

Name of the programme module	Animal physiology
Year of studies for a given field	II
Programme module type (obligatory/optional)	Obligatory
Term for a given field	IV
ECTS credits together with contact/no contact hours division	6 (3.1/2.9)
A unit providing the course	Department of Animal Physiology
Module objective	Acquainting students with physiological mechanisms of the functions of animal body and the regulation of these mechanisms, with a particular reference to the processes responsible for maintaining the homeostasis of the body.
Educational results	Knowledge: Ability to describe life processes taking place in an animal body at the cellular, organ and systemic level. Ability to describe the activities, functions and the interaction of systems, organs and tissues. Understanding basic mechanisms of physiological regulation of cellular, tissue and organ activity and their mutual integration on the level of the organism
	Skills: Ability to take measurements, evaluate and interpret basic physiological parameters of the body as health indicators. Ability to define the physiological state as an adaptation of the ever-changing environmental factors. Ability to use the basic principles of physiology in specialist learning.
	Social competence: Awareness of the importance of the body's physiological state for its health, animal production and the quality of food of animal origin. Awareness of the need to permanently broaden the knowledge of how different factors interact with the functions of animal organism.
Content of the programme module	Functional characteristics of the cardiac muscle. Hemodynamics of circulation. Neural and hormonal regulation of the circulatory system. Basic parameters of the functional status of the circulatory system. Respiratory mechanics. Spirometry. Central and peripheral respiratory regulation. Physiology of sensory organs. Biological rhythms. Instincts, drives, motivational behaviour, learning. Physiology of the reproductive system and the mammary gland. Physiology of the excretory system. Regulation of water-mineral balance. Autonomous and behavioural thermoregulation mechanisms. Mechanisms that regulate metabolism and energy transformation. Physiological significance of hormones.
Planned didactic forms/actions/methods	Lecture, multimedia presentations, films, virtual laboratory, performance of in vivo circulatory and spirometric tests, biochemical determinations and hematological analyses, discussions, laboratory class report.

Name of the programme module	Topographical Anatomy
Programme module type (obligatory/optional)	Obligatory
Year of studies for a given field	II
Term for a given field	IV
ECTS credits together with contact/no contact hours division	3 (2/1)
A unit providing the course	Department of Anatomy and Histology of Animals
Module objective	The objective of the course is to teach the specific localization of anatomical structures and organs in domesticated animals (dog, cat, cattle, horse). Comparative analysis of the morphology of above-mentioned species. The student will be able to determine the position of the organs of the body in relation to the bone. After completing the topographic anatomy course, students should have the ability to recognize the correct
Educational results	<p>Knowledge: Detailed knowledge of the localization of the anatomical structures in domestic animals. Knowledge of the position, structure and basic functions of respective organs in domestic animals. Knowledge of and ability to describe differences in the localization of organs and systems in different species of domestic animals.</p> <p>Skills: Ability to seek, comprehend, analyse and implement necessary information from various literature sources. Ability of accurate verbal communication with different entities. Ability to put into practice the knowledge of topographical anatomy of domestic animals.</p> <p>Social competence: Understanding the importance of lifelong learning. Ability to cooperate and work in a group assuming various roles. Ability to popularise basic knowledge of animal anatomy among friends and acquaintances. Awareness of the need for targeted further self-improvement.</p>
Content of the programme module	Acquisition of detailed knowledge of topographical anatomy: 1. The topography of the external regions of the body of large and small animals. 2. The topography of the head and neck, withers, courses of nerves, blood vessels, lymph nodes. 3. The topography of the thorax and its organs including small and large animals. 4. The topography and division of abdominal and pelvic cavity of domestic animals. Additionally, they will know the position of the internal organs of dead animals. 5. The topography of the thoracic and pelvic limbs of large and small animals. 6. The topography of the nervous system.
Planned didactic forms/actions/methods	Lecture, multimedia presentations, slides, transparencies, information board, museum exhibits. Dissection classes - preparation of animal (the thoracic cavity, the abdominal cavity). Use of ultrasound examination to locate the internal organs of dog and cat- demonstration.

Name of the programme module	Immunology
Programme module type (obligatory/optional)	Obligatory
Year of the study programme	II
Term for a given field	IV
ECTS credits together with contact/no contact hours division	3 (2/1)
Academic unit offering the module	Institute of Biological Bases of Animal Diseases, Department of Veterinary Prevention and Avian Diseases
Module objective	To familiarize students with the components of the immune system, mechanisms of immune reactions, the possibilities of increasing immunity and laboratory methods used in immunological tests.
Educational results	Knowledge: Understands basic immune processes. Has knowledge of immunological terminology, as well as concepts that have a direct reference to the practical applications of knowledge in the field of immunology. Understands the relationship between the achievements of immunology and the possibility of their use in the treatment of human and animal diseases.
	Skills: Has the ability to search, understand, analyze and use the needed information on immunology from various sources. Has the ability to isolate leukocytes from animal peripheral blood, count cells and determine their viability, and perform basic immunodiagnostic tests. Demonstrates the ability to draw conclusions from conducted experiments.
	Social skills: Can interact and work in a group, taking on different roles in it. Demonstrates the need to constantly update knowledge in the field of immunology.
Contents of the education module	Structure and functions of the immune system; polyclonal and monoclonal antibodies; antigens - types, processing, presentation; main histocompatibility system; lymphoid tissue associated with mucous membranes; cytokines and regulation of the immune response; types and functions of cells participating in the immune response; mechanisms of non-specific and specific immunity; flow cytometry; diagnostic tests based on antigen-antibody reactions; hypersensitivity reactions; autoimmune phenomena.
Planned didactic forms/activities/methods	Lecture; discussion, laboratory classes (multimedia presentations, quality tests); achievement test;

