UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

# COURSE SYLLABUS

## Cardiology

**2627-4-H4102D024-H4102D084M**

### Aims

The course will provide essential and up-to-date theoretical knowledge of the clinical diagnosis and management of a wide spectrum of cardiovascular diseases. The course presents the field of cardiology in a concise and practical manner, addressing the learning needs of medical students. The acquired knowledge will contribute to a better understanding of the causes, diagnosis, and treatment options of cardiac pathologies. Gender differences in epidemiology, clinical presentation, and prognosis will be also addressed.

1. Knowledge and Understanding

- Explain the origin and natural history of acute and chronic heart disease, having acquired essential knowledge of pathology, pathophysiology, epidemiology, health economics, and the principles of health management. They will also have a good understanding of the mechanisms that determine equity in access to health care, the effectiveness and quality of care, including in relation to existing sex/gender differences;
- Describe and interpret the fundamental elements of clinical reasoning, in order to develop a sound decision-making process, after having collected, interpreted, and critically evaluated information on the health and disease status of an individual, including in relation to the environment in which they live;

2. Applied Knowledge and Understanding

- Correlate the principles of drug action with their indications, paying attention to differences in sex/gender and population, and describe the main instrumental diagnostic, surgical, physical, psychological, social, and other therapeutic interventions in acute and chronic illness, rehabilitation, prevention, and end-of-life care;
- Demonstrate knowledge and understanding of the determinants of health and disease, such as lifestyle, genetic, demographic, environmental, socioeconomic, psychological, cultural, and sex/gender factors, including in relation to the population as a whole;
  Demonstrate possession of basic skills for examination, diagnosis, treatment, and rehabilitation in a manner appropriate to the situation and respectful of patients, being able to develop questions based on clinical problems, researching and evaluating the best available evidence, and communicating it empathetically and

in a format that patients can understand;

- correctly and using appropriate relational methods, collect a comprehensive medical history, including social aspects,
  and perform a physical and mental health assessment, applying the principles of clinical reasoning,
  using basic diagnostic procedures and techniques, analyzing and interpreting the results, in order to
  correctly define the nature of a problem and correctly apply appropriate diagnostic and therapeutic strategies, also drawing on modern knowledge acquired in gender medicine and precision medicine;
- establish diagnoses and therapies for each patient, developing a decision-making process informed
  by best practices derived from evidence-based medicine and inspired by precision medicine,
  taking into account specific circumstances, the principles of gender medicine, and the patient's
  preferences, in relation to the availability of resources;
- carry out diagnosis, treatment, and prevention activities with adequate technical and cultural skills to operate in
  technically advanced contexts, selecting and using appropriate equipment, tools, and methods, and being able to competently utilize the most modern information, digital, and telematic communication
  technologies at local, regional, and global levels;

4. Independent judgment

- recognize any condition that puts the patient's life in imminent danger, knowing how to correctly and independently manage
  the most common medical emergencies, even in wartime and catastrophic events (disaster preparedness);
- be aware of the limitations of treatment, especially in chronic degenerative incurable diseases or in
  the pathologies of the elderly, so that palliative care programs can be activated well before terminal illness;
- undertake appropriate preventive and protective actions against disease, maintaining and promoting the health of individuals, families, and communities, with reference to the basic organization of health systems, which includes policies, organization, financing, cost containment measures, and the principles of efficient management in the proper provision of health care. They will therefore be able to correctly use local, regional, and national demographic and epidemiological surveillance data, including in relation to sex/gender differences, in health decisions. They will be able to identify patient safety factors in their work environment as causes of adverse events and potential harm;

6. Communication skills

- interpret the global needs of patients and their families from a bio-psycho-social perspective at any stage of the disease process,
  from diagnosis to the incurable and terminal stages when these occur, through competent communication and an interdisciplinary approach that takes into account cultural, psychological, and spiritual factors, not just the biological ones.

## Contents

Cardiac arrhythmias and conduction disturbances; arterial hypertension and other cardiovascular risk factors; aorta and peripheral vascular disease; valvular heart disease; acute and chronic ischemic heart disease; diseases of myocardium, pericardium, and pulmonary circulation; heart failure with reduced and preserved ejection fraction; interventional cardiology; adaptation of the cardiovascular system to physiologic conditions; basics of pediatric cardiology and congenital heart diseases

## Detailed program

- Arrhythmias (tachyarrhythmias I/ bradyarrhythmias II)
- Syncope
- Hypertension
- Aortic syndromes
- Valvular heart disease (I/II)
- Infective endocarditis
- Myocarditis
- Chronic ischemic heart disease
- Acute coronary syndromes (I/II)
- Interventional cardiology
- Cardiomyopathies (I/II)
- Heart failure (I/II)
- Pericardial diseases
- Pulmonary embolism
- Pulmonary hypertension
- Right ventricular failure and cor pulmonale
- Adult congenital heart diseases
- Cardiac tumors
- Adaptation of the cardiovascular system to various physiologic conditions (aging, exercise, pregnancy, high altitude)

## Prerequisites

- Basic cardiovascular pathology and diagnostics, fundamentals of human genetics, physiology, and pharmacology of cardiovascular system - English language

## Teaching form

The course comprises 30 one-hour lessons taught in person. All course activities will be held in English language except those involving real patients that will be delivered in Italian

## Textbook and teaching resource

- Lilly LS. Pathophysiology of Heart Disease. 6th Edition. 2016 Wolter Kluwer
- Harrison’s Principles of Internal Medicine 20th Edition 2018, McGraw-Hill
- Hurst’s The Heart 14th Edition 2017, McGraw-Hill
- The slides and the recorded lessons are available on the e-learning page of the subject

## Semester

First semester

## Assessment method

(1) **Written exam** with multiple choice quiz comprising 50 questions with only one correct answer (among 4) aimed at evaluating global comprehension of the course program. Each correct answer is scored 1. A minimum score of 30 correct answers is required for being admitted to oral examination

(2) **Oral examination** (starting from a real clinical case we will discuss on topics covered during the lectures or clinical case analysis)

In case of a new Covid-19 emergency, only telematic oral exams will be available. They will be carried out using the WebEx platform. For access to the events, the links will be published on the e-learning page of the subject

All assessments will be done in the English language

## Office hours

By email appointment at luigi.badano@unimib.it

## Sustainable Development Goals

QUALITY EDUCATION | GENDER EQUALITY