Mechanics of Materials I

Calendar: 3rd day semester

Contact Hours: T 30h; PL 22,5h; OT 15,0 h

Scientific Area: Mechanics and structures

Intended learning outcomes (knowledge, skills and competences to be developed by the students):

It is intended that after the attendance of this course unit, students acquire skills and competences in order to solve problems involving the following concepts: (i) stresses, strains and constitutive laws of Mechanics of Materials; (ii) linear elements under tension and compression; (iii) axial torsion; (iv) virtual work principle; (v) strain of structures under axial forces and torsion.

Syllabus:

- 1. Mechanics of Materials: stresses, strains and constitutive laws.
- 2. Linear elements under tension and compression.
- 3. Axial torsion.
- 4. Virtual work principle.
- 5. Strain of structures under axial forces and torsion.

Evidence of the syllabus coherence with the curricular unit's intended learning outcomes:

Syllabus just fit to learning outcomes exhibited by the following correspondence: 1 with i); 2 with ii); 3 with iii); 4 with iv); 5 with v).

Bibliografia principal:

Beer, F. P.; Johnston, E. R.; Eisenberg, E. R. – Mecânica Vectorial Para Engenheiros. Estática. McGraw-Hill de Portugal, Nona edição, 2012.

Chen, W.-F., Saleeb, A. - Constitutive equations for engineering materials. Studies in Applied Mechanics, 37. Volume 1, Elasticity and modeling. Elsevier, 2nd revised edition, 1994. Amsterdam.

Chen, W.-F., Saleeb, A. - Constitutive equations for engineering materials. Studies in Applied Mechanics, 37. Volume 2, Plasticity and modeling. Elsevier, 2nd revised edition, 1994. Amsterdam