

The exam is successful if the result is minimum 40 %.

Calculation of the grade *(TVSz 47§ (3))*

The mid-term performance accounts for ***50*** %, the performance at the exam accounts for ***50*** % in the calculation of the final grade.

Calculation of the final grade based on aggregate performance in percentage.

Course grade	Performance in %
excellent (5)	85 % -…
good (4)	70 % ... 84 %
satisfactory (3)	55 % ... 69 %
pass (2)	40 % ... 54 %
fail (1)	below 40 %

The lower limit given at each grade belongs to that grade.

COMPULSORY READING

[1st] 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.

RECOMMENDED LITERATURE

[2nd] Alexander Reichel, Peter Ackermann, Alexander Hentschel, Anette Hochberg, Building with Steel, 2007.

[3rd] 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.

[4th] 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.

[5th] 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.

[6th] Iványi, Miklós - Iványi, Péter: EUROCODE Manual: Design of Multi-storey Steel Buildings (in English-Hungarian) POLLACK PRESS, Pécs, 2008, p. 380.

[7th] 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.

[8th] 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.

[9th] Iványi, M. Miklós - Iványi, Miklós: Refurbishment of Steel Bridges (in English) POLLACK PRESS, Pécs, 2011, p. 107.

[10th] 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				
2022/2023. I. SEMESTER	**1.**	**2.**	**3.**	**4.**	**5.**	**6.**	**7.**	**8.**	**9.**	**10.**	**11.**	**12.**	**13.**	**14.**	**15.**	**1.**	**2.**	**3.**	**4.**	**5.**
Number of Lecture and Practice	1	2	3	4	5	6	7	8		9	10	11	12	13				Signature, midsemester grade can not be fulfil		
Laboratory																				
Exams														x						
Signature and midsemester grade															sign.					
Planed exam time																				

5th September 2022.

Dr. Attila FÜLÖP

responsible lecturer