UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Fisiologia Umana

2526-2-H4101D253

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.

Knowledge and Understanding At the end of the course, the student will be able to:

1. Correlate the structure and normal function of the human body as a complex system of biological processes in constant adaptation, interpreting the morpho-functional anomalies observed in various diseases;
2. Identify normal and abnormal human behavior, highlighting the determinants and major risk factors for health and disease, and the interactions between humans and their physical and social environments, with attention to sex/gender and population differences;
3. Describe the fundamental molecular, cellular, biochemical, and physiological mechanisms that maintain the organism’s homeostasis, and explain the human life cycle and the effects of growth, development, and aging on the individual, family, and community, with attention to sex/gender and population differences;
4. Demonstrate knowledge and understanding of the determinants of health and disease, including lifestyle, genetic, demographic, environmental, socioeconomic, psychological, cultural factors, and those related to sex/gender, also with reference to population-level complexity.

Judgment Autonomy At the end of the course, the student will be able to:

1. Demonstrate a critical approach, constructive skepticism, and a creative research-oriented attitude, taking into account both the importance and limitations of scientific thinking based on information obtained from

multiple sources;
2. Formulate personal judgments to solve analytical and complex problems and autonomously search for scientific information, without waiting for it to be provided, using the foundations of scientific evidence;
3. Formulate hypotheses, collect and critically evaluate data in order to solve problems.

Communication Skills At the end of the course, the student will be able to:

1. Listen attentively to extract and synthesize relevant information on various issues, understanding their content;
2. Use different methods and tools for scientific communication, including written, verbal, and technological ones, considering their context and purpose; they will be able to identify the context in which specific information was created and disseminated, and critically evaluate the quality, credibility, reliability, and relevance of the information and its sources.

Learning Skills. At the end of the course, the student will be able to:

1. Propose and design a research project, choosing appropriate strategies, methods, and resources to address a specific medical question; identify and critically evaluate information for evidence-based medical practice; recognize relevant bioethical issues in medical research and propose measures to ensure scientific integrity;
2. Critically assess their own level of education, recognize its limits, and reflect on learning and development needs;
3. Apply appropriate learning strategies to meet professional development needs, including setting goals, planning, and managing time for self-directed learning; use available resources to search, identify, and select health-related information and critically evaluate content and sources.

Contents

The course systematically and comprehensively presents the foundational concepts underlying human body functions. The mechanism leading to dysfunction cannot be appreciated without a deep understanding of basic physiological mechanisms. Therefore, the course will present these mechanisms that ensure cellular, tissue, organ, and system functions at integrated levels. In particular, the course will address the physiology of excitable and non-excitable cells, the cardiovascular system, the respiratory system, the nervous system, motor functions, and higher nervous functions.
During the course, the effects of the aging process and gender differences on human physiology will be emphasized.
Topics will be presented in a context that prepares students for their role as physicians. Therefore, whenever possible, clinical examples will be used to illustrate basic physiological principles.

Detailed program

Please, refer to the specific module

Prerequisites

To take the Human Physiology exam it is necessary to have passed the exam Human anatomy and histology

Teaching form

All lessons 102 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, videos, and class discussions.

Textbook and teaching resource

Please, refer to the specific module

Semester

Second year, first and second semester

Assessment method

No midterm assessments are scheduled. The exam consists of a written test with open-ended questions, ranging from 2 to 5 questions per module. The questions are designed to assess the student's overall knowledge of the topics, their ability to analyze complex phenomena, rationalize them, and apply specific principles of physiology. Students may also be asked to solve simple exercises and to analyze complex scenarios, with particular attention to the interconnections between physiological variables in light of theoretical paradigms. The final outcome will result from an integrated evaluation of the different modules. The overall final grade will be expressed on a scale of 30.

Office hours

The professors receive by appointment upon agreement by e-mail
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Sustainable Development Goals

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