**Mechanics 2 (ECTS credits: 6)**

Language: the course is offered in Serbian and Hungarian.

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**Course description:**

Throughout this course students will study the basic concepts regarding the strength of materials (mostly the metals, and within that steel). In the first quarter of theoretical lessons the main goal is to teach students the basic theoretical principles. In the second part, students are introduced to the types of deformations – their characteristics and their mathematical description. At the end, the emphasis is put on tasks about dimensioning and checking the carriers, which are burdened by stretching, pressure, shearing, twisting, and bending. These deformations are analyzed both by classical methods and Castigliano’s deformation work method. Students will study the deformation by buckling based on the Euler and Tetmayer methods.

The main topics are the following: characteristics of flat cross-sections, stress conditions, deformation theory, San-Venants problem, basic and complex stresses, deformation of the carrier by the deformation work method, static uncertain tasks.

This course would cover the following topics, both as lectures and exercises:

1. Introduction
2. Characteristics of flat sections
3. Theory stress conditions
4. Deformation theory
5. San Venant's problem
6. Basic and complex stresses
7. Curve shaft
8. Frames
9. Beam deformations by elastic line method
10. Beam deformation by deformation work method
11. Betty-Maxwell theorem
12. Chastiglian's theorem
13. Statically determined tasks
14. Static uncertain tasks
15. Closing remarks

**Aims:**

* to familiarize students with the flat sections, stress conditions and deformations
* basic and complex stress conditions, dimensioning and checking the carriers
* introduction of the deformation work method, statically determined and unspecified cases

**Learning outcomes:**

After completing this course the student should be able to:

* dimension and check the carriers
* solve statically certain and unspecified cases