General Information:

Name of Course: # LOAD-BEARING STRUCTURES 2. (STEEL STRUCTURES)

Course Code:	PM-KSTNE150A
Semester:	7th
Number of Credits:	2
Allotment of Hours per Week:	1 Lecture – 2 Practical Lessons /Week
Evaluation:	Signature (with grade)
Prerequisites:	**Mechanics**

Instructors: **Dr Attila FÜLÖP, assistant professor**
Office: 7624 Hungary, Pécs, Boszorkány út. 2. Office Nº B-345
E-mail: afulop.pollack@gmail.com

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.

General Course Description and Main Content:
Brief Syllabus: 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-beam and column-beam 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.

Methodology:
Lectures are augmented by visual presentations and demonstration models. The material is consecutive; thus no lectures should be missed.

Attendance:
Attending is required all classes. In case of unexcused absence from more than 30% of the total number of lesson 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.

Schedule:

Detailed Outline of Course Content	
Week	*Lecture and Practice*
1.	Introduction
2.	Definition, types and division of steel structures, their advantages and disadvantages, modelling steel materials.
3.	Components of steel bars, basic materials, different joints.
4.	Design of trusses, compressed bars, structural bars: classification, structural design, limit states, standard dimensions.
5.	Bars and beams subject to eccentric tension or compression.
6.	Bolted, riveted and welded joints: classification, technology and application.
7.	Structural design, behaviour and dimensioning of beam-beam and column-beam joints.
8.	***Holiday***
9.	***Holiday***
10.	Process of planning steel structures: design, application, design principles and methodology. 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.	Eurocode 3
14.	Classification, application and construction principles of complex steel structures.
15.	Relationship between the built environment and steel structures. Harmonising the design of steel structures and artistic viewpoints.

Evaluation + Grading

The grading is based on the semester homework project, which is a study about an arbitrary structure containing steel structural parts. Details is discussed on the practice.

Grading Scale:

Numeric Grade:	5	4	3	2	1
Evaluation in points:	88%-100%	76%-87%	63%-75%	51%-62%	0-50%

PTE Grading Policy:
Information on PTE's grading policy can be found at the following location:
…

Students with Special Needs:
Students with a disability and needs to request special accommodations, please, notify the Deans Office. Proper documentation of disability will be required. All attempts to provide an equal learning environment for all will be made.

Recommended Readings:

- Alexander Reichel, Peter Ackermann, Alexander Hentschel, Anette Hochberg, Building with Steel, 2007.
- 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.
- 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.
- 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.
- Iványi, Miklós - Iványi, Péter: EUROCODE Manual: Design of Multi-storey Steel Buildings (in English-Hungarian) POLLACK PRESS, Pécs, 2008, p. 380.
- 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.
- 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.
- Iványi, M. Miklós - Iványi, Miklós: Refurbishment of Steel Bridges (in English) POLLACK PRESS, Pécs, 2011, p. 107.
- Iványi, M. Miklós - Iványi, Miklós: Plastic Design of Steel Structures (in English) POLLACK PRESS, Pécs, 2013, p. 157.