UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Medical Physics II

1819-1-H4102D001-H4102D005M

Aims

The primary goal of the course is to provide students with the tools for the understanding of the complex reactions that represent the molecular basis of life, and with the fundamentals to identify the cause-effect relations of the most important chemical and physical processes for the curriculum and the work of a physician. This knowledge will form the primary basis for a rationale approach to the knowledge of medical sciences.

Contents

Electrostatics and electrodynamics: Electrical charges and electrical circuits.

Fluid mechanics: ideal fluids and real fluids

Detailed program

ELECTRODINAMICS: - Interaction between electric charges. - Electrical field and electrostatic potential. - Distribution of electric charges: electric dipole and dipole layer. -Meaning of the dielectric constant. - The capacity of a capacitor. - Electrical circuits. - Laws of Ohm. - Concept of stationary current and of transient current. - Charge and discharge of a capacitor.

MECHANICS OF FLUIDS: - Stevino's Law - Principle of Archimedes - Theorem of Bernoulli – Poiseuille equation. Properties of real liquids and viscosity- Concept of hydraulic resistance . - Surface tension in liquids. - Surfactants; phenomena of adhesion and capillarity. - Laplace law

Prerequisites

Basic knowledges of mathematics and analysis.

Teaching form

Lectures and exercises

Textbook and teaching resource

FISICA MEDICA: Zinke-Allmang, Sills, Nejat, Galiano-Riveros, "Physics for the life sciences", Nelson Education

Semester

Second semester

Assessment method

Written exam with questions and exercises with open answers (numerical exercises which require the application of some physical principle).

Office hours

By telephone appointment (0264488215) or by email (domenico.salerno@unimib.it).