UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Medical Physics II

2122-1-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

During the Covid-19 emergency period, lessons could take place in a mixed mode: partial presence and asynchronous / synchronous videotaped lessons with some physical presence events.

Textbook and teaching resource

Giancoli D. "Physics for Scientists & Engineers with Modern Physics", Editore: Pearson Higher Education; ISBN-13: 978-1292020761

Semester

Second semester

Assessment method

Multiple choice exercises (numerical exercises that require the application of several physical principles). Oral test on teacher evaluation.

In the Covid-19 emergency period, exams will only be online. They will be conducted using the WebEx platform and on the e-learning page of the course and a link will be sent to the students to access the exam.

Office hours

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