



Syllabus

Term: 2026/27/1 **Subject name:** Comparative Anatomy I. - lecture **Subject code:** ENBIOB1103

Unit (Unit code) (BIOLOGIA)

Lecturer responsible for the course: Dr. VÖLGYI Béla

Requirement: Exam

Classes per week : 2/0/0

Classes per term: 26/0/0

Purpose of education:

Basic course that designed to provide the students with knowledge related to animal body plan, organs and systems. The knowledge of this course is needed for to study Comparative anatomy II, Basic developmental biology, Zoosystematics, Comparative physiology, Human biology and Evolution.

Contents:

Short description:

Introduction to animal diversity: Levels of organization: cells, tissues, organs, organ systems and organisms.

Tissues: concept and classification. Epithelial tissues: general characterization and classification.

Special structures of epithelial tissues (basement membrane, basal lamina, cilia and microvilli, intercellular contacts). Secretory activities of epithelial cells: uni- and multicellular glands. Histogenesis of epithelium.

Connective tissue: general characterization and classification. Extracellular matrix of connective tissues: Ground substance, connective tissue fibers. Types of connective tissue cells. Embryonic connective tissues. Loose and dense connective tissues. White and brown adipose tissues. Hyaline, elastic and fibrocartilage. Classification of bone tissues: compact and cancellous bone tissues. Ground substances and cells of bone tissues. Bone formation: intramembranous and endochondral ossification. Blood and interstitial fluid (lymph). Blood cells and cellular elements.

Muscle tissues: smooth and striated muscles. Light microscopic and ultrastructural



Syllabus

Term: 2026/27/1 **Subject name:** Comparative Anatomy I. - lecture **Subject code:** ENBIOB1103

Contents:

characterization of skeletal and heart striated muscles, and smooth muscle. Muscle tissues of invertebrates.

Composition of neural tissue. The neuron as structural and functional unit: perikaryon, dendrites, axon, synapse. Structure and function of supporting (glial) cells.

Body plan of animals: definition of taxonomic groups (phyla and classes): symmetry, segmentation and tagmosis.

The integument: forms and functions from Protists to Mammals.

Locomotion of Protists. Locomotor systems of metazoan invertebrates: hydrostatic skeleton, exo- and endoskeleton, types of invertebrate muscles.

Evolution of the vertebrate skeletal system: skull, axial and appendicular skeleton. The muscular systems of vertebrates.

Transport systems of animals. Evolution of circulation from Cnidarians to Arthropods. Circulatory system of Cephalochordates. Circulatory system of Vertebrates Single and double circulation. Phylogeny of the cardiovascular system. Anatomy and histology of arteries, veins and capillaries. Phylogeny of lymphatic system. Histology and function of lymphatic vessels, tissues and organs.

System of examining and valuation:

Terminal examination (written and oral). Students must pass two interim written tests during the semester in order to be admitted to the terminal examination

Bibliography:

Michael H. Ross and Wojciech Pawlina: Histology. A test and atlas. 5th edition. Lippincott Williams & Wilkins. 2006.



Syllabus

Term: 2026/27/1 **Subject name:** Comparative Anatomy I. - lecture **Subject code:** ENBIOB1103

Bibliography:

Richard C.. Brusca and Gary J. Brusca: Invertebrates. Second edition. Sinauer Association Publisher, 2006.

Kenneth V. Kardong: Vertebrates. Comparative anatomy, function, evolution. McGraw-Hill Companies, 2009. Michael H. Ross and Wojciech Pawlina: Histology. A test and atlas. 5th edition. Lippincott Williams & Wilkins. 2006.

Richard C.. Brusca and Gary J. Brusca: Invertebrates. Second edition. Sinauer Association Publisher, 2006.

Kenneth V. Kardong: Vertebrates. Comparative anatomy, function, evolution. McGraw-Hill Companies, 2009.

Bibliography: