UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

# SYLLABUS DEL CORSO

# Imaging Cardiovascolare

**2627-4-H4101D214**

## Aims

Giving students the tools to learn theoretical and practical indications to invasive and non-invasive study of the heart with the most modern methods supported by the most recent guidelines.

## Contents

Technological developments of the last twenty years have given on one hand new non-invasive diagnostic tools that allows to obtain important and, until recently, no imaginable information about the structure and function of te heart. On the other hand also the invasive methodology have known a rapid evolution.
Content of this course will be the approach to non-invasive methods for studying the structure and function of the heart: ultransound Echo Color Doppler, magnetic resonance, nuclear medicine technique (myocardial stress scintigraphy, and PET) coronary computer tomography. It will be shown also a cardiac angiography with treatment of coronary stenosis. The techniques are contextualized to the study of major cardiac acute and chronic diseases with particular interest to indications in hypertension, ischemic heart disease, and heart failure.
Furthermore, we will discuss gender issue regarding cardiovascular imaging. In particular, to analyze and evaluate with a medical and scientific approch and in a gender based view with the aim to improv not only the knowledge on aspect determining gener differences but also the appropriateness of medical intervention in order to give higher attention on anamnestic, instrumental and laboratory data in relatioship to patients gender.

## Detailed program

The course will be done at the Niguarda Hospital in order to offer the possibility to interact with the methodology used.

- DAY 1: study of the structure of the heart using ultrasound technique.
- DAY 2: cardiac magnetic resonance and coronary CT.
- DAY 3: nuclear medicine technique (myocardial scintigraphy, PET, SPECT/CT and PET/CT).
- DAY 4: study of coronary angiography with possible means of endovascular treatment of coronary stenosis.

## Prerequisites

To have already attend the cardiological lessons of the PMC1 course.

## Teaching form

- DAY 1: 3 hours od interactive teaching with explanation direclty during the echocardiography examination done by the tutor.
- DAY 2: 1 hour of didattic teaching on cardiac magnetic resonance and coronary CT and 1 hour of interactive teaching with discussion of radiological images.
- DAY 3: 1 hour of didattic teaching on nuclear medicine technique and 1 hour of interactive teaching with discussion of scintigraphyc images.
- DAY 4: 1 hour of didattic teaching on coronary angiography and 1 hour of interactive teaching with discussion of coronarographic images.

All the activities are on-site.

## Textbook and teaching resource

Fundamental scientific paper for the various cardiac imaging modalities:

- Echocardiography:Lang RM, Badano LP, Mor-Avi V, Afilalo J, Armstrong A, Ernande L, Flachskampf FA, Foster E, Goldstein SA, Kuznetsova T, Lancellotti P, Muraru D, Picard MH, Rietzschel ER, Rudski L, Spencer KT, Tsang W, Voigt JU. Recommendations for cardiac chamber quantification by echocardiography in adults: an update from the American Society of Echocardiography and the European Association of Cardiovascular Imaging. J Am Soc Echocardiogr. 2015 Jan;28(1):1-39.e14. doi: 10.1016/j.echo.2014.10.003. PMID: 25559473.
- Cardiac computer tomography and magnetic resonance: Kwong RY. MY APPROACH to selecting cardiac computed tomography vs cardiac magnetic resonance imaging vs echocardiography. Trends Cardiovasc Med. 2015 Jan;25(1):70-1. doi: 10.1016/j.tcm.2014.07.008.
- Nuclear cardiological imaging: Bourque JM, Beller GA. Nuclear Cardiology: The Past, Present, and Future.

Circ Cardiovasc Imaging. 2024 May;17(5):e016875. doi: 10.1161/CIRCIMAGING.124.016875.

- Coronary angiography: Task Force on Myocardial Revascularization of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS); European Association for Percutaneous Cardiovascular Interventions (EAPCI); Wijns W, Kolh P, Danchin N, Di Mario C, Falk V, Folliguet T, Garg S, Huber K, James S, Knuuti J, Lopez-Sendon J, Marco J, Menicanti L, Ostojic M, Piepoli MF, Pirlet C, Pomar JL, Reifart N, Ribichini FL, Schalij MJ, Sergeant P, Serruys PW, Silber S, Sousa Uva M, Taggart D. Guidelines on myocardial revascularization. Eur Heart J. 2010 Oct;31(20):2501-55. doi: 10.1093/eurheartj/ehq277.

## Semester

Second semester; April-May.

## Assessment method

Interview on the topics covered during the lessons.

## Office hours

By e-mail contact.
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## Sustainable Development Goals

GOOD HEALTH AND WELL-BEING | QUALITY EDUCATION