UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Study programme

Field of study: Veterinary Medicine

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Field of study characteristics

Basic information

Field of study:	Veterinary Medicine
Study level:	Long-cycle programme
Study profile:	General academic
Study form:	Full-time
Professional title awarded to graduates:	
Study duration (number of semesters):	11
Number of ECTS points required to complete the study programme:	360
Number of hours (including ones completed through remote learning methods and techniques):	5219
Number of hours for physical education classes*:	60

*) - applies to first-cycle programmes and long-cycle programmes

Assignment of field of study to disciplines:

Discipline	Percentage share	ECTS
Veterinary medicine	100%	360

Graduate’s profile

The graduate acquires knowledge in the field of veterinary medicine in accordance with the principles set out in the Act on the veterinary profession and veterinary medical chambers, in the Act on veterinary inspection and in European Union law (Directive 2005/36/EC of the European Parliament and of the Council of 7 September 2005 on the recognition of professional qualifications and at level 7 of the Polish Qualifications Framework.

The graduate has the skills to practice as a veterinarian while maintaining the principles of veterinary ethics and deontology. The graduate has knowledge enabling: examining the health of animals and recognizing, preventing, combating and treating animal diseases, performing surgical procedures; issuing medical and veterinary opinions and decisions; issuing prescriptions for medicines and medical supplies; examination of slaughter animals, meat and other animal products; sanitary and veterinary supervision over products of animal origin; exercising veterinary supervision over the protection of public health, the environment and the health of animals in the herd; exercising veterinary supervision over the trade in animals and places of their collection; performing tests and veterinary assessment of animal feed and the conditions of their production; dissemination of veterinary knowledge; management of veterinary matters and performance of laboratory tests conducted for diagnostic, preventive, therapeutic or sanitary-veterinary purposes.

The graduate is prepared to work in: animal treatment facilities, diagnostic laboratories and in the production and distribution of veterinary medicinal products, medical devices and medical materials, in veterinary administration at various levels, as well as: in scientific and research units and research and development centers; units dealing with advice and dissemination of knowledge in the field of veterinary medicine, when a professional title of a veterinarian is required; in education - after completing teaching specialization (in accordance with the standards of education preparing for the teaching profession).

The graduate should know a foreign language at the B2+ level of the Common European Framework of Reference for Languages and be able to use a specialized language related to the field of study.

The graduate is prepared to undertake education at level 8 of the Polish Qualifications Framework at doctoral schools.

Duration (number of hours and ECTS points), rules and form of internships

Summer practical training are used to achieve the required learning outcomes.
Practical training include learning the practical aspects of medical and veterinary procedures on farms, in animal health facilities, slaughterhouses and in plants processing animal products and feed production, as well as in the field of animal insemination.
Student Practical training are aimed at expanding the knowledge acquired during studies and developing the ability to use it, learning the practical aspects of medical and veterinary procedures on animal production farms, in animal medical facilities, slaughterhouses and plants processing animal products and producing animal feed, as well as in the field of animal insemination.
Organizational forms of summer practical training:
During the practical training, the student performs medical and veterinary activities under the supervision of a supervisor appointed by the practitioner, in accordance with the practical training program. The supervisor is obliged to confirm attendance at the practical training.
Summer practical training supervisors appointed by the Dean are responsible for:
– preparation of subject syllabuses
– preparation of programs and rules
– practice control
– credit for completed practical training
The Dean may count as an summer practical training the paid work he performs if its nature meets the requirements of the internship program. It may also be work abroad, but it must be carried out under an agreement between the university and the host institution.

No.	**Type of practice**	**Fulfillment period**	**Duration**		**ECTS**
			weeks	**hours**	
1	Summer practical training: Farm practice	after the 4th semester	2	80	4
2	Summer practical training: Animal clinic I	after the 8th semester	4	160	8
3	Summer practical training: Abattoir I	after the 8th semester	2	80	4
4	Summer practical training: Animal clinic II	after the 10th semester	4	160	8
5	Summer practical training: Food processing plant I	after the 10th semester	2	80	4
Total			**14**	**560**	**28**

Principles/Organisation of the degree awarding process

The basis for calculating the final result of long-cycle master's studies is the arithmetic average of all grades obtained in individual subjects, including internships, rounded to two decimal places.

The final result of studies on a five-point scale is entered on the diploma of completion of master's studies: 3.0; 3.5; 4.0; 4.5; 5.0, determined in accordance with the principles set out in the applicable Study Regulations. The date of graduation is the date of passing the last examination required by the study program.

ECTS

The number of ECTS points a student receives for courses requiring direct participation of academic teachers or other tutors, as well as students	194
The number of ECTS points the student receives in the humanities or social sciences **	5
The number of ECTS points a student receives for elective courses	16
The number of ECTS points allocated to courses related to the academic activity conducted at the institution in the discipline or disciplines to which the field of study is assigned	215
Number of ECTS points allocated to practical skill courses	105

**) - applies to fields of study other than those assigned to the disciplines of humanities and social sciences

Allowable ECTS point deficit after each semester

Semester	Deficit	Comment
1	4	
2	5	
3	4	
4	4	
5	3	
6	3	
7	3	
8	4	
9	3	
10	0	the need to settle the deficit of points from previous years
11	0	the need to settle the deficit of points from previous years

Subject sequences

Semester	Name of the subject being implemented	Name of the preceding subject
2	Animal anatomy II	Animal anatomy I
2	Biochemistry I	Chemistry
2	Histology and embryology II	Histology and embryology I
3	Biochemistry II	Biochemistry I
3	Veterinary microbiology I	Biochemistry I
3	Animal physiology I	Histology and embryology II
4	Animal physiology II	Animal physiology I
4	Veterinary microbiology II	Veterinary microbiology I
4	Pathophysiology I	Biochemistry II
5	Veterinary pharmacology I	Veterinary immunology
5	Pathophysiology II	Animal physiology II
5	Pathophysiology II	Pathophysiology I
5	Clinical and laboratory diagnostics I	Biochemistry II
5	Pathomorphology I	Histology and embryology II
5	Clinical and laboratory diagnostics I	Veterinary microbiology II
6	Clinical and laboratory diagnostics II	Clinical and laboratory diagnostics I
6	Veterinary pharmacology II	Veterinary pharmacology I
6	Parasitology and invasiology I	Pathophysiology II
6	Pathomorphology II	Pathomorphology I
7	Diseases of farm animals	Veterinary pharmacology II
7	Parasitology and invasiology II	Parasitology and invasiology I
7	Slaughter animals and meat hygiene I	Veterinary microbiology II
8	Diseases of horses	Clinical and laboratory diagnostics II
8	Andrology and artificial insemination	Diseases of farm animals
8	Slaughter animals and meat hygiene II	Slaughter animals and meat hygiene I
8	Veterinary toxicology	Clinical and laboratory diagnostics II
8	Diseases of horses	Parasitology and invasiology II
9	Diseases of dogs and cats	Andrology and artificial insemination
9	Avian diseases	Veterinary toxicology
9	Slaughter animals and meat hygiene III	Slaughter animals and meat hygiene II
9	Preventive veterinary medicine I	Diseases of farm animals
9	Hygiene of food processing I	Slaughter animals and meat hygiene II
10	Hygiene of food processing II	Hygiene of food processing I
10	Preventive veterinary medicine II	Preventive veterinary medicine I
10	Diseases of dogs and cats - Clinical internship I	Diseases of dogs and cats

10	Diseases of horses - Clinical internship I	Diseases of horses
10	Avian diseases – Clinical internship	Avian diseases
10	Diseases of farm animals - Clinical internship I	Diseases of farm animals
11		Preventive veterinary medicine II
11		Hygiene of food processing II
11	Diseases of horses - Clinical internship II	Diseases of horses - Clinical internship I
11	Diseases of dogs and cats - Clinical internship II	Diseases of dogs and cats - Clinical internship I
11	Diseases of farm animals - Clinical internship II	Diseases of farm animals - Clinical internship I

Learning outcomes

Knowledge

General

In terms of knowledge, the graduate knows and understands:

Code	Contents
O.W1	Knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the rgan, animal, to the entire animal population;
O.W2	Nows to an extensive degree, describes in detail and explains the development, structure, functioning, behaviours and physiological mechanisms of animals in normal conditions, as well as the mechanisms of disorders in pathological conditions;
O.W3	Explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in individual animal species, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;
O.W4	Knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;
O.W5	Characterises in detail the methods of using veterinary medicinal products, aimed at prophylaxis and treatment of animals, as well as at guaranteeing food chain safety and environmental protection;
O.W6	Presents the biology of infectious factors that cause diseases transmitted between animals, as well as anthropozoonoses, taking into account the mechanisms of disease transmission and defense mechanisms of the macroorganism;
O.W7	Specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes;
O.W8	Knows to an extensive degree and distinguishes the principles of animal raising and husbandry, taking into account the principles of animal nutrition, principles of maintaining their welfare and principles of production economics;
O.W9	Identifies and describes in detail the principles of management and utilisation of animal by-products and waste associated with animal production;
O.W10	Presents in detail the principles of examination of the slaughter animals, meat and other animal products;
O.W11	Explains in detail the principles of consumer health protection
O.W12	Explains in detail the principles of appropriate supervision over the production of foodstuffs of animal origin;
O.W13	Knows to an extensive degree the standards, principles and conditions of animal production technology and maintaining the hygiene of technological process;
O.W14	Describes legal standards associated with the activities of veterinary physicians;
O.W15	Presents the basic IT and biostatistic methods used in veterinary medicine.

Detailed

A. Basic sciences

In terms of knowledge, the graduate knows and understands:

Code	Contents
A.W1	Knows to an extensive degree and understands the structure of the animal organism: cells, tissues, organs and systems
A.W2	Knows to an extensive degree, describes in detail and explains the structure, activity and regulation mechanisms of organs and systems of the animal organism (respiratory, digestive, circulatory, excretory, nervous, reproductive, hormonal, immune system and skin), as well as their integration at the organism level;
A.W3	Presents the development of organs and the entire animal organism in relation to the mature organism
A.W4	Characterises in detail the metabolic processes at the molecular, cellular, organ and system levels
A.W5	Knows to an extensive degree and understands the principles of water and electrolyte metabolism, acid-base balance of animal organism, as well as the mechanism of system homeostasis;
A.W6	Characterises the basic reactions of organic and inorganic compounds in aqueous solutions
A.W7	Presents the physical laws describing flow of fluids and factors affecting vascular resistance of blood flow;
A.W8	Knows to an extensive degree and understands the physicochemical and molecular foundations of the operation of sensory organs
A.W9	Describes in detail the mechanism of neurohormonal regulation, reproduction, aging and death
A.W10	Knows to an extensive degree and understands the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, herd of animals, to the entire animal population;
A.W11	Explains the correlation between factors that disturb the balance of biological processes of the animal body and physiological and pathophysiological changes
A.W12	Describes and interprets the pathophysiological changes occurring in cells, tissues, organs and systems of animals, as well as biological mechanisms, including immunological mechanisms, and therapeutic possibilities that allow recovery
A.W13	Knows to an extensive degree the biology of infectious factors that cause diseases transmitted between animals, as well as anthropozoonoses, taking into account the mechanisms of disease transmission and defense mechanisms of the organism
A.W14	Describes and characterises the principles and processes of inheritance, genetic disorders and the basics of genetic engineering
A.W15	Knows to an extensive degree and presents the basics of microbiological diagnostics
A.W16	Knows to an extensive degree and understands the mechanisms of operation, activity in the system, side effects and mutual interactions of the groups of veterinary medicinal products used in target animal species
A.W17	Describes in detail the application of antibacterial and antiparasitic chemotherapy
A.W18	Presents the mechanisms of drug resistance, including multi-drug resistance by microorganisms and cancer cells;
A.W19	Knows to an extensive degree the procedures and elements necessary to issue a prescription for veterinary medicinal products
A.W20	Knows and understands the Polish and Latin medical nomenclature
A.W21	Describes and characterises the types of poisonings occurring in animals and the principles of diagnostic and therapeutic procedure in the case of poisonings
A.W22	Knows and understands the veterinary physician’s code of ethics
A.W23	Presents the concepts in the scope of intellectual property protection

B. Professional knowledge

In terms of knowledge, the graduate knows and understands:

Code	Contents
B.W1	Knows to an extensive degree as well as understands disorders at the level of the cell, tissue, organ, system and organism, in the course of the disease;
B.W2	Explains the mechanisms of organ and systemic pathologies
B.W3	Describes the causes and symptoms of anatomopathological changes, principles of treatment and prophylaxis in individual disease entities
B.W4	Knows and understands the principles of diagnostic procedure, taking into account the differential diagnostics and therapeutic procedure
B.W5	Presents the principles of conducting clinical examination and monitoring animal health
B.W6	Explains the method of handling clinical data, as well as results of laboratory tests and additional tests
B.W7	Knows and interprets the regulations of the law, rules for issuing judgments and preparing opinions for the needs of courts, state, local government and professional administration bodies
B.W8	Knows to an extensive degree the method of procedure in the case of suspicion or diagnosing diseases that are subject to the obligation of disease eradication or its registration
B.W9	Describes the principles of ensuring animal welfare
B.W10	Knows and understands the principle of functioning of the parasite-host system, as well as basic disease symptoms and pathological changes caused by parasites in the host organism;
B.W11	Characterises breeds within animal species, as well as principles of animal raising and husbandry
B.W12	Knows and understands the assumptions of animal pairing, methods of fertilization, reproduction biotechnology, as well as breeding selection
B.W13	Presents the principles of animal nutrition, taking into account the differences in species and age
B.W14	Presents the principles of planning and analysing the feed doses
B.W15	Presents the methods of management and utilisation of animal by-products and waste associated with animal production
B.W16	Knows and describes the principles of functioning of the Veterinary Inspection, also in the aspect of public health
B.W17	Presents the principles of consumer health protection, which are ensured by appropriate supervision over the production of foodstuffs of animal origin
B.W18	Characterises the control systems in accordance with HACCP (Hazard Analysis and Critical Control Points) procedures
B.W19	Knows to an extensive degree the procedures of pre- and post-mortem inspection
B.W20	Knows and interprets the conditions of hygiene and technology of animal production;
B.W21	Knows to an extensive degree, interprets and observes the principles of food law
B.W22	Knows and understands the principles of economics of the animal production

C. Supplementary classes

In terms of knowledge, the graduate knows and understands:

Code	Contents
C.W1	Knows and understands vocabulary and grammatical structures of at least one foreign language, which is a language of international communication, at the B2+ level of the Common European Framework of Reference for Languages, as well as specialised terminology in the scope of veterinary medicine, which is necessary in professional activity;
C.W2	Presents the functioning of institutions associated with veterinary activities and the social role of a veterinary physician
C.W3	Describes the rules of occupational health and safety in veterinary activities

Skills

General

In terms of skills, the graduate can:

Code	Contents
O.U1	Conducts clinical examination of the animal in accordance with the principles of medical art;
O.U2	Analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;
O.U3	Plans the diagnostic procedure
O.U4	Monitors health of the herd, as well as undertakes action in the case of a disease that is subject to the obligation of disease eradication or its registration;
O.U5	Performs pre- and post-mortem inspection of slaughter animals and examination of meat, as well as other products of animal origin;
O.U6	Performs activities that are associated with the veterinary supervision, including trade in animals, as well as sanitary and veterinary conditions of animal gathering locations and processing products of animal origin
O.U7	Issues veterinary medical opinion and certificate
O.U8	Uses Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health, diseases, pathological changes and conditions
O.U9	Applies IT systems used to support the health facility for animals, herd and analysis of epizootic situation
O.U10	Performs basic statistical analysis and uses appropriate methods for presentation of the results
O.U11	Uses vocabulary and grammatical structures of a foreign language, which constitutes the language of international communication, in the scope of creating and understanding written and oral statements, both general and specialised in the scope of veterinary;
O.U12	Maintains physical fitness that is required for the work with certain animal species

Detailed

A. Basic sciences

In terms of skills, the graduate can:

Code	Contents
A.U1	Is able to use the knowledge of the laws of physics in order to explain the impact of external factors (temperature, pressure, electromagnetic field, ionizing radiation) on the animal body
A.U2	Uses the basic laboratory techniques, such as: qualitative analysis, titration, colourimetry, pH-metry, chromatography and electrophoresis of proteins and nucleic acids
A.U3	Calculates the molar and percentage concentrations of substances and compounds in isoosmotic solutions
A.U4	Describes changes in functioning of the organism in the situation of homeostasis disorders
A.U5	Predicts the direction of biochemical processes, depending on the energy state of the cells
A.U6	Explains the anatomical basis of physical examination, taking into account the individual animal species;
A.U7	Defines physiological state as the animal's adaptation to the changing environmental factors
A.U8	Recognises (in the images from optical microscope) histological structures corresponding to organs, tissues and cells, and is able to formulate their description, interpret their structure and relations between their structure and activity, taking into account the animal species from which they originate;
A.U9	Analyses genetic crosses and pedigree of the characteristics of individuals from respective species
A.U10	Performs basic microbiological diagnostics
A.U11	Is able to choose and apply rational empirical and targeted antibacterial chemotherapy, taking into account the target species of animals
A.U12	Communicates with the clients and other veterinary physicians
A.U13	Is able to listen and provide answers with the use of understandable language, appropriate to the given situation
A.U14	Prepares transparent case descriptions and keeps documentation, in accordance with regulations applicable in this scope, in the form understandable to the animal owner and legible to other veterinary physicians
A.U15	Is able to work in a multidisciplinary team
A.U16	Interprets the responsibility of veterinary physician in regard to the animal, its owner, society, as well as the natural environment
A.U17	Estimates the toxicological danger in specific technological groups of farm animals
A.U18	Assesses the economic and social conditions, in which the profession of veterinary physician is performed;
A.U19	Uses his/her professional skills to improve the quality of veterinary care, animal welfare, as well as public health;
A.U20	Organises and conducts veterinary practice (including calculation of the fees), as well as issues invoices, keeps financial and medical documentation, and uses IT systems for effective communication, collection, processing, transmission and analysis of information
A.U21	Understands the need of continuing education, in order to ensure continuous professional development
A.U22	Adapts to the changing situation on the labour market
A.U23	Is able to use the advice and help of specialised organisational units or persons in the scope of problem solving.

B. Professional knowledge

In terms of skills, the graduate can:

Code	Contents
B.U1	Safely and humanely handles animals and instructs others in this scope
B.U2	Conducts a medical-veterinary interview in order to obtain precise information regarding individual animal or group of animals and its or their living environment
B.U3	Performs a full clinical examination of the animal
B.U4	Is able to provide first aid to animals in the case of haemorrhage, wounds, respiratory disorders, eye and ear injuries, loss of consciousness, cachexia, burns, tissue damage, internal injuries, cardiac arrest
B.U5	Assesses the nutritional status of the animal and provides advice in this scope;
B.U6	Collects and secures the samples for tests, as well as performs standard laboratory tests, and correctly analyses and interprets the results of laboratory tests
B.U7	Uses diagnostic equipment, including radiographic, ultrasound and endoscopic equipment, in accordance with its intended purpose and safety rules for animals and people, as well as interprets the results of tests obtained after its application
B.U8	Implements the appropriate procedures in the case of diagnosing a disease subject to the obligation of eradication or registration
B.U9	Obtains and uses information on authorised veterinary medicinal products;
B.U10	Is able to prescribe and use veterinary medicinal products and medical materials, taking into account their safe storage and utilisation
B.U11	Uses the methods of safe sedation, general and local anaesthesia, as well as assessment and relief of pain
B.U12	Monitors the patient's condition in the intra- and post-operative period on the basis of basic life parameters
B.U13	Chooses and applies the appropriate treatment
B.U14	Implements the principles of surgical antisepsis and asepsis, as well as applies appropriate methods of sterilising equipment
B.U15	Assesses the need for performance of euthanasia of the animal and informs its owner about this fact in an appropriate manner, and euthanizes the animal in accordance with the principles of professional ethics and appropriate handling of corpses
B.U16	Is able to perform an autopsy of the animal corpse, along with the description, as well as to take samples and secure them for transport
B.U17	Is able to perform pre- and post-mortem inspection
B.U18	Assesses the quality of products of animal origin
B.U19	Performs an epizootic investigation in order to determine the period of time, during which a contagious disease may have developed on the farm before suspecting or establishing its occurrence, place of origin of the source of the animal contagious disease, along with determination of other farms and the pathways of movement of people, animals and objects that could cause the spread of an infectious disease to or from the farm;
B.U20	Uses the collected information associated with the health and welfare of animals, and in selected cases also with productivity of the herd
B.U21	Develops and introduces preventive programs, which are appropriate for the individual animal species
B.U22	Is able to estimate the risk of occurrence of chemical and biological hazards in food of animal origin
B.U23	Is able to collect samples for monitoring tests for the presence of prohibited substances, chemical and biological residues, medicinal products and radioactive contamination in animals, in their secretions, excretions, tissues or organs, in products of animal origin, food, in water intended for animal drinking and in the feed;
B.U24	Assesses the fulfilment of requirements of the slaughter animals protection, taking into account the various methods of slaughter

Code	Contents
B.U25	Assesses the risk of contamination, cross-contamination and accumulation of pathogens in veterinary facilities and in the natural environment, as well as introduces recommendations that minimise such risk.

C. Supplementary classes

In terms of skills, the graduate can:

Code	Contents
C.U1	Uses at least one foreign language, which is a language of international communication, at the B2+ level of the Common European Framework of Reference for Languages, including specialised terminology in the scope of veterinary, which is necessary in professional activity
C.U2	Critically analyses veterinary literature and draws conclusions on the basis of available literature
C.U3	Uses and processes information with the use of IT tools and modern sources of veterinary knowledge
C.U4	Effectively communicates with employees of control bodies and offices, as well as central and local government administration

Social competence

General

Within the scope of competence, the graduate is ready to:

Code	Contents
O.K1	Exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment
O.K2	Has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions
O.K3	Participates in resolution of the conflicts and exhibits flexibility in reactions to social changes
O.K4	Uses the objective sources of information
O.K5	Formulates conclusions from own measurements or observations
O.K6	Formulates opinions regarding various aspects of professional activity
O.K7	Is ready for reliable self-assessment, formulating constructive criticism in the scope of veterinary practice, accepting criticism of presented solutions, reacting to such criticism in a clear and material manner, also with the use of arguments referring to the available scientific achievements in the discipline;
O.K8	Deepens his/her knowledge and improves skills
O.K9	Communicates with the co-workers and shares knowledge
O.K10	Is ready to act in the conditions of uncertainty and stress
O.K11	Cooperates with representatives of other professions in the scope of public health protection
O.K12	Gets involved in the activities of professional and local government organisations

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Animal anatomy I

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J1BO.0068.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** Yes **Subject shaping practical skills** No

Teacher responsible for the subject	Maciej Janeczek
Other teachers conducting classes	Maciej Janeczek, Karolina Goździewska-Harłajczuk, Aleksandra Rozwadowska

Period	**Examination**	**Number of ECTS points**
Semester 1	graded credit **Activities and hours** lecture: 30 laboratory classes: 75	9.0

Goals

C1	Understanding of animal anatomy
C2	Dissection of the corpses

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	knows the structure of the organism of dog, cat, horse, cow, pig.	A.W1	presentation, test, participation in discussion
W2	knows the structure, activity and regulation mechanisms of organs and systems of the dog, cat, horse, cow, pig as well as their integration at the organism level. Describes and explains in detail the structure and classification of bones and muscles - head, neck, pectoral limb.	A.W2	presentation, test, participation in discussion
W3	knows the English and Latin veterinary nomenclature regarding the anatomy of a dog, cat, horse, cow, pig.	A.W20	presentation, test, participation in discussion
Skills – Student can:			
U1	knows explain the anatomical basis of physical examination, including the anatomical structure of a dog, cat, horse, cow, pig.	A.U6	oral credit, observation of student’s work, active participation, presentation, practical training report
U2	recognize in the images from the optical microscope the histological structures corresponding to organs, tissues and cells, describe them, interpret their structure and the relationship between their structure and function, in dogs, cats, horses, cows and pigs.	A.U8	observation of student’s work, practical training report
U3	listen and respond in a language that is understandable and appropriate to the situation.	A.U13	observation of student’s work, participation in discussion, practical training report
Social competences – Student is ready to:			
K1	uses the objective sources of information about animal anatomy	O.K4	observation of student’s work, active participation
K2	deepens of knowledge and improves skills about animal anatomy	O.K8	observation of student’s work, active participation
K3	communicates with the co-workers and shares of knowledge.	O.K9	observation of student’s work, active participation, presentation

Balance of ECTS points

Activity form	Activity hours*
lecture	30
laboratory classes	75
consultations	35

lesson preparation	50
collecting and studying literature	30
exam / credit preparation	50

Student workload	**Hours** 270	**ECTS** 9.0
Workload involving teacher	**Hours** 140	**ECTS** 5.0
Practical workload	**Hours** 75	**ECTS** 3.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Anatomy concept 2. Osteology (structure of bone tissue, axial skeleton) 1 3. Osteology (peripheral skeleton) 2 4. Osteology (peripheral skeleton) 3 5. Osteology (development and structure of the skull) 4 6. Syndesmology (general structure of the junctions) 1 7. Syndesmology (detailed joints) 2 8. Syndesmology 3 and test 9. Myology (structure and types of muscles) 10. Digestive apparatus (general structure and organisation) 1 11. Digestive apparatus (oral cavity and oesphagus) 2 12. Digestive apparatus (stomach) 3 13. Digestive apparatus (intestine) 4 14. Glands associated with the digestive tract 15. Respiratory system (upper respiratory tract) 1	lecture

2.	1. Principles of the dissecting office 2. Osteology - axial skeleton 3. Osteology - thoracic limb 1 4. Osteology of the thoracic limb 2 5. Osteology - pelvic limb 1 6. Osteology - pelvic limb 2 7. Analysis of the material and test 8. Osteology - skull 1 9. Osteology - skull 2 10. Osteology - skull 3 11. Analysis of the material and test 12. Neck and trunk muscles 1 13. Neck and trunk muscles 2 14. Neck and trunk muscles 3 15. Analysis of the material and test 16. Muscles, nerves and vessels of the thoracic limb 1 17. Muscles, nerves, vessels of the thoracic limb 2 18. Muscles, nerves and vessels of the thoracic limb 3 19. Muscles, nerves and vessels of the thoracic limb 4 20. Analysis of the material and test	laboratory classes

Course advanced

Teaching methods:

situation-based learning, classes, lecture, teamwork, educational film, brainstorming, project-based learning (PBL)

Activities	Examination methods	Percentage in subject assessment
lecture	test, participation in discussion	50%
laboratory classes	oral credit, observation of student’s work, active participation, presentation, test, participation in discussion, practical training report	50%

Literature

Obligatory

1. Horst Erich König, Hans-Georg Hans-Georg, H. Bragulla: Veterinary Anatomy of Domestic Mammals: Textbook and Colour Atlas. Georg Thieme Verlag, 2020
2. Budras K-D., McCarthy P., H., Ficke W., Richter R. 2010. Anatomy of the dog. Hannover.

Optional

1. Budras K-D., Sack W., O., Rock S.: Anatomy of the horse. Schlutersche, 2012
2. Budras K-D., Habel R., E., Mülling Ch., W. i inni: Bovine Anatomy. Schlütersche, 2003

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Biophysics

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J1BO.0237.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** mandatory
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills No

Teacher responsible for the subject	Janusz Miśkiewicz
Other teachers conducting classes	Janusz Miśkiewicz, Natalia Trochanowska-Pauk

Period	**Examination**	**Number of ECTS points**
Semester 1	exam **Activities and hours** lecture: 15 laboratory classes: 15	3.0

Goals

C1	The aim of the course is to present fundamental elements of Biophysics. Students gain basic biophysics knowledge and become able to continue the study in the professional career.
C2	Acquainting students with the influence of environmental factors (acceleration, temperature, pressure, field electromagnetic radiation, ionizing radiation) on a living organism.
C3	Acquainting students with modern physical methods used in the study of the properties of cells and organs.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	A student knows to an extensive degree and understands the physicochemical and molecular foundations of the operation of sensory organs. A student knows the physical laws describing the flow of fluids and factors affecting vascular resistance of blood flow.	A.W7, A.W8	written exam, observation of student's work, report, test
W2	The student knows and understands the effects of physical factors on organisms.	A.W11	written exam, observation of student's work, report, test
W3	The student knows and understands the physical basis of the method of proceeding in medical diagnostics and therapy.	A.W12	written exam, test
Skills – Student can:			
U1	A student is able to use the knowledge of the laws of physics to explain the impact of external factors (temperature, pressure, electromagnetic field, ionizing radiation) on the animal body.	A.U1	written exam
U2	A student understands the need for continuing education, in order to ensure continuous professional development.	A.U21	observation of student's work, report
Social competences – Student is ready to:			
K1	A student uses objective sources of information.	O.K4	observation of student's work, presentation
K2	A student formulates conclusions from his/her own measurements or observations.	O.K5	observation of student's work, presentation
K3	A student deepens his/her knowledge and improves skills.	O.K8	observation of student's work

Balance of ECTS points

Activity form	Activity hours*
lecture	15
laboratory classes	15
report preparation	30
exam participation	2
consultations	7
exam / credit preparation	10
class preparation	10

Student workload	**Hours** 89	**ECTS** 3.0
Workload involving teacher	**Hours** 39	**ECTS** 1.4
Practical workload	**Hours** 45	**ECTS** 1.7

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	1. The biophysics subject. Mathematical foundation of biophysics. Definition and properties of vector quantities. Vector arithmetic – sum, difference, scalar, and vector products. 2. Introduction to physical quantities and laws. Basic and derivative physical quantities. Vector and scalar intensive and extensive quantities. Measurement of a physical quantity. SI system. Unit conversion. 3. Description of motion. Kinematics elements: velocity, acceleration, uniform motion, uniform acceleration. Application of kinematics to describe animal movement. The projectiles as a description of jumping animals. 4. Force. Example of forces. Newton's principles of dynamics. Inertial and non-inertial systems. Centrifugal force. The use of a centrifuge in laboratory tests. The principle of momentum conservation. 5. Elements of animal statics. Center of gravity. Torque. One-sided and two-sided lever. The skeleton as a leverage system. The mechanical advantage of the lever. Impact of living conditions on the anatomical structure of animals. Stability condition. 6. Determination of forces acting on selected skeleton elements on the example of the elbow and hip joints. 7. Oscillatory movement – characteristics, physical and biological examples – heartbeat and breathing. Simple (harmonic) oscillating motion: harmonic oscillators, motion equation. Damped oscillations in the material medium and forced oscillations. The phenomenon of resonance in biological systems, its negative effect on organs. 8. Wave motion. Types of waves and their properties, equation of a harmonic wave. Longitudinal and transverse waves. Basic wave phenomenon: superposition, diffraction and interference. 9. Doppler effect. The application of the Doppler effect in the study of blood flow velocity. Acoustic waves (sounds) and their division; sounds heard by man and recorded by various animals. Speed of sound propagation in various media and tissues. 10. Sound intensity. Ear. Sound source location methods. Sources of ultrasound and infrasound and their impact on animal organisms. The use of ultrasound in diagnostics (USG) and medical therapy (surgery using ultrasound). Polarization of the wave. Wave polarization methods. The use of polarization of waves by living organisms. 11. Elements of geometrical optics – types of lenses and their parameters (refractive index, focus and focal length, a radius of curvature, and resolution). Eye biophysics. Mammal eye structure – scaler, choroid and retina functions. Retinal structure – photoreceptor and nerve cells (rods, suppositories and macula). Image construction in the eye - accommodative ability of the eye. Eyesight defects. 12. Heat transport in organisms. Heat, temperature, specific heat of bodies and heat capacity of thermodynamic systems. The first principle of thermodynamic. Molecular mechanisms of heat transport: thermal conductivity – Fourier's law, convection, radiation – Stefan-Boltzmann and Wien law. Heat transport in organisms (convection and radiation) the importance of fur in animals and clothing in humans. Adaptation of animals to seasonal changes – examples. 13. The transport of real liquid through pipes of various cross-sections - flow resistance. Real liquid properties - viscosity, capillarity. Laminar flow of viscous liquid - Poiseuille's law - flow rate and resistance caused by conduits. The law of continuity of the stream. Biophysics of the mammalian circulatory system. 14. Elements of modern physics. Wave-particle duality. Photoelectric effect. Linear spectrum. De-Broglie waves – electron microscope. Natural and artificial radioactivity. Biological effects of radiation. Deterministic and stochastic effects. 15. Modern physics in diagnostics. X-rays, biological impact. Computer tomography. Properties of elementary particles – spin use for magnetic resonance imaging. Annihilation phenomenon as the basis of positron tomography.	lecture

2.	Laboratory plan: 1. Introduction: division into teams and assigning exercises. Safety conditions. Laboratory regulations. Conditions for passing laboratory. Basics of laboratory data analysis. (2h) 2. Students working in teams do the experiments according to the schedule. (2h) 3. Discussion of experiment results and verification of learnig objectives (colloquim). (2h) 4. Students working in teams do the experiments according to the schedule. (2h) 5. Discussion of experiment results and verification of learnig objectives (colloquim). (2h) 6. Students working in teams do the experiments according to the schedule. (2h) 7. Students working in teams do the experiments according to the schedule. (2h) 8. Laboratory summary, conclusions, credits. (1h) List of experiments on the basis of which the laboratory schedule is prepared: 1. Hooke's law and measurement of Young's modulus. The aim of the exercise is to verify Hooke's law and measure Young's modulus of steel wire. In addition to substantive issues during this exercise, important methodological goals are achieved: a proper collection of measurements, paying attention to the correct set up of the measuring system, analysis of factors affecting the accuracy of measurements, construction of the results table, development of the chart. 2. Liquid flow through horizontal pipes. The basic fluid dynamics laws are verified in the experiment: continuity law and Bernoulli's law. A narrowing horizontal pipe system is used for the measurements. During measurements, the fluid flow and static pressure drop in the constriction of the narrowing are tested. 3. Humidity measurement. Using the psychrometric method and the dew point method, air humidity is determined. 4. Viscosity. The exercise examines the properties of real liquid: water and highly viscous liquids. The viscosity coefficient of water is determined on the basis of Poiseille’s law measuring the flow rate of the water under the constant pressure. The measurement of the highly viscous liquid is done on the basis of Stoke’s law measuring the velocity of the ball moving in the liquid. 5. Measurement of the bone elasticity coefficient. The aim of the exercise is to study the elastic deformation of bones, subject to Hooke's law. The chicken bone placed on supports bends due to external forces. The deflection value is recorded with a micrometer sensor for various loads. Based on the results obtained, a graph is prepared, the deflection as a function of load, and then the bone elasticity factor is calculated. 6. Determination of blood flow through the hand. Using the principle of heat balance, the volume of blood that flows through the hand is determined in relation to the volume of blood flowing through the whole body in one minute – blood flow. The specified volume of the hand is immersed in a calorimeter with water for 30 minutes. Three bodies take part in the heat balance: heat is transmitted by blood flowing to the palm of the hand, while heat is absorbed by the hand, water in the calorimeter and the calorimeter by heating. During the exercise, the water temperature in the calorimeter is measured and the average temperature rise of the bodies receiving heat is determined. 7. Measurement of sugar concentration. The use of polarization phenomenon to determine the sugar concentration in a solution. In the exercise with a saccharimeter, the phenomenon of the plane polarization of the solution by a biologically active substance is observed.	laboratory classes

Course advanced

Teaching methods:

lecture, discussion, computer lab/laboratory, teamwork, presentation / demonstration

Activities	Examination methods	Percentage in subject assessment
lecture	written exam	50%
laboratory classes	observation of student’s work, report, presentation, test	50%

Entry requirements

None

Literature

Obligatory

1. M. Sternheim, J. Kane, General Physics, John Willey and Sons 1991
2. H. Young, R. Freedman, University physics with modern physics,
3. J. Miśkiewicz, Description of the laboratory experiments available on the CKNO web pages.

