UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Fisiologia 1 B

2526-2-H4101D253-H4101D021M

Aims

The objective of teaching human physiology is to provide students with a solid foundation to understand the normal functioning of the human body, which is essential for recognizing, diagnosing, and treating diseases in their future roles as physicians. During the course, students will learn to interpret physiological data and correlate these data with pathological conditions, developing analytical and critical thinking skills. This will provide the necessary basis for further studies in pharmacology, pathology, pathophysiology, and clinical medicine and surgery. Acquiring measurement techniques and interpreting experimental data are crucial for practical understanding of physiological functions. Furthermore, it is important for students to acquire the ability to communicate clearly and present physiological data in an understandable manner, as well as the skill to solve clinical problems through the application of acquired knowledge.

Contents

The course is based on the systematic presentation of physiological concepts based on the functions of the human body. The mechanism leading to an imbalance of function cannot be appreciated without a deep understanding of the biophysical and physiological basics. Therefore, such mechanisms that ensure the functions at the cellular level, tissues, organs and apparatus and at the integrated level will be introduced. In particular, the course will address the physiology of cardiovascular system.
During the course, the effects of the aging process and gender differences on human physiology will be emphasized.

Detailed program

Physiology of the Heart. Structural and functional characteristics of the myocardium. Cardiac automation.

Adjustment of heart rate. Rhythmic excitation processes and excitation-contraction coupling. Nervous control of cardiac activity. Cardiac pump mechanics. Cardiac output. Self-regulation of cardiac output (Starling's law). Measurement of cardiac output. Relationship between oxygen consumption and cardiac output (Fick's principle).

The cardiac cycle. Energetics and work of the heart. Mechanisms of intrinsic and extrinsic regulation of the heart. Heart tones.

Circulatory System. Blood and its rheology, biophysics of circulation: Bernouilli's principle, Poiseuille's law. Mechanical properties of vessels: arteries, arterioles, capillaries, veins. Distensibility and 'compliance' of the vessels. Laplace's law. Blood speed. Arterial pressure and its control. Systemic and pulmonary circle. The venous system. Coronary circulation. Splanchnic circulation. Pulmonary circulation. Renal circulation

Prerequisites

To take the Human Physiology exam it is required to pass the exam Human anatomy and histology

Teaching form

All th 12 lessons of 2 hours each will be in person, except in emergencies. They will begin with an initial part where concepts will be presented (lecture-based mode), followed by interaction with students that defines the subsequent part of the lesson in interactive mode.
Teaching methods will include lectures, and class discussions.

Textbook and teaching resource

KLINKE, Fisiologia EdiSES

CONTI, Fisiologia Medica, EDIERMES

GUYTON & J.E. HALL, Fisiologia medica, Piccin

GRASSI, NEGRINI, PORRO Fisiologia Medica, POLETTO EDITORE

Reviews or scientific papers recommended by the Professor During Lectures.

Semester

First Semester

Assessment method

For the assessment method, please refer to the general course syllabus.

Office hours

The professor receives by appointment upon agreement by e-mail
antonio.zaza@unimib.it

Sustainable Development Goals

GOOD HEALTH AND WELL-BEING | QUALITY EDUCATION | GENDER EQUALITY | REDUCED INEQUALITIES