



## Syllabus

**Term:** 2026/27/1      **Subject name:** Comparative Physiology I. - lecture      **Subject code:** ENBIOB1401

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**Unit (Unit code)** (BIOLOGIA)

**Lecturer responsible for the course:** Dr. HERNÁDI István

**Requirement:** Exam

**Classes per week :** 2/0/0

**Classes per term:** 26/0/0

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### Purpose of education:

The course is designed to provide an introduction to the basic chapters of human physiology within the core curriculum of biology. The course aims to provide the student with knowledge related to the basic concepts and phenomena and serve as a good theoretical basis for further specializations. Students will acquire a general understanding of integrative processes in the living body, too.

### Contents:

**Cellular and molecular basis of physiology:** Resting membrane potential, action potential, local potentials. Types and function of ion channels.

**Physiology of muscle cells I.** Skeletal muscle.

**Physiology of muscle cells II.** Smooth muscle.

**Physiology of the cardiovascular system I.** Heart muscle (conduction system, cardiac action potential). Electrocardiogram.

**Physiology of the cardiovascular system II.** Events, volumes and pressures of the cardiac cycle. Regulation of the cardiac output.

**Physiology of the cardiovascular system III.** Fluid compartments, transports. Physical principles of blood flow. Physiology of arterial,-capillary,-venous system.

**Physiology of the cardiovascular system IV.** Cardiovascular regulatory system



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### Contents:

#### **Physiology of the cardiovascular system V.** Circulation through special regions

**Blood physiology.** Components of human blood. Haemostasis. Blood groups. Principles of immunology.

**Immunology.** The principles of immune functions. Types of immunity and immune cells

**Pulmonary function.** Mechanism of breathing. Gas transport. Regulation of respiration.

**Renal function.** Glomerulus function (filtration). Tubular function (reabsorption, secretion). Regulation of volume and acidification of urine.

**Gastrointestinal physiology.** The function of secretory glands from the oral cavity through the small intestine. Motor function of the gastrointestinal tract. Absorption in the small and large intestine.

### System of examining and valuation:

#### Requirements:

- to take the final exam you are required to pass three interim exams
- a minimum average of the three exams must be 50%
- you have the opportunity to repeat unsuccessful interim exams at the end of the semester. It is optional between 40 - 50%, obligatory below 40%
- missing all interim exams leads to disqualification
- excellent (5) grade will be offered if your average is 80% or above



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### System of examining and valuation:

- final exam will be carried out in written form

Exams will be written either paper-based or online depending on the COVID pandemic.

Plan A – the written exam paper will be composed of both test and essay questions for a total of 100 points.

Plan B – online exam composed of essay and test questions for a total of 100 points will be carried out in Teams.

Grades will be assessed according to the classification below:

0-49% - fail (1), 50-65% - acceptable (2), 66-75% - average (3), 76-84% - good (4), 85-100% - excellent (5)

### Bibliography:

**Recommended literature: Guyton and Hall - Textbook of Medical Physiology (Elsevier, 13th edition)**

### Bibliography: