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## Politecnico di Torino

Academic Year 2009/10 (first time established in A.Y.1999/00)

01LQODR, 01LQOAX, 01LQOJA

### Mechanics

1st degree and Bachelor-level of the Bologna process in Mechanical Engineering - Vercelli (I FACOLTA' DI INGEGNERIA)

1st degree and Bachelor-level of the Bologna process in Civil Engineering - Vercelli (I FACOLTA' DI INGEGNERIA)

1st degree and Bachelor-level of the Bologna process in Electronic And Computer Engineering - Vercelli (III FACOLTA' DI INGEGNERIA)

Teacher	Status	SSD	Les	Ex	Lab	Years Stability
Sparavigna Amelia Carolina	RC	FIS/01	37	22	0	0

SSD	CFU	Activities	Area context
FIS/01	5	A - Di base	Fisica e chimica

#### Objectives of the course

This course covers the basic principles of mechanics: vectors, displacement, velocity, accelerations, force, equilibrium, mass, Newton's law, gravitation, work, energy. These arguments will be studied for a single particle, for a system of particles and rigid bodies. The wave mechanics will also be discussed.

The main goal of this course is the learning of the scientific methodology.

The course is fundamental for all engineering courses.

#### Expected skills

The student learns how to describe the physics phenomena.

#### Prerequisites

It would be better if the student previously attended the Mathematics courses.

#### Syllabus

Kinematics in One and Two Dimensions, Vectors and relative velocity. Relative accelerations. Motion with constant and generic accelerations. Dynamics. Forces. Vector dynamics. Newton's Laws. Work, energy and power.

Momentum. Equilibrium. Circular motion.

Systems of particles. Center of mass. Dynamics of systems. Rigid body.

Gravitation. Potential energy. Coulomb law.

Oscillations and waves. Wave mechanics. Sound. Interference.

#### Laboratories and/or exercises

Exercises.

#### Bibliography

Halliday, Resnick, Walker: Fundamentals of Physics, Wiley  
The Feynman Lectures on Physics

#### Revisions / Exam

Examination is both written and oral. Written examination takes place first. The written part is aimed at verifying the basic knowledge of physics. In this part, the student must solve few exercises. Oral examination follows written examination and consists of discussing a subject of syllabus.

Programma definitivo per l'A.A.2009/10

