UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Physics I

2122-1-E2701Q058

Aims

The course aims to introduce students to the discipline of physics and in particular to the knowledge of classical mechanics. The topics are treated by accompanying theoretical explanations with numerous examples and problems, useful for a better understanding of the subjects. Extensive references to the connections between the topics covered and the topics developed in more advanced courses are also proposed.

Contents

Classical mechanics

Detailed program

Algebra of vectors

Kinematics of a material point

Dynamics of a material point

Mechanical work and kinetic energy

Conservative forces

Potential energy; mechanical energy and its conservation

Non conservative forces; sliding friction and viscous friction phenomena

Inertial and non inertial reference systems; Galileian principle of relativity; fictitious forces

Dynamics of points systems

Collisions between material points

Dynamics of rigid bodies

Properties of a central force field

Universal gravitation

Kinematics and dynamics of fluids

Free, damped, and forced oscillations; two-body oscillator

Propagating and standing mechanical waves

Prerequisites

Knowledge of algebra and analysis (program of the first math course)

Teaching form

Lessons and exercises

Textbook and teaching resource

P. Mazzoldi, M. Nigro, C. Voci, "Elementi di Fisica vol. 1 - Meccanica e Termodinamica" EdiSES

Semester

Second semester (March-June)

Assessment method

The assessment consists in a written examination followed by an oral examination.

The written examination (2:30 hours duration) concerns the solution of 5 exercises related to topics of classical mechanics developed during the course.

The oral examination consists in the discussion of exercises non correctly solved by the student in the written examination, followed by an extended discussion of some topics of classical mechanics developed during the course.

The oral examination can be performed in the same session of the written part, as well as in one of the following two sessions.

Office hours

Upon agreement by email.