



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## SYLLABUS DEL CORSO

### Tecniche di Medicina Nucleare

2425-3-I0303D036

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#### Aims

The student will learn the fundamental notions of radiopharmaceuticals used for diagnostic and therapeutic purposes, including cell marking, their radiochemical, biokinetic and biodistribution characteristics, as well as methods of preparation and use. They will also have to learn the basic technological characteristics and general operating principles of the equipment used in conventional nuclear medicine (gamma cameras) and positron emission tomography (PET); will also have to acquire knowledge of scintigraphic investigations and PET investigations used to study the pathologies of the various organs/systems, the related acquisition protocols and image processing methods, as well as the basic notions relating to their main indications in the study of pathologies in the cardiovascular, respiratory, gastrointestinal, urogenital, locomotor, neurological, endocrinological, pediatric infectious diseases and oncology fields. The student will also have to learn the basic notions relating to therapeutic treatments in nuclear medicine.

#### Contents

Fundamental notions of radiopharmaceuticals for diagnostic and therapeutic purposes, equipment in conventional nuclear medicine (SPET and SPET/CT gamma cameras), PET tomographs, scintigraphic investigations and their clinical applications, PET investigations and their clinical applications, basic notions of metabolic radiotherapy.

#### Detailed program

**Radiochemistry:** the laws, methods of radioactive decay, methods of preparation and use of radionuclides and radiopharmaceuticals in nuclear medicine.

**Radiopharmaceuticals:** fundamental notions of biodistribution, biokinetics and safety of radiopharmaceuticals used for diagnostic and therapeutic purposes.

**Equipment in conventional nuclear medicine and PET:** basic notions on the technologies of SPET, SPET/CT gamma cameras and PET tomography cameras

**Techniques and radiopharmaceuticals in conventional nuclear medicine (scintigraphy):** radiopharmaceuticals, methodological protocols, acquisition techniques and main clinical applications of scintigraphic investigations

**Techniques and radiopharmaceuticals in positron emission tomography (PET):** radiopharmaceuticals, methodological protocols, acquisition techniques and main clinical applications of PET investigations

**Diagnostics and Therapy in Nuclear Medicine:** basic notions on the clinical applications of scintigraphic and PET investigations in the cardiovascular, respiratory, gastrointestinal, urogenital, locomotor, neurological, endocrinological, pediatric infectious diseases and oncology fields. Basic knowledge of radiopharmaceutical therapies (radiometabolic, radioreceptor, radioligand therapy and radioembolization treatments).

## **Prerequisites**

## **Teaching form**

Teaching takes place in attendance, with frontal and interactive lessons (see individual modules).

## **Textbook and teaching resource**

The Teachers will provide educational materials

## **Semester**

First semester

## **Assessment method**

Written and oral exam, to evaluate preparation on the exam programme, the ability to organize knowledge and communication skills in a disciplinary context.

The written test will consist of 5 multiple choice questions for each module. The oral exam consists of a more in-depth assessment of knowledge of the topics covered in the course modules through open questions, with questions possibly relating to errors made during the written exam. The final evaluation will take into account the results obtained in both the written test and the oral test.

## **Office hours**

By appointment required by mail

## Sustainable Development Goals

GOOD HEALTH AND WELL-BEING | QUALITY EDUCATION

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