Optional

1. R. Hobbie, B. Roth, Intermediate Physics for Medicine and Biology, Springer 2007
2. G. Benedek, F. Villars, Physics With Illustrative Examples From Medicine and Biology, Springer 2000
3. P. Davidovits, Physics in Biology and Medicine, Elsevier 2019

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Cell biology

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J1BO.0336.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** mandatory
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills Yes

Teacher responsible for the subject	Piotr Kuropka
Other teachers conducting classes	Piotr Kuropka

Period	**Examination**	**Number of ECTS points**
Semester 1	exam **Activities and hours** lecture: 15 laboratory classes: 15	3.0

Goals

C1	The aim of the course is to familiarize students with the latest knoledge about the cell - its manifestations of life and interaction of all intracellular structures. In addition, present the most recent data about how cells form tissues and how they interact with other cells.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the structure of cell organellas and physiology of the connective, muscular and nervous tissue cells	A.W1	oral exam, presentation
W2	metabolic processes at the molecular level, the role of receptors and the transmission of signals to the cell, and the regulation of responses at the cell level.	A.W4	oral exam, presentation
W3	the mechanism of neurohormonal regulation, reproduction, cell cycle, aging, changes in the nucleus, cytoplasm and cell membrane during the aging process; the duration, course and mechanism of programmed cell death. Effects of harmful factors on the cell	A.W9	oral exam, presentation
Skills – Student can:			
U1	Recognize in images from an optical microscope cellular organelles, cells of muscle and nerve tissue, make their description, interpret their structure and the relationship between their structure and activity	A.U8	oral exam
Social competences – Student is ready to:			
K1	Demonstrate responsibility towards people and animals	O.K1	observation of student’s work
K2	Use objective sources of information	O.K4	observation of student’s work
K3	Formulate own conclusions	O.K5	observation of student’s work
K4	Deepen knowledge and skills	O.K8	observation of student’s work
K5	Communicate with other students and share knowledge	O.K9	observation of student’s work

Balance of ECTS points

Activity form	Activity hours*
lecture	15
laboratory classes	15
consultations	2
lesson preparation	30
exam / credit preparation	27
exam participation	1

Student workload	Hours 90	ECTS 3.0
Workload involving teacher	Hours 33	ECTS 1.1
Practical workload	Hours 15	ECTS 0.6

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1 1. Cell - definition, differences in cell structure and unicellular organisms (eukaryotes, prokaryotes, fungi, archaeozoa) 2. Cell membranes (structure, membrane permeability, transport of ions and molecules, active transport, endocytosis and its types) 3. Different cell organelles 4. Cell nucleus (structure, molecular basis of transcriptional activation of chromatin, gene structure, synthesis and maturation of mRNA and rRNA, DNA replication, genetic engineering). 5. RNA (types of RNA, function, involvement in metabolic processes, care of DNA, translation, gene folding (splicing), micro RNA, interfering RNA) 6. Golgi apparatus - formation, decay and role. Protein biosynthesis. Lysosomes and peroxisomes. 7. Receptors and signal transduction into the cell (membrane receptors - receptors forming ion channels, receptors associated with G-protein activation, signal transduction by adenylyl cyclases, by activation of membrane phospholipases and by tyrosine kinases; intracellular receptors; regulation of responses at the receptor level). 8. Cytoskeleton. 9. Cytoskeleton-associated proteins 10. Extracellular matrix synthesis of connective tissue - its biological properties. 11. Cell polarity and depolarisation (nerve transmission, structure and function of the nerve synapse, role in muscle cell function) 12. Cell differentiation (genome invariant, determination, modulation, metaplasia, cell interactions in the differentiation process, regulation of the differentiation process) 13 Damage in the cell 14.Ageing and cell death. Changes in the nucleus, cytoplasm and cell membrane during the ageing process; necrosis versus programmed cell death (apoptosis), duration, course and mechanism of programmed cell death (apoptosis). Effects of damaging agents on the cell. 15.Intercellular signaling.	lecture

2.	1. Cell nucleus and nucleoli. Analysis of cell nuclei from photographs and histological preparations. 2. Cell organelles. Structure and function of the endoplasmic reticulum, Golgi apparatus and lysosomes. 3. Biological membranes. Structure and function of the Golgi apparatus and lysosomes. 4. Exocytosis, endocytosis, receptor endocytosis and transcytosis. Membrane fluidity experiment. 5. Cytoskeleton and intercellular connections. 6. Mitochondria - structure and function. Making a slide showing mitochondrial activity. 7. Cytophysiology of connective tissue cells. 8. Phenomenon of intercellular substance synthesis and the role of its components in tissue transformation processes. Movement in the cell - microscopic observation. 9. Cytophysiology of muscle tissue cells. Muscle contraction and physiological hypertrophy. 10. The role of MyoD in the process of muscle cell differentiation. 11. Cytophysiology of nerve and glial cells. Mechanism of stimulus conduction. 12. Synapses and secretion by synapses. 13. Cell cycle (mitotic, meiotic). Interphase - G1, S, G2 phase Entry into the cell cycle. 14. Mitotic and meiotic divisions in histological preparations 15. Programmed cell death in histological preparations.	laboratory classes

Course advanced

Teaching methods:

classes, discussion, presentation / demonstration, educational film, project-based learning (PBL), lecture

Activities	Examination methods	Percentage in subject assessment
lecture	oral exam	50%
laboratory classes	observation of student’s work, presentation	50%

Literature

Obligatory

1. Essential Cell Biology, Alberts, B. and Bray, D. and Hopkin, K. and Johnson, A.D. and Lewis, J. and Raff, M. and Roberts, K. and Walter, P. CRC Press 2013
2. Molecular Biology of the Cell, Alberts, B. CRC Press 2017
3. Dellmann's Textbook of Veterinary Histology with CD, Eurell, J.A.C. and Frappier, B.L. and Dellmann, H.D. Wiley 2006, ISBN 0781741483, 9780781741484

Optional

1. Developmental Biology, Gilbert, S.F. Sinauer 2016,
2. Veterinary Histology of Domestic Mammals and Birds: Textbook and Colour Atlas, Liebich, H.G. and Klupiec, C., 5m Publishing, 2019
3. Cell Biology and Genetics, Starr, C. and Taggart, R. and Evers, C., Cengage Learning 2012

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Chemistry

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J1BO.0359.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Liliana Kiczak
Other teachers conducting classes	Liliana Kiczak, Agata Mikołajczyk

Period Semester 1	**Examination** exam **Activities and hours** lecture: 15 laboratory classes: 30	**Number of ECTS points** 3.0

Goals

C1	The aim of the course is to familiarize students with general chemistry (with special emphasis on chemical processes in aqueous solutions), with quantitative and qualitative analysis, as well as with calculations (concentrations, ionic equilibrium, buffers).
C2	Students will be familiarized with general principles of organic chemistry (atomic and molecular orbitals, nucleophilic substitution, elimination, and addition reaction, free radical reaction), structure and chemical properties of organic compounds with one functional group, carbohydrates, lipids, amines, aminoacids and proteins, nucleotides and bonds in nucleic acids.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	basal chemical processes concerning ionic equilibrium in aqueous solutions, basal principles of colligative properties of solutions.	A.W5	written exam, test
W2	the principles of buffer solutions and their importance for living organisms, basal principles of chemical reactions kinetic and termodynamic.	A.W5	written exam, test
W3	basal chemical properties of organic compounds with one or two functional groups.	A.W6	written exam, test
W4	structures and names of chemical compounds, especially basic building blocks of living organisms and biologically active compounds.	A.W6	written exam, test
Skills – Student can:			
U1	use the common laboratory equipment.	A.U2	observation of student’s work, active participation, performing tasks
U2	perform calculations concerning concentrations, pH, buffering properties, rate of chemical reactions, chemical equilibrium.	A.U3	written credit, performing tasks
U3	perform basic chemical quantitative determinations (titrations and colorimetric analyses).	A.U2	observation of student’s work, active participation, performing tasks
Social competences – Student is ready to:			
K1	interpretation of results of quantitative and qualitative chemical analysis.	O.K5	observation of student’s work, active participation
K2	knowledge and practical skills sharing with other team members.	O.K7, O.K9	observation of student’s work, active participation
K3	critical approach to his/her knowledge and its constant updating according to the current state of general knowledge.	O.K4, O.K8	observation of student’s work

Balance of ECTS points

Activity form	Activity hours*
lecture	15
laboratory classes	30
exam / credit preparation	30
exam participation	2
consultations	1
lesson preparation	5

Student workload	**Hours** 83	**ECTS** 3.0
Workload involving teacher	**Hours** 48	**ECTS** 1.9
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	Lecture 1 (1h). Basic principles of solutions: solubility; saturated, unsaturated and supersaturated solutions; solvent classification; water as a protonic and polar solvent; solvation and hydration; comparison of solutions, colloids and suspension. Lecture 2 (1h). Basic principles of solutions: colloids – definition, classification, and properties; colligative properties of solutions; osmosis. Lecture 3 (1h). Ionic equilibrium in aqueous solutions: chemical equilibrium; acids and bases (Arrhenius theory, Brønsted-Lowry acid-base theory); dissociation; ion product constant for water; pH, pH indicators. Lecture 4 (1h). Ionic equilibrium in aqueous solutions: buffers; bicarbonate buffering system; electrolytes; hydrolysis of salts. Lecture 5 (1h). Basal principles of chemical reactions kinetics: the collision theory; exothermic and endothermic reactions; reaction rate; the molecularity and order of the reaction; the elementary and complex reaction. Lecture 6 (1h). Basal principles of thermodynamics: 1st, 2nd and 3rd law of thermodynamics; standard Gibbs free energy of reaction. General principles of organic chemistry: electron arragment in atoms. Lecture 7 (1h). General principles of organic chemistry: covalent bonds, polar covalent bonds, ionic bonds; the structural theory of organic chemistry; molecular orbitals (σ and π bonds); carbon - orbital hybridisation; the structure of methane, ethane, ethane and ethyne. Lecture 8 (1h). General principles of organic chemistry: nomenclature of alkanes; conformation of alkanes; van der Waals forces; chemical properties of alkanes; halogenation of alkanes – example of radical chain reaction; cycloalcanes. Lecture 9 (1h). General principles of organic chemistry: benzen; Lewis acids and bases; benzene - electrophilic aromatic substitution; stereoisomers; nucleophilic substitution reaction. Lecture 10 (1h). General principles of organic chemistry: elimination reactions; competition between substitution and elimination reactions; addition reaction; alkadienes. Lecture 11 (1h). Organic compounds with one functional group: alcohols and phenols; oxidation-reduction reactions in organic chemistry; thiols; aldehydes and ketones (nomenclature). Lecture 12 (1h). Organic compounds with one functional group: aldehydes and ketones (keto-enol tautomerism, aldol reaction, nucleophilic additions to carbonyl groups, formation of acetals). Structure and chemical properties of carbohydrates: monosaccharides. Lecture 13 (1h). Structure and chemical properties of carbohydrates: reducing sugars, polysaccharides, glycosides. Structure and chemical properties of carboxylic acids and derivatives - esters, lactones, amides, lactams. Lecture 14 (1h). Structure and chemical properties of lipids: triglyceride and phosphatidic acid; phosphoglycerides; steroids; waxes; sphingolipids and cerebrosides. Structure and chemical properties of amines, and azo compounds. Lecture 15 (1h). Biologically active amines: sulfa drugs; alkaloids - pyridine,piperidine, purine, and indole ring; catecholamines. Principles of amino acids: type of aminoacids, zwitter ion and pI; peptide bond formation; peptide and proteins. Nucleotides and nucleosides – scheme, the structural formulas of purine and pirymidyne ring; phosphate linkage.	lecture

2.	Classes 1 (2h). Regulation of the chemistry course. Safety rules in chemical laboratory. Calculations - volume percent (v/v) concentration, mass/volume percent (w/v) concentration, molar concentration (mol/L), units. Classes 2 (2h). Anion qualitative analysis. Identification of anions: Cl-, SO42-, CO32-, PO43-, NO3- Classes 3 (2h). Cation qualitative analysis. Identification of cations: NH4+, K+, Ca2+, Fe2+, Fe3+, Pb2+, Cu2+. Classes 4 (2h). Chemical calculations: dissociation constant, colligative properties. Classes 5 (2h). Practical pH determination: pH determination using indicators and pH-meter. Buffer capacity. Classes 6 (2h). Test - general chemistry. Chemical calculations - buffers. Classes 7 (2h). Titration procedures in analytical chemistry. Acid-base titration. Sørensen formol titration of aminoacids. Classes 8 (2h). Titration based on a reduction-oxidation reaction. Redoxometric quantitative determination of vitamin C and H2O2. Classes 9 (2h). Back titration. Determination of the chloride anion in milk by Volhard’s procedure. Classes 10 (2h). Test – organic chemistry, part 1. Chemical calculations – titration. Classes 11 (2h). Complexometric titration of calcium ion with EDTA. Classes 12 (2h). Introduction into a photometric analysis. The Beer-Lambert law. Plotting a calibration curve. Classes 13 (2h). Photometric assay of orthophosphate: plotting a calibration curve and determination of orthophosphate concentration. Classes 14 (2h). Test - organic chemistry, part 2. Classes 15 (2h). Completion of the semester. Receiving grades	laboratory classes

Course advanced

Teaching methods:

blended learning, problem-solving method, classes, lecture, teamwork, presentation / demonstration

Activities	Examination methods	Percentage in subject assessment
lecture	written exam	50%
laboratory classes	written credit, observation of student’s work, active participation, test, performing tasks	50%

Literature

Obligatory

1. Timberlake K.C. 2007 (or later editions) General, Organic, and Biological Chemistry, Pearson International Edition

Optional

1. 2012 Book Archive Introduction to Chemistry: General, Organic, and Biological https://2012books.lardbucket.org/books/introduction-to-chemistry-general-organic-and-biological/

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Histology and embryology I

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J1BO.0884.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** Yes **Subject shaping practical skills** Yes

Teacher responsible for the subject	Piotr Kuropka
Other teachers conducting classes	Piotr Kuropka, Małgorzata Tarnowska

Period	**Examination**	**Number of ECTS points**
Semester 1	graded credit **Activities and hours** lecture: 15 laboratory classes: 30	4.0

Goals

C1	The aim of the course is to familiarize students with the cell and tissue structure of pet organs and acquaintance with the basic aspects of their histophysiology. The student gains experience in use of microscope and the basics of histological techniques. The student is familiarized with embryonic and fetal development of animals from conception to the early postpartum period.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the microscopic structure, the related activities and mechanisms of regulation of organs and systems of the animal organism (respiratory, digestive, circulatory, excretory, nervous, reproductive, hormonal, immunological and skin integuments) and their integration at the level of the body	A.W2	written credit, Practical recognition of slides under microscope
W2	development of organs and the whole animal organism in relation to the mature organism, describes the stages of organ development	A.W3	written credit, Practical recognition of slides under microscope
W3	English and Latin medical nomenclaturee	A.W20	written credit
Skills – Student can:			
U1	recognize in images from an optical microscope the histological structures of cells and tissues, knows species differences	A.U8	Practical recognition of slides under microscope
Social competences – Student is ready to:			
K1	Demonstrate responsibility towards people and animals	O.K1	observation of student’s work
K2	Use objective sources of information	O.K4	observation of student’s work
K3	Formulate own conclusions	O.K5	observation of student’s work
K4	Deepen knowledge and skills	O.K8	observation of student’s work
K5	Communicate with other students and share knowledge	O.K9	observation of student’s work

Balance of ECTS points

Activity form	Activity hours*
lecture	15
laboratory classes	30
consultations	2
lesson preparation	73

Student workload	**Hours** 120	**ECTS** 4.0
Workload involving teacher	**Hours** 47	**ECTS** 1.8
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Gametogenesis as a process preceding the formation of the germ of a new organism. 2. Oocyte formation - oogenesis, sperm formation - spermatogenesis. Hormonal regulation of gametogenesis, sexual cycle. 3. Fertilisation and insemination. 4. Stages of fertilisation in mammals. 5. Atypical and pathological modes of fertilisation. Parthenogenesis. 6 Cleavage, types and significance. 7. Formation of morula and then blastula as a result of cleavage. 8. Gastrulation and gastrula formation. 9. Examples of gastrulation in different species. 10. Formation of embryonic cotyledons and primary embryonic organs. 11. The formation of fetal membranes. 12. Placentation in various domestic and wild animal species. Disorders of placentation. 13. Fetal circulation. 14. Principles of fetal circulation. Development of the heart, blood vessels and formation of blood. 15. Lymphatic system.	lecture

2.	1 Principles of microscopy. 2 Epithelial tissue simple squamous , cuboidal, and columnar epithelium. 3. Stratified and pseudostratified epithelium . 4- Glandular and sensory epithelium. 5 Connective tissue - mesenchyme, reticular connective tissue, adipose connective tissue 6. Loose connective tissue, compact connective tissue (plexiform, tendon, elastic). 7. Cartilage: hyaline and elastic. 8. Bone 9. Chondrogenesis and osteogenesis. 10. Muscle tissue: smooth muscle tissue, skeletal striated muscle tissue, cardiac muscle 11. Nerve tissue: sensory nerve cell, motor nerve cell, glial cell, nerve fibre. 12. Circulatory system - artery of elastic type, artery and vein of muscular type, pre-capillary vessel, capillary vessel. 13. Lymph node, spleen, thymus gland, bursa of Fabricius. 14. Endocrine system - pituitary gland, thyroid gland with parathyroid gland, adrenal gland. 15 Concluding activity - 2 hrs.	laboratory classes

Course advanced

Teaching methods:

classes, lecture

Activities	Examination methods	Percentage in subject assessment
lecture	written credit	50%
laboratory classes	written credit, observation of student’s work, Practical recognition of slides under microscope	50%

Entry requirements

Biology and chemistry general secondary school level.

Literature

Obligatory

1. Dellmann's Textbook of Veterinary Histology with CD, Eurell, J.A.C. and Frappier, B.L. and Dellmann, H.D. Wiley 2006, ISBN 0781741483, 9780781741484
2. Color Atlas of Veterinary Histology, Bacha, W.J. and Bacha, L.M. Wiley, ISBN 2000 0683306189, 9780683306187
3. Veterinary Histology of Domestic Mammals and Birds: Textbook and Colour Atlas, Liebich, H.G. and Klupiec, C., 5m Publishing, 2019
4. Gilbert S.F. Developmental biology. 7th edition, Sinauer Associates, Inc. 2003.

Optional

1. Textbook of Veterinary Histology, Samuelson, D.A. Saunders-Elsevier 2007
2. Veterinary Histology, Jennings, R. and Premanandan, C., Ohio State University, 2017
3. General Histology of the Mammal, Krstic, Radivoj V. Springer- Verlag 1985, ISBN 978-3-642-70420-8

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Latin

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J1BO.1139.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Zdzisław Koczarski, Adam Poznański
Other teachers conducting classes	Adam Poznański

Period Semester 1	**Examination** graded credit **Activities and hours** foreign language (course): 30	**Number of ECTS points** 2.0

Goals

C1	The course aims to present the rules of pronunciation, inflection and correct usage of Latin veterinary nomenclature, especially anatomical terminology, which is obligatory during first year of veterinary studies. During the course students will learn all the declension patterns of Latin substantives and adjectives using the whole material of animal anatomy vocabulary, they learn correct inflection of complex anatomical terms and basics of translation from Latin into English. They also conduct a critical analysis of sentence and recognize differences and similarities between Polish and Latin veterinary nomenclature. Finally, they acquire informations about science and culture of Antiquity, Medieval and Modern age, suitable for their profile.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	vocabulary and grammatical structures of Latin language as well as specialised terminology in the scope of veterinary medicine, which is necessary in professional activity	C.W1	observation of student’s work, active participation, test, performing tasks
Skills – Student can:			
U1	to use the grammar and basic vocabulary of Latin language, including specialised terminology in the scope of veterinary, which is necessary in professional activity.	C.U1	observation of student’s work, active participation, test, performing tasks
U2	to critically analize and translate basic Latin veterinary texts	C.U2	observation of student’s work, active participation, test, performing tasks
Social competences – Student is ready to:			
K1	to develop their language skills	O.K8	observation of student’s work, active participation

Balance of ECTS points

Activity form	Activity hours*
foreign language (course)	30
lesson preparation	26
consultations	4

Student workload	**Hours** 60	**ECTS** 2.0
Workload involving teacher	**Hours** 34	**ECTS** 1.2
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	1. Organizational class – course requirements and specification 2. Accent and pronunciation in Latin language, grammar repetition 3. 1st and 2nd declension of substantives, numerals 4. 1st, 2nd and 3rd declension of adjectives, basics of veterinary nomenclature 5. 3rd declension of substantives, adjective gradation 6. 4th and 5th declension of substantives, participles 7. Repetition class – 1st-5th declension of substantives, 1st-3rd declension of adjectives 8. Test – 1st-5th declension of substantives, 1st-3rd declension of adjectives 9. Cultural class – Latin culture in Europe 10. Basics of Latin syntax and translation into English 11. Basics of word-building – Latin and Greek word-prefixes and suffixes, Greek alphabet 12. Basic Latin veterinary texts reading I 13. Basic Latin veterinary texts reading II 14. Basic Latin veterinary texts reading III 15. Summary class – grammar and translations	foreign language (course)

Course advanced

Teaching methods:

classes, foreign language (conversation classes), text analysis

Activities	Examination methods	Percentage in subject assessment
foreign language (course)	observation of student’s work, active participation, test, performing tasks	100%

Literature

Obligatory

1. Nomina Anatomica Veterinaria, Gasse H. [ed], Hannover 2017 [6th ed.].

Optional

1. Morwood J., A Latin Grammar, Oxford 1999.
2. Lexicon medicum. Anglicum, Russicum, Gallicum, Germanicum, Latinum, Polonum, B. Złotnicki [ed.], Warszawa 1971.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Agronomy

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J1BO.0014.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** No

Teacher responsible for the subject	Piotr Sobkowicz
Other teachers conducting classes	Piotr Sobkowicz

Period Semester 1	**Examination** graded credit **Activities and hours** lecture: 15	**Number of ECTS points** 1.0

Goals

C1	1. To make students familiar with the organization of field crop production, including fodder production
C2	2. Characteristics of crops with high forage importance

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the basics of growing crops of high fodder importance and how to use animal manure in fertilizing crops	O.W8, O.W9	test
Skills – Student can:			
U1	consult the extent of crop production on the farm to ensure the proper quantity and quality of feed for animals	A.U16, A.U21	test
Social competences – Student is ready to:			
K1	to take responsible decisions concerning organization of feed production and protection of the natural environment against contamination with animal faeces	O.K1, O.K4	observation of student's work

Balance of ECTS points

Activity form	Activity hours*	
lecture	15	
exam / credit preparation	8	
consultations	2	
Student workload	**Hours** 25	**ECTS** 1.0
Workload involving teacher	**Hours** 17	**ECTS** 0.6

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	1. Types and specific of crop production. 2. Farm as agroecosystem 1 - farm animals as a link in the food chain. 3. Agroecosystem 2, environmental factors of crops. 4. Light and temperature. 5. Topographic and biotic factor. 6. Water. 7. Soil. 8. Soil tillage. 9. Fertilization of agricultural crops, role of animal fertilizers. 10. Harmfulness of weeds to crops and livestock. Protection against weeds. 11. Characteristics of the most important groups of crops, their fodder importance 1. 12. Characteristics of the most important groups of crops, their fodder importance 2. 13. Cover crops 14. Contemporary agricultural systems 1, negative effects of industrialization of livestock production. 15. Contemporary agricultural systems 2. Written test.	lecture

Course advanced

Teaching methods:

lecture

Activities	Examination methods	Percentage in subject assessment
lecture	observation of student’s work, test	100%

Entry requirements

biology, physics, chemistry

Literature

Obligatory

1. Martin J. H., Waldren R. P. Stamp D. L. Principles of field crop production. Prentice Hall, Upper Saddle River, 2006

Optional

1. Gliessman S. R. Agroecology. The ecology of sustainable food system. Taylor & Francis Inc, 2014

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Environmental protection

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J1BO.0631.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** No

Teacher responsible for the subject	Błażej Poźniak
Other teachers conducting classes	Błażej Poźniak, Angelika Sysak

Period Semester 1	**Examination** graded credit **Activities and hours** lecture: 10 laboratory classes: 20	**Number of ECTS points** 2.0

Goals

C1	The aim of the course is to introduce students with the links of cause-and-effect of problems related to consumer and professional burdening the environment and adverse global and local ecological phenomena.
C2	Teachers make students aware of basic problems of environmental protection, the source of the pollution and emission reduction methods and neutralization of hazardous substances, as well as ecotoxicological risks associated with industrial production, agriculture and animal breeding.
C3	Lecturers provide students with knowledge in the field of regulations on environmental protection in Poland, EU and in the world and the structure of the systems of environmental protection in Poland.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the relationship of cause-and-effect problems associated with consumer and professional burdering the environment and the adverse global and local environmental phenomena	O.W5, O.W9	written credit, presentation
W2	the outline of legislation on environmental protection in Poland and in the world	O.W14	written credit
Skills – Student can:			
U1	critically analyze the scientific literature and media reports in the field of environmental protection and draw correct conclusions, especially with regard to consumer behavior	C.U2	written credit, presentation, participation in discussion
U2	discuss current problems of environmental protection with the use of modern multimedia tools	C.U3	presentation, participation in discussion
U3	interpret the responsibility of veterinarian towards the natural environment	A.U16	written credit, participation in discussion
Social competences – Student is ready to:			
K1	exhibit responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	presentation, participation in discussion
K2	use the objective sources of information in the field of environmental protection	O.K4	presentation, participation in discussion
K3	get involved in the activities of professional and local government organisations in the interest of environmental protection	O.K12	presentation, participation in discussion

Balance of ECTS points

Activity form	Activity hours*
lecture	10

laboratory classes	20
presentation/report preparation	15
exam / credit preparation	15

Student workload	**Hours** 60	**ECTS** 2.0
Workload involving teacher	**Hours** 30	**ECTS** 1.0
Practical workload	**Hours** 20	**ECTS** 0.8

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. History and the action program in the field of environmental protection in Poland and world. International conventions on environmental protection. Environmental protection in the light of the laws of Poland and the EU. 2. International ecological organizations. Areas of ecological risks in Poland and in the world, the types of threats. The organic compounds of ecotoxicological importance (dioxins, nitrofurans, biphenyls, polycyclic aromatic hydrocarbons, plastics). 3. Metal pollution and its effects on human and animal health. The main causes of environmental change caused by industrial production. Global circulation of mercury. 4. Environmental pollution by pesticides and their impact on human and animal health. The main causes of environmental change caused by agricultural production, breeding and veterinary. The fate of the antibiotics in the environment. 5. Environmental impact of pharmaceutical and personal care products. Law challenged the Environmental Protection act lawfully European Union. System and environmental protection organization in Poland (environment monitoring).	lecture

2.	1. Basic definitions associated with environment: ecology, sozology, biocenosis, biotope, biosphere, habitat, ecosystem, population, ecological niche, biome and ecotone, eutrophisation, biodegradation, recycling. Basic ecosystems of the world. 2. Sources and types of atmosphere pollution. Emission of sulphur dioxide, carbon monoxide and nitric oxides. Methods for reducing their emissions. 3. Photochemical and "classical" smog as a result of atmosphere pollution. Acid rains – mechanism of development, influence on plants and animals. 4. Freons and the decrease of ozone layer as a global phenomenon associated with air pollution. The greenhouse effect – mechanisms and results of development. 5. Sources and types of water pollution (oceans, seas, rivers, lakes, aquacultures). Polish water resources in comparison to other European countries and the world. 6. Sewage – types, content, threat to the environment, methods of treating and water conditioning. 7. Causes of soil degradation (desertification, terrain malformation, chemical contamination, erosion). Ways of soil protection – reclamation, treatment against erosion. 8. Types of wastes, recycling, storage and neutralization. 9. Global environmental problems associated with overpopulation, taking into account the difficulties in obtaining food from natural sources as an example of overexploitation of the seas and oceans – overfishing. 10. Repetition of material and final test.	laboratory classes

Course advanced

Teaching methods:

educational film, classes, lecture, discussion, presentation / demonstration

Activities	Examination methods	Percentage in subject assessment
lecture	written credit	40%
laboratory classes	written credit, presentation, participation in discussion	60%

Literature

Obligatory

1. Cunningham W.P., Cunningham M.A.: Principles of Environmental Science. Inquiry and Applications, 9th edition, 2020.

Optional

1. http://europa.eu/legislation_summaries/environment/index_en.htm
2. www.iucnredlist.org
3. www.cites.org/eng
4. www.codexalimentarius.org
5. www.who.org
6. www.epa.gov

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Biostatistics and methods of data collection

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J1BO.3219.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** No

Teacher responsible for the subject	Heliodor Wierzbicki
Other teachers conducting classes	Heliodor Wierzbicki

Period Semester 1	**Examination** graded credit **Activities and hours** laboratory classes: 30	**Number of ECTS points** 2.0

Goals

C1	The general aim of the course is to provide students with theoretical knowledge and practical skills (use of computer software for statistical analysis of data) in biostatistical methods used in the collection and description of a set of data (descriptive statistics) and hypothesis testing (parametric and non-parametric tests). It also covers correlation, simple linear regression and analysis of variance.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the basic biostatistical methods used in the analysis of data collected by veterinarians and animal breeders	O.W15	project
Skills – Student can:			
U1	to carry out basic biostatistical analyses of collected data, to visualise the results obtained and prepare a presentation of the results together with their interpretation	O.U10	project
Social competences – Student is ready to:			
K1	to formulate conclusions on the basis of the biostatistical analyses carried out and to share this knowledge with co-workers	O.K5	observation of student's work

Balance of ECTS points

Activity form	Activity hours*
laboratory classes	30
project preparation	15
class preparation	15

Student workload	**Hours** 60	**ECTS** 2.0
Workload involving teacher	**Hours** 30	**ECTS** 1.0
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	1. Descriptive biostatistics (1) – basic definitions and concepts; measures of central tendency 2. Descriptive biostatistics (2) – measures of variability; random variables and their distributions; methods of data collection 3. Excel/the SAS computer system – an introduction. 4. Excel/the SAS computer system – data management. 5. Excel/the SAS computer system – basic procedures (descriptive statistics). 6. Hypothesis testing (1) - basic definitions and concepts; types of hypotheses; significance level; critical value; rejection region; type I and II errors, power of the statistical test. 7. Hypothesis testing (2) – parametric tests; t-test (single sample; two independent samples; two paired samples). 8. Hypothesis testing (3) – non-parametric tests; chi-square test (one-way classification, two-way classification). 9. Correlation and simple linear regression. 10. Analysis of variance. 11. Excel/the SAS computer system - using computer sofware for hypothesis teting – t-test; Duncan test; chi-square test. 12. Excel/the SAS computer system - using computer software to compute correlation coefficients and construct simple linear regression equation. 13. Excel/the SAS computer system - using coputer sofware to perform analysis of variance. 14. Introduction to final project preparation - data, statistical analysis, data visualization and interpretation. 15. Final project presentation.	laboratory classes

Course advanced

Teaching methods:

lecture, computer lab/laboratory, teamwork, project-based learning (PBL)

Activities	Examination methods	Percentage in subject assessment
laboratory classes	project, observation of student’s work	100%

Entry requirements

mathematics, computer science

Literature

Obligatory

1. 1. Beginning statistics v.1,0. Douglas S. Shafer, Zhiyi Zhang. https://2012books.lardbucket.org/pdfs/beginning-statistics.pdf
2. 2. Basics of statistics. Jarkko Isotalo. http://www.mv.helsinki.fi/home/jmisotal/BoS.pdf

Optional

1. Starting SAS - https://support.sas.com/documentation/cdl/en/hostwin/69955/HTML/default/viewer.htm#p16esisc4nrd5sn1ps5l6u8f79k6.htm

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Ergonomy, intellectual protection and work safety

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J1BO.0646.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** mandatory
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills Yes

Teacher responsible for the subject	Marek Brennensthul
Other teachers conducting classes	Marek Brennensthul

Period	**Examination**	**Number of ECTS points**
Semester 1	graded credit **Activities and hours** lecture: 15	1.0

Goals

C1	Presentation of safety and comfortable conditions of work (both at professional and non-professional activities). The basic information about ergonomics will be also presented. The use of ergonomics at the designing and improvement of workplaces will shown. TMoreover, the overall information about protection of intellectual property will be presented.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	describes the rules of occupational health and safety in veterinary activities	C.W3	written credit
W2	presents the concepts in the scope of intellectual property protection	A.W23	written credit
Skills – Student can:			
U1	is able to use the advice and help of specialised organisational units or persons in the scope of problem solving	A.U23	written credit
Social competences – Student is ready to:			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student’s work

Balance of ECTS points

Activity form	Activity hours*
lecture	15
lesson preparation	10
exam participation	5

Student workload	**Hours** 30	**ECTS** 1.0
Workload involving teacher	**Hours** 20	**ECTS** 0.8

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	Titles of lectures: 1. Introduction to ergonomics, basis definitions, historical background. 2. Basic ergonomic system. Anthropometry – geometric shaping of workplaces. 3. Workload evaluation – energy expenditure of human organism. 4. Workload evaluation – static loads on the musculo-skeletal system. Repetitive works and monotype. Assessment of mental workload. 5. Basic definitions of occupational health and safety. Overall characteristics of factors at the workplaces. 6. Dangerous factors at the workplaces: threats related to movement of people. Mechanical threats. 7. Dangerous factors at the workplaces: the fire and explosion, fire protection. 8. Dangerous factors at the workplaces: the protection against electrical shock. 9. Risk of accidents. The definition of occupational accident. Procedures after the accidents, protection against accidents. 10. The harmful and onerous factors; vibrations and their impact on human. Minimization of vibration effects at the workplaces. 11. Dangerous, harmful and onerous factors at the works at animals. 12. The harmful and onerous factors; exposure to audible noise at the workplaces. 13. Microclimate. The temperature and air pressure at the workplaces. 14. Protection of intellectual property. The types and features of copyright laws. The ways to correct use of intellectual property. 15. Protection of intellectual property. Industrial property.	lecture

Course advanced

Teaching methods:

lecture

Activities	Examination methods	Percentage in subject assessment
lecture	written credit, observation of student’s work	100%

Literature

Obligatory

1. Stanton N. et al. Handbook of Human Factors and Ergonomics Methods, CRC Press 2005.
2. Bridger R. S. Introduction to ergonomics; 3rd edition. CRC Press 2009.

