

## PHYSIOLOGY 2

<b>Study program</b>	Veterinary Medicine
<b>Year of study</b>	2 <sup>nd</sup>
<b>Semester</b>	4 <sup>th</sup>
<b>Regime of discipline</b>	DOB
<b>Category of discipline</b>	Dsf
<b>Number of lectures hours per week</b>	2
<b>Number of seminar/laboratory/project hours per week</b>	3
<b>Total number of hours according to the curriculum: lectures/seminars/laboratory/project</b>	28 / 42
<b>Number of transferable credits</b>	5

### SPECIFIC SKILLS

<b>Professional Competence</b>	<p>C1 - Understanding the functions of animal body, understading the physiological adjustments, interpretation of physiological parameters defining the state of homeostasis; applying knowledge of functional mechanisms and their regulation to explain the pathology underlying common diseases.</p> <p>C2 - The monitoring of physiological parameters and monitoring of metabolic profile of the animals allow livestock epidemiological surveillance, disease detection, prevention and control.</p> <p>C6 - Physiology is an experimental science and create experimental models using knowledge and equipment from all areas of science to reveal the functional aspects of the animal body, at all levels of the organization, respecting the ethics and welfare animal rules.</p>
--------------------------------	---

### LEARNING OUTCOMES

<b>Knowledge</b>	<p>The student:</p> <p>Knows, understands, and describes the fundamental mechanisms of animal organism functioning and the physiological specificities of the main species of veterinary interest;</p> <p>Explains the relationships between system functions and homeostatic regulation mechanisms;</p> <p>Correlates the structure of organs and systems with their functions;</p> <p>Uses correctly the scientific terminology specific to veterinary physiology.</p>
<b>Skills</b>	<p>The student:</p> <p>Describes the functioning of cells, tissues, organs, systems, and the organism as a whole;</p> <p>Measures and interprets the normal physiological parameters in animals;</p> <p>Applies experimental methods and uses the instruments specific to physiology, respecting safety and ethical standards;</p> <p>Analyzes and correlates experimental data with the corresponding physiological processes;</p> <p>Applies theoretical knowledge autonomously in controlled practical and experimental contexts.</p>
<b>Responsibility and autonomy</b>	<p>The student:</p> <p>Knows the functioning of the animal organism;</p> <p>Demonstrates a responsible attitude towards animals and the work environment, respecting ethical, biosecurity, and animal welfare standards;</p> <p>Manifests scientific integrity and takes responsibility for the results of their own work;</p> <p>Acquires autonomy in carrying out practical activities, the capacity for self-assessment, and the independent application of physiological knowledge;</p> <p>Collaborates effectively in a team and participates actively in practical works.</p>

### COURSE OBJECTIVES

<b>General objective of the course</b>	<ul style="list-style-type: none"> <li>• Understanding of the means by which the various organ systems of the animal body operate and how these functions are integrated.</li> </ul>
<b>Specific objectives</b>	<ul style="list-style-type: none"> <li>• To acquire and to understand the physiological terms to be able to use medical terminology</li> <li>• To describe the fundamental mechanisms underlying normal function of cells, tissues, organs, and organ systems of the animal body</li> <li>• To explain the basic mechanisms of homeostasis by integrating the functions of cells, tissues, organs, and organ systems</li> <li>• To develop skills like: sense of observation, handiness, earning ability to understand and interpret the physiological parameters knowing that physiology is the</li> </ul>

	<p>discipline that makes the bridge between preclinical and clinical veterinary disciplines.</p> <ul style="list-style-type: none"> <li>• Properly handle animals, instruments and laboratory equipment, which are specific for physiology</li> <li>• To apply the methods and techniques of physiology laboratory</li> <li>• To perform responsible professional tasks under conditions of limited autonomy</li> </ul>
--	---

## COURSE CONTENT

<b>LECTURES</b>	Number of hours
Topic no. 1 <b>PHYSIOLOGY OF THE CARDIOVASCULAR SYSTEM</b> Physiology of the heart.	2
Topic no. 2 <b>PHYSIOLOGY OF THE CARDIOVASCULAR SYSTEM</b> Physiology of the blood vessels.	2
Topic no. 3 <b>PHYSIOLOGY OF RESPIRATION</b> Functional organization of the respiratory system. Mechanic of respiration. Pulmonary ventilation. The pulmonary volumes and capacities.	2
Topic no. 4 <b>PHYSIOLOGY OF RESPIRATION</b> Respiratory function of blood for oxygen and carbon dioxide. Cellular respiration. Nervous and humoral control of respiration. Respiration in birds.	2
Topic no. 5 <b>DIGESTION AND ABSORPTION PHYSIOLOGY</b> Alimentary behaviour. Digestion in different segments of the digestive tract. (at different species).	2
Topic no. 6 <b>DIGESTION AND ABSORPTION PHYSIOLOGY</b> Digestion in different segments of the digestive tract. (at different species).	2
Topic no. 7 <b>DIGESTION AND ABSORPTION PHYSIOLOGY</b> Digestion in different segments of the digestive tract. (at different species). Ruminants. Birds.	2
Topic no. 8 <b>DIGESTION AND ABSORPTION PHYSIOLOGY</b> Nutrient absorption.	2
Topic no. 9 <b>METABOLISM.</b> Metabolism of carbohydrates. Physiology of protein metabolism. Physiology of lipid metabolism.	2
Topic no. 10 <b>METABOLISM. BODY TEMPERATURE REGULATION.</b> Regulation of body temperature.	2
Topic no. 11 <b>EXCRETION</b> Functional organization of the kidney and urinary tract. Glomerular filtration Tubular function: reabsorption and secretion of different substances.	2
Topic no. 12 <b>EXCRETION</b> Renal excretion of blood components. Renal control of acid - base balance. Neuro-endocrine regulation of renal activity. Micturition. Excretion in birds.	2
Topic no. 13 <b>REPRODUCTIVE PHYSIOLOGY</b> General Reproductive physiology. Functions of male reproductive system.	2
Topic no. 14 <b>REPRODUCTIVE PHYSIOLOGY</b> Functions of female reproductive system Reproduction in birds.	2

