



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## SYLLABUS DEL CORSO

### Contrast Media and Radiopharmaceutical

2324-2-H4102D014-H4102D043M

---

#### Aims

The course aims to provide knowledge and skills on the pharmacological aspects of diagnostics medicinal products. Topics include the pharmacological aspects of diagnostics medicinal products, including fundamental of pharmacokinetics, pharmacodynamics, regulatory aspects related to the use of contrast media and radiopharmaceuticals in Diagnostic imaging and radionuclide therapy

#### Contents

- Radiological contrast media: mechanism of action, pharmacokinetics and safety
- Radiopharmaceuticals: mechanism of action, kinetics of biodistribution and safety. Normal biodistribution and pathological pattern of the most commonly used radiopharmaceuticals
- Optical imaging probes: mechanism of action, kinetics behavior and safety
- Regulatory affairs relative to their classification and reimbursement

#### Detailed program

Pharmacology of Diagnostic Medicinal Products

Radiological contrast media: chemical and pharmacological characteristics of biological relevance that differentiate contrast media; main clinical indication and clinical and evidence based rational for the clinical use of contrast media; main toxicity profile, adverse event, procedures to predict, prevent and manage contrast media related adverse event. Pharmacovigilance.

Radiopharmaceuticals: nature and characteristics of radioisotopes, with specific reference to those used in diagnostic imaging; and therapy. Fundamentals of radiochemistry, radiopharmaceuticals, radiopharmacology and radiobiology. Production and supply. Laboratory and equipment. Biodistribution profiles, pharmacokinetics,

pharmacodynamics, normal and pathological biodistribution pattern. Main toxicity profile, adverse event. Dosimetric estimates.

Medicines for optical imaging: mechanism of action, instrumentation, kinetics of biodistribution and safety aspects.

Risk benefit assessment for contrast media;

Regulatory affairs relative to their classification and reimbursement

## **Prerequisites**

Basic knowledge on chemistry, physics and physiology and pharmacology that will be presented during the course when necessary

## **Teaching form**

Lectures. Active and interactive discussion on critical issues presented during the course. Scientific manuscript discussion in small group.

## **Textbook and teaching resource**

Slides presented during the course; scientific papers; guide line and auto evaluation question to be discussed during lessons

European Pharmacopeia and specific legislation

Nuclear medicine textbook, Methodology and Clinical Applications. Editors: Duccio Volterrani, Paola Anna Erba, Ignasi Carrió, H. William Strauss, Giuliano Mariani. Springer 2019. Chapters 1-4

## **Semester**

Second Semester

## **Assessment method**

Self evaluation with written or oral self-assessment test (closed questions or multiple choice); specific scientific question, problem solving activities on specific issues during the course.

Final test:

The course exam consists of a written exam with multiple-choice questions or open questions. Oral exam consisting of ample discussion on the basis of radiological images digitally provided with the aim of recognizing the key anatomical features and the autonomous reflection capacity on critical points of the program is also possible. 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 2. 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 context.

## **Office hours**

By appointment fixed by e-mail

## **Sustainable Development Goals**

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

---