Optional

1. Rączkowski B. 2022; BHP w praktyce – wydanie XIX. ODDK Gdańsk.
2. Romanowska – Słomka I., Słomka A. 2008; Zarządzanie ryzykiem zawodowym, wyd. Tarbonus, Tarnobrzeg, wyd. VI, uzupełnione.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Veterinary economy

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J1BO.2640.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** No

Teacher responsible for the subject	Robert Karczmarczyk
Other teachers conducting classes	Robert Karczmarczyk

Period	**Examination**	**Number of ECTS points**
Semester 1	graded credit **Activities and hours** auditorium classes: 15 practical classes: 15	1.0

Goals

C1	Showing to the students basic knowledge about economy on global and country level. Giving the knowledge in the area of business functioning. Making the students aware of many issues concerning own bussiness running in the free market environment.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	economical backgroun of animal production	B.W22, O.W8	written credit, active participation
W2	how to run effective company in the field of production and service	O.W15	written credit
W3	law regulations regarding veterinarians on the free market	O.W14	written credit, active participation
Skills – Student can:			
U1	to use basic data available on the farm and in veterinary practice	A.U20, O.U10	written credit
Social competences – Student is ready to:			
K1	to make up the decisions based on economical backgroud	O.K5	observation of student’s work
K2	a proper use of objective data	O.K4	observation of student’s work

Balance of ECTS points

Activity form	Activity hours*
auditorium classes	15
practical classes	15

Student workload	**Hours** 30	**ECTS** 1.0
Workload involving teacher	**Hours** 30	**ECTS** 1.0
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	1. Market - construction, role and functions of the market, 2. Consumers and clients, target group, market size, changes and dynamics of the market growth 3. Veterinary service market as a brand, market nish 4. Macroeconomics - world's economy, gross national income, domestic income 5. Microeconomics - demand and supply, demand annd supply curve, trade balance 6. National budget and budgeting, national impact on economy, social level of life 7. Country and administration and its role in free market, impact and control and stimulation 8. Economic account - profit and profitability, economic planning, pricing of veterinary service, income and profit 9. Cost in bussiness - kinds of expenditures, cost analysis, cost in veterinary practice as a bussiness 10. Veterinary service costs - costs of health of farm and companion animals, costs of therapy	auditorium classes
2.	1. Private veterinary practice - categories of rpactices, size, control 12. Specialized veterinary service - pricing, high costs and high income and high profit 13. Privet veterinary practice - market surroundings 14. Private veterinary practice - registration, staff qualification. 15. Final assessment work.	practical classes

Course advanced

Teaching methods:

situation-based learning, problem-solving method, classes

Activities	Examination methods	Percentage in subject assessment
auditorium classes	written credit, observation of student’s work, active participation	80%
practical classes	written credit	20%

Entry requirements

None.

Literature

Obligatory

1. “Economics” , Soman “Core economics”, Stone “Veterinary practice management. A practical guide”, M. Shilcock , Saunders 2005 “Managing Veterinary Practice”, Caroline Jevring-Back, Saunders Elsevier 2007

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

OHS and fire protection training

Educational subject description sheet

Basic information

Field of study all	**Education cycle** 2024/25
Speciality -	**Subject code** 00000000WS.J1A.1493.24
Department Wrocław University of Environmental and Life Sciences	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** mandatory
Study form Full-time	**Block** general subjects
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills No

Teacher responsible for the subject	Joanna Markowska
Other teachers conducting classes	Joanna Markowska

Period	**Examination**	**Number of ECTS points**
Semester 1	credit **Activities and hours** e-learning lecture: 4	0.0

Goals

C1	To familiarize students with the principles of health and safety and fire protection during their stay at the university, preventing and protecting students against accidents

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Skills – Student can:			
U1	be cautious at the university, identify and counteract hazards effectively, and identify harmful and nuisance factors in laboratories and rooms		written credit
U2	provide first aid to victims in certain accidents, behave properly in situations of danger to health and life		written credit
U3	behave properly in the event of a fire and evacuate yourself and other persons at risk from the building		written credit
Social competences – Student is ready to:			
K1	recognise the importance of the impact of their behaviour on their own safety and that of other students/employees of the university		written credit
K2	understanding the importance of health and safety and fire protection for the health and life of students / university employees		written credit
K3	understand the consequences of non-compliance with health and safety rules		written credit

Balance of ECTS points

Activity form	Activity hours*	
e-learning lecture	4	
Student workload	**Hours** 4	**ECTS** 0.0
Workload involving teacher	**Hours** 4	**ECTS** 0.1

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	The subject matter of the course is health and safety at work in terms of legal basis and prevention activities, first aid, as well as organization of fire protection at the University. The subject is conducted in the form of a blended learning course on the Moodle platform. The course includes four modules: - Module 1: Selected legal issues - Module 2 Health and Life Threats - Module 3 First Aid - Module 4 Fire protection	e-learning lecture

Course advanced

Teaching methods:

lecture, educational film

Activities	Examination methods	Percentage in subject assessment
e-learning lecture	written credit	100%

Literature

Obligatory

1. Ustawa z dnia 20 lipca 2018 r. Prawo o szkolnictwie wyższym (Dz.U. 2018 poz. 1668)
2. Rozporządzenie Ministra Nauki i Szkolnictwa Wyższego z dnia 30 października 2018 r. w sprawie sposobu zapewnienia w uczelni bezpiecznych i higienicznych warunków pracy i kształcenia (Dz.U. 2018 poz. 2090).

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Animal anatomy II

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J2BO.0069.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** Yes **Subject shaping practical skills** No

Teacher responsible for the subject	Maciej Janeczek
Other teachers conducting classes	Maciej Janeczek, Karolina Goździewska-Harłajczuk, Aleksandra Rozwadowska

Period	**Examination**	**Number of ECTS points**
Semester 2	exam **Activities and hours** lecture: 30 laboratory classes: 60	8.0

Goals

C1	Understanding of animal anatomy.
C2	Dissection of the corpses.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	knows the structure of the organism of dog, cat, horse, cow, pig.	A.W1	test, participation in discussion
W2	knows the structure, activity and regulation mechanisms of organs and systems of the dog, cat, horse, cow, pig as well as their integration at the organism level.	A.W2	test, participation in discussion
W3	knows the Polish and Latin veterinary nomenclature regarding the anatomy of a dog, cat, horse, cow, pig.	A.W20	test, participation in discussion
Skills – Student can:			
U1	knows explain the anatomical basis of physical examination, including the anatomical structure of a dog, cat, horse, cow, pig.	A.U6	oral credit, observation of student’s work, test, practical training report
U2	recognize in the images from the optical microscope the histological structures corresponding to organs, tissues and cells, describe them, interpret their structure and the relationship between their structure and function, in dogs, cats, horses, cows and pigs.	A.U8	observation of student’s work, practical training report
U3	listen and respond in a language that is understandable and appropriate to the situation.	A.U13	observation of student’s work, participation in discussion, practical training report
Social competences – Student is ready to:			
K1	uses the objective sources of information about animal anatomy	O.K4	observation of student’s work
K2	deepens of knowledge and improves skills about animal anatomy	O.K8	observation of student’s work
K3	communicates with the co-workers and shares of knowledge.	O.K9	observation of student’s work

Balance of ECTS points

Activity form	Activity hours*
lecture	30
laboratory classes	60
class preparation	20
exam / credit preparation	70
collecting and studying literature	30
consultations	30

Student workload	**Hours** 240	**ECTS** 8.0
Workload involving teacher	**Hours** 120	**ECTS** 4.0
Practical workload	**Hours** 60	**ECTS** 2.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Respiratory system (lower respiratory tract) 2 2. Urinary system 3. Male genital organs 4. Female genital organs 5. Structure of the blood vessels, heart and blood vessels of the chest 1 6. Blood vessels of the abdomnial cavity and pelvic cavity 7. Nervous system (general structure and function of nervous system) 1 8. Nervous system (brain) 2 9. Nervous system (spinal cord and spinal nerves) 3 10. Nervous system (autonomic nervous system) 4 11. Endocrine glands 12. Eye 13. Vestibulocochlear organ 14. Immune system and lymphatic organs 15. Common integument	lecture

2.	1. Pelvic limb muscles, nerves and vessels 1 2. Pelvic limb muscles, nerves and vessels 2 3. Pelvic limb muscles, nerves and vessels 3 4. Pelvic limb muscles, nerves and vessels 4 5. Pelvic limb muscles, nerves and vessels 5 6. Analysis of the material and test 7. Chest 1 8. Chest 2 9. Chest 3 10. Chest 4 11. Analysis of the material and test 12. Abdominal cavity 1 13. Abdominal cavity 2 14. Abdominal cavity 3 15. Abdominal cavity 4 16. Abdominal cavity 5 17. Analysis of the material and test 18. Pelvic cavity 1 19. Pelvic cavity 2 20. Pelvic cavity 3 21. Pelvic cavity 4 22. Analysis of the material and test 23. Head splanchnology 1 24. Head splanchnology 2 25. Head splanchnology 3 26. Head splanchnology 4 27. Head splanchnology 5 28. Analysis of the material and test	laboratory classes

Course advanced

Teaching methods:

educational film, classes, lecture, teamwork, situation-based learning

Activities	Examination methods	Percentage in subject assessment
lecture	test, participation in discussion	50%
laboratory classes	oral credit, observation of student’s work, test, participation in discussion, practical training report	50%

Entry requirements

Animal anatomy I

Literature

Obligatory

1. Horst Erich König, Hans-Georg Liebich.: Veterinary Anatomy of Domestic Animals: Textbook and Colour Atlas. Georg Thieme Verlag, 2020
2. Budras K-D., McCarthy P., H., Ficke W., Richter R. 2010. Anatomy of the dog. Hannover.

Optional

1. Budras K-D., Sack W., O., Rock S.: Anatomy of the horse. Schlutersche, 2012
2. Budras K-D., Habel R., E., Mülling Ch., W. i inni: Bovine Anatomy. Schlütersche, 2003

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Animals in research and education

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J2BO.3765.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Magdalena Lis
Other teachers conducting classes	Magdalena Lis, Dorota Miśta, Kamila Bobrek

Period Semester 2	**Examination** graded credit **Activities and hours** lecture: 16 laboratory classes: 14	**Number of ECTS points** 2.0

Goals

C1	Acquisition of knowledge in the field of ethical principles regarding work with animals. Sensitization on symptoms of suffering, pain and distress in animals.
C2	Students acquire knowledge in the field of applicable Polish regulations concerning animal purchase, husbandry and care, as well as preparing animals for procedures for scientific or education purposes.
C3	Familiarize students with the basics of anatomy, physiology and species-specific behavior in laboratory animals in order to understand their needs and provide the best possible conditions to reduce suffering and distress.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	national legislation concerning the animal purchase, husbandry, care, using animals for scientific or education purposes, as well as ethical principles regarding work with animals.	A.W22, O.W14, O.W8	written credit, case study
W2	safety rules and hygiene at work with animals and the mechanisms underlying well-being animals, as well as abnormalities leading to disorder of this state and the creation of distress.	O.W1, O.W2	written credit, observation of student’s work, performing tasks, case study
W3	behavior, physiology and anatomy as well as the principles of keeping selected species of animals in laboratory conditions, and understands the correlation between factors that disturb the balance of biological processes of the animal body and behavior.	A.W11, A.W2	written credit, case study
Skills – Student can:			
U1	analyze and interpret changes in behavior, condition and physiology, and based on them draw conclusions about the current needs of the animal in order to avoid or reduce suffering and distress.	A.U4, O.U4	observation of student’s work, participation in discussion
U2	use acquired animal handling skills during scientific research, taking into account biology and species specificity, in order to improve animal welfare.	A.U19	performing tasks, case study
U3	interpret the responsibility of the student and the scientist in regard to the animal during scientific experiments and teaching activities with the use of animals.	A.U16	participation in discussion, case study
Social competences – Student is ready to:			
K1	exhibit responsibility for his/her decisions made in regard to the people, animals and the natural environment during scientific research and teaching activities.	O.K1	participation in discussion, case study
K2	have an attitude consistent with ethical principles and undertake actions based on the code of ethics in work with animals.	O.K2	participation in discussion, case study
K3	deepen his/her knowledge and improve skills related to ensuring the welfare of laboratory animals and reducing their suffering and distress.	O.K8	observation of student’s work, participation in discussion, case study

Balance of ECTS points

Activity form	Activity hours*
lecture	16
laboratory classes	14
lesson preparation	10
exam / credit preparation	12
consultations	6
report preparation	2

Student workload	**Hours** 60	**ECTS** 2.0
Workload involving teacher	**Hours** 36	**ECTS** 1.3
Practical workload	**Hours** 16	**ECTS** 0.6

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Ethical principles of dealing with animals (1h). Safety rules and hygiene at work with animals intended for use or used in procedures (1h). 2. Applicable polish legislation on the protection of animals used for scientific or educational purposes. Ethical committees for animal experiments (2h). 3. Husbandry and breeding of animals intended for use or used in procedures, taking into account the biology of the species and genetics. Standards of keeping the animals and methods to enrich their environment. Daily care of the animals. Caring for the health and hygiene of animals (2h). 4. The basic knowledge concerning of anatomy and physiology of animals intended for use or used in procedures (2h). 5. Basic types of animal behavior. Recognition of species-specific signs of distress, pain and suffering in animals intended for use or used in procedures (2h). 6. Preparation of animals for the procedure. Species-specific methods and procedures for handling animals intended for use or used in procedures (1h). Anesthesia and methods of pain relief. Influence of anesthetics and analgesics on the result of the experiment (1h). 7. Principles of replacement, reduction and refinement. Methods alternative to experiments with the use of animals (2h). 8. Methods of animals euthanasia, application of early and humane completion of the procedure (2h).	lecture

2.	1. Arguments for and against the use of animals for scientific or educational purposes (1h). General principles of PBL (Problem-Based Learning). Division into teams and familiarize students with the contents of PBL task (1h). 2. Practical aspects of hygiene and safety at work with animals intended for use or used in procedures (2h). 3. Presentation of the chosen types of breeding of animals intended for use or used in procedures, taking into account the biology of the species and genetics and the application of appropriate standards for keeping these animals and enriching their environment. Practical application of the standards of keeping experimental animals (in accordance with law) in centers at the Wroclaw University of Environmental and Life Sciences (2h). 4. Practical classes using phantoms of laboratory animals concerning preparation of animals for procedures and methods of handling animals intended for use or used in procedures, taking into account species-specific forms of animal behavior (2h). 5. Recognition of species-specific signs of distress, pain and suffering in animals intended for use or used in procedures - practical part (1h). Basic principles and techniques used to anesthetize and relieve pain in animals (1h). 6. Practical aspects related to husbandry and breeding of animals intended for use or used in procedures, taking into account the biology of the species and genetics as well as the standards of keeping these animals and methods to enrich their environment. Daily care of animals (1h). A test checking knowledge from lectures and classes (1h). 7. Presentation of PBL tasks reports by individual teams of students (2h). Laboratory classes (14 hours) are carried out for 7 weeks, classes take place every other week.	laboratory classes

Course advanced

Teaching methods:

problem-based learning (PBL), practical simulation training, classes, case analysis, brainstorming, educational film, problem-solving method, presentation / demonstration, teamwork, discussion, lecture

Activities	Examination methods	Percentage in subject assessment
lecture	written credit	50%
laboratory classes	written credit, observation of student’s work, participation in discussion, performing tasks, case study	50%

Entry requirements

Animal anatomy I, Environmental protection

Literature

Obligatory

1. Directive 2010/63/EU of the European Parliament and of the Council of 22 September 2010 on the protection of animals used for scientific purposes.

Optional

1. National Research Council. 2008. Recognition and Alleviation of Distress in Laboratory Animals. Washington, DC: The National Academies Press. https://doi.org/10.17226/11931

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Biochemistry I

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J2BO.0168.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** mandatory
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** Yes
	Subject shaping practical skills Yes

Teacher responsible for the subject	Arkadiusz Miążek
Other teachers conducting classes	Arkadiusz Miążek, Liliana Kiczak, Krzysztof Grzymajło

Period Semester 2	**Examination** graded credit **Activities and hours** lecture: 45 laboratory classes: 45	**Number of ECTS points** 6.0

Goals

C1	The course provides students with the knowledge on chemical structure and biological properties of proteins, nucleic acids, carbohydrates and lipids, basic metabolic pathways in animal cells, their energetics and regulatory mechanisms as well as basic information pathways and recombinant DNA technology. The course provides some practical training in basic laboratory procedures. After completing the course student acquires the knowledge and terminology necessary to understand biochemistry, molecular biology, physiology, genetics, microbiology, etc.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	characterises in detail the metabolic processes at the molecular, cellular, organ and system levels	A.W4	written credit, test
W2	knows to an extensive degree and understands the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, herd of animals, to the entire animal population;	A.W10	written credit, test
Skills – Student can:			
U1	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	observation of student’s work, test
U2	uses the basic laboratory techniques, such as: qualitative analysis, titration, colourimetry, pH-metry, chromatography and electrophoresis of proteins and nucleic acids	A.U2	observation of student’s work, test
U3	predicts the direction of biochemical processes, depending on the energy state of the cells	A.U5	observation of student’s work, test
U4	calculate molar and percentage concentrations of glucose, triglycerides, cholesterol in body fluids	A.U3	observation of student’s work, test
Social competences – Student is ready to:			
K1	uses the objective sources of information	O.K4	observation of student’s work, test
K2	deepens his/her knowledge and improves skills	O.K8	observation of student’s work, test

Balance of ECTS points

Activity form	Activity hours*
lecture	45
laboratory classes	45
exam / credit preparation	30
consultations	15
class preparation	15
collecting and studying literature	10

Student workload	Hours	ECTS
	160	6.0

Workload involving teacher	**Hours** 105	**ECTS** 4.0
Practical workload	**Hours** 45	**ECTS** 1.7

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	I. Introduction to biomolecules II. Proteins: the relationship between structure and function III. Biological membranes; IV. Enzymology I V. Enzymology II VI. Bioenergetics VII. The carbohydrate metabolism I VIII The carbohydrate metabolism II IX. The lipid metabolism I X. The lipid metabolism II XI. The lipid metabolism III XII. The nitrogen compound metabolism I XIII. The nitrogen compound metabolism II XIV. The nitrogen compound metabolism III XV. Integration of metabolism	lecture

2.	1. Techniques for measuring liquids with automatic pipettes 2. Assessment of physicochemical properties of proteins 3. Quantitative determination of proteins using the Lowry method 4. Veterinary clinical cases I 5. Determination of the molecular weight of myoglobin using gel filtration 6. Separation of blood serum proteins by ion exchange chromatography 7. Separation of IgG immunoglobulin subunits by electrophoresis 8. Veterinary clinical cases II 9. Determination of trypsin activity 10. Determination of pancreatic amylase activity 11. Biochemical calculations 12. Identification of sugars in animal tissues 13. Determination of the lipid profile in blood serum of cattle 14. Determination of bilirubin in blood serum and bile of dogs 15. Written assessment of lab practicals	laboratory classes

Course advanced

Teaching methods:

problem-solving method, classes, lecture, discussion, teamwork, educational film

Activities	Examination methods	Percentage in subject assessment
lecture	written credit	70%
laboratory classes	written credit, observation of student’s work, test	30%

Entry requirements

General and organic chemistry, biophysics

Literature

Obligatory

1. Biochemistry Ninth Edition| ©2019Lubert Stryer; Jeremy Berg; John Tymoczko; Gregory Gatto
2. Harper's Illustrated Biochemistry Thirty-First Edition 2018, Victor W. Rodwell , By (author) David Bender , By (author) Kathleen M. Botham , By (author) Peter J. Kennelly , By (author) P. Anthony Weil

Optional

1. Lehninger PRINCIPLES OF BIOCHEMISTRY Fourth Edition David L. Nelson (University of Wisconsin–Madison) Michael M. Cox (University of Wisconsin–Madison)
2. Rapid review biochemistry / John W. Pelley, Edward F. Goljan. – 3rd ed. p. ; cm. – (Rapid review series) Rev. ed. of: Biochemistry. 2nd ed. c2007. ISBN 978-0-323-06887-1

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Biology

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J2BO.0227.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Grzegorz Zaleśny
Other teachers conducting classes	Grzegorz Zaleśny, Grzegorz Apoznański

Period	**Examination**	**Number of ECTS points**
Semester 2	graded credit **Activities and hours** lecture: 15 laboratory classes: 30	2.0

Goals

C1	The aim of the course is to acquaint students with basic processes occurring in animate environment. This course will fill the gaps and expand the knowledge in the field of general rules and theories of biological sciences such as definition of organism (e.g. distinguishing parasitic and free-living organisms, description and comparison of the development cycles of parasitic forms, characteristics of selected groups of plants [also in the terms of biologically active substances], morphological and anatomical structure), evolution of organic world and structural organisation of life. Understanding the relationship between structure and function at the level of cells, tissues and organs.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the structure of single and multicellular organisms as well as morphology, structure and taxonomy	A.W2	presentation, test
W2	the systematic division, structure and development of selected taxonomic groups in comparison to a mature organism.	A.W3	presentation, test
Skills – Student can:			
U1	recognise (in the images from optical microscope) histological structures corresponding to organs, tissues and cells, and is able to formulate their description, interpret their structure and relations between their structure and activity, taking into account the animal species from which they originate;	A.U8	observation of student’s work, presentation, test
U2	listen and respond in a language that is understandable and appropriate to the situation	A.U13	observation of student’s work, participation in discussion
U3	work in a multidisciplinary team	A.U15	observation of student’s work, presentation
Social competences – Student is ready to:			
K1	showing responsibility for decisions made towards people, animals and the natural environment	O.K1	observation of student’s work, participation in discussion
K2	using objective sources of information as well as extending knowledge and improving skills	O.K4, O.K8	observation of student’s work, participation in discussion

Balance of ECTS points

Activity form	Activity hours*
lecture	15
laboratory classes	30
class preparation	10

Student workload	**Hours** 55	**ECTS** 2.0
Workload involving teacher	**Hours** 45	**ECTS** 1.7
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Basic definitions in biology 2. Overview of systematics and taxonomy, part 1 3. Overview of systematics and taxonomy, part 2 4. Phylogeny and evolution, part 1 5. Phylogeny and evolution, part 2 6. Overview of selected taxa (Protists) 7. Overview of selected taxa (Plants) 8. Overview of selected taxa (Metazoa) 9. Introduction to ecology, part 1 10. Introduction to ecology, part 2 11. Basic concepts in conservation biology 12-15. Animal's and plant's basic physiological processes	lecture
2.	1. Concepts and definitions in cell biology 2. Overview of Protists 3. Overview of Metazoa: Porifera and Cnidaria 4. Overview of Metazoa: Platyhelminthes 5. Overview of Metazoa: Nematoda 6. Overview of Metazoa: Annelida 7. Overview of Metazoa: Arthropoda 8. Collection of Arthropods in the field 9. Identification of Arthropods 10. Overview of Metazoa: Mollusca 11. Overview of Metazoa: Chordata, part 1 12. Overview of Metazoa: Chordata, part 2 13. Overview of Metazoa: Chordata, part 3 14. Plant diversity, part 1 15 Plant diversity, part 2	laboratory classes

Course advanced

Teaching methods:

discussion, presentation / demonstration, classes, lecture

Activities	Examination methods	Percentage in subject assessment
lecture	test	50%
laboratory classes	observation of student's work, presentation, test, participation in discussion	50%

Literature

Obligatory

1. Urry L., Cain M., Wasserman S., Minorsky P., Reece J. Campbell Biology 11th Edition. 2017. Pearson
2. Miller S., Harley J. Zoology 10th Edition. 2014. McGraw Hill
3. Mason K., Johnson G., Losos J.,Singer S. Understanding Biology 2nd Edition. 2018. McGraw-Hill

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IT

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J2AO.1026.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** mandatory
Study form Full-time	**Block** general subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills Yes

Teacher responsible for the subject	Sebastian Ploch
Other teachers conducting classes	Anna Zwyrzykowska-Wodzińska

Period Semester 2	**Examination** graded credit **Activities and hours** laboratory classes: 30	**Number of ECTS points** 2.0

Goals

C1	The purpose of the course is to familiarize students with the basics of issues in computer data processing of various types, the tools and services used for this purpose, taking into account Internet methods.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	presents the basic IT and biostatistic methods used in veterinary medicine.	O.W15	test
Skills – Student can:			
U1	use and process information, applying IT tools and using modern sources of knowledge	C.U3	test
Social competences – Student is ready to:			
K1	enhance knowledge and improve skills	O.K8	observation of student's work
K2	communicates with the co-workers and shares knowledge	O.K9	observation of student's work
K3	use the objective sources of information	O.K4	observation of student's work

Balance of ECTS points

Activity form	Activity hours*
laboratory classes	30
lesson preparation	10
consultations	2
exam / credit preparation	10

Student workload	**Hours** 52	**ECTS** 2.0
Workload involving teacher	**Hours** 32	**ECTS** 1.1
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	1. Subject of IT; types of data; data processing history; structure and evolution of the computer hardware. 2. Operating system of the personal computer (goals, construction, examples); computer-human interaction (history and overview); Operating system installation on the PC (selected Linux distribution); software included in the OS; Basics of author law and kinds of computer software licences - part 1 3. Operating system of the personal computer (goals, construction, examples); computer-human interaction (history and overview); Operating system installation on the PC (selected Linux distribution); software included in the OS; Basics of author law and kinds of computer software licences - part 2 4. Text editing application (Writer/LibreOffice package) – environment, page/document formatting (breaks, symbols, header&footer, fields, footnotes, page numbering, margins, etc.), tables, graphical objects, embedding objects from external sources, hypertext, mail merge - part 1 5. Text editing application (Writer/LibreOffice package) – environment, page/document formatting (breaks, symbols, header&footer, fields, footnotes, page numbering, margins, etc.), tables, graphical objects, embedding objects from external sources, hypertext, mail merge - part 2 6. Spreadsheet (Calc/LibreOffice package) – environment, cell formatting, conditional formatting, references, functions (math, text, logical), data sorting, charts, pivot tables, subtotals - part 1 7. Spreadsheet (Calc/LibreOffice package) – environment, cell formatting, conditional formatting, references, functions (math, text, logical), data sorting, charts, pivot tables, subtotals - part 2 8. Computer graphics – types and representing methods (bitmap, vector, file formats, compression), color space, sample applications (GIMP, Inkscape) - part 1 9. Computer graphics – types and representing methods (bitmap, vector, file formats, compression), color space, sample applications (GIMP, Inkscape) - part 2 10. Internet – history, network services and their evolution, Internet tools and resources, threats on the Internet, data security and confidentiality. 11. Databases – types, relational databases, database query languages, examples - part 1 12. Databases – types, relational databases, database query languages, examples - part 2 13. New data processing techniques – artificial intelligence, Big Data, machine learning, natural language processing. 14. Methods and measurements of the scientific articles/journals – national and international classifications systems and their base, pros and cons of rankings; knowledge bases – practical usage with Internet access. 15. Methods and measures for evaluating scientific papers: PubMed, ScienceDirect, BlackwellSynergy databases, etc.; access to knowledge databases through the University library	laboratory classes

Course advanced

Teaching methods:

teamwork, classes, computer lab/laboratory

Activities	Examination methods	Percentage in subject assessment
laboratory classes	observation of student’s work, test	100%

Literature

Obligatory

1. Any literature (books, magazines, Internet) related to the topics discussed

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

General and veterinary genetics

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J2BO.0756.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Maciej Zacharski
Other teachers conducting classes	Maciej Zacharski

Period Semester 2	**Examination** graded credit **Activities and hours** lecture: 15 laboratory classes: 15	**Number of ECTS points** 2.0

Goals

C1	During the course, students learn the rules of inheritance and mechanisms generating genetic diversity. The course aims to familiarize students with the rules of inheritance of innate traits, mechanisms of genetic diversity generation at the level of a single organism and population, and the importance of genetics in the diagnostics of animal and human diseases.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	principles of inheritance of monogenic diseases, qualitative and quantitative traits, the concept of gene linkage and sex linkage, and the basics of molecular biology used in the process of genetic disorders diagnostics.	A.W14	active participation, test, performing tasks
Skills – Student can:			
U1	conduct an experiment using mating of various fruit fly strains and, based on them, analyze the traits' inheritance pattern.	A.U9	project, active participation, performing tasks
U2	analyze trait pedigrees of people and individuals from other animal species.	A.U9	active participation, test
U3	perform a statistical analysis of the results of genetic crosses using the Chi ^ 2 test and prepare a report on the conducted breeding experiment.	O.U10	project, active participation, performing tasks
Social competences – Student is ready to:			
K1	critically analyze sources of information in the field of genetics in order to identify the reliable sources.	O.K4	observation of student’s work, active participation
K2	independently formulate conclusions based on the results of a breeding experiment including an analysis of the inheritance of a selected phenotype determined by one or two genes.	O.K5	observation of student’s work, active participation
K3	efficient cooperation in a group during experiment setup and report preparation, and comprehensively present her/his ideas for solving problems in the field of genetics.	O.K9	observation of student’s work, active participation

Balance of ECTS points

Activity form	Activity hours*
lecture	15
laboratory classes	15
exam / credit preparation	10
consultations	2
project preparation	5
class preparation	2
lesson preparation	5

Student workload	Hours	ECTS
	54	2.0

Workload involving teacher	**Hours** 32	**ECTS** 1.1
Practical workload	**Hours** 15	**ECTS** 0.6

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	1. Organizational information. Introduction to genetics. History of genetics with consideration of key theories that have allowed its development. 2. Definitions of basic concepts. Mendel's laws. Basic information on the chemical structure of genes. 3. Cell divisions with particular emphasis on meiosis as a source of genetic variability. Gametogenesis. 4. Organization of genetic material. Differences between prokaryotic and eukaryotic chromosomes. Structure and morphology of metaphase chromosomes. Application of differential staining. 5. Karyotypes of selected breeding and domestic animals. Examples of aneuploidies. 6. Departures from Mendel's laws. Chromosomal theory of inheritance. Gene linkage. Chromosome mapping. Calculation of map distances using 2- and 3-point crosses. 7. Complete dominance, incomplete dominance, codominance. Multiple alleles, lethal alleles, sublethal alleles, synthetic lethality with examples in animals and humans. Testing carrier status of lethal alleles. 8. Sex determination in mammals, birds, and other animals. Pedigree analysis. Sex-linked and sex-related traits. 9. Interaction of non-allelic genes and quantitative traits. Complementarity, epistasis, complementation, modifying genes with examples in animals. 10. Cumulative genes. Calculation of phenotypic variance using Pascal's triangle. Transgression and heritability. 11. Chemical basis of heredity. Chemical structure of DNA and RNA, DNA structure, molecular processes leading to the copying of genetic information and phenotype expression. Types of RNA. Genetic code. Gene structure. Transcription and translation. 12. Regulation of gene expression and quantitative traits. Levels of gene expression regulation. Mechanism of action of transcription factors. Homeotic genes. Epigenetic mechanisms, concept of genomic imprinting with examples. X chromosome inactivation. 13. Mutations. Types of chromosomal, gene, and point mutations. Mosaicism. Causes of mutations. Physical and chemical mutagens. Concept of carcinogen. Basics of DNA recombination and repair. Monogenic diseases, congenital metabolic disorders. 14. Introduction to population genetics. Basic concepts (population, allele frequency). Hardy-Weinberg equilibrium law. Factors affecting allele frequency in a population. 15. Final test.	lecture

2.	1. Genetic calculations. Mono-, dihybrid crosses, and the crosses of larger numbers of genes. Mendelian genetics calculation. Complete and incomplete dominance. (3 hours) 2. Fruit fly as a model organism for genetic research. Morphology, culture conditions, sexual dimorphism, life cycle and developmental stages. The use of the stereoscopic microscope. Anesthetizing the flies, observation of the mutant strains' phenotypes, and setting up the new cultures. (3 hours) 3. Preparation and staining of the polytene chromosomes from fruit fly larvae salivary glands. Chromosome structure, different types of chromosomes. Setting up the cross of two different strains of fruit flies. (3 hours) 4. The molecular diagnostics of the ivermectin hypersensitivity in dogs. Polymerase chain reaction, agarose gel electrophoresis. Phenotyping of the progeny (F1) of crossed fruit fly strains. Transferring of the fruit fly progeny to the new culture tube (F1xF1). (3 hours) 5. Phenotyping and counting of the fruit fly second generation (F2). Creating phenotypic ratios. Chi2 test. Preparation of lab reports and calculations. Population genetics calculation practice examples. (3 hours)	laboratory classes

Course advanced

Teaching methods:

teamwork, educational game, classes, lecture, discussion, presentation / demonstration, educational film

Activities	Examination methods	Percentage in subject assessment
lecture	test	40%
laboratory classes	project, observation of student's work, active participation, performing tasks	60%

Entry requirements

General knowledge of genetics on the high-school level as expected for biology/chemistry profile.

Literature

Obligatory

1. Frank W. Nicholas. Introduction to Veterinary Genetics, Wiley-Blackwell 3rd Edition, 2009, ISBN: 978-1-405-16832-8

Optional

1. Alison Thomas, Introducing genetics, Garland Science, Taylor & Francis Group, LLC, 2nd ed., 2015
2. Nature Education, Genetics: https://www.nature.com/scitable/topic/genetics-5/
3. T.A. Brown, Genomes 4, Garland Science, Taylor & Francis Group, LLC, 1st ed., 2018
4. T.A. Brown, Genomes 2, Garland Science, 2002, https://www.ncbi.nlm.nih.gov/books/NBK21128/

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Histology and embryology II

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J2BO.0885.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** Yes **Subject shaping practical skills** Yes

Teacher responsible for the subject	Piotr Kuropka
Other teachers conducting classes	Piotr Kuropka, Małgorzata Tarnowska

Period	**Examination**	**Number of ECTS points**
Semester 2	exam **Activities and hours** lecture: 30 laboratory classes: 30	4.0

Goals

C1	The aim of the course is to familiarize students with the organs structure and acquaintance with the basic aspects of their histophysiology. The student gains experience in use of microscope and histological techniques. The student is familiarized with embryonic and fetal development of animals from conception to the early postpartum period.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the microscopic structure, activities and mechanisms of regulation of organs and systems of the animal organism and their integration at the level of the body	A.W2	written exam, test, Recognition microscope slides
W2	the development of organs and the whole animal organism in relation to a mature organism, describes and understands embryogenesis	A.W3	written exam, test, Recognition microscope slides
W3	English and Latin medical nomenclature	A.W20	written exam, test
Skills – Student can:			
U1	recognize in images from an optical microscope histological structures corresponding to organs, tissues and cells discussed during classes, recognizes species differences i.e digestive and respiratory systems of mammals and birds	A.U8	written exam, test, Recognition microscope slides
Social competences – Student is ready to:			
K1	Demonstrate responsibility towards people and animals	O.K1	observation of student’s work
K2	Use objective sources of information	O.K4	observation of student’s work
K3	Formulate own conclusions	O.K5	observation of student’s work
K4	Deepen knowledge and skills	O.K8	observation of student’s work
K5	Communicate with other students and share knowledge	O.K9	observation of student’s work

Balance of ECTS points

Activity form	Activity hours*
lecture	30
laboratory classes	30
lesson preparation	45
consultations	2
exam / credit preparation	12
exam participation	1

Student workload	Hours	ECTS
	120	4.0

Workload involving teacher	**Hours** 63	**ECTS** 2.2
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Digestive system I- General structure of the digestive system. Formation and development of the primary gut- 2 hours. 2. Digestive system II- Differentiation of the foregut. Odontogenesis -2 hours 3. Digestive system III. Midgut differentiation - development of the liver and pancreas. Histological structure of individual sections of the digestive tract. -2 hours. 4. Digestive system IV- Intramural and extramural glands. Structures involved in the processes of digestion and absorption. Structures involved in the regulation of digestive tract functions - 2 hours. 5. Respiratory system. Development and histological structure of the nasal cavity, larynx, trachea and lungs. The blood-air barrier. The lungs of birds. - 2 hours 6. Urinary system. Development and histological structure of the kidney. Ultrafiltration barrier. Urinary tracts. -2 hours 7. Male reproductive system. Development and histological structure of the male gonad. Semen excretory ducts. 2 hours 8. Male reproductive system II. Male accessory sex glands. -2 hours 9. Female reproductive system. Development and histological structure of the female gonad, fallopian tube and uterus. -2 hours. 10. Female reproductive system II. Ovarian cycle and uterine cycle - 2 hours 11. Nervous system I. Development and histological structure of central and peripheral nervous system. -2 hours. 12. Nervous system II. Nerve synapses. The formation of nerve processes and the specificity of CNS development. -2 hours. 13. Outer integument I. Histological structure of the skin. Skin glands. Horn products - 2 hours 14. Skin glands. Keratinized products of epitheliumin in various animals - 2 hours 15. Development of the common integument - 2 hours.	lecture

2.	1. Digestive system I - tongue, taste buds, salivary glands, teeth - 2 hours 2. Digestive system II - esophagus, foreguts, stomach - 2 hours 3. Digestive system III - small intestine: duodenum, jejunum, ilium, large intestine: colon. - 2 hours. 4. Digestive system IV - pancreas, liver - 2 hours. 5. Wrap- up session- 2 hours. 6. Respiratory system - trachea, lungs - 2 hours. 7. Urinary system - kidney, ureter, urinary bladder - 2 hours 8. Female reproductive system - ovary, fallopian tube, uterus. - 2 hours 9. Male reproductive system - testis with epididymis, vas deferens - 2 hours. 10. Wrap-up session - 2 hours 11. Nervous system I - intervertebral ganglion, spinal cord, cerebellum, brain. -2 hours. 12. Nervous system II - sensory organs - eye (front part), eye (back part) - 2 hours. 13. The Integument - skin, hair, hoof, mammary gland. -2 hours. 14. Wrap- up session - 2 hours 15. Repair and distraction osteogenesis - 2 hours.	laboratory classes

Course advanced

Teaching methods:

classes, lecture, problem-solving method

Activities	Examination methods	Percentage in subject assessment
lecture	written exam	50%
laboratory classes	observation of student’s work, test, Recognition microscope slides	50%

Entry requirements

Biology and chemistry at basic level. Histology I course

Literature

Obligatory

1. Dellmann's Textbook of Veterinary Histology with CD, Eurell, J.A.C. and Frappier, B.L. and Dellmann, H.D. Wiley 2006, ISBN 0781741483, 9780781741484
2. Color Atlas of Veterinary Histology, Bacha, W.J. and Bacha, L.M. Wiley, ISBN 2000 0683306189, 9780683306187
3. Veterinary Histology of Domestic Mammals and Birds: Textbook and Colour Atlas, Liebich, H.G. and Klupiec, C., 5m Publishing, 2019

Optional

1. Textbook of Veterinary Histology, Samuelson, D.A. Saunders-Elsevier 2007
2. Veterinary Histology, Jennings, R. and Premanandan, C., Ohio State University, 2017
3. General Histology of the Mammal, Krstic Radivoj V. Springer- Verlag 1985, ISBN 978-3-642-70420-8

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Veterinary history and deontology

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J2BO.2642.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** No

Teacher responsible for the subject	Aleksander Chrószcz
Other teachers conducting classes	Aleksander Chrószcz

Period Semester 2	**Examination** graded credit **Activities and hours** lecture: 15	**Number of ECTS points** 1.0

Goals

C1	The course aims to present students with information concerning veterinary history, its development and achievements from Antiquity until today as well as instilling passion and pride for their future profession. Students also obtain essential information on professional ethics as well as rights and obligations of veterinary surgeon in contemporary professional and social life.
C2	Students identify and describe the crucial persons and events during the medicine development process.
C3	Students understand the close relation between veterinary and human medicine history.
C4	Students understand the role of ethic and veterinary deontology in veterinary practices.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	describes legal standards associated with the activities of veterinary physicians; describes the history and development of veterinary as a branch of science and profession, presents the functioning of institutions associated with veterinary activities and the social role of a veterinary physician,	O.W14	presentation, test
W2	knows and understands the English and Latin medical nomenclature; knows and understands etymology, history and development of the most important terminology used in human medicine and veterinary medicine,	A.W20	test
W3	knows and understands the veterinary physician’s code of ethics; knows and understands the history of changing views on the place and role of animals in the world of people and their mutual relations,	A.W22	test
W4	presents the concepts in the scope of intellectual property protection; knows and understands examples of changes in the concept of intellectual property in history,	A.W23	test
W5	describes legal standards associated with the activities of veterinary physicians; knows and understands the functioning of the institution of activity with veterinary activities and the task of a doctor veterinary; knows and understands the history of the animal health control system and the quality of animal products supervision.	O.W14	test
Skills – Student can:			
U1	communicates with the clients and other veterinary physicians; is able to use the rules resulting from the code of ethics and veterinary deontology,	A.U12	observation of student’s work
U2	is able to listen and provide answers with the use of understandable language, appropriate to the given situation; is able to use veterinary terminology resulting from the common tradition of human and veterinary medicine,	A.U13	observation of student’s work, presentation
U3	is able to work in a multidisciplinary team,	A.U15	observation of student’s work, presentation

U4	interprets the responsibility of veterinary physician in regard to the animal, its owner, society, as well as the natural environment resulting from the history of the profession and the code of ethics and veterinary deontology,	A.U16	test
U5	assesses the economic and social conditions, in which the profession of veterinary physician is performed resulting from the history of the profession and the code of ethics and veterinary deontology,	A.U18	test
U6	understands the need of continuing education, in order to ensure continuous professional development resulting from the history of the profession and the code of ethics and veterinary deontology.	A.U21	observation of student's work
Social competences – Student is ready to:			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment resulting from the history of the profession and the code of ethics and veterinary deontology,	O.K1	observation of student's work
K2	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions taking into account the principles resulting from historical experience and the code of ethics and veterinary deontology,	O.K2	observation of student's work
K3	participates in resolution of the conflicts and exhibits flexibility in reactions to social changes resulting from historical experience and the code of ethics and veterinary deontology,	O.K3	observation of student's work
K4	is ready for reliable self-assessment, formulating constructive criticism in the scope of veterinary practice, accepting criticism of presented solutions, reacting to such criticism in a clear and material manner, also with the use of arguments referring to the available scientific achievements in the discipline resulting from historical experience and the code of ethics and veterinary deontology,	O.K7	observation of student's work
K5	gets involved in the activities of professional and local government organizations resulting from historical experience and the code of ethics and veterinary deontology.	O.K12	observation of student's work

Balance of ECTS points

Activity form	**Activity hours***
lecture	15
exam / credit preparation	5
presentation/report preparation	5
class preparation	5

Student workload	**Hours** 30	**ECTS** 1.0
Workload involving teacher	**Hours** 15	**ECTS** 0.6

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	Lecture I – Introduction, myth and symbol in history of medicine and veterinary. Ancient Greece mythology and medicine. Lecture II – Ancient Mesopotamia – The first receipts and veterinarians. Ancient Egypt – animal mummies, medicine, veterinary and breeding. Lecture III – Ancient Rome – Empire, medicus veterinarius, Roman science organization, Byzantine Empire – the main bridge between ancient and medieval world. Lecture IV – Medieval – Is it dark enough in Middle Ages? Humanity and sciences in medieval Europe. Arabic medical sciences. Lecture V – Renaissance – New spring of old scientific tradition. Scientific transfer form Antiquity to Modernity. Lecture VI – 1st partial exam (Antiquity to Medieval – Lectures I – V). Lecture VII – Early modern biological and medical literature in Poland. The rise, development and fall of strange country in the middle of Europe. Meat and animal products history. Slaughter and slaughter houses. Lecture VIII – Modernity – New discoveries and inventions of XIX century, development and perspectives of medicine. Lecture IX – The birth of modern veterinary sciences. Schools for veterinarians in Europe. Lecture X – The history of polish veterinary schools, basic historic context. Lemberg-Wroclaw tradition. Lecture XI – History of veterinary journals and veterinarians organization, Polish example – between Prussia, Austria and Russia. Lecture XII – Main problems of veterinary deontology. Lecture XIII – 2nd partial exam (Modernity to Deontology – Lectures VIII – XIII). Lecture XIV – Archaeozoology – between history and modernity, animal-human-environment relation in time. Lecture XV – 2nd term of all partial exams.	lecture

Course advanced

Teaching methods:

lecture, discussion, teamwork, presentation / demonstration

Activities	Examination methods	Percentage in subject assessment
lecture	observation of student’s work, presentation, test	100%

Literature

Obligatory

1. Dunlop R., H., Williams D., J.: Veterinary Medicine. An Illustrated History. Mosby Yaer Book, Inc. 1996.

Optional

1. von den Driesch A., Peters J.: Geschichte der Tiermedizin. 5000 Jahre Tierheilkunde. Schattauer. 2003.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Physical education-Sports

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J6AO.1570.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** mandatory
Study form Full-time	**Block** general subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills Yes

Teacher responsible for the subject	Piotr Marszał
Other teachers conducting classes	Piotr Marszał, Piotr Gliniak, Andrzej Zarzycki, Jan Ciesielski

Periods Semester 2, Semester 3	**Examination** graded credit **Activities and hours** physical education PE: 30	**Number of ECTS points** 0.0

Goals

C1	Developing skills in assessing own physical fitness.
C2	Increasing the awareness around healthy lifestyle.
C3	Introduction to health and safety rules during physical activity.
C4	Developing personal and social skills enhancing lifelong physical activity.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Skills – Student can:			
U1	maintains physical fitness that is required for the work with certain animal species	O.U12	observation of student’s work, active participation

Balance of ECTS points

Activity form	Activity hours*	
physical education PE	30	
Student workload	**Hours** 30	**ECTS** 0.0
Workload involving teacher	**Hours** 30	**ECTS** 1.0
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	Students choose the type of class before the semester start from the offer available on the webpage of Department of Physical Eduacation and Sport as well as the USOS system. Registration is done via the electronic system in place. Particular classes are designed based on the chosen sport discipline and is enhances by additional elements such as warm-up or strechting exercises. Detailed list of available classes can be found on this webpage: https://swfis.upwr.edu.pl/en/sports/physical-education	physical education PE

Course advanced

Teaching methods:

Physical activity, PE (physical education), presentation / demonstration

Activities	Examination methods	Percentage in subject assessment
physical education PE	observation of student’s work, active participation	100%

Entry requirements

No medical contraindications to participate in physical education classes.

Literature

Obligatory

1. Michael Boyle "New functional Training for Sports"
2. Mark Rippetoe "Starting strength"

Optional

1. Karl Wadman "Karkonosze - Hiking, Skiing, Cycling"

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Introduction to Polish culture

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J6HS.0993.24 **Lecture languages** english **Mandatory** mandatory **Block** humanities and social sciences **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Anna Cegłowska- McCann
Other teachers conducting classes	Anna Cegłowska- McCann

Period	**Examination**	**Number of ECTS points**
Semester 2	graded credit **Activities and hours** lecture: 15	2.0

Period	**Examination**	**Number of ECTS points**
Semester 3	graded credit **Activities and hours** lecture: 30	2.0

Goals

C1	The course focuses on Polish history, traditions and culture in order to become an ambassador of Poland.
C2	It aims at discussing the influence of the past as well as globalisation on the contemporary condition of Polish society.
C3	The course should influence its participants to develop their intercultural awareness and to promote a stereotype-free cooperation.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	Presents the functioning of institutions associated with veterinary activities and the social role of veterinary physician.	C.W2	written credit
Skills – Student can:			
U1	Effectively communicates with employees of control bodies and offices as well as central and local government administration.	C.U4	active participation
Social competences – Student is ready to:			
K1	Communicates with the co-workers and shares knowledge	O.K9	active participation
K2	Formulates conclusions from own measurements or observations	O.K5	active participation
K3	Deepens his/her knowledge and improves skills	O.K8	active participation
K4	Takes responsibility for his/her decision and exhibits flexibility in reactions to social changes as well as the natural environment	O.K1	active participation

Balance of ECTS points

Semester 2

Activity form	Activity hours*
lecture	15
collecting and studying literature	28
consultations	1

Student workload	**Hours** 44	**ECTS** 2.0
Workload involving teacher	**Hours** 16	**ECTS** 0.6

* hour means 45 minutes

Semester 3

Activity form	Activity hours*
lecture	30
collecting and studying literature	30
consultations	1

Student workload	**Hours** 61	**ECTS** 2.0
Workload involving teacher	**Hours** 31	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Polish national symbols - the flag, the coat of arms, the national anthem. 2. Polish legends and archetypes. 3. History of Poland and its influence on the Polish contemporary society. 4. Wrocław - the city, its inhabitants and history. 5. Polish customs and traditions throught a calendar year. Their roots and observance. 6. The Polish society - its structure, institutions and relationships. 7. International perception of Poland and its culture. 8. The world of animals and plants in Poland. Polish national parks. Veterinary doctors in Poland. 9. Food in Poland. 10. Mountains, lakes and the seacoast in Poland. 11. Education in Poland. 12. Current, important events in Poland. 13. Polish national dances. Folk culture. 14. Polish homes.	lecture

Course advanced

Semester 2

Teaching methods:

presentation / demonstration, lecture, discussion, educational film

Activities	Examination methods	Percentage in subject assessment
lecture	written credit, active participation	100%

Semester 3

Teaching methods:

lecture, discussion, presentation / demonstration, educational film

Activities	Examination methods	Percentage in subject assessment
lecture	written credit, active participation	100%

Literature

Obligatory

1. Suchodolski B.: A History of Polish Culture, Wydawnictwo Interpress, Warszawa 1986
2. Davies N.: God's Playground, Oxford Uniwersity Press, New York 1981
3. Chomątowska B., et al: Live the Polish Way of Life, Znak Publishers, 2019

Optional

1. Davies N., Moorhouse R. : Microcosm. Portrait of a Central European City, Jonathan Cape, London 2002
2. Besala, J.: Polish Symbols. MULTICO Oficyna Wydawnicza, Warszawa 2011
3. Web portal Culture.pl founded by the Adam Mickiewicz Institute in Warsaw

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Spanish language

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.JEJO.2352.24 **Lecture languages** english **Mandatory** optional **Block** foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Agata Sikora-Jańska
Other teachers conducting classes	Agata Sikora-Jańska

Periods	**Examination**	**Number of ECTS points**
Semester 2, Semester 3, Semester 4	graded credit **Activities and hours** e-learning: 4 foreign language (course): 26	2.0

Goals

C1	The student is made acquainted with Spanish medical and veterinary teaching contents required at the minimum B2+ level for the purpose of achieving the relevant language competences enabling him/her to function properly both in the working environment and in the academia.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	basic Spanish grammar and vocabulary	C.W1	test
Skills – Student can:			
U1	uses vocabulary and grammatical structures of a foreign language, which constitutes the language of international communication, in the scope of creating and understanding written and oral statements, both general and specialised in the scope of veterinary;	O.U11	oral credit, observation of student's work, active participation, presentation, test, practical training report
Social competences – Student is ready to:			
K1	Communicate with the co-workers and shares knowledge	O.K9	observation of student's work

Balance of ECTS points

Activity form	Activity hours*
e-learning	4
foreign language (course)	26
consultations	4
lesson preparation	26

Student workload	**Hours** 60	**ECTS** 2.0
Workload involving teacher	**Hours** 34	**ECTS** 1.2
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	The curriculum contents are partly realized on the basis of appropriate e-learning materials.	e-learning
2.	The curriculum contents are realized on the basis of appropriate coursebooks at a given level. The detailed range of the curriculum contents is available on the SJOiNHS website.	foreign language (course)

Course advanced

Teaching methods:

classes, teamwork, foreign language (conversation classes)

Activities	Examination methods	Percentage in subject assessment
e-learning	practical training report	10%
foreign language (course)	oral credit, observation of student’s work, active participation, presentation, test	90%

Entry requirements

Adequate level of language is required

Group level	Minimum level
B1	--> A2, B1
B2	--> B1, B2
C1	--> B2, C1

Literature

Obligatory

1. The lecturer makes use of the relevant popular and scientific literature, specializedcoursebooks, academic textbooks and online resourcessuitable for a given specialty. Some of the classes are carried out by means of distance learning methods and techniques: 2 to 3 meetings or more (depending on the specifics and requirements of a given specialty). The detailed contents are available on the SJOiNHS website.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

German language

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.JEJO.0803.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** optional
Study form Full-time	**Block** foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills No

Teacher responsible for the subject	Elżbieta Bochenek-Kowalska, Mirosława Mikołajczyk
Other teachers conducting classes	Elżbieta Bochenek-Kowalska, Mirosława Mikołajczyk

Periods	**Examination**	**Number of ECTS points**
Semester 2, Semester 3, Semester 4	graded credit **Activities and hours** e-learning: 4 foreign language (course): 26	2.0

Goals

C1	Objectives The student is made acquainted with German medical and veterinary teaching contents required at the minimum B2 level for the purpose of achieving the relevant language competences enabling him/her to function properly both in the working environment and in the academia.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	Knows and understands vocabulary and grammatical structures of at least one foreign language, which is a language of international communication, at the B2+ level of the Common European Framework of Reference for Languages, as well as specialised terminology in the scope of veterinary medicine, which is necessary in professional activity;	C.W1	observation of student's work, active participation, test, performing tasks
Skills – Student can:			
U1	Uses at least one foreign language, which is a language of international communication, at the B2+ level of the Common European Framework of Reference for Languages, including specialised terminology in the scope of veterinary, which is necessary in professional activity	C.U1	observation of student's work, active participation, test, performing tasks
U2	Uses vocabulary and grammatical structures of a foreign language, which constitutes the language of international communication, in the scope of creating and understanding written and oral statements, both general and specialised in the scope of veterinary;	O.U11	observation of student's work, active participation, test, performing tasks

Balance of ECTS points

Activity form	Activity hours*
e-learning	4
foreign language (course)	26
consultations	4
lesson preparation	26

Student workload	**Hours** 60	**ECTS** 2.0
Workload involving teacher	**Hours** 34	**ECTS** 1.2
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	E-learning classes The curriculum contents are partly realized on the basis of appropriate e-learning materials.	e-learning
2.	Contents The curriculum contents are realized on the basis of appropriate coursebooks at a given level. The detailed range of the curriculum contents is available on the SJOiNHS website.	foreign language (course)

Course advanced

Teaching methods:

classes, foreign language (conversation classes)

Activities	Examination methods	Percentage in subject assessment
e-learning	performing tasks	10%
foreign language (course)	observation of student’s work, active participation, test	90%

Additional info

Additional information
The student is taught the selected language for 4 semesters to take the exam at the minimum B2 level. The student can study the selected language at a level lower than B2 for 3 semesters, but during semester 4 he/she has to attend a course at the minimum B2 level.
The reference for the language competence levels is in accordance with Common European Framework of Reference for Languages (CEFR).

LEVEL A1
The student, who commands a language at this level, can understand and use the learnt simple utterances for the purpose of communicating specific needs of everyday life.
The student can introduce himself/herself and others; can ask questions concerning private life, residence, friends and possessions as well as answer such questions; can have simple conversations provided that the interlocutor speaks slowly and clearly, and is ready to help,

LEVEL A2
The student, who commands a language at this level, can understand utterances, common at this level, related to the most important matters (e.g. basic information concerning his/her family, shopping, environment, work; can communicate in typical communication situations which only require direct exchanges of information about known and often repeated topics; can easily describe the direct environment as well as that of his/her origin; can speak in a very simple way about topics related to the most important needs.

LEVEL B1
The student, who commands a language at this level, can understand the importance of the main contents of communication and standard utterances referring to familiar matters as well as typical situations related to work, school, leisure time, etc.; can cope with typical travel situations to the country of the studied language; can create consistent oral and written statements on topics that are familiar or interesting to him/her; can describe events, personal experiences, plans, projects and future plans.

POZIOM B2
The student, who commands a language at this level, understands the importance of main messages contained in complex texts on specific and abstract topics; can understand and participate in discussion by use of the specialist language referring to professional topics;
can communicate smoothly and spontaneously enough to have a free conversation with a native speaker, without any particular effort for either party; can formulate clear and detailed oral or written statements on many topics as well as express his/her viewpoint concerning the matters discussed along with advantages and disadvantages of different solutions.

LEVEL C1
The student, who commands a language at this level, can understand extensive and advanced texts concerning various topics. While reading and listening the student can fully comprehended not only the gist of it, but also various overtones, implicit meanings and the author's attitude; can speak fluently by means of the extensive vocabulary; can use the language effectively in interpersonal, social, educational and professional contexts; can formulate clear, well-structured, detailed written statements on a wide range of topics by use of grammatical rules as well as language tools in accordance with the principles of oral and written statements in a manner indicating a very good mastery of the language
http://sjo.up.wroc.pl/o_sjoinhs/
Verification of learning outcomes
Learning outcomes are verified by means of grammatical and lexical tests, oral and written statements, reading and listening comprehension tests.

Entry requirements

Prerequisites
Adequate level of language is required

Group level	Minimum level
B1	--> A2, B1
B2	--> B1, B2
C1	--> B2, C1

Literature

Obligatory

1. Literatura Bazę stanowi podręcznik kursowy natomiast dobór materiałów uzupełniających i pogłębiających tematykę danego kursu i poziomu pozostaje w gestii nauczyciela. Część zajęć odbywa się z zastosowaniem metod i technik kształcenia na odległość. Szczegółowy wykaz dostępny jest na stronie SJOiNHS.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Polish language

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.JEJO.1732.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** optional
Study form Full-time	**Block** foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills No

Teacher responsible for the subject	Karolina Bykowska
Other teachers conducting classes	Karolina Bykowska

Periods	**Examination**	**Number of ECTS points**
Semester 2, Semester 3, Semester 4	graded credit **Activities and hours** e-learning: 4 foreign language (course): 26	2.0

Goals

C1	The student is made acquainted with educational contents required at A1 level of the Polish language for the purpose of achieving the relevant language competence.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	Knows and understands vocabulary and grammatical structures of at least one foreign language, which is a language of international communication, at the B2+ level of the Common European Framework of Reference for Languages, as well as specialised terminology in the scope of veterinary medicine, which is necessary in professional activity.	C.W1	observation of student's work, active participation, test, performing tasks
Skills – Student can:			
U1	Uses vocabulary and grammatical structures of a foreign language, which constitutes the language of international communication, in the scope of creating and understanding written and oral statements, both general and specialised in the scope of veterinary.	O.U11	observation of student's work, active participation, test, performing tasks
Social competences – Student is ready to:			
K1	Communicates with the co-workers and shares knowledge in everyday situations.	O.K9	observation of student's work, performing tasks

Balance of ECTS points

Activity form	Activity hours*
e-learning	4
foreign language (course)	26
consultations	4
lesson preparation	26

Student workload	**Hours** 60	**ECTS** 2.0
Workload involving teacher	**Hours** 34	**ECTS** 1.2
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	The curriculum contents are realized on the basis of appropriate coursebooks at a given level. The detailed range of the curriculum contents is available on the SJOiNHS website.	foreign language (course)

2.	The curriculum contents are partly realized on the basis of appropriate e-learning materials.	e-learning

Course advanced

Teaching methods:

classes, foreign language (conversation classes)

Activities	Examination methods	Percentage in subject assessment
e-learning	performing tasks	10%
foreign language (course)	observation of student’s work, active participation, test	90%

Entry requirements

Adequate level of language is required.
Group level Min. level
A1 --> 0, A1
A2 --> A1, A2
B1 --> A2, B1
B2 --> B1, B2
C1 --> B2, C1

Literature

Obligatory

1. Małolepsza M., Szymkiewicz A., Hurra!!! Po polsku 1. Podręcznik studenta. Nowa edycja, Prolog Publishing, Kraków 2022.

