

**MINISTRY OF SCIENCE AND EDUCATION OF THE
REPUBLIC OF AZERBAIJAN
KHAZAR UNIVERSITY
HASVET FACULTY OF VETERINARY MEDICINE
DEPARTMENT OF VETERINARY MEDICINE**

Physiology

SYLLABUS

Academic Year and Semester:

Fall Semester of the 2026/27 Academic Year

Instructor: Aygun Ganbarzade

Reviewed by:

Approved by:

Head of Department:

Dr. Sabina Mammadova

Physiology

General information	Course name, code and credits	VET 150, Physiology, 6 ECTS
	Department	Veterinary Medicine
	Program (bachelor, master)	Bachelor
	Academic semester	Fall Semester of the 2026/27 Academic Year
	Instructor	Aygun Ganbarzade
	E-mail	aygunium@gmail.com
	Phone	
	Lecture hall/Table	
	Consultation hour	To be arranged with students
Prerequisites	None	
Language of instruction	English	
Course type	Elective	
Reading list and references	Main literature 1. Cunningham, J.G. & Klein, B.G. Cunningham's Textbook of Veterinary Physiology. 6th ed. Elsevier (Saunders), 2019. 2. Guyton, A.C. & Hall, J.E. Textbook of Medical Physiology. 13th ed. Elsevier (Saunders), 2016. 3. Fərəsov, Ə.N. & Qarayev, M.A. İnsan və heyvan fiziologiyası. Bakı, ADPU nəşriyyatı, 2010, 404 səh. 4. Лысов, В.Ф., Ипполитова, Т.В., Максимов, В.И., Шевелев, Н.С. Физиология и этология животных. М.: КолосС, 2012, 605 с. Additional literature 5. Sjaastad, Ø.V., Sand, O. & Hove, K. Physiology of Domestic Animals. 3rd ed. Scandinavian Veterinary Press, 2016. 6. Hill, R.W., Wyse, G.A. & Anderson, M. Animal Physiology. 3rd ed. Sinauer Associates, 2012. 7. Тёплый, Д.Л. и др. Физиология человека и животных. Астраханский университет, 2017, 335 с.	
Course description	Animal Physiology is one of the fundamental biological sciences. It studies the functions of the organs and systems of the healthy organism, their integration, and their interaction with the environment. The course is closely linked to anatomy, histology and the foundations of embryology, and it forms the theoretical basis for veterinary pharmacology and toxicology, veterinary-sanitary expertise, internal medicine and other clinical disciplines. By understanding the normal functions of the body, the veterinarian is able to recognise the mechanisms of disease and to support the health and productivity of animals. The course surveys the whole of animal physiology across one semester. It covers the physiology of the cell and body fluids; blood; muscle; the digestion of monogastric, ruminant and avian species; respiration; the kidney and acid-base balance; the cardiovascular system; the endocrine system; metabolism, energy balance and thermoregulation; reproduction and lactation; the nervous system; and the sense organs. Species differences relevant to veterinary practice, particularly in farm animals, are emphasised throughout.	

Course objectives	The aim of the course is to give students a systematic understanding of the physiological processes and functions of the animal organism and of its individual systems. To this end, the course sets out to: • teach the general regularities of the functional activity of the organs and systems of the healthy organism; • explain the nervous and humoral mechanisms that regulate the functions of the organism; • develop an understanding of the functional features of farm animals in comparative, phylogenetic and ontogenetic perspective; • relate physiological principles to their significance for veterinary practice and animal productivity.		
Learning outcomes	By the end of the course, students will be able to: • explain the functions of the organism, its systems and organs, and the mechanisms that regulate them; • describe the species-specific features of physiological processes in different animals; • interpret the main physiological indicators of animals and recognise their normal ranges; • explain the forms and mechanisms of animal behaviour and their veterinary significance; • apply the basic principles of physiological investigation to interpret the functional state of a healthy animal.		
Teaching methods	Lectures supported by visual and multimedia materials		x
	Group discussion		x
	Practical tasks and problem-solving		x
	Case-based analysis		x
	Individual student presentation		x
Assessment	Components	Timing/deadline	Percent (%)
	Quiz	During the semester	10
	Assignment	During the semester	10
	Attendance	During the semester	5
	Activity (participation)	During the semester	5
	Midterm examination	Mid-semester	30
	Final examination	End of semester	40
	Total		100
Course Policies (Teaching Policy and Conduct)	Organisation of Teaching General information about the course is provided to students at the beginning of the semester. New topics are explained with visual and multimedia materials (slides and video). Students' level of understanding is checked before the midterm and final examinations through quizzes. During the semester each student prepares and presents an individual topic presentation; the presentation, including discussion, must not exceed 15 minutes and is also submitted in printed form. Attendance Regular attendance and active participation in all classes are expected. In the event of an absence, students are required to inform the faculty dean's office and provide an appropriate justification, such as illness or family circumstances. Students who are absent from more than 25% of the scheduled classes will not be eligible to sit the examination. Lateness and Disruption of Classes Students arriving more than 10 minutes after the scheduled start of a class will be recorded as absent but may remain in and participate in the class. Quizzes		

