



UNIVERSITÀ  
degli STUDI  
di CATANIA

DEPARTMENT OF GENERAL SURGERY AND MEDICAL-  
SURGICAL SPECIALTIES  
Master's Degree in School of Dentistry  
Academic Year 2015/2016 - 1° Year

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## APPLIED PHYSICS

FIS/07 - 6 CFU - 1° Semester

### Teaching Staff

#### FRANCESCO MUSUMECI

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### DETAILED COURSE CONTENT

**BASES:** Operative definition. I.S.U. Dimension, radiant. Characteristics of instruments: Errors. Arithmetic mean and standard deviation. Scalars, vectors.

**MOVEMENT:** Position, speed and acceleration.

**MECHANICS:** The three laws. Weight force. Rigid bodies. Center of gravity, moment of a force. Static equilibrium. Levers in the human body. Work and kinetic energy. Potential energy. Power.

**FLUIDS:** Static and dynamics of fluids. Bernoulli's theorem. Influence of viscosity. Blood pressure.

**Thermodynamics:** Zeroth law, temperature, thermometers, I law, the internal energy. Heat and work, specific heats, phase transition, metabolic power, energetic value of food, thermoregulation. II law.

**ELECTRICITY** The electric charge, electric field, Coulomb's law, conductors and insulators. The Coulomb. Electric potential. The electric current. Electrical circuits. Resistance, Ohm's law. Joule effect. dielectric constant. Electrical risk.

**WAVES:** Elastic and electromagnetic waves. Longitudinal, transverse and surface waves. Sound. the decibel. Technical applications and biological effects of ultrasound. The electromagnetic spectrum, action of ionizing radiation in biological tissues. The X-ray dosimetric quantities and units of measurements.

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### TEXTBOOK INFORMATION

D. Scannicchio - Fisica Biomedica - EdiSES, Napoli 2013

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