Optional

1. Gworys M., Mądrecka A., Mówię po polsku. Ćwiczenia dla obcokrajowców. Poziom A1 i A2, Prolog Publishing, Kraków 2021.
2. Kołaczek E., Gry i zabawy językowe. Język polski jako obcy A0/A1, Prolog Publishing,Kraków 2022.
3. Kołaczek E., Testuj swój polski – fonetyka, Prolog Publishing, Kraków 2017.
4. Krztoń J., Testuj swój polski – słownictwo 1, Prolog Publishing, Kraków 2019.
5. Machowska A., Gramatyka? Dlaczego nie? Ćwiczenia gramatyczne dla poziomu A1, Universitas, Kraków 2014.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Animal breeding

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J4BO.0070.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Anna Zielak-Steciwko
Other teachers conducting classes	Anna Zielak-Steciwko, Joanna Rosenberger

Period Semester 3	**Examination** exam **Activities and hours** lecture: 15 laboratory classes: 4 auditorium classes: 26	**Number of ECTS points** 4.0

Goals

C1	The aim of the course is to familiarize Students with issues of livestock breeding and husbandry.
C2	During the course are discussed problems related to usefulness of particular utility types and selected breeds of livestock to specific livestock production.
C3	Students learn important methods of husbandry and breeding for cattle, sheep, horses, pigs and poultry as well as modern production technologies of milk, meat, wool and eggs.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the principles of cattle, sheep, horses, swine and poultry breeding and husbandry, including livestock feeding, animal wefare and rules of production economics;	O.W8	written exam, written credit
W2	rules and requirements of animal production technology and ensuring the hygiene of the technological procedures;	O.W13	written exam, written credit
W3	breeds of different livestock species: cattle, sheep, goats, swine, horses and poultry, as well as rules of livestock breeding and husbandry;	B.W11	written exam, written credit
W4	how to plan breeding work, the rules of next generation parents selection, biotechnologies used in reproduction;	B.W12	written exam, written credit
W5	the conditions of hygiene and technology of dairy, meat, wool and eggs production;	B.W20	written exam, written credit
W6	conditions necessary to meet farm animal welfare requirements based on the principle of "five freedoms";	B.W9	written exam, written credit
W7	principles of cattle, sheep, horses, swine and poultry nutrition during various periods of life and production stages;	B.W13	written exam, written credit
Skills – Student can:			
U1	using available data on the health and welfare of livestock and the efficiency of herd production;	B.U20	written exam, written credit, observation of student’s work, active participation
Social competences – Student is ready to:			
K1	take accountability for the choices made regarding livestock breeding, encompassing production, with consideration for the well-being of individuals, animals, and the environment;	O.K1	observation of student’s work, active participation
K2	expanding comprehension and enhancing abilities in the field of livestock breeding;	O.K8	observation of student’s work, active participation

Balance of ECTS points

Activity form	Activity hours*
lecture	15
laboratory classes	4
auditorium classes	26
consultations	4
lesson preparation	30
exam / credit preparation	25
exam participation	2

Student workload	**Hours** 106	**ECTS** 4.0
Workload involving teacher	**Hours** 51	**ECTS** 2.0
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	1. Economical importance and current situation of livestock farming in Poland and European Union (1h). 2. Dairy cattle husbandry. Characteristics of cattle breeds and utility types (1h). 3. Characteristics of housing and feeding systems for cattle. Cattle behaviour and welfare (1h). 4. Diary utility of cattle. Technology, hygiene and conditions of milk production (1h). 5. Reproduction performance of a cattle herd. Reproduction methods and breeding documentation (1h). 6. Beef cattle husbandry. Technology of beef cattle production (1h). 7. Sheep and goats breeding and husbandry. Basic breeds and utility types of small ruminants (1h). 8. Technologies of sheep production. Housing systems for small ruminants (1h). 9. Species, breeds and lines of birds known as poultry, different types of poultry production (1h). 10. Organization of poultry breeding and production. Advantage of poultry production and its product (eggs and meat) (1h). 11. Role of an egg in embryonic development and influence of microclimate conditions during egg incubation (1h). 12. Breeds and utility types of pigs (1h). 13. Performance evaluation and breeding value evaluation of pigs. Crossing breeds for fattening. Housing systems for pigs (1h). 14. Horse breeding and husbandry in EU and the Word. Breeding programs for horses in Poland (1h). 15. Horse breeding value evaluation – performance tests (1h).	lecture
2.	1. An overiview of cattle herd and nutrition. Breeding and husbandry conditions evaluation at barn. Cattle taming and care (2h). 2. Artificial hatching. Factors affecting the ability of hatching. Biological analysis of hatching (2h).	laboratory classes

3.	1. Basics of breeding in a cattle herd. Selection and crossing methods in cattle. Mating rules in cattle. Selection indices in dairy cattle (2h). 2. Breeding and management in large-scale cattle farming (2h). 3. Methods of raw milk production at a dairy farm. The efficiency of cow's feeding and milk production (2h). 4. Organization of reproduction in a dairy cattle herd. Consequences of feeding mistakes in dairy cattle farm (2h). 5. Rearing young cattle. Beef utility of cattle and evaluation of beef performance (2h). 6. Sheep reproduction and rearing offspring (2h). 7. Beef and dairy utility of sheep (2h). 8. Exterior characteristics of different species of poultry. Morphological traits indicating productiveness and health of poultry (2h). 9. Characteristics of production indicators of different species and utility types of birds (2h). 10. Organization of breeding at a pedigree swine farm (2h). 11. Organization (planning) of swine production in an industrial piggery. Classification of swine carcasses using EUROP method (2h). 12. Exterior evaluation and identification of horses. Reproduction of horses and rearing of foals (2h). 13. Horse utility types. Buildings and facilities for housing horses (2h).	auditorium classes

Course advanced

Teaching methods:

classes, lecture, presentation / demonstration, educational film

Activities	Examination methods	Percentage in subject assessment
lecture	written exam	40%
laboratory classes	observation of student’s work, active participation	10%
auditorium classes	written credit, observation of student’s work, active participation	50%

Entry requirements

Animal anatomy

Literature

Obligatory

1. Marek RE. Dairy Cows: Nutrition, Fertility and Milk Production. Wyd. Nova Science Publishers, 2011
2. Drake DJ. Understanding and improving beef cattle carcass quality. Wyd.ANR Publications, 2004
3. Dobrowolska D., Lach H., Pilawski J. Current research on pig breeding and production. Wyd. Kraków: National Research Institute of Animal Production, 2006
4. Abbott K., Hynd P., de Graaf S., Leahy T., Larsen J. The practice of sheep veterinary medicine. Wyd. University of Adelaide Press, 2018
5. Pavia A., Gentry-Running K. Horse health nutrition for dummies. Wyd. Hoboken, 2008

Optional

1. Appleby MC., Mench JA., Hughes BO. Poultry behaviour and welfare. Wyd. Wallingford: CABI Publishing, 2004
2. Thear K. Free-range poultry. Wyd. Stowmarket: Whittet Books, 2002
3. Clive P. The welfare of sheep. Wyd. Dordrecht: Springer Netherlands, 2008

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Animal hygiene

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J4BO.0072.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** Yes **Subject shaping practical skills** Yes

Teacher responsible for the subject	Anna Budny-Walczak
Other teachers conducting classes	Anna Budny-Walczak

Period	**Examination**	**Number of ECTS points**
Semester 3	graded credit **Activities and hours** lecture: 15 laboratory classes: 15	2.0

Goals

C1	The aim of the course is to present the basic knowledge in the field of animal hygiene and animal welfare. The topics cover the environmental and living conditions for farm animals and includes: microclimatic conditions (UV radiation, lighting, air temperature and humidity, air movement, gas mixtures, dustiness, noise) on the health and productivity of animals, methods for optimizing environmental conditions in animal buildings (ventilation, heat balance in livestock buildings, heat protection and functionality of animal beddings), livestock keeping systems taking into account aspects of welfare, biosecurity, hygiene and environmental protection, principles of Good Breeding Practice in animal production as well as the animal transport.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population.	O.W1	written credit
W2	explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in individual animal species, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W3	written credit
W3	presents the biology of infectious factors that cause diseases transmitted between animals, as well as anthropozoonoses, taking into account the mechanisms of disease transmission and defense mechanisms of the macroorganism;	O.W6	written credit
Skills – Student can:			
U1	monitors health of the herd, as well as undertakes action in the case of a disease that is subject to the obligation of disease eradication or its registration;	O.U4	project, observation of student’s work, active participation, presentation
U2	performs activities that are associated with the veterinary supervision, including trade in animals, as well as sanitary and veterinary conditions of animal gathering locations and processing products of animal origin	O.U6	project, observation of student’s work, active participation, presentation
U3	uses vocabulary and grammatical structures of a foreign language, which constitutes the language of international communication, in the scope of creating and understanding written and oral statements, both general and specialised in the scope of veterinary;	O.U11	project, observation of student’s work, active participation, presentation
Social competences – Student is ready to:			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	project, observation of student’s work, active participation, presentation

K2	uses the objective sources of information	O.K4	project, observation of student’s work, active participation, presentation
K3	participates in resolution of the conflicts and exhibits flexibility in reactions to social changes	O.K3	project, observation of student’s work, active participation, presentation

Balance of ECTS points

Activity form	**Activity hours***
lecture	15
laboratory classes	15
lesson preparation	5
presentation/report preparation	10
exam / credit preparation	15

Student workload	**Hours** 60	**ECTS** 2.0
Workload involving teacher	**Hours** 30	**ECTS** 1.0
Practical workload	**Hours** 15	**ECTS** 0.6

* hour means 45 minutes

Study content

No.	**Course content**	**Activities**

1.	Lecture 1 (2h): Introduction to animal hygiene and its role in veterinary sciences. The importance of zoohygiene and animal welfare in the protection of animal and public health. Lecture 2 (2h): The importance of welfare in animal husbandry and breeding. Criterias and valuation of animal welfare. Lecture 3 (2h): Impact of microclimatic factors on farm animals, with particular emphasis on lighting and thermo-humidity parameters. Lecture 4 (2h): Livestock systems and technological and functional conditions in livestock buildings. Ventilation in livestock buildings (ventilation, noise, sewerage, floors). Lecture 5 (2h): Disinfection, disinsection and deratization and their role in ensuring animal hygiene and welfare. Lecture 6 (2h): Biosecurity of farms. Methods for effective protection of livestock herds against infectious agents. Lecture 7 (2h): Legal basics of animal transport in Poland and European Union member states. Lecture 8 (1h): Summary of living conditions for selected farm animal species.	lecture
2.	Classes 1 (2h): Infrared and ultraviolet radiation (actinometry, radiometry, UV, infrared radiation). UV fractions, their measurement and calculation of the UV-C disinfection potential. Classes 2 (2h): Visible light and its role in the prevention and breeding of farm animals. Visible light measurements and calculations of illuminance for chosen species of farm animals. Classes 3 (2h): Thermometry and heat indifference zone. Temperature measurement methods using the minimum and maximum thermomentres, pyrometers and thermographic cameras. Calculation of thermo-humidity index (THI). Classes 4 (2h): Psychrometry and hygrometry. Basic hygrometric indicators and thermal-humidity systems, humidity measurement. Classes 5 (2h): Air movement. Anemometry and cataterometry. Measurement and calculation of air velocity, catatermometric cooling and thermal comfort. Classes 6 (2h): Heat balance and heat protection in livestock buildings. Objectives and principles of calculating the index of thermal properties of rooms. Classes 7 (3h): Practical methods of zoohygienic assessment of livestock buildings - SPIWET (field classes at RZD Swojec). Air pollution (mechanical, chemical and biological). Conimetry, gasometry, gas measurements i.e. ammonia, hydrogen sulfide, carbon dioxide. Olfaktometria.	laboratory classes

Course advanced

Teaching methods:

classes, lecture, discussion, presentation / demonstration, situation-based learning, problem-solving method, foreign language (conversation classes), educational film, brainstorming, text analysis, case analysis, teamwork

Activities	Examination methods	Percentage in subject assessment
lecture	written credit, observation of student’s work	70%

Activities	Examination methods	Percentage in subject assessment
laboratory classes	project, active participation, presentation	30%

Additional info

During the epidemiological situation in Poland (especially related to the spread of SARS-CoV-2 virus), the program of lectures remains unchanged and, in accordance to the regulations at WUELS, is going to be made online. The program of classes, especially the practical part of it, may undergo some changes, especially it may be based on the students' own work carried out on-line and in real time, under the supervision of the teacher. Detailed guidelines in the above-mentioned scope will be presented to students by the teacher conducting the course during the first class, in relation to the current epidemiological situation and legal acts and University regulations.

Entry requirements

Basic issues related to animal physiology.

Literature

Obligatory

1. Aland A., Banhazi T., Livestock housing. Modern managment to ensure optimal health and welfare of farm animals. Wageningen Academic Publischers 2013, https://doi.org/10.3920/978-90-8686-771-4.
2. Sossidou E., Szucs E. Farm animal welfare, environment & food quality interaction studies. Welfood Partners, 2007.
3. Banhazi T., Aland A., Hartung J. Air Quality and Livestock Farming. Routledge Taylor & Francis Group, 2018.

Optional

1. Ekesbo I., Gunnarsson S. Farm animal behaviour: characteristics for assessment of health and welfare. CABI, 2018.
2. Council Regulation (EC) No 1/2005 of 22 December 2004 on the protection of animals during transport and related operations and amending Directives 64/432/EEC and 93/119/EC and Regulation (EC) No 1255/97; OJ L 3, 5.1.2005, p. 1–44
3. Council Regulation (EC) No 1099/2009 of 24 September 2009 on the protection of animals at the time of killing (Text with EEA relevance); OJ L 303, 18.11.2009, p. 1–30

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Animal physiology I

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J4B.0076.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** mandatory
Study form Full-time	**Block** major subjects
Education profile General academic	**Subject related to scientific research** Yes
	Subject shaping practical skills Yes

Teacher responsible for the subject	Bożena Króliczewska
Other teachers conducting classes	Bożena Króliczewska, Jolanta Bujok

Period	**Examination**	**Number of ECTS points**
Semester 3	graded credit **Activities and hours** lecture: 30 laboratory classes: 45	4.0

Goals

C1	The subject of Animal physiology provides knowledge about the processes occurring in living organisms at the cellular and organ level and their regulation.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the way of functioning of individual cell structures/systems / organs such as central and peripheral nervous system, smooth and skeletal muscles, heart muscle, circulatory system, respiratory system, excretory system, reproductive system.	O.W2	written credit, oral credit, presentation, test, participation in discussion, performing tasks, case study
W2	the action of mechanisms regulating the activities of the animal organism's nervous, motor, circulatory, respiratory, excretory, and reproductive systems.	A.W2	written credit, oral credit, presentation, test, participation in discussion, performing tasks, case study
W3	mechanisms integrating the functioning of the organism and maintaining the organism's homeostasis (CNS, AUN, neurotransmitters in the nervous system, neurohormonal regulation, circulatory system).	A.W9	written credit, oral credit, presentation, test, participation in discussion, performing tasks, case study
Skills – Student can:			
U1	indicate how the discussed organs / systems can influence each other and what are the consequences for the functioning of the organism.	A.U7	written credit, test, participation in discussion, performing tasks, case study
U2	explains the physiological mechanisms of sensation and perception, movement and maintenance of body posture, the physiological basis of behavior, endocrinology (hypothalamic-pituitary axis, peripheral endocrine glands, and tissue hormones), regulation of blood flow in the vessels, gas exchange.	A.U4	written credit, presentation, test, participation in discussion, performing tasks, case study
U3	performs tests of parameters determining the physiological state of the body: the nervous system (reflexes), physiological parameters of the circulatory system (blood pressure, heart rate, auscultation of heart tones, ECG), spirometry, urine tests.	O.U2	written credit, observation of student’s work, presentation, test, participation in discussion, performing tasks, case study
Social competences – Student is ready to:			
K1	assessment and interpretation of the body's functioning based on the measurements of physiological parameters concerning the nervous system, skeletal and smooth muscles, circulatory system, sensory organs, and respiratory system.	O.K5	observation of student’s work, participation in discussion, case study
K2	approaches knowledge critically and constantly updates it with the latest state of general knowledge, using scientific sources to expand their knowledge.	O.K8	observation of student’s work, participation in discussion, case study

Balance of ECTS points

Activity form	Activity hours*
lecture	30

laboratory classes	45
consultations	10
class preparation	20
presentation/report preparation	10

Student workload	**Hours** 115	**ECTS** 4.0
Workload involving teacher	**Hours** 85	**ECTS** 3.0
Practical workload	**Hours** 45	**ECTS** 1.7

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Biological definition of life, functional organization of living organisms, physiology of the cell. 2. Body compartments, homeostasis and principles of regulatory systems in the multicellular organisms. 3. Nervous system physiology - part 1– General physiology of the nervous system. 4. Nervous system physiology - part 2 – Central nervous system physiology. 5. Nervous system physiology - part 3 – Sensory nervous system physiology. 6. Nervous system physiology - part 4 – Motor nervous system physiology. 7. Nervous system physiology - part 5 – Autonomic nervous system physiology. 8. Special senses physiology - part 1. 9. Special senses physiology - part 2. 10. Endocrine system physiology - part 1 – Endocrine system organisation, general aspects of endocrine system physiology, hypothalamus and pituitary gland. 11. Endocrine system physiology - part 2 – Thyroid gland and Adrenal cortex. 12. Endocrine system physiology - part 3 – Adrenal medulla, exocrine pancreas. 13. Cardiovascular system physiology - part 1 – General aspects of circulation. 14. Cardiovascular system physiology - part 2 – Neurohumoral regulation. 15. Cardiovascular system physiology - part 3 – Circulation in particular organ systems.	lecture

2.	Laboratory 1. Cell excitability. Resting and action potential. Functions of peripheral nerves. Nerve transmission. Laboratory 2. Analysis of the reflex arc. Testing of unconditioned reflexes. The influence of hypoxia on the central nervous system in reflex reactions (Stenson's experiment). Reaction time to stimuli. Laboratory 3. Testing conditioned reflexes. Electrodermal response to stimuli. Laboratory 4. Excitatory and inhibitory synapses. Processes of excitation and inhibition in the central nervous system. Animal hypnosis (akinesia). Experiment with strychnine. Testing of selected sensory receptors. Laboratory 5. Physiology of the autonomic nervous system. Testing the response of the autonomic system to selected stimuli. Laboratory 6. Physiological properties of skeletal muscles. Recording the contraction of striated skeletal muscle: single contraction, incomplete, and complete tetanic contraction. Types of muscle contractions depend on changes in tension and length. Laboratory 7. Function of the neuromuscular synapse (motor end plate). Muscle fatigue. The absolute skeletal muscle strength. Laboratory 8. Test (Laboratory 1-7). Principles of the PBL method. Solving problem tasks related to the material covered. Laboratory 9. Physiological properties of smooth muscles. Physiology of individual smooth muscles on the example of intestinal muscles. Physiology of multiunit smooth muscles on the example of vascular smooth muscles. Observation of the contraction curve of a single smooth muscle – working with the SimVessel program. Laboratory 10. Physiological properties of the heart muscle. Cardiac action potential. Structure and functions of the mammalian stimulus-conduction system. The bundles of Stannius (movie). Blood flow in vessels. Location of venous valves. Laboratory 11. Cardiac cycle - hemodynamics. Auscultation of heart sounds. Arterial pulse examination. Heart rate waveform recording. Cardiac function (movie). Laboratory 12. Cardiogram. The influence of hormones, the thermal factor, and the vagus nerve on heart rate - working with the SimHeart program. Nervous and humoral regulation of the heart and blood vessel lumen - working with the SimVessel program. Laboratory 13. Electrocardiography. Electrocardiogram. The electrical axis of the heart. Analysis of electrocardiograms. Laboratory 14. Dynamics of blood pressure values in the circulatory system. Blood pressure measurement. Laboratory 15. Test (Laboratory 9-14). Presentation of s problem tasks. Credit	laboratory classes

Course advanced

Teaching methods:

brainstorming, classes, lecture, discussion, computer lab/laboratory, teamwork, presentation / demonstration, project-based learning (PBL), problem-solving method, educational film, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	written credit	50%
laboratory classes	written credit, oral credit, observation of student’s work, presentation, test, participation in discussion, performing tasks, case study	50%

Entry requirements

Cell biology, Chemistry, Biophysics, Animal anatomy I and II, Biochemistry I, Histology and embriology I and II

Literature

Obligatory

1. Cunningham's Textbook of Veterinary Physiology, Bradley G. Klein, Fifth Ed. Elsevier, 2013
2. Dukes' Physiology of Domestic Animals, 13th Edition. William O. Reece (Editor), Howard H. Erickson (Associate Editor), Jesse P. Goff (Associate Editor), Etsuro E. Uemura (Associate Editor), Wiley-Blackwell, 2015
3. Physiology of Domestic Animals - Oystein V. Sjaastad, Knut Hove, Olav Sand, Scandinavian Veterinary Press, 2010
4. Guyton and Hall Textbook of Medical Physiology, John E. Hall, 13th-Ed, Elsevier Books, 2015.

Optional

1. Eckert Animal Physiology by David Randall,Warren Burggren, Kathleen French
2. Anatomy and Physiology of Domestic Animals, 2nd Ed., R. Michael Akers, D. Michael Denbow, Wiley-Blackwel, 2013.
3. Sturkie's Avian Physiology, 6th Ed., 2014.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Biochemistry II

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J4BO.0169.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** mandatory
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** Yes
	Subject shaping practical skills Yes

Teacher responsible for the subject	Arkadiusz Miążek
Other teachers conducting classes	Arkadiusz Miążek, Krzysztof Grzymajło, Rafał Kolenda, Jarosław Suchański

Period	**Examination**	**Number of ECTS points**
Semester 3	exam **Activities and hours** lecture: 30 laboratory classes: 30	5.0

Goals

C1	The course provides students with the knowledge on chemical structure and biological properties of proteins, nucleic acids, carbohydrates and lipids, basic metabolic pathways in animal cells, their energetics and regulatory mechanisms as well as basic information pathways and recombinant DNA technology. The course provides some practical training in basic laboratory procedures. After completing the course student acquires the knowledge and terminology necessary to understand biochemistry, molecular biology, physiology, genetics, microbiology, etc.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the rgan, animal, to the entire animal population;	O.W1	written exam, written credit, test
Skills – Student can:			
U1	performs basic statistical analysis and uses appropriate methods for presentation of the results	O.U10	observation of student’s work, test
Social competences – Student is ready to:			
K1	uses the objective sources of information	O.K4	observation of student’s work
K2	deepens his/her knowledge and improves skills	O.K8	observation of student’s work

Balance of ECTS points

Activity form	Activity hours*
lecture	30
laboratory classes	30
exam / credit preparation	60
consultations	10
lesson preparation	10
collecting and studying literature	10

Student workload	**Hours** 150	**ECTS** 5.0
Workload involving teacher	**Hours** 70	**ECTS** 2.6
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	I. DNA structure and replication II. DNA mutations and repair III. RNA Synthesis and post-translational processing IV. Translation of mRNA: protein synthesis V. Protein targeting and their catabolism VI. Regulation of gene expression in Prokaryotes VII. Regulation of gene expression in Eukaryotes VIII. Gene rearrangements IX.Recombinant DNA I X. Recombinant DNA II XI. Transgenic animals and somatic cloning XII. Biochemistry of tumor cells XIII. Biochemistry of aging XIV. Biochemical cases in veterinary medicine I XV. Biochemical cases in veterinary medicine II	lecture
2.	1. Isolation of genomic DNA from animal tissues 2. Determination of the hyperchromic effect of DNA 3. Digestion of genomic DNA with DNAse I 4. Analysis of clinical cases I 5. Isolation of RNA from animal tissue 6. Induction of bacterial operon expression 7. Isolation of plasmid DNA and electrophoretic evaluation of the preparation 8. Restriction analysis of the DNA preparation 9. In silico design of PCR-RFLP analyses 10. Clinical case analysis II 11. Immunological techniques in biochemistry 12. Biochemical analysis of urine 13. Student presentations on assigned topics in clinical biochemistry 14. Practical use of bioinformatics tools in veterinary medicine 15. Written assessment of the exercises	laboratory classes

Course advanced

Teaching methods:

problem-solving method, classes, lecture, discussion, teamwork, educational film

Activities	Examination methods	Percentage in subject assessment
lecture	written exam	70%
laboratory classes	written credit, observation of student’s work, test	30%

Entry requirements

General and organic chemistry, biophysics BIOCHEMISTRY I

Literature

Obligatory

1. Biochemistry Ninth Edition| ©2019Lubert Stryer; Jeremy Berg; John Tymoczko; Gregory Gatto
2. Harper's Illustrated Biochemistry Thirty-First Edition 2018, Victor W. Rodwell , By (author) David Bender , By (author) Kathleen M. Botham , By (author) Peter J. Kennelly , By (author) P. Anthony Weil

Optional

1. Lehninger PRINCIPLES OF BIOCHEMISTRY Fourth Edition David L. Nelson (University of Wisconsin–Madison) Michael M. Cox (University of Wisconsin–Madison)
2. Rapid review biochemistry / John W. Pelley, Edward F. Goljan. – 3rd ed. p. ; cm. – (Rapid review series) Rev. ed. of: Biochemistry. 2nd ed. c2007.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Ethology and animal welfare

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J4BO.0650.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** Yes **Subject shaping practical skills** Yes

Teacher responsible for the subject	Tadeusz Stefaniak
Other teachers conducting classes	Tadeusz Stefaniak, Julia Miller, Agnieszka Żak-Bochenek

Period Semester 3	**Examination** graded credit **Activities and hours** auditorium classes: 15 lecture: 15	**Number of ECTS points** 3.0

Goals

C1	The goal of the course is to introduce general principles of ethology and basic issues associated with the welfare of animals kept by humans. During the course the students gain knowledge about behavioral needs of farm animals and pets and learn to interpret their behaviors. Methods of assessing animal welfare are introduced as well as main problems associated with transport and slaughter of farm animals.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	defines basic behavioural laws and phenomena	A.W11, B.W9, O.W2	project, observation of student’s work, report, presentation, test
W2	identifies patterns of proper behavior and communication of farm animals (horse, cow, sheep, goat, pig) and accompanying animals (dog, cat)	B.W9, O.W8	project, observation of student’s work, report, presentation, test
Skills – Student can:			
U1	recognizes and correctly interprets the behaviour of healthy and sick domestic animals	A.U7, B.U1	project, observation of student’s work, report, presentation, test
U2	recognizes behavioural disorders in animals	A.U7, B.U1, B.U20	project, observation of student’s work, report, presentation, test
U3	classifies the welfare parameters of domestic animals	A.U4, A.U7	report, presentation, test
Social competences – Student is ready to:			
K1	is able to use modern methods of animal welfare assessment in the assessment of the farm animal breeding facility	O.K1, O.K2, O.K4, O.K8	project, observation of student’s work, presentation
K2	is able to use knowledge about the most common behavioral disorders of dogs and cats in order to correctly identify the causes of the problem and provide initial help in cases requiring therapy	O.K4, O.K5, O.K8	project, observation of student’s work, presentation

Balance of ECTS points

Activity form	Activity hours*
auditorium classes	15
lecture	15
presentation/report preparation	24
consultations	1
exam / credit preparation	35

Student workload	**Hours** 90	**ECTS** 3.0
Workload involving teacher	**Hours** 31	**ECTS** 1.0
Practical workload	**Hours** 15	**ECTS** 0.6

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	1. Associations between behaviour and welfare. Basic features of behaviour. The role of senses in the behaviour of different animal species. Phases of behavioural act. Innate releasing mechanism. Behavioural chain. Innate and adaptative factors influencing the animal behaviour. 2. Definition of animal welfare. Five freedoms. Limitations of welfare in pets and farm animals. Methods of evaluation of farm animal welfare. Partitioning of abnormal behaviour. Typical limitations of enviromnent of intensive animal production. Suffering versus health. Limits of adaptation abilities. 3. Normal and abnormal behaviours of dogs. Natural behavioural patterns, methods of communication, senses. Novel theories in the field of dogs' behaviour and training. Scientific basics of animal training. 4. Normal and abnormal cat behaviour. Natural behavioural pattern, means of communication; senses; teritorialism of cats and their situation at home; kinds of behavioural problems; urination and defecation at home; damage of furnitures, objects associated with scratching need; prevention of urine spraying; aggression problem in cats; occurrence of stereotypies. 5. Normal and abnormal horse behaviour in keeping conditions. Natural behavioural pattern; means of communication; herd organisation; senses; hierarchic behaviour; factors affecting the occurrence of stereotypies in horses; types of stereotypic behavior, diagnosis, causes, course, consequences, prevention. 6. Normal and abnormal cattle behaviour in keeping conditions. Natural behavioural pattern; means of communication; herd organisation; senses; the role of the hierarchy and problems associated with in group housing. Relations between the individuals in horned and decornized herds; proper behaviour of humans in relation to cattle; recognition of proper and inappropriate relations between human and cows; types of stereotypies, their diagnosis, causes, course consequences and prevention. 7. Normal and abnormal pig behaviour in keeping conditions. Natural behavioural pattern; means of communication; herd organisation; senses; limitations associated with group housing in large farms; the possibilities of modeling the pig behaviour; types of stereotypies, their diagnosis, causes, course consequences and prevention; periparturient abnormal behaviour of sows. 8. Normal and abnormal sheep behaviour in keeping conditions. Natural behavioural pattern; means of communication; herd organisation; senses; breed associated differences in herd organisation, practical aspects; „sheep rush"-importance of the phenomenon, threats in keeping conditions; offsprings' care; types of stereotypies their diagnosis, causes, course consequences and prevention. 9. Normal and abnormal goat behaviour in keeping conditions. Natural behavioural pattern; means of communication; herd organisation; senses; hierarchic problems in conditions of poor welfare; offsprings' care; sex behaviour; basic requirements associated with the welfare of goats. 10. Evaluation of animal welfare – clinical methods. Factors that influence the human-animal relations. Methodical clinical examination and registration of problems. Ethological parameters. How to recognize proper and inappropriate relations between the animals and the human based on animal behaviour and human behaviour. How to achieve the good relations with cows? What causes bad relations with cows? 11.Evaluation of animal welfare – laboratory methods. Types of physiological parameters in the monitoring of animal welfare. Changes of selected blood parameters in the poor welfare. Utilization of acute phase proteins. The determination of cortisol and its metabolites. Immunological parametrs. Production parameters. 12.Evaluation of animal welfare – the influence of environment and production management. Factors affecting the welfare of cows in farm conditions. Problem of technopaties. Features of high level of animal welfare. Features of low level of animal welfare. Comprehensive evaluation of welfare of tethered cows farms. 13.Methods of evaluation of insufficient welfare, pain, suffering, injury, and stress in animals. Examples of human-animal relations. The interpretation of intentions of animals in different situations in large farms. 14. How to improve the animal welfare in selected species of farm animals. Technical indices of the keeping conditions. Index of Animal Welfare. 15. Welfare of slaughter animals. Methods of protecting the pigs before slaughter. Ways of moving the animals in slaughterhouse. Leading with light. Smels. Factors affecting meat quality. Symptoms of failures at stunning of slaughtered pigs.	lecture

2.	1. Selection of themes to be prepared by students. Methods of studying and evaluation of animal behaviour. Definitions of ethology and welfare. Phases of analysing the behaviour. Phases of behavioural reaction. Key stimuli. The law of heterogenic summation. Loosing behaviour. Symptoms of crossing over the ability to adaptation. Basic forms of animal behaviour (according to Hafez). Methods of learning. 2. Characterization and recognizing of normal and abnormal canine behaviour. Methods of welfare improvement. Topics presented by students: 1) Communication of dogs 2) Raising of a puppy – the role ant methods of socialization. 3) Common aggression-types in dogs (fear-based aggression, interdogs aggression, resource guarding) 4) Problems related to separation (fear, destructiveness, excessive barking, house soiling) 5) Behavioural tools used in dog training 3. Characterization and recognizing of normal and abnormal feline behaviour. Methods of welfare improvement. Topics presented by students: 1) Natural feline behaviour, methods of communication between individuals. 2) Problems associated with defecation and urination at home. 3) Aggression –types. 4) Destruction caused by scratching. 5) Nutritional disturbances and stereotypies. 4. Test I (written) 5. Characterization and recognizing of normal and abnormal horse behaviour. Methods of welfare improvement.. Selected themes presented by students 6. Characterization and recognizing of normal and abnormal bovine behaviour. Methods of welfare improvement. Selected themes presented by students. 7. Characterization and recognizing of normal and abnormal swine behaviour. Methods of welfare improvement. Methods of welfare improvement. Selected themes presented by students. 8. Scheme of complex evaluation of animal behaviour in large farms. Quiz based on self made photos /movies. Test II (written).	auditorium classes

Course advanced

Teaching methods:

classes, lecture, discussion, presentation / demonstration, educational film

Activities	Examination methods	Percentage in subject assessment
auditorium classes	observation of student’s work, report, presentation, test	50%
lecture	project, observation of student’s work, presentation, test	50%

Entry requirements

Animal Anatomy I, Animal Anatomy II, Biochemistry I, Biochemistry II, Animal Physiology I, Animal Physiology II, Professional Ethics

Literature

Obligatory

1. Tinbergen N.: The study of Instinct, 1951
2. Hafez E.S.E.: The behaviour of domestic animals. Bailliere Tindall, London, 1975.
3. Keeling L.J., Gonyou H.W.: Social Behaviour in Farm Animals. CABI Publishing. London. 2005

Optional

1. Lindsay S.R.: Handbook of applied dog behavior and training. Vol. I Adaptation and learning. Blackwell Publishing, Ames 2000
2. Bradshaw JWS., Casey RA, Brown SL. The behavior of the domestic cat. CABI 2012
3. Mason G., Rushen J. Stereotypic animal behaviour.Fundamentals and applications to welfare. CAB International, 2nd ed. 2008
4. Mcfarlad D.: A Dictionary of Animal Behaviour., Oxford 2006
5. Horwitz D., Mills D., Heath S.: Manual of Canine and Feline Behavioural Medicine. BSAVA 2002
6. Waran N.: The Welfare of Horses. Kluwer Academic Publishers. Dordrecht, Boston, London. 2002

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Topographical anatomy

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J4BO.2590.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** mandatory
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills Yes

Teacher responsible for the subject	Aleksander Chrószcz
Other teachers conducting classes	Aleksander Chrószcz, Dominik Poradowski

Period Semester 3	**Examination** graded credit **Activities and hours** lecture: 15 laboratory classes: 30	**Number of ECTS points** 3.0

Goals

C1	The objective of the course is to teach the species specific location of anatomical structures and internal organs within domesticated animals body (dog, cat, cattle and horses) together with their clinical importance. The course describes: the role of topographical anatomy in veterinary sciences, animal body partition into body parts, basic terminology (axis, plane, region, subregion, skeletotopy, syntopy and holotopy), detailed topographical anatomy of subsequent parts and regions of animal body with clinical importance.
C2	Additionally, the aim of the course is to present: basic information on the domestic birds anatomy (anatomical structures comparison in mammals and birds), the common integument morphology and the locomotor system structure in horse (staying apparatus).
C3	The course provides elementary information for the studying of pathological anatomy, physiology, clinical diagnostics of animals, animal husbandry and slaughter animals hygiene.
C4	Students know stratygraphy, skeletptopy, holotopy, syntopy of the structures and organs of domesticated animals, assess the regularity of morphology of the animals, indicate differences between species and breeds including the anatomical features of certain structures and organs.
C5	Students perform the topographical partition of animal body parts using visible and palpable osseous points, help lines, planes, regions borders, stratigraphy and indicate the clinical important regions and points of animal body.
C6	Students understand the anatomical background of veterinary diagnostic procedures.
C7	Students understand the anatomical background of veterinary manipulations.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	knows to an extensive degree and understands the structure of the animal organism: cells, tissues, organs and systems to the extent necessary for a veterinarian familiar with the morphology and topographic anatomy of domestic animals,	A.W1	written credit
W2	knows to an extensive degree, describes in detail and explains the structure of organs and systems of the animal organism (respiratory, digestive, circulatory, excretory, nervous, reproductive, hormonal, immune system and skin), as well as their integration at the organism level,	A.W2, A.W3	written credit
W3	knows and understands the English and Latin medical nomenclature to the extent necessary for a veterinarian familiar with the morphology and topographic anatomy of domestic animals,	A.W20	written credit
W4	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population to the extent necessary for a veterinarian familiar with the morphology and topographic anatomy of domestic animals.	O.W1	written credit
Skills – Student can:			

U1	uses Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health, diseases, pathological changes and conditions to the extent necessary for a veterinarian familiar with the morphology and topographic anatomy of domestic animals,	O.U8	written credit
U2	explains the anatomical basis of physical examination, taking into account the individual animal species to the extent necessary for the veterinarian,	A.U6	written credit
U3	is able to work in a multidisciplinary team to the extent necessary for a veterinarian familiar with the morphology and topographic anatomy of domestic animals,	A.U15	observation of student's work
U4	communicates with the clients and other veterinary physicians to the extent necessary for a veterinarian familiar with the morphology and topographic anatomy of domestic animals,	A.U12	written credit
U5	understands the need of continuing education, in order to ensure continuous professional development to the extent necessary for a veterinarian familiar with the morphology and topographic anatomy of domestic animals,	A.U21	observation of student's work
U6	is able to listen and provide answers with the use of understandable language, appropriate to the given situation to the extent necessary for a veterinarian familiar with the morphology and topographic anatomy of domestic animals.	A.U13	observation of student's work
Social competences – Student is ready to:			
K1	communicates with the co-workers and shares knowledge to the extent necessary for a veterinarian familiar with the morphology and topographic anatomy of domestic animals,	O.K9	observation of student's work
K2	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment to the extent necessary for a veterinarian familiar with the morphology and topographic anatomy of domestic animals,	O.K1	observation of student's work
K3	formulates conclusions from own measurements or observations to the extent necessary for a veterinarian familiar with the morphology and topographic anatomy of domestic animals,	O.K5	observation of student's work
K4	deepens his/her knowledge and improves skills to the extent necessary for a veterinarian familiar with the morphology and topographic anatomy of domestic animals.	O.K8	observation of student's work

Balance of ECTS points

Activity form	**Activity hours***
lecture	15

laboratory classes	30
class preparation	15
exam / credit preparation	15
consultations	15

Student workload	**Hours** 90	**ECTS** 3.0
Workload involving teacher	**Hours** 60	**ECTS** 2.0
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	Lecture I – Introduction, role of topographical anatomy in veterinary sciences. Animal body partition into body parts, basic terminology (axis, planes, regions, subregions, skeletotopy, syntopy and holotopy). Lecture II – Topographical anatomy of the abdomen I (partition and borders, visible and palpable osseous points, muscular grooves, clinical important regions, stratigraphy of body wall). Lecture III – Topographical anatomy of the abdomen II (location of the digestive tract organs, location of the kidneys and spleen, intra-, retro- and extraperitoneal location of organs, injection points and abdominal cavity imagination methods). Lecture IV – Topographical anatomy of the pelvis (partition and borders, visible and palpable osseous points, muscular grooves, clinical important regions, location of the urogenital organs, perineum and external genital organs, inguinal canal). Lecture IV – Topographical anatomy of the limbs (joint structure and joint injections, digital organ of horse). Lecture V – Topographical anatomy of the thoracic limb II (partition and borders, visible and palpable osseous points, muscular grooves, clinical important regions, joint structure and joint injections, local anesthesia of peripheral sensory nerves). Lecture VI - Topographical anatomy of the pelvic limb (partition and borders, visible and palpable osseous points, muscular grooves, clinical important regions, joint structure and joint injections, local anesthesia of peripheral sensory nerves). Lecture VII – Topographical anatomy of the thorax I (partition and borders, visible and palpable osseous points, muscular grooves, clinical important regions, location of lungs, structure of thoracic cavity) Lecture VIII – Topographical anatomy of the thorax II (Location of heart, puncta maxima of heart, injection points, thorax percussion methods, normal radiography of thoracic cavity). Lecture IX – Topographical anatomy of the neck (partition and borders, visible and palpable osseous points, muscular grooves, clinical important regions and injection points, structure of the jugular groove and jugular fossa). Lecture X – Topographical anatomy of the head (partition and borders, visible and palpable osseous points, muscular grooves, clinical important regions and local anesthesia injection points, masticatory apparatus, pharynx, łarynx and neighbouring structures). Lecture XI – Basic avian anatomy I (general taxonomy, flight ability dependent changes in head, neck, pelvic and thoracic limb, tail and trunk morphology, basic anatomy of the skeletal system, muscles, respiratory apparatus, nervous system and senses). Lecture XII – Basic avian anatomy II (digestive tract, urogenital apparatus, circulatory system, common integument in birds, egg structure and production). Lecture XIII – Common integument I (the morphology of skin, hair and horn). Lecture XVI – Common integument II (the morphology of pads, hoof and skin glands). Lecture XV – Locomotor system and staying apparatus in horse.	lecture

2.	Practical labs I – Introduction, curriculum, course organization, students safety and protection during practical labs. Topographical anatomy in living animal (cow); practical labs take place in Research and Training Station – Swojczyce - https://upwr.edu.pl/en/university/structure/index,research-and-training-station---swojczyce.html Practical labs II – Sonographic imagination in topographical anatomy in dog; practical labs take place in Division of Animal Anatomy, Treatment room, Kożuchowska 1. Practical labs III – Topographical anatomy of horse's head, regions, clinical importances; practical labs take place in Division of Animal Anatomy, Section room, Kożuchowska 5. All subsequent practical labs take place in Division of Animal Anatomy, Section room, Kożuchowska 5. Practical labs IV – 1st partial exam (topographical anatomy of abdomen and pelvis). Practical labs V – Topographical anatomy of the thoracic limb (joint structure and injections in thoracic limb of dog). Practical labs VI – Topographical anatomy of the pelvic limb (joint structure and injection in pelvic limb of dog). Practical labs VII – Topographical anatomy of the digital organ in horse (joint structure and injection, anatomical preparation of horse's digit). Practical labs VIII – 2nd partial exam (topographical anatomy of limbs). Practical labs IX – Topographical anatomy of the head in dog (regions, perineural injections, clinical importance). Practical labs X - Basic avian anatomy (avian locomotor system - how to walk and fly) Practical labs XI – 3rd partial exam (topography of the thorax, neck and head). Practical labs XII – Basic avaian anatomy (digestive tract, respiratory apparatus, urogenital apparatus, circulatory system) Practical labs XIII – Bird dissection Practical labs XIV – 4th partial exam (basic birds anatomy). Practical labs XV - 2nd term of all partial exams.	laboratory classes

Course advanced

Teaching methods:

discussion, problem-solving method, educational film, classes, lecture, teamwork, presentation / demonstration

Activities	Examination methods	Percentage in subject assessment
lecture	written credit, observation of student's work	50%
laboratory classes	written credit, observation of student's work	50%

Entry requirements

Animal Anatomy I and II, Histology and Embryology I and II.

