UNIVERSITÀ degli STUDI di CATANIA

DEPARTMENT OF CHEMICAL SCIENCES
Bachelor's Degree in Industrial Chemistry
Academic Year 2018/2019 - 1° Year

FISICA II E LABORATORIO

FIS/01 - 9 CFU - 2° Semester

Teaching Staff

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LEARNING OBJECTIVES

Basic knowledge of Electromagnetism and Geometric and Physical Optics

COURSE STRUCTURE

The course is organized for about 13 weeks. During the first 3 weeks (in each week there are 3 + 3 + 2 hours of lectures for a total of 8 hours per week) are devoted to explain Physics experiments. Afterwards the frontal lectures (5 hours per week) are alternated with practical activity in the Physics laboratory (3 hours per week).

DETAILED COURSE CONTENT

Physics: Electromagnetism and Optics

Electrostatics: Electric Charge**,** Coulomb's Law**,** Electric Field**,** Electric Potential**,** Gauss's Law**,**Conductors**,** Capacitors**,** Dielectrics

Electric Current: Electric Current, Electric Resistance, Electric Power, DC Circuits, Resistors in Circuits, Capacitors in Circuits

Magnetostatics: Magnetic materials, Electromagnetism, Ampère's Law, Electromagnetic Force

Magnetodynamics: Electromagnetic Induction, Faraday-Neumann-Lenz ‘s Law, Inductance

AC Circuits: Alternating Current, RC Circuits, RL Circuits, RLC Circuits

Physical Optics: The Nature of Light: Diffraction & Interference

Geometric Optics: Reflection, Refraction, Spherical Lenses

Physics Laboratory

Laboratory experiments to measure: Gravitational acceleration using the simple pendulum, Elasticity constant of a spring, Electric Resistance using the Wheatstone bridge, Rotary power and Malus law, Electric Resistance with the Volt-Amperometric method, Electric high resistances through the discharge of a capacitor, Focal distance of a converging lens with the Bessel method, Inductance via RLC circuit in alternating current. Analysis of the collected experimental data.

TEXTBOOK INFORMATION

1. Mazzoldi P., Nigro M.,Voci C.: "Elementi di Fisica - Elettromagnetismo" EdiSES, Napoli.
2. Halliday-Resnick: Fondamenti di Fisica-Elettromagnetismo e Ottica, Editrice Ambrosiana
3. A. Foti, C.Giannino: Elementi di analisi dei dati sperimentali (Ed. Liguori, Napoli)
4. A. Insolia, F. Riggi: Laboratorio di Fisica (Ed. CULC, Catania)