Name of the programme module	Veterinary epidemiology
Programme module type (obligatory/optional) field	Obligatory
Year of the study programme	II
Semester of the study programme	IV
ECTS credits together with contact/no contact hours division	3.0 (2.0 /1.0)
A unit providing the course	Department of Epizootiology and Clinic of Infectious Diseases
Module objective	To familiarise students with basic terms used in epidemiology, including terms referring to the formation, course and prevalence of diseases in a population, theoretical background for the interpretation of diagnostic test results, the principles of carrying out cross-population and observational studies, the principles of evidence-based medicine, the principles of carrying out surveys and clinical studies, IT systems used in animal health care, and the principles of animal disease control.
Educational results	Knowledge: The Student is familiar with and understands basic epidemiological terms and definitions; Is able to name the basic types of epidemiological studies
	Skills: Is able to plan the course of epidemiological studies ; Is able to interpret results of epidemiological studies ; Is able to use the available software to plan and interpret epidemiological study results
	Social competencies: Is able to work in a team ; Shows responsibility for the taken decisions regarding people and animals ; Developed the habit of lifelong knowledge and skill development
Contents of the education module	Basic terms in epidemiology; diseases and their classification; epidemiology and its classification; population and its characteristics; formation and course of diseases in a population; causes of diseases; frequency of diseases; epidemic; prevalence of diseases in a population; indicators of disease prevalence in a population; diagnostic tests; sensitivity and specificity of diagnostic tests; predictive values; diagnostic tests; threshold value and methods for determining a threshold value; ROC curve and its interpretation; evaluation of the compliance of test results; multiple studies; cross-population studies; principles for carrying out cross-population studies; sampling methods; cross-population studies; determining a sample size; observational studies; cohort, case/control and cross-sectional observational studies; calculating the relative risk and attributable risk; interpretation of results; observational studies; cohort, case/control and cross-sectional observational studies; calculating the relative risk and attributable risk; interpretation of results; evidence-based medicine; systematic review and meta-analysis; reliability of study results; clinical studies; surveys; clinical study protocol; the sponsor, the monitor and the investigator; survey structure and development; methods for carrying out surveys; principles for disease control; data and methods of their collection; monitoring; supervision of the health of a population; IT systems in animal health care; IT systems used in Poland; IT

	systems used in other EU member states; principles for animal disease control; disease control programmes; contingency plans
Planned didactic forms/activities/methods	Lectures, individual task-solving, case studies, discussion

Name of the programme module	Ethology and animal welfare
Programme module type (obligatory/optional)	Obligatory
Year of the study programme	II
Term for a given field	IV
ECTS credits together with contact/no contact hours division	2 (1/1)
Academic unit offering the module	Institute of Biological Basis of Animal Diseases. SubDepartment of Veterinary Prevention and Avian Diseases.
Module objective	The aim of the course is to gain knowledge of the correct and incorrect behavior of farm animals, accompanying humans and free-living animals, which are a consequence of reduced welfare. In addition, the acquisition of skills to assess the basic parameters of animal welfare and methods of its control based on applicable national and EU legislation.
Educational results	<p>Knowledge: Has general knowledge of the effects of the environment on the behavior and functioning of animals in the natural and breeding environment and knows the negative effects of the impact of the breeding environment on the reactions induced in the body of animals and their health and productivity.</p> <p>Has basic knowledge of applicable the EU legislation regarding animal welfare and protection.</p>
	<p>Skills: Has the skills to search and understand legal acts in the field of animal protection and welfare in individual technology groups.</p> <p>Performs simple practical tasks in the field of recognition and interpretation of basic animal behavior under the guidance of a scientific supervisor.</p> <p>Performs identification and standard analysis of welfare in farming facilities based on the interpretation of current legislation. Documents and uses the collected information related to the health and well-being and productivity of the herd.</p> <p>Has knowledge of the advantages and disadvantages of his actions in the aspect of assessing welfare criteria and social conditions.</p>
	<p>Social skills: Is aware of the importance of social, professional and ethical responsibility for animal production, animal welfare as well as the development and condition of the natural environment in terms of welfare.</p> <p>Is aware of the need for further education and self-improvement in the field of his profession, which is closely related to changes in legislation, animal housing systems and social changes.</p>
Contents of the education module	The content of the module's education contains the characteristics of correct and incorrect behavior of farm, accompanying and free-living animals. In addition, they concern basic parameters characterizing welfare as well as EU legal acts in the field of animal protection and welfare. During