Literature

Obligatory

1. H.E. Koenig, H.-G. Liebich - Veterinary Anatomy Domestic Mammals – Textbook and Color Atlas. Schattauer, 2007.
2. H. E. Koenig, R. Korbel, H.- G. Liebich - Corinna Klupiec Avian Anatomy - Textbook and Colour Atlas, Sheffield : 5M Publishing, 2017.
3. K.M. Dyce, Wolfgang O. Sack, C. J. G. Wensing – Textbook of Veterinary Anatomy. 3rd edn. Elsevier, 2002.
4. S.H. Done, P.C. Goody, S.A. Evans, N.C Stickland – Color Atlas of Veterinary anatomy, vol. 3. Mosby, 2001.

Optional

1. R. Berg - Angewandte und topographische Anatomie der Haustiere. VEB Gustav Fischer Verlag, 1973.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Veterinary microbiology I

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J4BO.2644.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** Yes **Subject shaping practical skills** Yes

Teacher responsible for the subject	Jarosław Król
Other teachers conducting classes	Jarosław Król, Magdalena Florek

Period Semester 3	**Examination** graded credit **Activities and hours** lecture: 30 laboratory classes: 45	**Number of ECTS points** 5.0

Goals

C1	The aim of the course is to provide students with basic knowledge on the biology of viruses, bacteria and fungi, classification of microorganisms, phenomena occurring in the microbial world and interactions between macro- and microorganisms. In addition the course gives the insight into elementary diagnostic methods used for the identification of pathogenic microorganisms as well as methods of the elimination of microorganisms from the environment (sterilization, disinfection) and techniques for the examination of bacterial susceptibility to antimicrobials.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	presents the biology of infectious factors that cause diseases transmitted between animals, as well as anthropozoonoses, taking into account the mechanisms of disease transmission and defense mechanisms of the macroorganism;	O.W6	written credit, oral credit
W2	explains the correlation between factors that disturb the balance of biological processes of the animal body and physiological and pathophysiological changes	A.W11	written credit, oral credit
W3	knows to an extensive degree the biology of infectious factors that cause diseases transmitted between animals, as well as anthropozoonoses, taking into account the mechanisms of disease transmission and defense mechanisms of the organism	A.W13	written credit, oral credit
W4	knows to an extensive degree and presents the basics of microbiological diagnostics	A.W15	written credit, oral credit, observation of student’s work, active participation, performing tasks
W5	presents the mechanisms of drug resistance, including multi-drug resistance by microorganisms	A.W18	written credit, oral credit
Skills – Student can:			
U1	plans the diagnostic procedure	O.U3	oral credit, observation of student’s work, participation in discussion
U2	performs basic microbiological diagnostics	A.U10	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
Social competences – Student is ready to:			
K1	cooperates with representatives of other professions in the scope of public health protection	O.K11	observation of student’s work, active participation
K2	deepens his/her knowledge and improves skills	O.K8	observation of student’s work, active participation

Balance of ECTS points

Activity form	Activity hours*
lecture	30
laboratory classes	45
lesson preparation	55

exam / credit preparation	20

Student workload	**Hours** 150	**ECTS** 5.0
Workload involving teacher	**Hours** 75	**ECTS** 3.0
Practical workload	**Hours** 45	**ECTS** 1.7

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Historical evolution of microbiology as a scientific discipline 2. Organization and structure of bacteria 3. Bacterial growth and metabolism 4. Bacterial genetics. Classification and nomenclature of bacteria 5. Interactions between microorganisms and higher animals. Virulence factors of pathogenic microorganisms 6. Main groups of pathogenic bacteria. Gram positive cocci (Staphylococcus, Streptococcus, Enterococcus) 7. Gram negative bacteria: Moraxella. Neisseria. The order Enterobacterales (1) 8. Gram negative bacteria (cont'd): The order Enterobacterales (2): Salmonella 9. Gram negative bacteria (cont'd): The order Enterobacterales (3): Escherichia. Other Gram negative bacteria: Bordetella, Burkholderia 10. Gram negative bacteria (cont'd): The family Pasteurellaceae. Taylorella 11. Epidemiology of brucellosis 12. Gram negative bacteria (cont'd): Legionella, Bartonella, Francisella, ORT, Riemerella 13. Gram negative bacteria (cont'd): Aeromonas, Vibrio. Anaerobic rods (Dichelobacter, Fusobacterium, Bacteroides) 14. Gram positive aerobic rods: Corynebacterium, Rhodococcus, Trueperella, Actinomycyes, Nocardia, Dermatophilus 15. The genus Mycobacterium	lecture

2.	1. Safety in the microbiology laboratory. Laboratory equipment. Diagnostic methods used in bacteriology. Microscopic investigation. Preparing and staining of bacteriological slides 2. Microscopic investigation (cont'd). Gram stain method. Capsule staining (Burri's and Loeffler' methods). Examination of bacterial motility (hanging drop preparation) 3. Bacterial culture. Culture media – types and methods of their preparation. Ordinary media. Enriched media. Selective media. Methods of inoculation on solid liquid media 4. Bacterial culture (cont'd). Description of bacterial growth on liquid and solid media. Reading of culture media. Enumeration of bacteria. The viable plate count method 5. Bacterial culture (cont'd). Differential media. Biochemical examination of bacteria. Carbohydrate fermentation tests. Urease-, catalase-, indole-, H2S-, and DN-ase tests. Miniaturized identification tests (the API system) 6. Influence of physical and chemical factors on microorganisms. Sterilization and disinfection. Evaluation of bactericidal activity of disinfectants through test inoculations 7. Evaluation of bactericidal activity of disinfectants (cont'd). Antimicrobial susceptibility testing. Serology. Definition of "antigen" and "antibody" 8. Reading of antimicrobial susceptibility plates. Serology (cont'd). Basic serological methods. Slide agglutination test. Tube agglutination test. Complement fixation test. Immunofluorescence assay. Antiglobulin (Coobms) test 9. EXAM IN GENERAL BACTERIOLOGY AND SEROLOGY (PARTIAL EXAM I) – practical and theoretical 10. Gram-positive spherical bacteria. The genera Staphylococcus and Streptococcus. Morphology, growth characteristics. Laboratory diagnostics 11. Gram-positive cylindrical bacteria. The genera: Listeria, Lactobacillus, Erysipelothrix. Morphology, and growth characteristics. Laboratory diagnostics 12. Gram-negative cylindrical bacteria. The genus: Pseudomonas. The genera Pasteurella and Mannheimia. Morphology, growth characteristics. Laboratory diagnostics 13. The family Enterobacteriaceae – laboratory diagnostics. The genera: Escherichia, Salmonella. Proteus 14. The family Enterobacteriaceae (cont'd). Reading of inoculated plates and biochemical tests. The genus Brucella. Modified Ziehl-Neelson method. Bacteriological and serological diagnosis of brucellosis 15. Completion of the winter semester. Receiving grades	laboratory classes

Course advanced

Teaching methods:

classes, lecture, participation in research, discussion, teamwork, presentation / demonstration

Activities	Examination methods	Percentage in subject assessment

Activities	Examination methods	Percentage in subject assessment
lecture	active participation	1%
laboratory classes	written credit, oral credit, observation of student’s work, participation in discussion, performing tasks	99%

Entry requirements

Biology, biochemistry I

Literature

Obligatory

1. Markey B., Leonard F., Archambault M., Cullinane A., Maguire D. 2013. Clinical Veterinary Microbiology. Mosby Elsevier
2. Songer J.G., Post K.W. 2005. Veterinary Microbiology: Bacterial and Fungal Agents of Animal Disease. Elsevier Saunders
3. Hirsh D.C., MacLachlan N.J., Walker R.L. 2004. Veterinary Microbiology. Blackwell Publishing

Optional

1. Carter G.R., Wise D.J.2004. Essentials of Veterinary Bacteriology and Mycology. Blackwell Publishing

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Animal nutrition and feed quality

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J8BO.0073.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** Yes **Subject shaping practical skills** No

Teacher responsible for the subject	Maja Słupczyńska
Other teachers conducting classes	Maja Słupczyńska

Period Semester 4	**Examination** exam **Activities and hours** lecture: 30 laboratory classes: 45	**Number of ECTS points** 5.0

Goals

C1	Students will be introduced to the principles of determining the chemical composition of feed, criteria for the division of feed materials, digestion, absorption and utilization of individual nutrients depending on the digestive tract anatomy.
C2	Students will learn to balance diets and complete mixtures recipes depending on the animal species and kind of production, as well as various systems and techniques of animal feeding.
C3	Students will be familiarized with metabolic disorders caused by dietary errors and methods of their prevention.
C4	Students will be presented with methods of modification of the chemical composition of animal products ton nutritional way and methods of reducing the emission of unused nutrients to the environment.
C5	Students will be acquainted with the physiological basics of feeding various groups of farm animals.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the rules for sampling feed materials for analysis, is able to name and define individual feed fractions, as well as knows the basic methods of their determination	B.W13, B.W14, O.W13, O.W8	written exam, test, performing tasks
W2	digestion, absorption and utilization of basic nutrients, vitamins and minerals in monogastric and ruminant animals	B.W13	written exam
W3	the classification of feed materials; characteristic of basic feeds in terms of their nutritional value, nutritional suitability or the presence of anti-nutritional substances	B.W14, B.W15, O.W8	written exam, test
W4	technologies of production, storage and processing of feed materials	B.W13, O.W3, O.W8	written exam
W5	the etiology of metabolic disorders resulting from nutritional mistakes - knows their symptoms and methods of preventing them	B.W13, B.W14, B.W6	written exam
W6	physiological basis of the nutrition of different species / technological groups of farm animals	B.W13, B.W14, O.W13, O.W8	written exam
Skills – Student can:			
U1	interpret the results of chemical analyzes of feed materials and estimate their nutritional value and suitability for animal nutrition	A.U2, B.U5, B.U6	written credit, test, performing tasks
U2	select the appropriate feed for various animal species, knowing their characteristics and taking into account their impact on the physiology and economics of nutrition; can choose the right feed additives	B.U5, B.U6	written credit, test, performing tasks
U3	arrange / optimize a diet and mixtures for various species of farm animals (ruminants and monogastric animals), taking into account the directions of the animal production	B.U5	written credit, test, performing tasks
Social competences – Student is ready to:			

K1	taking responsibility for decisions made in the field of proper animal nutrition and the consequences of dietary mistakes made	O.K1	active participation
K2	is aware of the effects of the environmental pollution related to animal nutrition - production of greenhouse gases, emission of unused metabolites - and strives, through appropriate nutritional measures, to minimize them	O.K1	active participation
K3	constantly expand and update knowledge in the field of animal nutrition physiology and animal feed science	O.K4, O.K8	active participation

Balance of ECTS points

Activity form	**Activity hours***
lecture	30
laboratory classes	45
lesson preparation	30
exam / credit preparation	20
exam participation	2
consultations	1

Student workload	**Hours** 128	**ECTS** 5.0
Workload involving teacher	**Hours** 78	**ECTS** 3.0
Practical workload	**Hours** 45	**ECTS** 1.7

* hour means 45 minutes

Study content

No.	**Course content**	**Activities**

1.	1. Feeds and their ingredients. Sampling of various feed materials for analysis (sampling methods, labels, packaging, storage and transport methods). Classification of feed ingredients. Basic and extended analysis of feeds - presentation of analytical methods for the determination of basic nutrients. 2. Classification and nutritional importance of carbohydrates. Digestion, absorption and utilization of carbohydrates in monogastric animals and ruminants. 3. Classification and nutritional importance of proteins. Digestion, absorption and utilization of proteins in monogastric animals and ruminants. Other nitrogen compounds present in feed materials. Evaluation of the biological value of proteins, the concept of ideal protein and protected protein / amino acids. 4. Classification and nutritional importance of lipids. Digestion, absorption and utilization of lipids in monogastric animals and ruminants. 5. Classification and importance of minerals. Role, symptoms of deficiency and /or toxicity of individual macro- and micronutrients. Synergism and antagonism between individual mineral components. Bioavailability of minerals from feed materials and commercial mineral additives. Methods for determining animals requirement for minerals. 6. Classification and importance of vitamins. Role, symptoms of deficiency and/or toxicity of individual vitamins. Factors affecting the stability/activity of vitamins in feed components and mineral-vitamin mixtures. Absorption of vitamins from the gastrointestinal tract. 7. Mechanisms regulating the feed intake in animals (mechanical, physiological). Classification and nomenclature of feed materials. Nutritive value and nutritional importance of roughage. 8. Nutritional value and nutritional importance of concentrates. Feed additives - division, purpose of application, applicable legal regulations. Anti-nutritive substances in feed materials -occurrence, impact on the health and productivity of animals, methods of inactivation of the activity of anti-nutritional substances. 9. Feed preparation methods and their effect on the digestibility of nutrients. The method of feed preparation depending on the species of animals for which they are intended. Feed preservation methods. 10. Physiological fundamentals of dairy cattle nutrition - nutritive value of feeds in dairy cow, feeding systems - nutrition techniques. Metabolic disorders resulting from incorrect feeding of dairy cows. 11. Feeding of fattening and breeding cattle. Feedstuffs used in fattening, physiological conditions of the fattening process, feeding systems for fattening. 12. Feeding the calves. Basics of physiological feeding of calves, development of the gastrointestinal tract, milk replacers, digestive and metabolic disorders in calves. 13. Physiological fundamentals of pigs feeding: sows, piglets and weaners, pigs for fattening. Demand of individual groups for nutrients. Pig feeding systems, swine feeding diseases - causes, symptoms and prevention. 14. Physiological fundamentals of poultry nutrition: specification of the keeping and feeding of laying hens (composition of eggs, influence of feeding on laying and nutritional methods of modifying the composition of eggs); feeding of chickens for slaughter - the demand for energy and nutrients, methods for improving the use of feed, the use of feed additives. Diseases of laying hens and broiler chickens caused by nutritional mistakes. 15. Hygiene and safety of feed production. Ways of modifying the chemical composition and quality of animal products on the nutritional way - functional foods.	lecture

2.	1. Calculation of the content of individual nutrients in fresh material and in dry matter based on the results of chemical analyzes. Interpretation of the results obtained. 2. Feed digestibility coefficients (apparent and true digestibility). Methodology for determination of digestibility: biological methods - in vivo (balance method, the difference technique, in sacco and in situ methods) and chemical methods. Calculation of apparent digestibility coefficients based on numerical data. Interpretation of the results obtained. 3. Metabolic balance - calculation of the production effect of feed on the basis of C and N balance. Assessment methods the biological value of feed protein. Calculation of the biological value of feed protein by chemical methods - Osera and Block-Mitchela method. 4. Principles of the use of non-protein (synthetic) nitrogen compounds in the feeding of ruminants. Calculation of the amount of the addition of various nitrogen sources from non-protein nitrogen compounds to feeds depending on the extent of the desired coverage of the needs in terms of the general protein. Interpretation of the results obtained. 5. Energy values for feed. Metabolism of energy in the body: from gross energy to net energy. Food/energy units used in various feeding systems of monogastric animals (European for poultry, pigs, horses) and energy value according to the NEL system - for ruminants. Calculation based on numerical data in accordance with the relevant mathematical formulas: net lactation energy values - for dairy cows; metabolic energy for pigs and energy digestible for horses. 6. Diet formulation for ruminants in the INRA system. Basic concepts: energy system - UFL and UFV, protein system (PDIA, PDIMN, PDIME, PDIN, PDIE), fill unit system, forage fill value, feed intake capacity). 7. Formulation of diet for fattening bull (selected breeds) in accordance with the recommendations of the INRA system - work with standards, determination of animal requirement, selection of feed materials, optimization of the feed ration (paper standards + computer program INRAtion). 8. Formulation of diet for breeding heifers (selected breeds) in accordance with the recommendations of the INRA system - work with standards, determination of animal requirement, selection of feed materials, optimization of the feed ration (paper standards + computer program INRAtion). 9. Balancing a diet for ruminating animals in the DLG system. Basic concepts related to the system: feeding standards for dairy cows, estimation of nutritional value of feeds, rules for determining the need for crude protein available in the small intestine and rules for calculating nCP values in feedingstuffs, energy demand (MJ-NEL). Calculation the diet for a dairy cow ("paper" standards + WinPasz computer program) 10. Dietary standards for pigs feeding. Principles of feeding pigs - fattening pigs. 11. Calculation of doses and recipes of complete mixtures for fattening pigs in individual phases of fattening ("paper" standards + WinPasz computer program). 12. The rules of feeding sows in different phases of the reproductive cycle. 13. Calculation of doses and recipes of complete mixtures for sows in individual phases of the cycle ("paper" standards + WinPasz computer program). 14. Feeding of poultry. Recommended shares of individual feed components due to the presence of "anti-nutritional" substances. 15. Calculation of the recipe for a complete mixture for poultry – broiler chickens and layers (WinPasz computer program).	laboratory classes

Course advanced

Teaching methods:

computer lab/laboratory, classes, lecture, discussion, teamwork, project-based learning (PBL), problem-solving method, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	written exam, active participation	60%
laboratory classes	written credit, active participation, test, performing tasks	40%

Entry requirements

Animal physiology I

Literature

Obligatory

1. Mc Donald P., Edwards R.A., Greenhalgh J.F., Morgan C.A.: (Ed). Animal Nutrition. Longman Scientific and Technical, New York, 2002, 2010.
2. Guoyao Wu. Principles of Animal Nutrition. CRC Press. 2018
3. D.V Reddy. Principles of Animal Nutrition and Feed Technology. OXFORD & IBH PUBLISHING. 2018
4. Philip I Hynd. Animal nutrition from theory to practice. CABI. 2019

Optional

1. M.F. Fuller (ed). The Encyclopedia of Farm Animal Nutrition. CABI Publishing. 2004
2. M. L. Galyean. Laboratory procedures in animal nutrition research. Texas Tech University, Lubbock. 1980.

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Animal physiology II

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J8B.0077.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** mandatory
Study form Full-time	**Block** major subjects
Education profile General academic	**Subject related to scientific research** Yes
	Subject shaping practical skills Yes

Teacher responsible for the subject	Bożena Króliczewska
Other teachers conducting classes	Bożena Króliczewska, Jolanta Bujok

Period	**Examination**	**Number of ECTS points**
Semester 4	exam **Activities and hours** lecture: 30 laboratory classes: 45	5.0

Goals

C1	The subject of Animal physiology provides knowledge about the processes occurring in living organisms at the cellular and organ level and their regulation.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the composition and function of blood and the mechanisms of homeostasis related to it, physiology and regulatory mechanisms of the cardiovascular, respiratory, reproductive, excretory and digestive systems (digestion and absorption, gastrointestinal motility, the role of the microbiome).	A.W2, O.W2	written exam, written credit, oral credit, presentation, test, participation in discussion, performing tasks, case study
W2	species differences in the functioning of systems and their physiological parameters (digestive system - specificity of digestion in ruminants, thermoregulation, kidney, reproductive system, pregnancy and lactation, bird physiology).	A.W2	written exam, written credit, oral credit, presentation, test, participation in discussion, performing tasks, case study
W3	mechanisms integrating the functioning of the whole organism and maintaining the organism's homeostasis (thermoregulation, water and electrolyte balance, acid-base balance, metabolism and energy).	A.W5	written exam, written credit, oral credit, presentation, test, participation in discussion, performing tasks, case study
Skills – Student can:			
U1	explain the physiological mechanisms / molecular mechanisms of cellular structures / organs / systems such as: cardiovascular system, digestive system, respiratory system, kidney, female and male reproductive systems, selected issues from bird physiology.	A.U7	written exam, written credit, presentation, participation in discussion, performing tasks, case study
U2	recognizes (in the images from optical microscope) histological structures corresponding to organs, tissues and cells, and is able to formulate their description, interpret their structure and relations between their structure and activity, taking into account the animal species from which they originate.	A.U8	written exam, written credit, presentation, participation in discussion, performing tasks, case study
U3	perform basic blood laboratory tests and define the body's physiological state based on the results obtained.	O.U2	observation of student’s work, participation in discussion, performing tasks, case study
Social competences – Student is ready to:			
K1	assessment and interpretation of the body's functioning based on the measurements of physiological parameters concerning the nervous system, skeletal and smooth muscles, the circulatory system, the sensory organs, and the respiratory system.	O.K5	observation of student’s work, participation in discussion, case study
K2	continuous deepening of acquired knowledge and skills and using them in further stages of education.	O.K8	observation of student’s work, participation in discussion
K3	working in a team on solving problem tasks related to the case study, using knowledge about the known physiological mechanisms in animals and using additional sources of information.	O.K4, O.K7, O.K9	observation of student’s work, participation in discussion

Balance of ECTS points

Activity form	Activity hours*
lecture	30
laboratory classes	45
consultations	10
exam / credit preparation	20
presentation/report preparation	20

Student workload	**Hours** 125	**ECTS** 5.0
Workload involving teacher	**Hours** 85	**ECTS** 3.0
Practical workload	**Hours** 45	**ECTS** 1.7

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	1. Cardiovascular system physiology 4 – Heart physiology. 2. Respiratory system physiology - part 1 – Ventilation and gas exchange. 3. Respiratory system physiology - part 2 – Respiratory centre and regulation of respiration, the role of the respiratory system in acid-base balance maintenance. 4. Reproductive system physiology - part 1 – Gonads as endocrine glands, reproductive physiology of non-pregnant female. 5. Reproductive tract physiology -part 2 - Pregnancy, parturition and lactation. 6. Reproductive system physiology - part 3 – Reproductive physiology of males. 7. Thermoregulation. 8. Urinary system physiology - part 1 – General organisation of a urinary system, kidney as an endocrine organ, nephron, glomerular filtration. 9. Urinary system physiology - part 2 – Reabsorption and secretion in the tubules of the nephron, production of final urine. 10. Urinary system physiology - part 3 - Role of the kidney in acid-base balance regulation and lower urinary tract physiology – storage and micturition. 11. Gastrointestinal tract physiology - part 1 – Motility of the gastrointestinal tract. 12. Gastrointestinal tract physiology - part 2 – Digestion and absorption in the GI tract. 13. Gastrointestinal tract physiology - part 3 – Ruminant digestive physiology. 14. Calcium-phosphorus homeostasis and absorption of microelements and vitamins. 15. Selected topics on bird physiology.	lecture

2.	Laboratory 1. Physiology of the mammalian and birds respiratory system. Examination of the vital volume of the lungs and its components (spirometry). Simulation of airway constriction. Laboratory 2. Registration of chest respiratory movements (thoracography). Determination of respiratory rate before and after exercise. Mechanism of respiratory regulation. Laboratory 3. Selected issues in exercise physiology with particular emphasis on racing horses. The impact of exercise on the cardiovascular system. Testing of selected physiological parameters in dogs. Laboratory 4. Selected issues in the physiology of the female reproductive system. Evaluation of cytological examination of vaginal smears in bitches. Laboratory 5. Formation and composition of urine in mammals. Determining the physical properties of urine. Chemical properties of urine - assessment using commercial test strips. Laboratory 6. Physiology of digestion in the rumen. Observing protozoa in the rumen fluid. Counting protozoa. Laboratory 7. Composition and production of saliva and gastric juice. Testing pepsin activity in various environmental conditions. Laboratory 8. Test (Laboratory 1-7). Solving problem tasks related to the material covered. Exercise 9. Composition and basic functions of blood. Counting red and white blood cells. Laboratory 10. Red blood cells of a mammals, birds and amphibians. The influence of osmotic pressure on red blood cells. Hemolysis of red blood cells. Determination of osmotic resistance of erythrocytes. Determination of red blood cell sedimentation rate (ESR). Laboratory 11. Preparation and staining of a blood smear. Morphology of leukocytes - species differences. Differentiation of leukocyte forms in blood smear. Laboratory 12. Functions of leukocytes. Determining the percentage number of subtypes of leukocytes. Calculation of the total number of individual forms (absolute values of leukocytes). Laboratory 13. Physiology of hemostasias. Evaluation of thrombocytes. Selected parameters of the coagulation system. Laboratory 14. Determination of hemoglobin using the spectrophotometric method. Determination of hematocrit. Calculation of MCV, MHC, MCHC. Measurement of blood oxygen saturation. Teichmann crystals. Laboratory 15. Test (Laboratory 9-14). Presentation of solved problem tasks. Credit	laboratory classes

Course advanced

Teaching methods:

participation in research, brainstorming, classes, lecture, discussion, computer lab/laboratory, teamwork, presentation / demonstration, project-based learning (PBL), problem-solving method, educational film

Activities	Examination methods	Percentage in subject assessment
lecture	written exam	50%
laboratory classes	written credit, oral credit, observation of student’s work, presentation, test, participation in discussion, performing tasks, case study	50%

Entry requirements

Animal physiology I, Cell biology, Chemistry, Biophysics, Animal anatomy I and II, Biochemistry I, Histology and embriology I and II

Literature

Obligatory

1. Cunningham's Textbook of Veterinary Physiology, Bradley G. Klein, Fifth Ed. Elsevier, 2013.
2. Dukes' Physiology of Domestic Animals, 13th Edition. William O. Reece (Editor), Howard H. Erickson (Associate Editor), Jesse P. Goff (Associate Editor), Etsuro E. Uemura (Associate Editor), Wiley-Blackwell, 2015.
3. Physiology of Domestic Animals - Oystein V. Sjaastad, Knut Hove, Olav Sand, Scandinavian Veterinary Press, 2010.
4. Schalm's Veterinary Hematology 6th Ed. By Douglas J. Weiss (Editor), K. Jane Wardrop, Wiley-Blackwell; 6 ed., 2010.
5. Veterinary hematology A diagnostic Guide and Color Atlas by John W. Harvey, 2011.

