UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Functional Analysis and Models

2526-1-F0602Q116-F0602Q11604

Aims

The course will be multidisciplinary and organized in modules in order to offer an overview of genetic, molecular, biochemical, physiological and pharmacological aspects of a human disease.
The focus of the course will be the study, from different perspectives, of a genetic disease, from diagnosis to treatment.
In particular, at the end of the course the student will have acquired the following skills:

1. knowledge and understanding: complete overview with different integrated approaches of a specific human genetic disease
2. applied knowledge and understanding: apply what has been learned to the study of numerous human genetic diseases
3. self-judgment: capacity to critically evaluate what has been learned
4. oral competences: oral communication of what has been learned using the correct scientific terminology
5. ability to learn: critical learning and understanding of scientific literature on different aspects of a human disease.

In the academic year 2025-2026 the genetic disease studied will be Cystic Fibrosis.

Regarding the physiology module (1 CFU), the student will have the opportunity to deepen the functional analysis of the mutated protein compared to the WT one (CFTR chlorine channel), analyzing the pathogenesis of the disease at the different organ levels. The student will be able to learn how to translate information from the analysis of the single mutate protein to the clinical manifestations associated with the pathology.

Contents

The course is composed in lectures, group works and reverse teaching on issues relating to the cellular and organ functional aspect of cystic fibrosis. The advantages/disadvantages of the different cellular and in vivo models for

studying the pathology will also be analysed.

Detailed program

The course is structured as follows:
-physiopathology of the CFTR channel
-clinical manifestations of cystic fibrosis
-experimental models
-analysis and interpretation of the results of scientific articles relating to the topic

Prerequisites

Basic knowledge of general and systems physiology.

Teaching form

The course required attendance (10 hours/1 CFU).
It consists in lessons composed by:

- a section (2 hours) of delivered didactics (Didattica erogativa, DE) focused on the presentation of contents by the lecturer.
- a section (8 hours) of interactive teaching (Didattica Interattiva, DI) including integrative didactic interventions by external experts, group works, reverse teaching with the student's personal involvement. Visits to centers of excellence in the study of the pathology under consideration are also planned.

Textbook and teaching resource

See the main course page

Semester

Second

Assessment method

The verification and evaluation of the student aims to be * innovative * compared to the classic methods.
The exam consists in the elaboration of the knowledges acquired during the course through a poster presentation, similar to what is carried out in scientific meetings.

The student will be evaluated by a commission in terms of: 1) expository skills on what is illustrated in the poster, 2) general knowledge of the pathology treated in the course, 3) first-hand participation in the activities carried out during the course, 4) graphic/display characteristics of the poster.
There are no ongoing tests.

Office hours

Appointment via e-mail with the Physiology module Lecturer (marcella.rocchetti@unimib.it, francesco.lodola@unimib.it).

Sustainable Development Goals

GOOD HEALTH AND WELL-BEING | QUALITY EDUCATION