

## GENERAL AND APPLIED MECHANICS

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Code: 322069

Main Scientific Area: Mechanics and industrial processes

Lecturer: António João de Melo Martins de Araújo

Language of Instruction: Portuguese

Regime: S2

Contact Hours: 60h Total Workload: 108h

ECTS: 6,0

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### **Objectives**

Master the main concepts of statics and dynamics. Solve typical statics and dynamics problems.

### **Learning Outcomes**

Understand the fundamental principles of statics: force, moment and equilibrium. Understand the fundamental principle of dynamics: force, acceleration, work and energy.

### **Course Contents**

#### UNITS

Conversion of units

#### STATICS

Forces

Moments

Resulting force

Resulting moment

balance

Structures

#### DYNAMICS

Particle kinetics

Force and acceleration Work and energy

### **Recommended Bibliography**

R. C. Hibbeler, "Statics and dynamics", Person, 2016

### **Learning and Teaching Methods**

Initially the main quantities to the understanding of UC are reviewed, as well as their units. Next, the fundamental principles of statics are introduced: force, moment, resulting force, resulting moment and, finally, the notion of equilibrium. Finally, the fundamental principles of dynamics are introduced: the relationship between force and acceleration applied to a particle and the notions of work and energy.

### **Assessment Methods**

Four written class exams.