

**Animal Physiology**

Code: 100898  
ECTS Credits: 6

| Degree               | Type | Year | Semester |
|----------------------|------|------|----------|
| 2500252 Biochemistry | FB   | 2    | 2        |

**Contact**

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**Use of languages**

Principal working language: catalan (cat)  
Some groups entirely in English: No  
Some groups entirely in Catalan: Yes  
Some groups entirely in Spanish: No

**Prerequisites**

Basic skills and knowledge of the subjects of Biochemistry, Cell Biology and Histology

**Objectives and Contextualisation**

Learn the basics of physiology of different functional systems of the body animal and regulatory systems.

- Acquire a complete and integrated view of the interrelationships of the various body systems.
- Integrate the knowledge of the physiology acquired in other core subjects that deal with the structure and cellular functions.
- To train students to apply knowledge in physiological deduction of the consequences of disease.

## Content

### PROGRAM THEORY

#### 1-Introduction to Animal Physiology:

- Brief history of animal physiology.
- Basic principles of physiology. Internal environment and homeostasis. Feedback mechanisms (feedback).

Compartments liquid composition. Transport through the membrane. Communication intercellular.

#### 2. Excitability and excitable cells:

- Concept and excitability excitable cells.
- The nervous system: neurons and glia
- Electrical activity in neurons: ion channels. Ionic basis of resting membrane potential and action potentials. Nervous system.
- Synapse. Basics of Neurochemistry. Neurotransmission.
- Synaptic integration.

#### 3. Nervous System

- Anatomical organization of the nervous system. Development of the nervous system
- Protective Structures of the nervous system: bone structure. Meninges. Cerebrospinal fluid.

BHE.

- Structural central nervous system: cerebral hemispheres: histological structure of the cerebral cortex.

Functional organization of the cortex. Basal ganglia. Hippocampus. Amygdala.

- Functional organization of structures diencephalic, mesencephalic and brainstem.
- Spinal cord

#### 4. Sensory Physiology:

- Sensory receptors. Concept. Type. Transduction mechanisms.
- Somatosensory receptors. Touch and pressure. Thermoreceptors. Nociception. Pathways processing somatosensory information.
- Special Senses. Chemoreception: smell and taste.
- Photoreception: the human eye
- Hearing and equilibrium: human ear.

#### 5. The autonomic nervous system

- Sympathetic and parasympathetic

#### 6. Somatic motor system

- Organization cord. Muscle organs and spinal reflexes.
- Organization supramedullary. The role of the cerebral cortex, cerebellum and basal ganglia

#### 7. Activation SNC:

- Reticular system. Wakefulness and sleep. Electroencephalogram.

#### 8. Endocrine system

- Hormones. Mechanisms of action. Regulatory systems.
- The pituitary: Neurohypophysis. Neurohypophysis hormones. Adenohypophysis. Adenohypophysis hormones. (Anterior pituitary hormones)
- Adrenal Glands: adrenocortical tissue: Glucocorticoids. Mineralocorticoid. Chromaffin tissue: Catecholamines
- The thyroid gland. Synthesis and function of thyroid hormones.
- Pancreatic hormones. Insulin and glucagon.
- The metabolism of calcium and phosphorus. Parathyroid hormone, vitamin D and calcitonin

#### 9. Muscle Physiology

-Type of muscle tissues: anatomical and functional characteristics.

- Striated skeletal muscle

- Cardiac muscle

- Visceral smooth muscle

#### 10. Circulatory System:

- Elements of blood forms. Hemostasis.

- Concepts of hemodynamics. Functional organization of the circulatory system.

- Functional structure of the heart, electrical and mechanical events during the cardiac cycle. Electrocardiogram.

- Arterial, venous. Blood pressure. Capillary exchange.

- Control of the cardiovascular system.

- Lymphatic System

#### 11. Respiratory Physiology:

- Functional anatomy of the respiratory system. The lungs of mammals. Functional structure. Exchange gases.

- Regulation of respiration in mammals.

#### 12. Renal Physiology:

- The mammalian kidney. Functional anatomy. Processes involved in the formation of urine. Formation of urine and

#### 13. Digestive:

- Anatomy and function of the digestive system in mammals. Gastrointestinal regulatory systems: enteric nervous

- Mouth and esophagus: saliva and swallowing

- Stomach

- Small intestine: Pancreatic Secretion. Bile secretion. Chemical digestion. Absorption. Entero-hepatic circulation
- Large intestine: digestion mechanical and chemical. Absorption. Formation of feces. Defecation

14. Control of body temperature

15. Reproduction:

- Testicular function. Control of male reproductive functions
- The ovarian function. The endometrial and ovarian cycle. Player control in the female.