UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Medical Physics

2627-1-I0107D004-I0107D00401

Aims

Provide students with the knowledge of general physics and medical physics necessary to carry out the profession.

**** Knowledge and Understanding****
At the end of the course, the student has acquired knowledge of the fundamental principles of general physics and medical physics, along with an understanding of the theoretical foundations that govern physical phenomena.

Applying Knowledge and Understanding
The student is able to critically and independently apply their knowledge of physics to analyze, model, and solve problems, including those related to technology.

Communication Skills
The student is able to communicate topics related to physics and medical physics clearly and accurately.

Learning Skills
The student is capable of independently updating their skills, including through consultation of bibliographic sources, scientific literature, and the use of digital tools.

Contents

The course will provide basic notions of physics, including: classical mechanics, fluid dynamics, thermodynamics, electrostatics. Emphasis will be given to physical aspects specifically related and relevant to the profession (levers, echography, electrostatics, gas physics, osmosis).

Detailed program

Mechanics: scalars and vectors, kinematics, forces and Newton's laws, inclined plane, work and energy, levers

Physics of waves: sound waves, Doppler effect, principles of echography

Electromagnetism: Coulomb forces, elettric field and potential, kinematics of charges, capacitor, current and Ohm's law.

Fluid dynamics: mechanics and statics of fluids, Bernoulli theorem, viscosity, surface tension

Thermodynamics: heat, ideal and real gases, work and transformations, principles of thermodynamics, heat transfer, diffusion and osmosis

Prerequisites

Knowledge of high school mathematics.

Teaching form

Frontal lectures (60 percent) and interactive workshops (30 percent) in presence, online tutorials (10 percent). Use of e-learning platform for additional readings.

Textbook and teaching resource

Scannicchio D. Giroletti E. (2015) Elementi di Fisica Biomedica, Edises, Milano.

Semester

1st Year, 2nd Semester

Assessment method

Take-home written assigment (test with multiple choice and/or open ended questions).
Oral exam with discussion on the written assigment and on all the topics covered during the lessons.

Office hours

All time, by fixing an appointment (via e-mail).

Sustainable Development Goals

GOOD HEALTH AND WELL-BEING | QUALITY EDUCATION