

## **Animal physiology (II nd Year of study, IV th Semester)**

**Credit value (ECTS) 6**

### **Course category**

Domain (Imposed)

### **Course holder:**

**PhD Prof. Paul Corneliu BOIȘTEANU**

### **Discipline objectives (course and practical works)**

During the courses, the discipline of Animal Physiology, in accordance with the Analytical Program, has a first objective to know the functions of the animal organism, with physiological particularities in farm animals. It also aims that students are able to acquire the notions regarding the mechanisms underlying the production of milk, meat and eggs, as well as the study of phenomena and physiological processes common to all levels of organization of living matter;

The objectives of the practical works are represented by the knowledge and understanding the notions of anatomy, but also the acquisition of knowledge regarding the development of the physiological mechanisms that define and involve the apparatuses and systems of the animal organism.

### **Contents (syllabus)**

<b>Course (chapters/subchapters)</b>
<b>Cell anatomy and physiology</b>
<b>Skeletal system and joints anatomy</b>
<b>Anatomy and physiology of the endocrine system</b>
<b>Anatomy and physiology of the muscular system</b>
<b>Anatomy and physiology of the somatic and vegetative nervous system:</b> synaptic transmission, physiology of the sensory and motor systems.
<b>Anatomy and physiology of the internal medium:</b> compartments, composition, hydroelectrolytic homeostasis.
<b>Blood and lymph; physiology of the figurative elements</b> (red blood cells, leukocytes, platelets, physiological hemostasis).
<b>Anatomy and physiology of the cardiovascular system:</b> properties of the heart muscle, heart revolution.
<b>Vascular physiology:</b> blood pressure, venous, capillary and lymphatic circulation.
<b>Anatomy and physiology of the digestive system:</b> oral, gastric, intestinal digestion; absorption of food principles; regulation of digestive functions. Liver physiology.
<b>Metabolism</b>
<b>Respiratory system:</b> stages of respiration (ventilation, pulmonary hemostasis, blood transport of respiratory gases, cellular respiration); breathing adjusting.
<b>Anatomy and physiology of the reproductive system</b>

<b>Practicum</b>
<p><b>The structure of biological membranes. Membrane transport. Resting potential. Potential for action.</b> Orientation plans. Anatomical terminology. Anatomical exploration methods. Anatomy of the locomotor system: skeleton, joints.</p>
<p><b>Anatomy of the locomotor system: Muscles</b> Latent addition phenomenon (summation) Recording and analysis of simple contraction (muscle shake)</p>
<p><b>Nervous system:</b> external conformation of the spinal cord, spinal nerve, applied anatomy of the spinal cord, innervation of the trunk and limbs, applied anatomy of the peripheral nerves. Conduction of nerve influx through nerve fibers. The law of propagation of excitation through the nerve fiber. The law of polar excitation.</p>
<p><b>Nervous system:</b> external conformation of the brain, cranial nerves, applied anatomy of the brain and cranial nerves. Reflex arc analysis. Physiology of spinal nerve roots. Bell-Magendie Law. Study of the complex reflex arc on frog. The laws of medullary reflexes (Pflüger's laws).</p>
<p><b>Anatomy and physiology of the endocrine system: Endocrine glands</b> Applied virtual physiology: The effect of thyroxine, TSH and propylthiouracil on the metabolic rate in normal, thyroidectomized and hypophysectomized rats; Effect of insulin and alloxane on rat blood glucose</p>
<p><b>Anatomy and physiology of the digestive system:</b> oral cavity, salivary glands, pharynx, esophagus, stomach, small intestine, large intestine, liver, pancreas. Oral digestion. The role of saliva in digestion. Gastric juice. Frog stomach motility. Gall.</p>
<p><b>Anatomy and physiology of the cardiovascular system:</b> heart, heart anatomy and large vessels, vascularization of the trunk and limbs, applied anatomy of blood vessels. Blood collection in animals; serum and blood plasma; ESR; hematocrit; osmotic resistance of erythrocytes. Blood red cell counts. Determination of hemoglobin content in the blood. Leukocyte count in the blood. Leukocyte formula. Plasma proteins (fibrinogen, albumin, globulins). Blood groups. Cardiac automatism. Stannius' ligatures. Excitation of the vagus nerve (X) in frog. Blood pressure. Arterial pulse. Elasticity of arteries. Capillary circulation.</p>
<p><b>Anatomy and physiology of the respiratory system.</b> Pneumography. Spirometry.</p>
<p><b>Anatomy and physiology of the reproductive system in both sexes.</b> Testicle. Sperm pathways. Penis. Ovary. Uterus. Vagina. Vulva</p>

### References

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2. Constantin N., Cotruț M., Șonea A. - *Fiziologia animalelor domestice*, vol I și II, Ed. Coral Sanivet, București, 1998.
3. Constantin N. și colab, - *Fiziologia animalelor domestice*, Editura Coral Sanivet, București, 1998.
4. Cotor G. - *Lucrări practice de fiziologie-Simulator*, Editura Monitor, 2003, București
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15. Mărgărint Iolanda, Boișteanu P.C., Halga P. – *Bazele morfofiziologice ale producției de lapte*. Edit. Vasiliana '98, Iași, 2001.
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19. Teodorescu-Exarcu și colab. – *Fiziologia și fiziopatologia sistemului endocrin*, Edit. Medicală, București, 1989.

### Evaluation

Evaluation form	Evaluation Methods	Percentage of the final grade
Oral examination	Presence, interactive discussion, regular assessment of knowledge	60%
Practical test	Active participation, resolving the topics along the way, craftsmanship	40%

### Contact

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