Optional

1. Guyton and Hall Textbook of Medical Physiology, John E. Hall, 13th-Ed, Elsevier Books 2015.
2. Rodak's hematology. Clinical Principles and Application, 5th ed, 2016
3. Anatomy and Physiology of Domestic Animals, 2nd Ed., R. Michael Akers, D. Michael Denbow, Wiley-Blackwel, 2013.
4. Sturkie's Avian Physiology, 6th ed., Elsevier Inc., 2015.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Ecology of game animals

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J8BO.0536.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** mandatory
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills No

Teacher responsible for the subject	Rafał Ciaputa
Other teachers conducting classes	Rafał Ciaputa

Period Semester 4	**Examination** graded credit **Activities and hours** auditorium classes: 15	**Number of ECTS points** 1.0

Goals

C1	The aim of teaching the course is to provide students with the basic knowledge of the mechanisms regulating the functioning of ecosystems, and bionomics and physiology of game animals occurring in Poland and Europe. The course presents both ethical aspects of human-animal interactions and adaptations of animals to live in specific biocenoses, as well as data on morphological characteristics, feeding and functioning of the digestive system, sensory organs and information exchange, and reproduction of individual animal species. The influence of anthropopressure on transformations occurring in modern ecosystems is also discussed. Aspects of first aid for wild animals are also presented

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	aspects of human-animal interaction and the adaptation of animals to particular biocoenoses and of the morphological characteristics, feeding and digestive functions, sensory organs and information exchange and reproduction of animal species	O.W2	written credit
Skills – Student can:			
U1	define physiological state as an animal's adaptation to changing environmental factors, mechanisms regulating the functioning of ecosystems, and the bionomy and physiology of game animals found in Poland and Europe	A.U7	written credit
U2	perform a clinical examination of a wild animal and administer first aid to the animal	B.U4	written credit, participation in discussion
Social competences – Student is ready to:			
K1	exhibit responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	participation in discussion
K2	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	participation in discussion

Balance of ECTS points

Activity form	Activity hours*	
auditorium classes	15	
consultations	10	
exam / credit preparation	5	
Student workload	**Hours** 30	**ECTS** 1.0
Workload involving teacher	**Hours** 25	**ECTS** 1.0
Practical workload	**Hours** 15	**ECTS** 0.6

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	Auditorium classes (15h) are implemented for 8 weeks, classes are held every other week Topics: 1. Different faces of ecology and human-animal relations 2h 2. Ethology and physiology of roe deer (Capreolus capreolus) 2h 3. Ecology and physiology of sica deer (Cervus nipon), ethology and physiology of fallow deer (Dama dama) 2h 4. Ethology and physiology of fox (Vulpes vulpes) and other predatory mammals 2h 5. Ethology and physiology of wild boar (Sus strofa) 2h 6. Ethology and physiology of hare (Lepus europaeus) 2h 7. Ethology and physiology of grey partridge (Perdix perdix) and common pheasant (Phasianus colchicus). Medical treatment and first aid for wild animals 2h 8 Credit of the course 1h	auditorium classes

Course advanced

Teaching methods:

classes, lecture, discussion, presentation / demonstration, brainstorming, case analysis

Activities	Examination methods	Percentage in subject assessment
auditorium classes	written credit, participation in discussion	100%

Entry requirements

Biology, animal anatomy, histology and embryology

Literature

Obligatory

1. L. Baskin, K. Danell „Ecology of Ungulates”, Springer, 2003
2. G. Gorman “Central and Eastern European Wildlife”, Bradt Travel Guides, 2008
3. P. Chanin, G, Troughton “The British Natural History Collection: Otters”, Whittet Books Ltd, 2013
4. S. Tapper, D. Yalden “The Brown Hare”, Mammal Society, 2010
5. M. Woods “The Badger”, Mammal Society, 2010

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Pathophysiology I

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J8BO.1559.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** Yes **Subject shaping practical skills** No

Teacher responsible for the subject	Aleksandra Pliszczak-Król
Other teachers conducting classes	Aleksandra Pliszczak-Król

Period Semester 4	**Examination** graded credit **Activities and hours** lecture: 30	**Number of ECTS points** 3.0

Goals

C1	to familiarize students with basic paradigms and concepts related to the science of disease and disorders of homeostasis, dynamics of the processes deterimning the development of the disease.
C2	to familiarize students with the pathogenic effect of selected etiological factors and pathogenesis of diseases caused by them.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population.	O.W1	written credit, oral credit, participation in discussion
W2	selected systemic disorders in pathological conditions.	O.W2	written credit, oral credit, participation in discussion
W3	the etiology, pathogenesis and clinical symptoms of diseases occurring in individual animal species, and knows the principles of therapeutic procedure.	O.W3	written credit, oral credit, participation in discussion
W4	the mechanism of neurohormonal regulation, aging and death.	A.W9	written credit, oral credit, participation in discussion
W5	the principles and mechanisms underlying animal health and disease formation at the level of cell, the organ and the entire animal body.	A.W10	written credit, oral credit, participation in discussion
W6	the correlation between factors (e.g. temperature, electricity, electromagnetic ionization, altitude) that disturb the balance between biological processes of the animal body and pathophysiological changes.	A.W11	written credit, oral credit, participation in discussion
W7	the pathophysiological changes occurring in cells, tissues, organs and systems of animals, as well as biological mechanisms, including immunological mechanisms, and therapeutic possibilities that allow recovery.	A.W12	written credit, oral credit, participation in discussion
W8	the Polish and Latin medical nomenclature in Pathophysiology.	A.W20	written credit, oral credit, participation in discussion
Skills – Student can:			
U1	use the knowledge of the laws of physics in order to explain the impact of external factors (temperature, pressure, electromagnetic field, ionizing radiation) on the animal body.	A.U1	written credit, oral credit, participation in discussion
U2	describe changes in functioning of the organism in the situation of homeostasis disorders caused by exogenous and endogenous factors.	A.U4	written credit, oral credit, participation in discussion
U3	define physiological state as the animal's adaptation to the changing environmental factors.	A.U7	written credit, oral credit, participation in discussion
U4	listen and provide answers with the use of understandable language, appropriate to the given situation	A.U13	written credit, oral credit, participation in discussion
U5	understand the need of continuing education, in order to ensure continuous professional development	A.U21	written credit, oral credit, participation in discussion

U6	use Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health, diseases, pathological changes and conditions	O.U8	written credit, oral credit, participation in discussion
Social competences – Student is ready to:			
K1	exhibit responsibility for his/her decisions made in regard to the people, animals and the natural environment.	O.K1	written credit
K2	use the objective sources of information related to pathophysiology.	O.K4	written credit
K3	deepen his/her knowledge and improve skill in pathophysiology.	O.K8	written credit
K4	communicate with the co-workers and share knowledge	O.K9	written credit

Balance of ECTS points

Activity form	**Activity hours***	
lecture	30	
exam / credit preparation	25	
lesson preparation	30	
Student workload	**Hours** 85	**ECTS** 3.0
Workload involving teacher	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	**Course content**	**Activities**

1.	1. Pathophysiology as a science that integrates all knowledge of disease and modulates the "medical thinking." (2h) 2. Nozology - the science of disease in general. Health vs disease. Kinetics of functional and pathological regulation, compensation, adaptation. Disease as disorder of the body function regulations and the correlation between them, "vicious circle". Etiology of diseases. Main and secondary, exogenous and endogenous causes as factors that cause and modulate the disease status. (2h) 3. Pathogenesis, sanogenesis, Development of the disease (evolutio morbi). Mechanical factors as reasons of diseases - kinetosis, hypokinesis, akinesis. (2h) 4. Thermal factors. Pathogenesis of burn disease. (2h) 5. Electromagnetic radiation influence on the animal body. Electrical currents and sound waves (infrasound, audible sound, ultrasound) - influence on the animal body. (2h) 6. Biological pathogens. Mechanisms of microbiological infections. (2h) 7. Macro- and microclimate conditions as determinants of the diseases occurrence. Pathogenesis of acute and chronic altitude sickness. Disorders of thermoregulation and their determinants. Hypothermia, hyperthermia - systemic changes and their results. (2h) 8. Fever as an adaptive process. Etiopathogenesis, systemic changes, positive and negative aspects of fever. (2h) 9. Genetic factors in the etiopathogenesis of diseases. Constitution, condition and the formation of diseases. Predisposition to the occurrence of diseases. Aging and death. Aging, homeostasis and the occurrence of diseases. Specificity of veterinary geriatrics. (2h) 10. Metabolic disorders. Priority of tissues in access to nutrients. Endogenous and exogenous causes of metabolic disorders in animals. (2h) 11-12. Trace elements and micronutrients in allostasis. Etiopathogenesis and symptoms of micronutrient deficiencies in animals. (4h) 13-15. Vitamin disorders in animals (fat-soluble vitamins): Vitamins and their participation in the regulation of body metabolism. Factors that determinate of vitamin requirements. Hypovitaminosis and hypervitaminosis. Factors promoting disorders and consequences of vitamin deficiency in various animal species. Credit for the topics of lectures 1-12. (6h).	lecture

Course advanced

Teaching methods:

educational film, problem-solving method, lecture, discussion, presentation / demonstration

Activities	Examination methods	Percentage in subject assessment
lecture	written credit, oral credit, participation in discussion	100%

Entry requirements

Completion of the course in: biochemistry, cell biology, histology and embriology, animal anatomy, animal physiology.

Literature

Obligatory

1. Zachary J.F. Pathologic basis of veterinary disease. ELSEVIER, 2017, 6th edition.
2. Cheville N.F. Introduction to Veterinary Pathology. BLACKWELL PUBLISHING, 2006, 3rd edition.
3. Dunlop R.H., Malbert Ch.h. Veterinary Pathophysiology. BLACKWELL PUBLISHING, 2004.
4. Stockham S.L., Scott M.A. Fundamentals of Veterinary Clinical Pathology. IOWA STATE PRESS. A Blackwell Publishing Company, 2002
5. McCance k.L., Huether S.E. Pathophysiology. The biologic basis for disease in adults and children. ELSEVIER, 2019, 8th edition.
6. Norris T.L. Porth’s Pathophysiology. Concepts of altered health states. Walters Kluwer, 2019.

Optional

1. Damjanov I. Pathophysiology. SAUNDERS. Elsevier, 2009.
2. Silbernagl S., lang F. Color atlas of Pathophysiology. THIEME, 2016, 3rd edition.
3. Harvey j.W. Veterinary Hematology. A diagnostic guide and color atlas. ELSEVIER, 2012.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Summer practical training: Farm practice

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J8BO.2406.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Renata Nowaczyk
Other teachers conducting classes	Renata Nowaczyk

Period	**Examination**	**Number of ECTS points**
Semester 4	graded credit **Activities and hours** practical training: 80	4.0

Goals

C1	The aim of the farm practice is to become familiar with the specificity of high production herds/ breeding herds/breeding stables
C2	The aim is to learn the principles of animal production and feeding routine. The student should learn basic procedures carried out on animals depending on group and production specificity.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	presents the principles of planning and analysing the feed doses	B.W14	oral credit
W2	care and production treatments carried out on animals	B.W20	oral credit, Attendance at the internship and completing the internship diary (based on the activities performed and events viewed). Presentation of a positive certificate-opinion on the course of the practice.
W3	breeds and breeding rules (within animal species with which the student practices)	O.W8	oral credit
W4	rules of animal nutrition, taking into account the requirements of the group production (within animal species with which the student practices)	O.W8	oral credit, Attendance at the internship and completing the internship diary (based on the activities performed and events viewed). Presentation of a positive certificate-opinion on the course of the practice.
Skills – Student can:			
U1	uses the collected information associated with the health and welfare of animals, and in selected cases also with productivity of the herd	B.U20	oral credit, Attendance at the internship and completing the internship diary (based on the activities performed and events viewed). Presentation of a positive certificate-opinion on the course of the practice.
U2	recognize the feed components used in animal nutrition and evaluate the quality and suitability ration components in feeding animals to maintain health and welfare.	B.U20	oral credit
Social competences – Student is ready to:			
K1	cooperation with the farm staff	O.K2	Attendance at the internship and completing the internship diary (based on the activities performed and events viewed). Presentation of a positive certificate-opinion on the course of the practice.

Balance of ECTS points

Activity form	Activity hours*
practical training	80
exam / credit preparation	20

Student workload	**Hours** 100	**ECTS** 4.0
Workload involving teacher	**Hours** 80	**ECTS** 3.0
Practical workload	**Hours** 80	**ECTS** 3.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Getting familiar with specificity, work organization, and safety procedures on the farm. Student is learning about zones and production sectors on the farm, as well work organization. 2. Getting familiar with rules of filling the records and different kind of records. 3. Getting familiar with production level and its results. Analysis of production on the farm. 4. Getting familiar with organization of feeding (food components, sources of food and rules for storing). Learning the food components and technology of feeding depending on the physiological state and production level. 5. Preparation of food components and feed ration depending on production group. 6. Getting familiar with restrain methods and moving animals from group to group depending on the group and animal keeping system. 7. Getting familiar with responsibility on each position concerning working with animals. 8. Getting familiar with basic operations carried out on animals by farm workers and farm veterinarian. 9. Getting familiar with technical aspect of boxes/pen preparation depending on animal age; cleaning procedures and way of dung and feces storing.	practical training

Course advanced

Teaching methods:

Learning while working on a farm / farm / stable., situation-based learning

Activities	Examination methods	Percentage in subject assessment
practical training	oral credit, Attendance at the internship and completing the internship diary (based on the activities performed and events viewed). Presentation of a positive certificate-opinion on the course of the practice.	100%

Entry requirements

Knowledge from following subjects is required: Animal breeding, Animal nutrition and feed quality, Technologies in animal production, Animal Hygiene, Ethology and animal welfare.

Literature

Obligatory

1. Specialized websites focused on specific breed like: http://www.calfnotes.com/ https://elearningpigs.com/en/
2. Principles of cattle production. C.J.C. Philips, CABI Publishing 2001. RUMINANT PHYSIOLOGY. Digestion, Metabolism, Growth and Reproduction. P.B. Cronjé. CABI Publishing 2000.

Optional

1. Trade magazines

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Technologies in animal production

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J8BO.2557.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Anna Rząsa
Other teachers conducting classes	Anna Rząsa

Period Semester 4	**Examination** graded credit **Activities and hours** lecture: 15 laboratory classes: 15	**Number of ECTS points** 2.0

Goals

C1	familiarizing students with the specifics of large-scale production and the principles of its existing
C2	presentation how to evaluate different technologies used at farms and examples of some modernization resolutions for working/old farms
C3	indication how to assess animal welfare and health status including body condition scoring, production results as well as various technological solutions/tools.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	basic patterns of behaviour in healthy and sick animals	B.W9, O.W2	written credit, test
W2	basic requirements of animals regarding the conditions of maintenance and nutrition	B.W11, B.W13, B.W15, B.W9, O.W8, O.W9	written credit, active participation, test
W3	relationships between management and technology and its influence on production results	B.W20, B.W22, B.W9, O.W13, O.W2, O.W8	written credit, test
Skills – Student can:			
U1	assess the adaptation of animal production technology to animals' requirements related to the direction of production and genotype	B.U20, B.U5, O.U4	active participation, test
U2	propose and evaluate a maintenance of animals in different production groups depending on their genotype and size of the herd	B.U2, B.U20, B.U21, B.U5	report, test
U3	prepeare a herd turnover and on this basis evaluate the results achieved on the farm	B.U20, O.U10	observation of student’s work, active participation, test
Social competences – Student is ready to:			
K1	cooperation with farmers and other people working in livestock area	O.K1, O.K4, O.K8	observation of student’s work, active participation
K2	cooperation with stockmen	O.K1, O.K5, O.K9	observation of student’s work, active participation

Balance of ECTS points

Activity form	Activity hours*
lecture	15
laboratory classes	15
presentation/report preparation	5
class preparation	5
literature study	5
report preparation	5

Student workload	**Hours** 50	**ECTS** 2.0
Workload involving teacher	**Hours** 30	**ECTS** 1.0
Practical workload	**Hours** 20	**ECTS** 0.8

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1,2,3. Animal production meaning and course of action. (presentation of large scale animal production specificity, option of different animal maintenance technology depending on their potential yield and high health status, ergonomic aspects, technological details, physiological needs, environment protection aspects) Characteristic of industry farms (presentation of basic animal production details, industry farm characteristic; factors influencing optimal production efficiency; common organization mistakes; basis rules of biosecurity: outside and inside factors, new animals introducing, comparison of open and close production cycle) 4,5. Detailed technologies in pig production: farrowings (overview of different housing systems, pens and feeding, management of sows and piglets) 6,7. Detailed technologies in cattle production: calves and heifers rearing (overview of different housing systems, pens and feeding, management of calves and heifers) 8,9. Detailed technologies in pig production: nurseries and fattening sectors (overview of different housing systems, management of weaners and fatteners) 10,11. Detailed technologies in pig production: reproduction sector (overview of different housing systems, management of empty and pregnant sows, and boars) 12,13. Detailed technologies in cattle production: basic stock (overview of different housing and feeding systems, management of lactation and dried cows) 14,15. Detailed technologies in dairy cattle production: overview of different milking parlours. Overview of technologically advanced solutions. PLF - a concept of creating smart animal farming.	lecture

2.	1,2. Mating and farrowing/calving schedule in farms with pigs or cattle. Calculation of planned farm productivity, timetable for occupation of farrowing pens with different farrowing/calving frequency during the year. According to obtained datas (number of sows/cows, mating / farrowing / weaning date) with usage of heat calendars students have to create technological groups and count number of required pens. 3,4. Production schedule at cattle farm. Basis on obtained datas (number of animals at farm, % of calving and losses in different production groups) students have to calculate production at farm, they have to calculate number of cows in technological groups, stock capacity, average state during the year. For obtained results students have to prepare: simple, expanded and decreasing production turnover. 5,6. Production schedule at pig farm. Basis on obtained datas (number of animals at farm, length of lactation, number of empty days, fertility, losses in different production groups) students have to calculate farm and sow production, they have to calculate number of technological groups, number of required pens and they have to prepare production turnover for farm working in a continuous or sezonal cycle. 7,8. Repetytory from turnovers for cattle and pig farms. 9. Distribution of topics for own presentations. Test. 10,11. Students present reports on given topics consist with cattle farm and discussion on them. 12,13. Students present reports on given topics consist with pigs farm and discussion on them. 14.Repetytory 15. Test	laboratory classes

Course advanced

Teaching methods:

discussion, classes, lecture, presentation / demonstration, educational film, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	written credit, active participation	30%
laboratory classes	observation of student’s work, active participation, report, test	70%

Entry requirements

Sequential subject, before taking part in „Technology in animal production” a student should be after courses: Animal breeding, Animal nutrition and feed quality, Animal hygiene, Ethology and animal welfare

Literature

Obligatory

1. Gordon I.: Reproductive technologies in farm animals. CABI publishing 2004
2. Aland A., Madec F.: Sustainable animal production. Wageningen Academic Publisher 2009
3. Academical books about livestock animals breeding
4. Own students notes from lectures and classes conducted within the subject "Technologies in animal production"

Optional

1. trade journals and www pages

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Veterinary immunology

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J8BO.2643.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** mandatory
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** Yes
	Subject shaping practical skills No

Teacher responsible for the subject	Anna Chełmońska-Soyta
Other teachers conducting classes	Anna Chełmońska-Soyta, Julia Miller, Agnieszka Żak-Bochenek

Period	**Examination**	**Number of ECTS points**
Semester 4	exam **Activities and hours** lecture: 15 laboratory classes: 30	3.0

Goals

C1	The aim of the course is to achieve by the students the basic knowledge on the role of integrative role of defense mechanisms, the rules governing of self-non-self recognition, the principles of migration, communication and co-operation of immune cells. Subject presents the basic clinical disorders resulting from dysregulation of defense mechanisms, immune and inflammatory nature of tissue repair, types of hypersensitivity, and also the ways of immune-modulation in the prevention of infectious diseases in a patient and in the herd.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the structure of the immune system of mammals and birds	A.W1	written exam, oral exam, test
W2	structure, activity and mechanisms of regulation of the immune system and its integration with other systems at the organism level	A.W2	written exam, oral exam, test
W3	immune mechanisms related to infection and inflammation, and anti-inflammatory processes	A.W12	written exam, oral exam, test
W4	the course of the immune response in the case of viral, bacterial and fungal infections, the use of serological tests in the diagnosis of infectious diseases	A.W13	written exam, oral exam, test
Skills – Student can:			
U1	analyze and interpret clinical symptoms and test results in the context of immune disorders and undertake therapeutic or prophylactic measures	O.U2	test
U2	plan diagnostic procedures in case of suspected infectious diseases and diseases of the immune system	O.U3	written exam, oral exam, test
U3	use basic immunodiagnostic techniques such as: qualitative and quantitative analysis	A.U2	test, performing tasks
U4	describe changes in the functioning of the organism in the situation of disturbed homeostasis in the context of immune disorders, inflammations and infections	A.U4	written exam, oral exam, test
U5	listen and respond in a language that is understandable, appropriate to the situation, using the known nomenclature regarding the immune response	A.U13	oral exam, participation in discussion
Social competences – Student is ready to:			
K1	use of objective sources of information regarding knowledge in the field of immunology	O.K4	observation of student’s work, active participation
K2	formulating conclusions from own measurements or observations, analysis of the obtained results	O.K5	observation of student’s work, active participation
K3	communicates with the co-workers and shares knowledge	O.K9	observation of student’s work, active participation, participation in discussion
K4	Demonstrating responsibility for diagnostic decisions made in relation to people, animals and the natural environment	O.K1	observation of student’s work, active participation

Balance of ECTS points

Activity form	Activity hours*
lecture	15

laboratory classes	30
exam / credit preparation	40
exam participation	2
consultations	3

Student workload	**Hours** 90	**ECTS** 3.0
Workload involving teacher	**Hours** 50	**ECTS** 2.0
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	1 Structures of immune system [resistance, immunity, innate and acquired immunity,cells, organs, leucocytes traffic]. 2.cont.Structures of immune system [resistance, immunity, innate and acquired immunity,cells, organs, leucocytes traffic]. 3. Molecules of immune recognition. Major histocompatibility complex(MHC). Innate recognition v specific recognition, Pathogen Recognition Receptors, Immunoglobulin superfamilly (MHC ,TCR,BCR,CD4), MHC diversity, TCR-CD3 complex; Immune recognition. Antigen presentation. MHC- T cell receptor (TCR) interaction [MHC I and II class presentation and restriction, T cell recognition and activation, first and second signal concept] 4. cont.Molecules of immune recognition. Major histocompatibility complex(MHC). Innate recognition v specific recognition, Pathogen Recognition Receptors, Immunoglobulin superfamilly (MHC ,TCR,BCR,CD4), MHC diversity, TCR-CD3 complex; Immune recognition. Antigen presentation. MHC- T cell receptor (TCR) interaction [MHC I and II class presentation and restriction, T cell recognition and activation, first and second signal concept] 5. Immune recognition. B-cell receptor (BCR). Development and differentiation of lymphocytes. [B cell antigen recognition and presentation, B and T cell linked recognition, B –cell activation. TCR and BCR diversity]. Cell cytotoxicity during immune response. [natural and antibody dependent cell cytotoxicity (ADCC), cytotoxic and target cells, MHC, MHC- restricted and non-MHC restricted cytotoxicity, NK cells, T ab and gd cells characteristics, key activators of Tc lymphocytes, cytotxic reaction, cytotoxic effect mediated by cytolytic granules and TNF family receptors]. 6. cont.Immune recognition. B-cell receptor (BCR). Development and differentiation of lymphocytes. [B cell antigen recognition and presentation, B and T cell linked recognition, B –cell activation. TCR and BCR diversity]. Cell cytotoxicity during immune response. [natural and antibody dependent cell cytotoxicity (ADCC), cytotoxic and target cells, MHC, MHC- restricted and non-MHC restricted cytotoxicity, NK cells, T ab and gd cells characteristics, key activators of Tc lymphocytes, cytotxic reaction, cytotoxic effect mediated by cytolytic granules and TNF family receptors]. 7. Cytokines. Immune response regulation.[cytokines: induction, pleiotropic, synergistic, redundant, additive, antagonistic mode of action, cytokine cascades, cytokines receptors, interferons, cytokines signal transduction pathways, the role of cytokines in Th1/Th2 lymphocytes subpopulations differentiation, cytokines knockouts and immune system impairment, immune response regulation-examples] 8.Acute inflammatory response. [cells, inflammatory cascade, (phagocytosis, PRR –PAMP interactions, , immune- mediated phagocytosis (immunoglobulins, complement), pro-inflammatory, anti-inflammatory and regulatory cytokines – role in inflammatory process. Leukocytes traffic : leukocytes- endothelium interactions (rolling, activation,adhesion,diapedesis). Adhesion molecules and their ligands, regulatory role of cytokines in inflammatory process. Acute phase response proteins. 9. Anti-infection response. [innate and adaptive immune response in viral, bacterial, fungal and parasite infections. Host defense strategy. Mechanisms used by pathogens to avoid an immune response]. primary and secondary immune response 10. Natural immunity. Mucosal immunity [natural barriers of resistance, Mucosal Associated Lymphatic Tissue, antigen recognition in the gut, activated lymphocytes traffic, .secretory immunoglobulins production and functions, gut-mammary link 11. cont.Natural immunity. Mucosal immunity [natural barriers of resistance, Mucosal Associated Lymphatic Tissue, antigen recognition in the gut, activated lymphocytes traffic, .secretory immunoglobulins production and functions, gut-mammary link 12. Vaccination [immune memory, routs of immunization and antigen recognition, vaccines antigens, boosting effect, herd immunity and immune responders and non-responders, adjuvants]. 13. cont.Vaccination [immune memory, routs of immunization and antigen recognition, vaccines antigens, boosting effect, herd immunity and immune responders and non-responders, adjuvants]. 14. Immune deficiency [severe combined immunodeficiency, transistent hypogammaglobulinamia in dogs and horses] T lymphocytes development (TCR development positive and negative selection, immunecompetence) 15. Tumor immunology. Organ graft rejection. [tumor cell antigens, immune cells involved in anti-tumor reaction, immune cells involved in organ graft rejection, Graft versus Host reaction and Host v Graft reaction]	lecture

2.	1. Serological tests and their use in veterinary medicine part 1. (4h) 2. serological tests and their use in veterinary medicine part 2. (4h) 3. serological tests and their use in veterinary medicine part 3, blood groups in animals. (4h) 4. test 1 (1h) 5. immunological tests in the diagnosis of hypersensitivity diseases (4h) 6. cellular function tests (4h) 7. modern immunodiagnostic methods in veterinary medicine (4h) 8. test (1h) 9. clinical cases, tasks using serological tests (4h)	laboratory classes

Course advanced

Teaching methods:

classes, lecture, teamwork, presentation / demonstration, case analysis, educational game

Activities	Examination methods	Percentage in subject assessment
lecture	written exam, oral exam	50%
laboratory classes	observation of student’s work, active participation, test, participation in discussion, performing tasks	50%

Entry requirements

the course in sequence, requires passed exam in animal anatomy I and II, Histology and embryology I and II, biochemistry I and II

Literature

Obligatory

1. Tizard I., Veterinary Immunology, Elsevier, 2018
2. Day M. Veterinary immunology - principles and practice, Taylor & Francis Group, 2014
3. Abbas A. Cellular and Molecular Immunology. ELSEVIER, 2018

Optional

1. Day M. Clinical immunology of the dog and cat, Manson Publishing, 2008
2. Abbas A. Cellular and Molecular Immunology. ELSEVIER, 2018
3. Gershwin L. Case Studies in Veterinary Immunology 1st Edition, Garland Science, 2017

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Veterinary microbiology II

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J8BO.2645.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** Yes **Subject shaping practical skills** Yes

Teacher responsible for the subject	Jarosław Król
Other teachers conducting classes	Jarosław Król, Magdalena Florek, Barbara Bażanów, Anna Matczuk

Period	**Examination**	**Number of ECTS points**
Semester 4	exam **Activities and hours** lecture: 30 laboratory classes: 30	5.0

Goals

C1	The aim of the course is to provide students with basic knowledge on the biology of viruses, bacteria and fungi, classification of microorganisms, phenomena occurring in the microbial world and interactions between macro- and microorganisms. In addition the course gives the insight into elementary diagnostic methods used for the identification of pathogenic microorganisms as well as methods of the elimination of microorganisms from the environment (sterilization, disinfection) and techniques for the examination of bacterial susceptibility to antimicrobials.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population	O.W1	written exam, oral exam, written credit, oral credit, test
W2	knows the biology of infectious factors that cause diseases transmitted between animals, as well as anthropozoonoses, taking into account the mechanisms of disease transmission and defense mechanisms of the macroorganism	A.W13	written exam, oral exam, written credit, oral credit, test
W3	knows to an extensive degree and presents the basics of microbiological diagnostics	A.W15	written exam, oral exam, written credit, oral credit, active participation, test
W4	presents the mechanisms of drug resistance, including multi-drug resistance by microorganisms	A.W18	written exam, oral exam, written credit, oral credit, test
W5	explains disturbations of the balance of biological processes in the animal body caused by microorganisms	A.W11	written exam, oral exam, written credit, oral credit
Skills – Student can:			
U1	plans the diagnostic procedure	O.U3	written exam, oral exam, written credit, oral credit, observation of student’s work
U2	performs basic microbiological diagnostics	A.U10	written exam, oral exam, written credit, oral credit, observation of student’s work, test
Social competences – Student is ready to:			
K1	deepens his/her knowledge and improves skills	O.K8	observation of student’s work, active participation
K2	cooperates with representatives of other professions in the scope of public health protection	O.K11	observation of student’s work, active participation
K3	draws conclusions from his/her own experiments and observations	O.K5	observation of student’s work, active participation

Balance of ECTS points

Activity form	Activity hours*
lecture	30
laboratory classes	30
lesson preparation	30

exam / credit preparation	55
consultations	5

Student workload	**Hours** 150	**ECTS** 5.0
Workload involving teacher	**Hours** 65	**ECTS** 2.3
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	1. Gram positive spore-forming rods. Bacillus anthracis – epidemiology and virulence factors. Clostridium - pathogenicity 2. Curved and spiral bacteria (Campylobacter, Helicobacter, Brachyspira, Treponema, Borrelia, Leptospira) 3. Bacteria without cell wall (Mycoplasma, Ureaplasma) 4. Obligate intracellular bacteria (Coxiella burnetii, Chlamydiales, Rickettsiales) 5. Development of virology as a scientific discipline. AIDS: history of AIDS research, origin of the disease, taxonomy, morphology and epidemiology of HIV, AIDS treatment and prevention 6. Virus taxonomy. Morphology of viruses. Size and shape of viruses. Bacteriophages 7. Virus replication. Stages of cell infection: virus receptors, virus penetration, early protein synthesis, eclipse stage and release of virus from the cell 8. Immunological mechanisms in viral infection. Types of viral infections, portal of entry of the virus, persistent viral infection, virus interference phenomenon. Immunoprophylaxis. Antivirus vaccines 9. Methods of virus cultivation. Laboratory animals. Embryonated eggs. Cell cultures. Techniques of virus isolation. Identification of viruses 10. The family Poxviridae. Taxonomy and morphology of pox viruses. Avian and mammalian pox. Orf. Myxomatosis 11. The families Asfarviridae and Flaviviridae. Taxonomy and morphology of the viruses. African and classical swine fever 12. The family Adenoviridae. Taxonomy and morphology of the viruses. Rubarth disease. Human adenovirus 36 infection 13. The family Orthomyxoviridae. Taxonomy and morphology of the viruses. Influenza 14. Exotic, vector-borne, zoonotic viruses – the threat to Europe and Poland: West Nile Fever virus, Crimean–Kongo hemorrhagic fever virus and Rift Valley fever virus 15. The family Rhabdoviridae. Rabies – diagnostic methods	lecture

2.	1. Gram-positive spore-forming rods. The genus Bacillus. Laboratory diagnosis of anthrax. The genus Clostridium. Characteristics of Gram-positive anaerobic rods. Laboratory identification of infections caused by Clostridia 2. The genus Mycobacterium. Mycobacterium tuberculosis complex (MTC). Atypical mycobacteria. Laboratory diagnostics of tubeculosis. Microscopic investigation of mycobacteria – the Ziehl-Neelsen method 3. MYCOLOGY (1). The pathogenic fungi. Methods of mycological investigation. The dermatophytes – mycological investigation. The genera Trichophyton and Microsporum. The moulds. The genus Aspergillus 4. MYCOLOGY (2). The yeasts and yeast-like fungi. The genera Candida, Cryptococcus, Geotrichum and Malassezia. Laboratory diagnosis of yeasts infections. Macroscopic- and microscopic assessment of fungal cultures. The germ tube test 5. EXAM IN MEDICAL BACTERIOLOGY AND MYCOLOGY (PARTIAL EXAM II) – practical and theoretical 6. VIROLOGY. Safety precautions in virological laboratory. Biosafety levels. Aseptic techniques. Laboratory equipment (biosafety cabinets, CO2 incubator, inverted microscopes) 7. Collection of samples from living and dead animals. Preparation of tissue suspensions for virus isolation 8. Methods of virus isolation. Experimental animals. Isolation of viruses in embryonated eggs 9. Collection of the virus harvest from embryonated chicken eggs. Hemagglutination assay. The family Paramyxoviridae (Newcastle disease virus, bovine parainfluenza-3 virus, canine distemper virus) 10. Cell culture techniques. Primary cell cultures. Continuous cell lines. Cytopathic effect (CPE) - microscopic observation. The family Herpesviridae (equine herpesviruses 1, 3 and 4; gallid herpesviruses 1 and 2) 11. Virus neutralisation test: application for the identification of virus and for quantification of antibodies. Immunofluorescence assay. The family Parvovridae (feline panleukopenia virus, canine parvovirus, porcine parvovirus) 12. The family Arteriviridae. Equine viral arteritis – diagnostic techniques. Virus isolation in cell cultures. Virus neutralisation test – interpretation. Cytopathic effect caused by EAV – a microscopic observation. Porcine Reproduction and Respiratory Syndrome (PRRS) virus. 13. Hemagglutination inhibition assay. The family Picornaviridae. Virological and serological diagnostics of foot and mouth disease. Swine vesicular disease 14. EXAM IN VIROLOGY (PARTIAL EXAM III) – theoretical Completion of the summer semester. Receiving grades	laboratory classes

Course advanced

Teaching methods:

classes, lecture, discussion, teamwork, presentation / demonstration

Activities	Examination methods	Percentage in subject assessment
lecture	written exam, oral exam	60%
laboratory classes	written exam, oral exam, written credit, oral credit, observation of student’s work, active participation, test	40%

Entry requirements

Biology, Biochemistry, Veterinary microbiology I

Literature

Obligatory

1. Markey B., Leonard F., Archambault M., Cullinane A., Maguire D. 2013. Clinical Veterinary Microbiology. Mosby Elsevier
2. Songer J.G., Post K.W. 2005. Veterinary Microbiology: Bacterial and Fungal Agents of Animal Disease. Elsevier Saunders
3. Hirsh D.C., MacLachlan N.J., Walker R.L. 2004. Veterinary Microbiology. Blackwell Publishing

Optional

1. OIE Manual of Standards for Diagnostic Tests and Vaccines (https://www.oie.int/standard-setting/terrestrial-manual/access-online/)

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Clinical and laboratory diagnostics I

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J10BO.0406.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** Yes **Subject shaping practical skills** Yes

Teacher responsible for the subject	Marcin Jankowski
Other teachers conducting classes	Maciej Grzegory, Agnieszka Cekiera, Alicja Cepiel-Kośmieja, Agnieszka Sikorska-Kopyłowicz

Period	**Examination**	**Number of ECTS points**
Semester 5	graded credit **Activities and hours** lecture: 30 clinical classes: 30	4.0

Goals

C1	To acquaint students with the methods and techniques of diagnostic testing of individual systems
C2	Transfer of knowledge in the field of practical clinical examination and additional tests, including laboratory tests, and interpretation of results.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W4	oral credit, test
W2	specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes;	O.W7	oral credit, test
W3	principles of diagnostic procedure, including differential diagnosis, and therapeutic procedure	B.W4	oral credit, test
W4	rules for conducting a clinical trial and animal health monitoring	B.W5, B.W6	oral credit, test
Skills – Student can:			
U1	conducts clinical examination of the animal in accordance with the principles of medical art;	O.U1	oral credit, active participation
U2	plans the diagnostic procedure	O.U3	oral credit, active participation
U3	uses Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health, diseases, pathological changes and conditions	O.U8	oral credit, active participation
U4	act safely and humanely with animals and instruct others in this regard	B.U1	oral credit, active participation
U5	conduct a medical and veterinary interview in order get accurate information about a single the animal or group of animals and his or theirs living environment	B.U2	oral credit, active participation
U6	conduct a complete clinical examination of the animal	B.U3	oral credit, active participation
Social competences – Student is ready to:			
K1	uses the objective sources of information	O.K4	active participation
K2	deepens his/her knowledge and improves skills	O.K8	active participation

Balance of ECTS points

Activity form	Activity hours*
lecture	30
clinical classes	30
consultations	30
class preparation	30

Student workload	**Hours** 120	**ECTS** 4.0
Workload involving teacher	**Hours** 90	**ECTS** 3.0
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Definition of the diagnostics. Clinical methods and ways of animal examination. Division of the clinical signs. Division of the clinical diagnosis. 2. A description of each species into account the specificities of the various species breed, coat color and animal identification. 3. Condition. Constitutional types of species. Disorders of animal behaviorand much diagnostic. 4. The temperature inside and outside the body (hypothermia, hyperthermia, fever). 5. Description and diagnostic significance mucosal lesions. 6. Description and diagnostic significance of changes of lymph nodes andlymph vessels. 7. Description and diagnostic significance of changes of the skin and its products. Additional tests used in dermatological diagnosis. 8. Description and diagnostic significance of changes the shape of the chest. 9. Description and diagnostic significance of changes in the nose, sinuses, throat, and guttal pouch. 10. Description and diagnostic significance of changes within the larynx, trachea and bronchi 11. Description and diagnostic significance of changes of lung 13. Additional methods used in the diagnosis of respiratory diseases 14. Diagnosis of heart disease. 15. Description and diagnostic significance of changes indicative of heart insufficiency. 16. Presentation of abnormal noise in various heart diseases	lecture

2.	1. Animal handling, methods and ways of clinical examination. 2. History and signalment 3. Status praesens: body building, condition, constitution, behavior, body temperature, pulse, respiration 4. Mucosal membrane examination 5. Lymphnodes examination 6. Skin examination 7. TEST, repetition on clinical cases 8. Upper respiratory tract examination 9. Lower respiratory tract examination 10. Chest percussion in horse and cattle 11. Chest percussion in other animals 12. Chest auscultation in horse and cattle 13. Chest auscultation in other animals 14. TEST, repetition on clinical cases 15. Blood examination (CBC), test improvement	clinical classes

Course advanced

Teaching methods:

situation-based learning, problem-solving method, educational game, brainstorming, case analysis, classes, practical simulation training, lecture, discussion, teamwork

Activities	Examination methods	Percentage in subject assessment
lecture	oral credit	20%
clinical classes	oral credit, active participation, test	80%

Entry requirements

completion of basic subjects:
Animal anatomy II, II,
Biochemistry I, II,
Histology and embryology I, II,
Veterinary microbiology I, II,
Veterinary immunology,
Animal nutrition and feed science,
Animal physiology I, II.