	<p>the course of activities, the assessment of basic well-being parameters and methods of its control are carried out using physiological, behavioral, production, health and supplementary parameters, based on national and EU legislation. In addition, students improve their knowledge of the negative consequences of reduced well-being, and become acquainted with abnormal behavior and diseases resulting from reduced well-being.</p>
<p>Planned didactic forms/activities/methods</p>	<p>Literature:</p> <ol style="list-style-type: none"> 1. Kołacz R., Dobrzański Z.: Higiena i dobrostan zwierząt gospodarskich, Wydawnictwo Wrocław, 2006. 2. Kondracki S., Rekiel A., Górski K. Dobrostan Trzody Chlewnej. Powszechne Wyd. Rolnicze i Leśne, 2014 3. Przepisy prawne z zakresu dobrostanu zwierząt obowiązujące krajowe akty legislacyjne (ustawy, rozporządzenia, instrukcje GLWet) oraz dyrektywy UE. 4. Dehase J. Agresja u psów. Postępowanie w przypadku zachowań agresywnych u psów. Galaktyka, 2006. 5. Fraslin J.M., Monbureau F., Auffray N., Sebastiao L.M., Vermersch D., Kowalska-Pyłka H., Cybulski W., Urban – Chmiel R., Desfontis J.C., Malbert C.H. et al. Bioethics In Life and Environmental Sciences. BRUMAR, 2007. 6. Scientific Opinion of the Panel on Animal Health and Welfare http://www.efsa.europa.eu/fr/scdocs/doc/572.pdf 7. Konecki K.T. Ludzie i ich zwierzęta. Scholar, 2005. 8. Pond W.G., Bazer4 F.W., Rollin B.E. Animal welfare in animal agriculture. Taylor & Francis, 2012 9. Grandin T. Improving Animal Welfare. A practical Approach. Cambridge Univ. Press. 2010. <p>Activities:</p> <p>Students have the opportunity to participate in lectures and seminars. In addition, they carry out some issues in the form of group work (e.g. assessment of well-being in communities), they can also develop their own project in consultation with the lecturer covering selected issues of well-being, which they then present.</p> <p>The final verification of the module is based on a written exam.</p>

Name of the programme module	Microbiology 1
Programme module type (obligatory/optional)	Obligatory
Year of studies for a given field	II
Term for a given field	IV
ECTS credits together with contact/no contact hours division	6 (3.1/2.9)
A unit providing the course	Division of Veterinary Microbiology
Module objective	The aim of module is to acquire the knowledge of morphology, physiology, biological properties, features of pathogenicity and resistance of microorganisms that cause diseases in animals and pose a threat to public health (bacteria, fungi, viruses) in the aspect of their identification and control
Educational results	Knowledge: General knowledge of morphology and physiology of microbes that are potentially pathogenic to animals. General knowledge of techniques to isolate and identify microbes. General knowledge of how microbes interact with macroorganisms (animals). General knowledge how to control microorganisms
	Skills: Ability to seek, comprehend, analyse and creatively implement the information on microbiology from various literature sources. Ability to accurately verbalise knowledge in oral or written form. Ability to single-handedly carry out, analyse and evaluate a given diagnostic procedure and interpret the results obtained.
	Social competence: Ability to cooperate and work in a group. Awareness of the social, professional and ethical responsibility for the health of animals. Knowledge of procedures necessary to restrict microbial influence on animal health. Awareness of the need to permanently broaden the knowledge of how microbes interact on the animal organism.
Content of the programme module	<p>Lectures:</p> <p>General microbiology: microbial taxonomy, morphology, physiology (factors determining the growth of bacteria and fungi, factors limiting the growth of microorganisms, factors determining variability and genetic mechanisms of its formation)</p> <p>Virology: laboratory methods used in virological diagnosis, characteristics of selected virus families: <i>Rhabdoviridae</i>, <i>Orthomyxoviridae</i>, <i>Flaviviridae</i>, <i>Reoviridae</i>, <i>Asfarviridae</i></p> <p>Lab courses:</p> <p>Methods used to identify microorganisms in the aspect of practical use in laboratory diagnosis: microscopy techniques, methods of staining, bacterial growth media and culture methods, effects of physical and chemical factors on bacteria (methods and devices for sterilization and disinfection), antibiogram - rules for performing the test, determination of biochemical profiles of bacteria, basic methods in serological diagnostics, molecular methods used to identify microorganisms, determination of bacteriophage titers, basic techniques and methods used in the diagnosis of viral diseases</p>
Planned didactic forms/actions/methods	Lecture, performing diagnostic analyses in bacteriology, virology and mycology, multimedia presentations, discussion