

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