UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Human Physiology 1 B

2627-2-H4103D007-H4103D00702

Aims

The **Gastrointestinal Physiology** module aims to provide students with fundamental knowledge of the functional mechanisms regulating the activity of the digestive system. By the end of the module, students are expected to understand the functional organization of the gastrointestinal tract, the mechanisms of secretion, motility, digestion and absorption, as well as the neural and hormonal control of the main digestive functions. Particular attention will be devoted to the role of the enteric nervous system, the electrophysiology of gastrointestinal smooth muscle cells, the regulation of salivary, gastric, pancreatic, intestinal and hepatic secretions, and the physiological mechanisms underlying the chemical senses of taste and smell.

Contents

The module covers the general functions of the digestive system, the functional structure of the gastrointestinal tract, and the mechanisms of secretion and motility. It also addresses the neural and hormonal control of digestive function, with particular reference to the enteric nervous system and the main gastrointestinal hormones. The physiology of the oral cavity, salivary secretion, taste and smell, gastric, intestinal, pancreatic and hepatic secretions, and the processes of digestion and nutrient absorption will also be discussed.

Detailed program

The module introduces the general functions and main characteristics of the digestive system, with reference to the functional organization of the gastrointestinal tract and the coordinated role of motility, secretion, digestion and absorption. The main structural and functional features of the gastrointestinal wall and their physiological significance in the different segments of the digestive tract will be described.

Part of the module will focus on the mechanisms controlling gastrointestinal function, with particular attention to the enteric nervous system, autonomic neural control and hormonal regulation. The main mechanisms regulating gastrointestinal motility will be analysed, together with the electrophysiology of gastrointestinal smooth muscle cells and the role of gastrointestinal hormones, including gastrin, cholecystokinin and secretin.

The functions of the oral cavity, salivary secretion and the physiology of the chemical senses will then be addressed, with reference to the mechanisms underlying taste and smell. The composition of saliva, the regulation of salivary secretion and the role of the oral cavity in the early stages of digestion will be described.

The module will then cover the stomach and gastric secretion, including the composition, mechanisms and regulation of acid and enzymatic secretion. Intestinal secretions, pancreatic secretion and hepatic secretion will also be discussed, with reference to their composition, regulation and role in digestive processes.

Finally, the mechanisms of digestion and absorption of the main nutrients will be analysed, considering the functional integration among digestive secretions, intestinal motility and transport across the intestinal epithelium.

Prerequisites

The prerequisite requirements to be fulfilled in order to sit the Human Physiology exam are those indicated in the Teaching Regulations of the Medicine and Surgery degree programme for the 2026/2027 academic year.

Teaching form

All 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.
Teaching activities may include, up to a maximum of 30% of the total lecture hours, the use of innovative teaching methods, including delivery under the supervision of the lecturer, co-teaching arrangements and/or remote teaching, in accordance with Ministerial Decree No. 1835 of 6 December 2024.

Textbook and teaching resource

Please refer to the general course syllabus.

Semester

Second year, first semester

Assessment method

Please refer to the general course syllabus.

Office hours

The professor receives by appointment upon agreement by e-mail
ilaria.rivolta@unimib.it

Sustainable Development Goals

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