## Organic and functional systems II

**Coordinator**  
Prof. SICA GIGLIOLA

**Course Code**  
ML0057

**CUIN Code**  
571601044

**Year Course**  
2

**Semester**  
1

**UFC**  
17

### Modules

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### Lecturers

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The whole course is aimed at giving the student a sound understanding of the structure, function and development of vascular, endocrine, respiratory, digestive and urinary systems. In particular, the Anatomy modules focus on the gross structure and functional correlations; the Histology and Embryology modules provide principles of development, and illustrate the microscopic structure of the different systems with cell and molecular biology correlations; the Physiology modules delineate the main mechanisms underlying the system functioning with particular attention on their interaction. A great relevance is given to the clinical impact of the different disciplines.

### Program

#### Vascular System

**Anatomy**
- Basic introduction to: Pulmonary circulation, Systemic circulation, Lymphatic system.
- Practicals: Introduction to medical examination and imaging of the vascular system.

**Histology and Embryology**
- Practical training: By studying histological sections of blood vessels, thymus, spleen and lymph nodes, students learn to recognize and analyze the different tissue and organ components.

**Physiology**
- Practicals: Measurement of blood pressure. Endocrine system
- Anatomy

- Practicals: Examination of histological sections of adenohypophysis stained with markers of the different cellular types. Histology and Embryology

- Practical training: By studying histological sections of thyroid, parathyroid and adrenal glands, students learn to recognize and analyze the different tissue and organ components.

#### Endocrine System

**Physiology**
- Endocrine regulation of growth and body mass: growth hormone and Insulin-like growth factor 1. The thyroid gland. The adrenal gland: cortisol, aldosterone and catecholamines. Regulation of calcium and phosphate balance: parathyroid hormone and vitamin D.

**Respiratory system**

**Anatomy**
- Practicals: Introduction to examination imaging of the respiratory system: X rays, computerized tomography, bronchography, bronchoscopy.

**Histology and Embryology**
- Histological structure of larynx, trachea, bronchi, bronchioles and alveoli. Emphysema and pneumonia. Cystic fibrosis.

**Practical training:** By studying histological sections, students learn to recognize and analyze the different tissue and organ components of the respiratory system.
Physiology

Practicals: Spirometry.

Dietary system

Anatomy
Overview of the system. Systematic gross anatomy, blood supply, and lymphatic drainage of main organs of the gastrointestinal tract and related accessory glands: oral cavity and salivary glands, pharynx, esophagus, stomach; small intestine, large intestine; liver and portal vein system, gallbladder and bile ducts, pancreas. Abdominal wall: muscles and fasciae. Peritoneum: general arrangement, ligaments, omentum, mesenteries, pouches and fossae, intraabdominal and retroperitoneal organs. Topographical anatomy and organ relations in the abdominal cavity.

Practicals: Introduction to medical examination and imaging of the digestive system; clinical anatomy of selected digestive disorders.

Histology and Embryology


Practical training: By studying histological sections, students learn to recognize and analyze the different tissue and organ components of the digestive system.

Physiology

Functional organization of the gastrointestinal system. Gastric function: acid secretion, pepsinogen secretion control of gastric secretion; gastric motility; filling and emptying of the stomach. Pancreatic and salivary glands: composition, function and control of pancreatic secretion; composition, function, and control of salivary secretion. Nutrient digestion and absorption: carbohydrate, lipid and protein digestion and absorption. Intestinal motility: tonic and rhythmic contractions of intestinal smooth muscle; peristalsis; motility of sphincters; motility of the small intestine and large intestine.

Urinary system

Overview of the system. Systematic gross anatomy, blood supply, and lymphatic drainage of main structures and organs: kidneys, ureters, urinary bladder and urethra. Topographical anatomy and organ relations in the abdomino-pelvic cavity. Hints on sexual dimorphism in the urinary system.

Practicals: Basics of imaging techniques for the urinary system; congenital malformations and anatomical variants; clinical anatomy of selected urinary disorders.

Histology and Embryology


Practical training: By studying histological sections, students learn to recognize and analyze the different tissue and organ components of the urinary system.

Physiology


Course structure

Learning activities include class lessons and laboratory and class practical lessons, student individual work or in small groups.

Evaluation method

The exam is composed of multiple-choice questions regarding all modules; for Histology an oral part is included. All the details concerning the exam procedures will be given out by the Coordinator at the beginning of the Course.

Bibliography

Anatomy:

Physiology:
W. F. Boron and E. L. Boulpaep, Medical Physiology, Elsevier.
J. B. West, Respiratory Physiology: the essential. Lippincott Williams and Wilkins.

Notes

Being defined by the faculty