

PHYSIOLOGY 1

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

SPECIFIC SKILLS

Professional Competence	<p>C1 - Understanding the functions of animal body, understanding 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>
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LEARNING OUTCOMES

Knowledge	<p>The student:</p> <ul style="list-style-type: none"> Knows, understands, and describes the fundamental mechanisms of animal organism functioning and the physiological specificities of the main species of veterinary interest; Explains the relationships between system functions and homeostatic regulation mechanisms; Correlates the structure of organs and systems with their functions; Uses correctly the scientific terminology specific to veterinary physiology.
Skills	<p>The student:</p> <ul style="list-style-type: none"> Describes the functioning of cells, tissues, organs, systems, and the organism as a whole; Measures and interprets the normal physiological parameters in animals; Applies experimental methods and uses the instruments specific to physiology, respecting safety and ethical standards; Analyzes and correlates experimental data with the corresponding physiological processes; Applies theoretical knowledge autonomously in controlled practical and experimental contexts.
Responsibility and autonomy	<p>The student:</p> <ul style="list-style-type: none"> Knows the functioning of the animal organism; Demonstrates a responsible attitude towards animals and the work environment, respecting ethical, biosecurity, and animal welfare standards; Manifests scientific integrity and takes responsibility for the results of their own work; Acquires autonomy in carrying out practical activities, the capacity for self-assessment, and the independent application of physiological knowledge; Collaborates effectively in a team and participates actively in practical works.

COURSE OBJECTIVES

General objective of the course	<ul style="list-style-type: none"> • Understanding of the means by which the various organ systems of the animal body operate and how these functions are integrated.
Specific objectives	<ul style="list-style-type: none"> • To acquire and to understand the physiological terms to be able to use

	<p>medical terminology</p> <ul style="list-style-type: none"> • To describe the fundamental mechanisms underlying normal function of cells, tissues, organs, and organ systems of the animal body • To explain the basic mechanisms of homeostasis by integrating the functions of cells, tissues, organs, and organ systems • To develop skills like: sense of observation, handiness, earning ability to understand and interpret the physiological parameters knowing that physiology is the discipline that makes the bridge between preclinical and clinical veterinary disciplines. • Properly handle animals, instruments and laboratory equipment, which are specific for physiology • To apply the methods and techniques of physiology laboratory • To perform responsible professional tasks under conditions of limited autonomy
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COURSE CONTENT

LECTURES	Number of hours
Topic no. 1 General physiology. Levels of organization of the body. Regulation and control. Physiology of cell. Transmembrane transport.	2
Topic no. 2 General physiology. Excitability.	2
Topic no. 3 Physiology of nervous system General organisation of nervous system. The neuron – excitability, conductivity, synaptic transmission. Reflex activity.	2
Topic no. 4 Physiology of nervous system Physiology of somatic nervous system.	2
Topic no. 5 Physiology of nervous system Physiology of autonomic nervous system. Higher nervous functions.	2
Topic no. 6 The sensory organs. Classification of sensory receptors. Sensory receptor responses. Skin sensibility. Kinaesthetic sensory system. Pain. Hearing and equilibrium.	2
Topic no. 7 The sensory organs. Taste. Smell. Vision.	2
Topic no. 8 Physiology of the muscular system. Skeletal muscle physiology – microstructure of the skeletal muscle, skeletal muscle contraction, skeletal muscle metabolism.	2
Topic no. 9 Physiology of the muscular system. Skeletal muscle fatigue. Smooth muscles physiology.	2
Topic no. 10 Physiology of endocrine system. Hormones. Pituitary gland. Thyroid gland. Parathyroid glands.	2
Topic no. 11 Physiology of endocrine system. Adrenal gland. Pancreatic gland. Pineal gland.	2
Topic no. 12 Blood and its functions. General characteristics. Plasma and its composition.	2
Topic no. 13 Blood and its functions. Erythrocytes. Leukocytes.	2
Topic no. 14	2

Blood and its functions. Hemostasis.	
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SEMINAR/LABORATORY	Number of hours
Topic no. 1 Occupational Safety Norms. Presentation of the Course Description.	3
Topic no. 2 Introduction to Experimental Physiology – Methods, Apparatus, Substances, and Animals Used in the Physiology Laboratory	3
Topic no. 3 General Physiology. Experimental Models Used in Physiology.	3
Topic no. 4 General physiology. Transfer Through Biological Membranes (Practical Activity).	3
Topic no. 5 Physiology of the Nervous System. Excitability. Resting and Action Potential. Excitability Threshold. Addition of Subliminal Stimuli. (VR, SimNeuron, SimNerv, video).	3
Topic no. 6 Physiology of the Nervous System. Conductivity of the Nerve Fiber. (SimNerv, LupraFiSim).	3
Topic no. 7 Physiology of the Nervous System. Reflex Activity. (LupraFiSim, video).	3
Topic no. 8 Physiology of the Sensory Systems. Vision. (Practical Activity, video, animations).	3
Topic no. 9 Physiology of the Striated Muscle. Elementary Muscular Contractions. (VR, SimMuscle).	3
Topic no. 10 Physiology of the Striated Muscle. The Relationship Between Stimulus Intensity and Muscle Contraction Force. Muscle Fatigue. (SimMuscle).	3
Topic no. 11 Physiology of endocrine system. Determining Blood Glucose. (Practical Activity) Effect of Insulin and Alloxan on Blood Glucose in Rats. (LupraFiSim).	3
Topic no. 12 Blood physiology Blood parameters.	3
Topic no. 13 Blood physiology Blood parameters.	3
Topic no. 14 Discussion, analysis and evaluation.	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
Lectures	The proper use of scientific language specific for discipline in communicating information. Correct explaining of common physiological processes and the interdependencies between them at different levels of organization of living matter. The ability to correlate	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	60%

	<p>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>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 Timisoara.</p> <p>In case of suspicion of fraud, the provisions of regulation R040 of the ULST will apply.</p>	
Seminar/laboratory/clinical sessions	<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>	
Other activities	-	-	-

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

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