UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Multimodal Imaging in Cardiovascular Diseases

2627-3-H4102D131

Aims

This elective course offers an in-depth exploration of multimodal imaging techniques and advanced therapies applied to the diagnosis, staging, and management of cardiovascular diseases. The focus is on integrating conventional radiology, ultrasound, computed tomography (CT), magnetic resonance imaging (MRI), and nuclear medicine, with particular emphasis on theranostic therapies, to ensure a comprehensive assessment and personalized patient management. Students will have the opportunity to apply their knowledge through case-based learning and clinical observation.

Course Objectives
By the end of the course, students will be able to:

1. Understand the principles, advantages, and limitations of various imaging modalities used in the assessment of cardiovascular diseases.
   Knowledge and Understanding – Demonstrate an in-depth knowledge of imaging methodologies and their clinical applications.
2. Interpret radiologic findings from radiographs, ultrasound, CT, MRI, and nuclear medicine studies, including those using theranostic radiopharmaceuticals.
   *Applying Knowledge and Understanding – Correctly apply theoretical knowledge to interpret multimodal imaging studies.
3. Integrate multimodal data to formulate differential diagnoses, guide disease staging, and support clinical patient management.
   Making Judgments – Critically evaluate and synthesize clinical and imaging information.
4. Understand the basics and applications of nuclear medicine for cardiovascular diseases.
   Knowledge and Understanding & Making Judgments – Comprehend the pharmacology and regulatory aspects of radiopharmaceuticals.
5. Recognize indications, contraindications, and limitations of imaging and theranostic techniques in the cardiovascular field.
   Knowledge and Understanding & Making Judgments – Apply criteria for appropriateness and safety.
6. Appreciate the role of imaging in risk stratification, diagnpsis and treatment assessment in line on the most

recent guidelines
*Knowledge and Understanding & Applying Knowledge – Use imaging to assess risk stratification, disease managment

Contents

1. Advanced Cardiovascular Imaging Modalities:
2. Cardiovascular Diseases and Imaging:
3. Multimodal Integration and Clinical Management:
4. Multidisciplinary approaches
5. Safety and Regulations:

Detailed program

1. Advanced Cardiovascular Imaging Modalities:
   Conventional radiology, ultrasound, CT, multiparametric MRI
   Diagnostic and theranostic nuclear medicine (scintigraphy, PET/CT, targeted radiopharmaceuticals)
2. Cardiovascular Diseases and Imaging:

- ischemic heart disease, cardiomyopathies, valvular heart disease
- Inflammatory and infectious cardiovascular conditions

3. Multimodal Integration and Clinical Management:

- Integrated clinical cases

4. Multidisciplinary approaches
5. Safety and Regulations:
   Guidelines and best practices
   National and international regulatory standards
   Appropriateness criteria

Prerequisites

Basic knowledge in the following topics: diagnostic imaging, cardiovascular disease, pharmacology

Teaching form

Lectures, case discussions and problem-based learning (PBL), independent study of clinical cases and scientific literature.

Textbook and teaching resource

Slides, dedicated textbook chapters, scientific articles, clinical guidelines, and clinical case studies.

Semester

Second semester

Assessment method

Continuous assessment and presentation of clinical cases.

Office hours

By appointment

Sustainable Development Goals

GOOD HEALTH AND WELL-BEING | QUALITY EDUCATION