UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

# SYLLABUS DEL CORSO

## Image Diagnostics

**2425-2-H4102D014**

### Aims

Acquisition of knowledge related to:

- X-ray based, US-based, Magnetic Resonance, Nuclear Medicine and hybrid diagnostic imaging instrumentation
- Radiotherapy instrumentation
- Pharmacological aspects of diagnostics medicinal products, including fundamental of pharmacokinetics, pharmacodynamics and regulatory aspects related to the use of contrast media and radiopharmaceuticals in Diagnostic imaging and radionuclide therapy

Basic comprehension of the key anatomic reference structures, as an introduction to clinical interpretation of radiological images.

### Contents

- Diagnostic imaging modalities: US, CT. MRI, scintigraphy, PET/CT and Pet/MR
- Principle of radiobiology
- Radionuclide therapy
- Radiotherapy systems
- Role of integrated imaging modality for image-guide therapy
- Legislation of Diagnostic Medicinal Products, classification and methods of production
- Pharmacology of Diagnostic Medicinal Products
- Normal biodistribution and and pathological pattern of the most commonly used radiopharmaceuticals
- Normal anatomy as documented by means of conventional radiology, CT, ultrasound, and Magnetic Resonance Imaging.

## Detailed program

Please, refer to the specific Module

## Prerequisites

Basic knowledge on chemistry, physics, human anatomy, physiology and pharmacology.

## Teaching form

Lectures including videos of real facilities. Case examples and case studies. Small group activities.

## Textbook and teaching resource

Slides illustrated and commented on during lessons.
General reviews from international literature.

Radiology Fundamentals. Introduction to Imaging & Technology. Editors: Jennifer Kissane, Janet A Neutze, Harjit Singh. Springer 2020
Nuclear medicine textbook, Methodology and Clinical Applications. Editors: Duccio Volterrani, Paola Anna Erba, Ignasi Carrió, H. William Strauss, Giuliano Mariani. Springer 2019. Chapters 1-11

Basic Radiotherapy Physics and Biology. Editors: David S. Chang , Foster D. Lasley , Indra J. Das , Marc S. Mendonca , Joseph R. Dynlacht. Springer 2021

## Semester

Second semester of second year

## Assessment method

The course exam consists of a written exam with multiple-choice questions or open questions.
The questions aim at verifying the student's knowledge. Each multiple-choice question is given a score between 0 and 1; each open questions is given a score between 0 and 5. Laude is assigned in case of particularly deserving tests.

Evaluation criteria: theoretical knowledge, synthesis skills, ability in the application of diagnostic methods to a specific clinical or experimental contest.

## Office hours

By appointment fixed by e-mail

## Sustainable Development Goals

GOOD HEALTH AND WELL-BEING | QUALITY EDUCATION | GENDER EQUALITY