UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

# COURSE SYLLABUS

# General Physiology

**2223-1-E3002Q008-E3002Q009M**

## Aims

1. Knowledge and comprehension.

The course brings the students to understand the fundamental physiological mechanisms necessary to understand the topics treated in the Ocular Physiology module.

2. Applied knowledge and comprehension.

These concepts are indispensable for further studies in Ocular Physiology, Pathology, Pharmacology, and Perception Psychology.

3. Making judgements.

The student will learn to apply the fundamental physiological knowledge to the different aspects of the eye pathophysiology.

4.Communication skills.

Being able to properly explain the basic concepts.

5. Learning skills.

The acquired physiological concepts and notions will enable the student to further pursue personal studies.

## Contents

Introduction.

General aspects of cell metabolism.

Biophysics and membrane transport mechanisms

Cellular physiology.

Organ Physiology.

## Detailed program

Cell biochemistry: energy exchanges and intermediate metabolism. Glycolisis and lactic acid.

Fundamentals of cell physiology and transmembrane transport (active and passive transport, osmotic fluxes, ion channels).

Mechanisms of excitability and cell signaling. Resting and action potential. Chemical and electrical synapses.

Function and regulation of the skeletal and smooth muscle, hints to the cardiac function.

Gas exchange and circulation.

Transepithelial transport: secretion and absorption.

Introduction to neuromuscular physiology.

Organization of the nervous and endocrine control of the organic functions.

## Prerequisites

Human Anatomy and Histology. General Chemistry.

## Teaching form

The lessons will be delivered in italian, in presence .

## Textbook and teaching resource

Slides and video-recorded lessons (available on E-learning).

Textbooks:

Stanfield C., Principles of Human Physiology, Pearson 2017.

Randall et al., Animal Physiology, Freeman 2012.

For consultation:

Kandel et al., Principles of Neural Sciences, McGraw-Hill 2013.

## Semester

II semester (March-early April).

## Assessment method

There are no in itinere tests.

The oral exam can be carried out in english, on request.

It consists in a few questions on the treated topics, aimed to verify the student's comprehension of the fundamental concepts of the course.

Passing the exam gives access to the oral exam of Ocular Physiology (which must be passed within the 3 following sessions).

## Office hours

Appointment by E-mail

## Sustainable Development Goals

QUALITY EDUCATION | GENDER EQUALITY | REDUCED INEQUALITIES