	A student who is unable to take a quiz due to a legitimate reason communicated in advance to the instructor and the faculty dean's office may be permitted to complete the quiz during the following week. Examinations All matters relating to students' eligibility to participate in examinations, as well as examination absences, will be addressed in accordance with the procedures established by the faculty administration. The topics covered in the midterm and final examinations will be communicated to students in advance. Questions included in the midterm examination will not be repeated in the final examination. Examination Misconduct Any form of disruption of the examination process, as well as academic misconduct, including copying or unauthorised assistance, is strictly prohibited during the midterm and final examinations. In the event of a violation, the student's examination will be invalidated, and the student will be assigned a grade of 0 (zero). Course Completion Requirements In accordance with the University's academic regulations, a minimum overall achievement of 60% is required for successful completion of the course. Students who do not successfully complete the course may retake it in a subsequent semester or academic year in accordance with the applicable University regulations. Student Conduct Students are expected to maintain a professional and respectful learning environment. Disruptive behaviour, violation of academic and ethical standards, unauthorised discussions that interfere with the learning process, and the use of mobile phones during classes are prohibited.
--	--

Approximate distribution of hours by topic - calendar and thematic plan

Week	Titles of Topics	Readings
I	Introduction to physiology, the cell and body fluids. Homeostasis and the regulation of function; membrane transport (diffusion, osmosis, active transport); the essentials of cell physiology; body-fluid compartments and their composition.	1 (pages 1-28), 3 (pages 13-16), 4 (pages 3-22)
II	Blood. Composition and physio-chemical properties of blood; plasma and serum; red blood cells and haemoglobin; white blood cells; haemostasis and coagulation; blood groups; the protective functions of blood and immunity.	2 (pages 443-494), 3 (pages 72-116), 4 (pages 182-200)
III	Muscle physiology. Bioelectric processes in excitable tissues; skeletal, smooth and cardiac muscle; the mechanism of muscle contraction; muscle metabolism and fatigue.	1 (pages 73-81), 3 (pages 48-68), 4 (pages 23-42)
IV	Digestion I: monogastric digestion. Feed intake, chewing and swallowing; salivary, gastric and intestinal secretion; the roles of the liver and pancreas; digestion and absorption of nutrients.	1 (pages 284-338), 3 (pages 241-302), 4 (pages 263-308)
V	Digestion II: ruminant and avian digestion. The rumen, reticulum, omasum and abomasum; rumen microbes and fermentation; volatile fatty acids and nitrogen metabolism; digestion in poultry.	1 (pages 339-360), 3 (pages 241-302), 4 (pages 263-308)
VI	Respiratory physiology. External respiration and pulmonary ventilation; lung volumes and capacities; gas exchange and gas transport in blood; control of respiration; respiration in birds.	1 (pages 518-575), 3 (pages 199-238), 4 (pages 249-262)
VII	Renal physiology, excretion and acid-base balance. The nephron; glomerular filtration, tubular reabsorption and secretion; concentration of urine and micturition; the role of the kidney and the buffer systems in acid-base balance.	1 (pages 480-517), 3 (pages 360-400), 4 (pages 347-377)
MIDTERM EXAMINATION		
VIII	Cardiovascular physiology. Cardiac muscle and automaticity; the cardiac cycle and heart sounds; regulation of cardiac activity; haemodynamic, blood pressure and pulse; lymph and the special circulations.	1 (pages 173-283), 3 (pages 118-195), 4 (pages 215-248)
IX	Endocrine physiology. Hormone classes and mechanisms of action; control of hormone secretion; the hypothalamus and pituitary; thyroid, parathyroid and adrenal glands; the endocrine pancreas.	1 (pages 378-427), 4 (pages 127-161)
X	Metabolism, energy balance and thermoregulation. Metabolism of proteins, fats, carbohydrates, water and minerals; basal and total metabolism; body temperature and the physiological mechanisms of thermoregulation.	1 (pages 361-377, 596-607), 3 (pages 307-358), 4 (pages 310-341)
XI	Reproductive physiology I. The female and male reproductive systems; oogenesis and spermatogenesis; ovarian and testicular hormones; the ovarian cycle, oestrus and ovulation; the nervous and hormonal control of reproduction.	1 (pages 428-449, 471-479), 4 (pages 379-411)
XII	Reproductive physiology II: pregnancy, parturition and lactation. Fertilisation, pregnancy and the physiology of parturition; the mammary gland and the physiology of lactation.	1 (pages 450-470), 4 (pages 413-432)

XIII	Nervous system I. The neuron and bioelectric processes; the action potential and its conduction; the synapse and neurotransmitters; the reflex principle; an overview of the central nervous system (spinal cord, brain stem, cerebellum, motor control).	1 (pages 51-125), 4 (pages 23-52, 118-126)
XIV	Nervous system II. The autonomic nervous system, its sympathetic and parasympathetic divisions and their effects; higher nervous activity and behaviour; conditioned and unconditioned reflexes; learning and memory.	1 (pages 126-137), 4 (pages 58-99, 118-126)
XV	Sense organs. Sensory receptors; the visual, auditory and vestibular systems; the chemical senses of smell and taste; skin and mechanical senses.	1 (pages 109-117, 138-148, 166-172), 4 (pages 101-116)
FINAL EXAMINATION		