<b>SEMINAR/LABORATORY</b>	<b>Number of hours</b>
<b>Topic no. 1</b> <b>Safety rules.</b> Course description presentation. <b>CARDIOVASCULAR PHYSIOLOGY</b> The effect of temperature, ions and chemical mediators on cardiac activity (VR, LupraFisim, Virtual Physiology).	3
<b>Topic no. 2</b> <b>CARDIOVASCULAR PHYSIOLOGY</b> The Stannius ligatures. The effect of electrical stimuli on cardiac activity. (LupraFisim, Virtual Physiology)	3
<b>Topic no. 3</b> <b>CARDIOVASCULAR PHYSIOLOGY</b> Measurement of arterial pressure (practical work)	3
<b>Topic no. 4</b> <b>PHYSIOLOGY OF RESPIRATION</b> Mechanic of respiration. Thoracography (practical work)	3
<b>Topic no. 5</b> <b>PHYSIOLOGY OF RESPIRATION</b> Pulmonary volumes and capacities; the role of diameter of the airways. The influence of pleural space pressure on pulmonary ventilation. The influence of surfactant on pulmonary ventilation. (LupraFisim)	3
<b>Topic no. 6</b> <b>PHYSIOLOGY OF DIGESTION</b> The role of salivary amylase. (Luprafisim, activitate practică)	3
<b>Topic no. 7</b> <b>PHYSIOLOGY OF DIGESTION</b> Gastric digestion. (video, practical work)	3
<b>Topic no. 8</b> <b>PHYSIOLOGY OF DIGESTION</b> Digestion in intestine. The role of pancreatic juice and the role of bile. (video, practical work)	3
<b>Topic no. 9</b> <b>PHYSIOLOGY OF DIGESTION</b> Digestion in ruminants. The mechanical activity of the ruminant stomach. The enzymatic activity of the ruminant stomach. (video, practical work)	3
<b>Topic no. 10</b> <b>METABOLISM</b> Basal metabolism. The effect of thyroxine, TSH and propyltiouracil on metabolism. (LupraFisim)	3
<b>Topic no. 11</b> <b>PHYSIOLOGY OF EXCRETION</b> The effect of hydrostatic pressure, osmotic pressure and diameters of the glomerular afferent and efferent arterioles on urine flow. The influence of the aldosterone and the antidiuretic hormone on the urine flow. The influence of glucose on urine flow. (VR, LupraFisim)	3
<b>Topic no. 12</b> <b>PHYSIOLOGY OF EXCRETION</b> Urinalysis. (practical work)	3
<b>Topic no. 13</b> <b>REPRODUCTIVE PHYSIOLOGY</b> Action of oxytocin on smooth muscle of the uterus. Action of estrogen and progesterone on utero-vaginal mucosa. (practical work)	3
<b>Topic no. 14</b> <b>DISCUSSION, ANALYSIS AND EVALUATION</b> <b>TEST: Cardiovascular physiology, Physiology of respiration, Physiology of digestion, Metabolism, Physiology of excretion, Reproductive physiology</b>	3

**BIBLIOGRAPHY:**

- Reece, W.O. - Functional anatomy and physiology of domestic animals, fifth edition, Wiley-Blackwell, 2017
- Klein, B. - Cunningham`s textbook of veterinary Physiology, Saunders, 2019
- Powerpoint presentations.
- Cotor, G. – LuPraFiSim Physiology Simulator, Ed. Monitor, Bucharest, 2003
- Virtual Physiology – SimNeuron, SimNerv, SimMuscle

## ASSESSMENT

Activity type	Assessment criteria	Assessment methods	Percentage of final grade
<b>Lectures</b>	<p>The proper use of scientific language specific for discipline in communicating information.</p> <p>Correct explaining of common physiological processes and the interdependencies between them at different levels of organization of living matter.</p> <p>The ability to correlate functions of cells, tissues, organs, and organ systems to explain the basic mechanisms of homeostasis.</p> <p>Knowledge of the regulating and control mechanisms of animal body functions.</p> <p>Knowledge of physiological parameters</p>	<p>Summative assessment- 45 multiple choice questions, with one correct answer. Each correct answer earns 0.20 points. Summative assessment-written test accepted with minimum 5 Time – 60 minutes.</p> <p>If the written exam is not passed, students can attend the oral exam on the same day, according to R040 of USV Timișoara.</p> <p>In case of suspicion of fraud, the provisions of regulation R040 of the ULST will apply.</p>	<b>60%</b>
<b>Seminar/ Laboratory /clinical sessions</b>	<p>The proper use of scientific, specialized language in presenting information about the experiments conducted in the laboratory</p> <p>Understanding functions at different levels of organization of living matter</p> <p>The ability to properly perform work models and methods specific for physiology laboratory</p> <p>Interpretation of experimental results</p>	<p>Formative assessment: 1 test (scheduled in the calendar plan in week 14), graded with grades from 1 to 10, the minimum grade for passing the test being 5 (five); the grade represent 40% of the final grade.</p> <p>Participation in the written test is conditioned by the prior recovery of the practical works, according to the recovery program established by the discipline.</p>	<b>40%</b>
<b>Other activities</b>	-	-	-

**Course coordinator: S. Lect. PhD Ghișe Alina, DVM**

**Practical activities coordinator L/S/P: Assist. Prof. PhD student Matei Diana Petra, DVM**