Literature

Obligatory

1. Nelson, Couto: Small Animal Internal Medicine, Elsevier, 2019
2. Divers, Peek: Rehbun diseases of diary cattle, Elsevier 2008
3. Reed, Bayly, Sellon: „Equine Internal Medicine", Elsevier – Health Sciences Division, 2009
4. Davidson M. G., Else R. W., Lumsden J. H: BSAVA Manual of Canine and Feline Clinical Pathology, BSAVA, 2016
5. Nicpoń J.: Clinical and laboratory diagnostics of diseases in animals, UPW, 2019

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Fodder hygiene

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J10BO.0722.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Piotr Sławuta
Other teachers conducting classes	Piotr Sławuta

Period Semester 5	**Examination** graded credit **Activities and hours** lecture: 15 laboratory classes: 15	**Number of ECTS points** 2.0

Goals

C1	The course in Fodder hygiene deals with the most common “feeding” reasons for diseases of farm and wild animals. In the course the natural noxious factors present in animal feeds are discussed – bacteria, viruses, fungi and their metabolites, as well as feeding mistakes constituting etiological factor of animal diseases – excess and deficiency of nutrients, feed incompatible with animal species, sex, age amd physiological condition. The students also study Polish and European Union legally binding regulations about animal nutrition and methods of evaluation of fodder healthful properties.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	principles of animal nutrition taking into account species differences and division into age groups. He knows the rules of arranging and analyzing food doses	B.W13, B.W14	test
W2	principles of animal nutrition taking into account specific physiological and production states	B.W20	test
Skills – Student can:			
U1	plan a diagnostic procedure	O.U3	observation of student’s work, active participation, participation in discussion, case study
U2	use the collected information related to the health and welfare of animals, on this basis to estimate the productivity of the herd	B.U20	observation of student’s work
U3	Takes samples for monitoring tests for the presence of various prohibited substances in water intended for animal watering and in animal feed	B.U23	observation of student’s work, test
Social competences – Student is ready to:			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student’s work, active participation, participation in discussion
K2	consciously using objective sources of information	O.K4	observation of student’s work
K3	formulating conclusions from own measurements or observations as well as opinions on various aspects of professional activity	O.K5	observation of student’s work, case study

Balance of ECTS points

Activity form	Activity hours*
lecture	15
laboratory classes	15
exam participation	20
consultations	5

Student workload	**Hours** 55	**ECTS** 2.0
Workload involving teacher	**Hours** 55	**ECTS** 2.0

Practical workload	Hours 15	ECTS 0.6

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	Lectures 1. Feed hygiene in farm and domestic animals as a health factor in humans and animals. Fodder materials as entry pathways for pathogens to the digestive tract, the concept „ from field to table", 2. Legal basis for supervision of fodders and nutrition of animals in Poland and the Euorepean Union (legally binding regulations). 2. Basic legal terms (used in regulations of veterinary services) concerning fodders: feeds, fodder materials, fodder additives, premix, fodder mixes – mixtures, full portion fodder mixture, supplementary fodder mixture, dietary fodder mixture, feed quality, turnover, the grace period, undesirable substance, animals, farm animals, domestic animals. 3. Application of genetically modified plants (GMO) in production of feeds and nutrition of farm animals. Transgenic plants: transgenesis of 1st, 2nd and 3rd generation . Procedures and legal regulations allowing evaluation of risk of using feeds containing genetically modified material in Poland, other countries in the European Union and the world. Presentation of results obtained worlwide concerning the effect of consumed GMO on the body and muscular tissue of animals. Methods of GMO content examinations in fodders in Poland. Veterinary Inspectorate as the official control authority for GMO. 4. Mycotoxins in animal feeds. Mould fungi metabolites as undesirable substances. Safety of food and fodders. Mould fungi which constitute the main threat in Poland. Control of fodder toxicity; methods of detoxication, adsorbents – kinds of and methods of application. Mycotoxic poisoning with lupin. 5. Specificity of cattle nutrition. The physical and physiological development of the digestive tract in calves – effect of fodder on development of the mucosa in the rumen and distal digestive tract parts. Nutrition and mineral-vitamin requirements in milk cattle depending on the lactation phase: perinatal period, drying period, milking period, full lactation period 6. Cattle diseases caused by feeding mistakes. Definition of the disease caused by feeding factors, prevalence, significance, clinical signs, diagnostics, treatment, prevention. The skin diseases related to nutrition:,acquired zinc deficiency – definition, causes, prevalence, clinical signs, prognosis, differential diagnosis, treatment, prevention. Diseases of the subcutaneous tissue related to nutrition deficiencies: mucous oedema related to iodine deficiency - definition, causes, prevalence, clinical signs, prognosis, therapy, prevention. 7. Cattle diseases caused by feeding mistakes: the heart diseases related to nutrition: the heart damage by calcium ions, cardiotoxic effect of products derived from cotton seeds (gossypol): clinical signs, course of the disease, diagnosis, treatment, prevention. The vascular diseases related to nutrition: hypervitaminosis D: clinical signs, course of the disease,diagnosis, treatment, prevention. 8. Cattle diseases caused by feeding mistakes: Blood diseases caused by feeding mistakes: iron deficiency,cobalt deficiency, hypophosphoremia (beetroot leaves anaemia), anaemia related to consumption of cabbage , anaemia related to consumption of onion, poisoning with Pteridium aquilinum (L) Kuhn- clinical signs, course of the disease, diagnosis, treatment. Immunosuppresion caused by mycotoxins – poisoning with trichocens: causes, prevalence, course of the disease,diagnosis, therapy, prevention. 9. Diseases of the respiratory system and eyes in cattle caused by feeding mistakes: iodine rhinitis; vitamin A deficiency: definition, causes, prevalence, diagnostics, pathogenesis, prognosis, treatment, prevention. The content of vitamin A and karoten in the blood and tissues in the case of suspected nutrition deficiencies. Hypersensitivity to soya protein. Multiorgan diseases related to nutrition. 10. Nutrition diseases in horses. Specific character of digestion and nutrition of horses. Frequency of feeding and volume of the stomach and caecum. The volume of the stomach and caecum as a factor in occurrence of colic diseases. Nutrition of pregnant and lactating mares. Necessity of monitoring Ca, P, Mg concentration in the serum of lactating mares. Specific nutrition and maintainance of older horses. Nutrition needs of an aging horse; caloric value and structure of the fodder, prevention of the gastric mucosa ulcerations and depositing of sand in the digestive tract. 11. Specific nutrition of pigs. The physical and physiological development of the digestive tract in pigs after birth- effect of fodder on the development of the digestive tract. The health status of the digestive tract – role of the intestines as a barrier against pathogens, colonization of the digestive tract with microorganisms, bacterial flora of the separate digestive tract segments in piglets. 12. Problems resulting from withdrawal of antibiotic growth stimulators in pigs nutrition. Phytogenic feeds supplements for piglets; mechanism of action: antioxidative and antibacterial activity, effect on consumption of fodder and functioning of the intestines, use of phytogenetic additives as growth stimulators. Yeast preparations in pigs nutrition: effect on the digestion process and nonspecific immunity. 13. Feeding mistakes as a cause of exotic animals` diseases. The world trends in nutrition of wild animals in home conditions. Observation of feeding habits of tortoises as a prerequisite for their good health. The most common feeding mistakes in nutrition of tortoises and turtles and related diseases.Metabolic bone disease – MBD – the most common disease related to nutrition. Avitaminosis A, problem of overfeeding, fatty diarrhea. 14. Feeding mistakes as a cause of diseases affecting rabbits, guinea pigs, hamsters, chinchillas, dormice,ferrets. Observation of feeding habits as a prerequisite for maintaining good health. Milk substitute preparations – composition,administration. Basic knowledge and notions (digestibility and energy of fodder) related to the need of domestic animals for nutrients (aminoacids, fats, saccharides). The effect of fodders on quality of products of animal origin. Basic methods of fodder examination and health evaluation of volume and substantial fodders.	lecture

2.	Classes 1. Fodder as an etiological factor in animal diseases – Part I. Poisonouus and noxious plants. Students get to know poisonous and noxious plants growing on pastures in Poland – the plants are shown and discussed during classes. The clinical signs of different plants poisoning and basic treatment are discussed. Students are also given access to materials about poisonous (decorative) plants poisonings in companion animals. Practical part: examination of hay according to legally binding regulations and norms 2. Fodder as an etiolodogical factor in animal diseases – Part II. Fodders spoilt by bacteria ,the most common bacteria in fodders - fodders as a source of contagious diseases. Pathogenic epiphytes present in the soil and on plants are discussed, as well as conditions in which their number grows – humidity, temperature of storage, etc. Conditions on which sick plants can be used for feeding animals. Practical part: examination of bulb and root plants. 3. Fodder as an etiological factor in animal diseases – Part III. Fodders spoilt by fungi. The mould fungi, most common in fodders, and their metabolites - mycotoxins are discussed. Students become familiar with the most important mycotoxicoses in cattle, pigs and poultry. The conditions of development and pathogenicity of aflatoxin, fumonisins, zearalenon, ochratoxins, and prophylaxis of mycotoxicoses are discussed in a detailed way, as well as principles of fodder quality evaluation in relation to mould fungi and collection of samples for examination. . Students are also given access to materials about poisonings with mycotoxins in companion animals. 4. Feeding mistakes as an etiological factor in animal diseases – Part I. Diseases of calves and cows in the prenatal period caused by feeding mistakes. The basic rules of hygiene related to feeding calves and proper temperature of liquid fodders are discussed. The protocol of introducing solid fodder, amount of its contents (hay, silage, carrot, greens) and its effect on development of the digestive tract, as well as effect of excessive feeding of hifers on their later health condition are discussed. Practical part: examination and evaluation of silages according to the legally binding regulations and norms. 5. Feeding mistakes as an etiological factor in animal diseases – Part II. Cattle disease caused by feeding mistakes. Calcium and phosphorus balance, homeostasis and disturbances are discussed – rickets, osteomalacia, - diagnostics, prevention, therapy. The problem of calcium and phosphorus supply in the prenatal period in milk cows and prevention of birth palsy are discussed in a detailed way. Students also learn about magnesium balance disturbances – pasture tetany, causes, laboratory diagnostics and prevention 6. Feeding mistakes as an etiological factor in animal diseases – Part III. Pigs diseases caused by feeding mistakes. Problems of energy deficiency, hypoglycaemia and anaemia in piglets are discussed. Other topics include diseases of the digestive tract related to a change of fodder in the weaning time and acidification of fodder, mechanism of action and application of probiotics, prebiotics and synbiotics in pigs, occurrence,diagnostics and therapy of stomach ulcers in pigs. 7. Skin diseases related to nutrition in goats, sheep and pigs: zinc-dependant dermatitis, vitamin E, A, biotin, niacin, pantothenic acid, riboflavin, selenium, iodine, sulphur and cobalt deficiencies. Discussion of particular disease units caused by mineral-vitamin deficiencies in individual farm animal species ; characteristics, clinical signs, treatment. The demand of farm animals for water , requirements concerning water for farm animals.Practical part: examination of water.	laboratory classes

Course advanced

Teaching methods:

educational film, classes, lecture, presentation / demonstration

Activities	Examination methods	Percentage in subject assessment
lecture	active participation, test	20%
laboratory classes	observation of student’s work, active participation, test, participation in discussion, case study	80%

Entry requirements

Animal anatomy, Animal physiology, Biochemistry

Literature

Obligatory

1. Large Animal Internal Medicine 6 th Edition. Bradford P. Smith red., Mosby - Year Book Inc., St Louis 2019
2. Small animal Clinical Nutrition. Hand et al. 2007
3. Animal Nutrition. Mc Donald et al. 2010
4. Basic Animal Nutrition and feeding. Pond et al. 2010
5. The encyclopedia of Farm Animal Nutrition. Fueller et al. 2011

Optional

1. Nedića S et al. Parathyroid hormone response in treatment of subclinical hypocalcemia in postpartum dairy cows, M Research in Veterinary Science 2020, 132, 351–356
2. Afshar Farniaa S. Effect of postparturient oral calcium administration on serum total calcium concentration in Holstein cows fed diets of different dietary cation-anion difference in late gestation. Research in Veterinary Science 2018, 117, 118–124
3. M. Benzaquen Effect of oral mineral and energy supplementation on blood mineral concentrations, energetic and inflammatory profile, and milk yield in dairy cows affected with dystocia The Veterinary Journal 2015, 204, 186–191
4. N. Martinez et al. Effect of induced subclinical hypocalcemia on physiological responses and neutrophil function in dairy cows. J. Dairy Sci. 2014, 97, 874–887
5. N. Chapinal et al. Herd-level association of serum metabolites in the transition period with disease, milk production, and early lactation reproductive performance J. Dairy Sci. 2012, 95, 5676–5682
6. P. E. Jawor et a.. Associations of subclinical hypocalcemia at calving with milk yield, and feeding, drinking, and standing behaviors around parturition in Holstein cows. Journal of Dairy Science 2012, 95, 1240-1248.
7. Figueroa-Gonzalez I.et al. Probiotics and prebiotics – perspectives and challenges. J Sci Food Agric 2011, 1341–1348
8. Douglas L. et al. Probiotics and Prebiotics in Dietetics Practice J Am Diet Assoc. 2008, 108, 510-521
9. Egmond H et al. Regulations relating to mycotoxins in food Perspectives in a global and European context. Anal Bioanal Chem 2007, 389:147–157
10. MURPHY P et al. Food Mycotoxins: An Update. JOURNAL OF FOOD SCIENCE 2006, 71, R51-R65.
11. Gregor Reid G et al. New Scientific Paradigms for Probiotics and Prebiotics J Clin Gastroenterol 2003, 37, 105–118
12. Tomasik P. et al Probiotics and Prebiotics, Cereal Chem. 2003, 80, 113–117

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Pathomorphology I

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J10BO.1557.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** mandatory
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** Yes
	Subject shaping practical skills Yes

Teacher responsible for the subject	Rafał Ciaputa
Other teachers conducting classes	Rafał Ciaputa, Małgorzata Kandefer-Gola, Izabela Janus, Paulina Śliwowska, Kacper Żebrowski

Period	**Examination**	**Number of ECTS points**
Semester 5	graded credit **Activities and hours** lecture: 45 laboratory classes: 45	7.0

Goals

C1	The aim of the course is to provide students with basic knowledge of regressive changes, circulatory disorders, inflammatory pathology, progressive changes, pathomorphology of cancer and diseases of particular organs and systems of the body as well as domestic animal infectious diseases. Subject shows the autopsy techniques, rules for the collection and protection of material for histopathological, microbiological and serological tests, and also indicates the possibility of the use of knowledge in the diagnosis of diseases, including infectious diseases.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population	O.W1	written credit
W2	nows to an extensive degree, describes in detail and explains the development, structure, functioning, behaviours and physiological mechanisms of animals in normal conditions, as well as the mechanisms of disorders in pathological conditions	O.W2	written credit
W3	knows to an extensive degree and understands the structure of the animal organism: cells, tissues, organs and systems	B.W1	written credit
W4	characterises in detail the metabolic processes at the molecular, cellular, organ and system levels	B.W1	written credit
W5	describes and interprets the pathophysiological changes occurring in cells, tissues, organs and systems of animals, as well as biological mechanisms, including immunological mechanisms, and therapeutic possibilities that allow recovery	B.W1	written credit
W6	knows and understands the Polish and Latin medical nomenclature	B.W2	written credit
Skills – Student can:			
U1	uses Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health, diseases, pathological changes and conditions	O.U8	written credit
U2	describes changes in functioning of the organism in the situation of homeostasis disorders	O.U8	written credit
U3	recognises (in the images from optical microscope) histological structures corresponding to organs, tissues and cells, and is able to formulate their description, interpret their structure and relations between their structure and activity, taking into account the animal species from which they originate	O.U8	written credit, observation of student’s work
Social competences – Student is ready to:			
K1	formulates conclusions from own measurements or observations	O.K5	participation in discussion
K2	deepens his/her knowledge and improves skills	O.K8	participation in discussion
K3	communicates with the co-workers and shares knowledge	O.K9	observation of student’s work, participation in discussion

Balance of ECTS points

Activity form	Activity hours*
lecture	45
laboratory classes	45
class preparation	15
consultations	15
exam / credit preparation	30
literature study	15
lesson preparation	10

Student workload	**Hours** 175	**ECTS** 7.0
Workload involving teacher	**Hours** 105	**ECTS** 4.0
Practical workload	**Hours** 45	**ECTS** 1.7

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Cell structure, cell injury, cloudy swelling, cell death, types of necrosis, apoptosis. 3h 2. Hypertrophy, hyperplasia, atrophy, metaplasia, intracellular and tissue accumulation. 3h 3. Vascular disorders. 3h 4. Inflammation. 3h 4. Acute exudative inflammation. 3h 5. Chronic inflammation. 3h 6. Neoplasia and tumor spread. 3h 7. Neoplasia and tumor spread. 3h 8. Pathology of alimentary system. 3h 9. Pathology of respiratory system. 3h 10. Pathology of cardiovascular system. 3h 11. Pathology of cardiovascular system. 3h 12. Pathology of urinary system. 3h 13. Pathology of endocrine system. 3h 14. Pathology of lymphatic system. 3h 15. Pathology of nervous system. 3h	lecture

2.	1. Cell injury: acute cloudy swelling of liver, cloudy swelling of kidney, fat (Balser's) necrosis, Zenker's necrosis of muscles. 3h 2. Intracellular accumulation: fatty liver (hepatic lipidosis), kidney lipidosis, glycogen deposition in the liver, intracellular inclusion bodies. 3h 3. Extracellular accumulation: spleen amyloidosis, gout of the kidney, cholesterol clefts, metastatic calcification of the kidney, dystrophic calcification of the kidney. 3h 4. Pigment changes: pulmonary anthracosis, anthracosis of the lymph node, pulmonary melanosis, lung haemosiderosis, icterus. 3h 5. Vascular disorders I: congestion of the liver, pulmonary oedema, oedema of stomach wall, hemorrhagic focus of the liver. 3h 6. Vascular disorders II: thrombosis of the stomach wall vessels, early stage of myocardial infarction, infarction in the kidney, infarct sequestration. 3h 7. Inflammation I: bronchopneumonia, fibrinous pneumonia, purulent pneumonia, purulent hepatitis. 3h 8. Inflammation II: acute interstitial myostitis, chronic interstitial nephritis, lymphocytis encephalitis, granulation tissue. 3h 9. Inflammation III: tuberculosis, botryomycosis, aspergillosis, actinomycosis. 3h 10. Neoplasms I: soft fibroma, lipoma, osteochondroma, leiomyoma, papilloma. 3h 11. Neoplasms II: haemangioma, fibrosarcoma, lymphoma of the kidney, lymphoma of the myocardium, malignant melanoma . 3h 12. Neoplasms III: basal cell carcinoma, keratizing squamous cell carcinoma, mammary adenocarcinoma, mixed tumor of mammary gland. 3h 13. Parasitic diseases: lung helminthiasis, sarcosporidiosis, trichinellosis, coccidiosis. 3h 14. Principles of cytological diagnosis: lipoma, mast cell tumor, adenocarcinoma, lymphoma, purulent inflammation. 3h 15. Final laboratorium. 3h	laboratory classes

Course advanced

Teaching methods:

classes, lecture, discussion, teamwork, presentation / demonstration, brainstorming, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	written credit, observation of student's work, participation in discussion	80%
laboratory classes	written credit, observation of student's work, participation in discussion	20%

Entry requirements

anatomy, histology, cell biology, biochemistry, physiology and pathophysiology

Literature

Obligatory

1. Pathologic basis of veterinary disease." M. Donald McGavin, James F. Zachary, Mosby Elsevier, 2012
2. Veterinary pathology" T. C. Jones, R. D. Hunt, N. W. King
3. Small Animal Cytologic Diagnosis. Anne M. Barger, Amy MacNeill

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Pathophysiology II

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J10BO.1560.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** mandatory
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** Yes
	Subject shaping practical skills No

Teacher responsible for the subject	Aleksandra Pliszczak-Król
Other teachers conducting classes	Aleksandra Pliszczak-Król, Marta Facon-Poroszewska

Period Semester 5	**Examination** exam **Activities and hours** lecture: 30 laboratory classes: 45	**Number of ECTS points** 6.0

Goals

C1	to familiarize students with functional mechanisms responsible for disturbances in selected organs and systems.
C2	to familiarize students with the aethiopathogenesis and the development of the disease process and selected systemic disorders.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population.	O.W1	written exam, test, participation in discussion
W2	mechanisms of selected systemic disorders in pathological conditions; hormonal and vitamin disorders, water-electrolyte imbalance, disturbances in cardiovascular and haemopoietic systems.	O.W2	written exam, test, participation in discussion
W3	tte etiology, pathogenesis and clinical symptoms of selected systemic and organ disorders occurring in animals.	O.W3	written exam, test, participation in discussion
W4	the principles and mechanisms underlying animal health, disease formation at the level of cells, the organ and the entire animal.	A.W10	written exam, test, participation in discussion
W5	the correlation between causing factors and pathophysiological results - hormonal and vitamin disorders, water-electrolyte imbalance, disturbances in cardiovascular and haemopoietic systems) disturbing the balance of biological processes of the animal body.	A.W11	written exam, test, participation in discussion
W6	the pathophysiological changes occurring in cells, tissues, organs and systems of animals, as well as biological mechanisms, including immunological mechanisms, and therapeutic possibilities that allow recovery.	A.W12	written exam, test, participation in discussion
W7	the English and Latin medical nomenclature in etiology and pathogenesis of general processes and disorders of selected organs and systems.	A.W20	written exam, test, participation in discussion
Skills – Student can:			
U1	use Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health, diseases, pathological changes and conditions.	O.U8	written exam, test
U2	describe changes in functioning of the organism in the situation of homeostasis disorders caused by exogenous and endogenous factors.	A.U4	written exam, test
U3	define physiological state as the animal's adaptation to the changing environmental factors.	A.U7	written exam, test
U4	listen and provide answers with the use of understandable language, appropriate to the given situation.	A.U13	observation of student’s work, active participation, participation in discussion
U5	understand the need of continuing education, in order to ensure continuous professional development.	A.U21	observation of student’s work, active participation, participation in discussion

Social competences – Student is ready to:			
K1	exhibit responsibility for his/her decisions made in regard to the people, animals and the natural environment.	O.K1	observation of student's work, active participation, participation in discussion
K2	use the objective sources of information.	O.K4	observation of student's work, active participation, participation in discussion
K3	formulate conclusions from own measurements or observations.	O.K5	observation of student's work, active participation, participation in discussion
K4	deepen his/her knowledge and improve skills in pathophysiology.	O.K8	observation of student's work, active participation, participation in discussion
K5	communicate with the co-workers and share knowledge.	O.K9	observation of student's work, active participation, participation in discussion

Balance of ECTS points

Activity form	Activity hours*
lecture	30
laboratory classes	45
exam / credit preparation	60
exam participation	2
class preparation	33
consultations	10

Student workload	**Hours** 180	**ECTS** 6.0
Workload involving teacher	**Hours** 87	**ECTS** 3.0
Practical workload	**Hours** 45	**ECTS** 1.7

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Vitamin metabolism disorders in animals (water soluble vitamins): vitamins and their participation in the regulation of systemic pathways. Factors determining vitamin demands . Hypovitaminoses and hypervitaminoses. Factors favoring disorders in vitamin metabolism and consequences of vitamin deficiences in various animal species. (2 hours). 2. Disorders of hormonal regulation: hypo- and hyperfunction of endocrine glands. Mechanisms of primary and secondary disorders of the endocrine glands. Hypothalamus and pituitary gland: etiopathogenesis of pituitary endocrinopathies in animals - diabetes insipidus, pituitary dwarfism. (2 hours). 3. Endocrine thyroid gland disorders: systemic consequences of hyperthyroidism and hypothyroidism. The contribution of environmental factors to the regulation of thyroid function in animals. Goitrogens. Pathophysiology of parathyroid glands: the relationship with the regulation of calcium and phosphate metabolism. Hypoparathyroidism. Etiopathogenesis of primary and secondary hyperparathyroidism in animals. (2 hours). 4. Endocrine disorders of adrenal glands; functional and metabolic consequences of adrenal endocrinopathies. Stress and adaptation. Metabolic and functional consequences of stress in animals. Stress and the activity of the immune system. (2 hours). 5. Pathophysiology of cardiovascular system - selected issues: disorders of circulating blood volume. The issue of shock and its etiopathogenesis. (2 hours). 6 - 7. Disorders of cardiac rhythm. Ischemic heart disease. Congestive heart failure. (4 hours). 8. Etiopathogenesis of water and electrolyte imbalances; dehydration, overhydration. (2 hours). 9. Etiopathogenesis of acid-base balance imbalances; metabolic and respiratory acidoses, metabolic and respiratory alkaloses. (2 hours). 10. Pathophysiology of the kidneys. (2 hours). 11. Pathophysiology of respiratory system - selected issues; gas exchange disorders, primary and secondary respiratory failures. (2 hours). 12 - 13. Pathophysiology of the liver and the exocrine part of the pancreas. (4 hours). 14. Pathophysiology of pain. Pain in veterinary medicine and protection of animal welfare. (2 hours). 15. Disorders of consciousness. (2 hours).	lecture

2.	1. Microcirculation; functional disorders (ischemia, passive hyperemia, active hyperemia, embolism, infarctus) and their consequences. (3 hours). 2. Pathophysiology of hemostasis - primary and secondary hemostasis, fibrinolysis; disorders and the results of them (DIC, haemorrhagic diatheses, thrombo-embolic risk). (3 hours). 3. Etiopathogenesis of inflammation. (3 hours). 4. Plasma protein pathophysiology. Assessment and interpretation of proteinograms from animals in state of the various diseases. (3 hours). 5. Hypersensitivity as an expression of altered immune system reactivity: types of hypersensitivity reactions. Dydactic film: Anaphylactic shock (guinea pig model). Test. (3 hours). 6. Disorders in peripheral circulation and their consequences. Reaction of the circulatory and hematopoietic systems to acute and chronic blood loss. Pathogenesis of hypovolemic shock. (3 hours). 7. Pathophysiology of white blood celsl; leukopoiesis, its regulation and disorders. Quantitive and qualitative alterations of leukocytes. (3 hours). 8. Assessment of the dynamics of changes in the white blood cell morphology and function in animals in the course of various diseases: in acute fever processes, in diseases with a typical course - the biological curve of leukocytes. (3 hours). 9. Analysis of haematological parameters in rabbits after administration of pyrogens. Assessment of granulocyte/agranulocyte ratio. (3 hours). 10. Disorders in the red blood cells - part I. Erythropoiesis - regulation, disorders; quantitative and qualitative changes of erythrocytes. Evaluation of bone marrow and peripheral blood smears - the interpretation of changes. (3 hours). 11. Red blood cell disorders - part II: anemia and polycythemia. Blood smears analysis from anemized rats, reticulocyte count assessment. (3 hours). 12. Complex analysis of alterations in haematological parameters in various animal diseases. (3 hours). 13. Pancreas; endocrine disorders, etiopathogenesis of diabetes mellitus in animals. (3 hours). 14. Pathophysiology of the kidneys. Analysis of selected biochemical changes of urine in animals. (3 hours). 15. Etiopathogenesis of neoplasms. (3 hours). Test.	laboratory classes

Course advanced

Teaching methods:

practical simulation training, teamwork, educational film, classes, lecture, discussion, presentation / demonstration, situation-based learning, problem-solving method, brainstorming, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	written exam	60%

Activities	Examination methods	Percentage in subject assessment
laboratory classes	observation of student’s work, active participation, test, participation in discussion	40%

Entry requirements

Completion of the course in: biochemistry, cell biology, histology and embriology, animal anatomy, animal physiology, veterinary microbiology, veterinary immunology, pathophysiology I.

Literature

Obligatory

1. Zachary J.F. Pathologic basis of veterinary disease. ELSEVIER, 2017, 6th edition.
2. Cheville N.F. Introduction to Veterinary Pathology. BLACKWELL PUBLISHING, 2006, 3rd edition.
3. Dunlop R.H., Malbert Ch.h. Veterinary Pathophysiology. BLACKWELL PUBLISHING, 2004.
4. Stockham S.L., Scott M.A. Fundamentals of Veterinary Clinical Pathology. IOWA STATE PRESS. A Blackwell Publishing Company, 2002
5. McCance k.L., Huether S.E. Pathophysiology. The biologic basis for disease in adults and children. ELSEVIER, 2019, 8th edition.
6. Norris T.L. Porth’s Pathophysiology. Concepts of altered health states. Walters Kluwer, 2019.

Optional

1. Damjanov I. Pathophysiology. SAUNDERS. Elsevier, 2009.
2. Silbernagl S., lang F. Color atlas of Pathophysiology. THIEME, 2016, 3rd edition.
3. Harvey j.W. Veterinary Hematology. A diagnostic guide and color atlas. ELSEVIER, 2012.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Veterinary Epidemiology

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J10BO.2641.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Krzysztof Rypuła
Other teachers conducting classes	Krzysztof Rypuła, Jarosław Kaba, Marek Bykowy, Karolina Bierowiec

Period	**Examination**	**Number of ECTS points**
Semester 5	graded credit **Activities and hours** laboratory classes: 30	2.0

Goals

C1	The subjects contains: rules and epidemiological models of outbreak and spreading of infectious diseases. The rules of epidemiological investigation and the standard of immunoprofilaxis, treatment and diagnostic in infection diseases of animals.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the biology of infectious agents that cause diseases that are transmitted between animals and anthropozoones, taking into account the mechanisms of disease transmission and the defense mechanisms of the macroorganism	O.W6	written credit, test
W2	basic information and biostatistics methods used in epidemiological research	O.W15	written credit, test
W3	principles and mechanisms underlying animal health, infectious disease development and therapy - from the cell level, through organ, animal to animal and from herd to animal population	O.W1	written credit, test
Skills – Student can:			
U1	collect and preserve samples for testing analyze and interpret the results to monitor the health status of the animals in the herd in terms of infectious diseases	B.U6	written credit, test
U2	conduct an epizootic investigation to determine the period of an infectious disease in animals and to identify the source of an infectious disease for the farm / farms and the routes of human movement, means of transport that could be the cause of the spread of the infectious diseases	B.U19	written credit, test
U3	use professional skills to improve the quality of veterinary care, animal welfare and public health	B.U23	written credit, test
U4	assess the risk of pathogens, perform basic statistical analyzes and use appropriate methods of presenting the results in epidemiological studies to introduce recommendations to minimise the risk of infection	B.U25	written credit, test
Social competences – Student is ready to:			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student’s work
K2	uses the objective sources of information	O.K11	observation of student’s work

Balance of ECTS points

Activity form	Activity hours*
laboratory classes	30
lesson preparation	10
presentation/report preparation	5
exam / credit preparation	5

Student workload	**Hours** 50	**ECTS** 2.0
Workload involving teacher	**Hours** 30	**ECTS** 1.0
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	Students learn the rules and epidemiological model of outbreak and spreading of infectious diseases. Students learn the rules of epidemiological investigation, immunity of infectious diseases, the principle of immunoprofilaxis, treatment and diagnostic of infection diseases of animals. Subject in vet. epidemiology: 1. Development of veterinary epidemiology; contemporary diseases threats 2. Occurrence of infectious diseases in population 3. Occurrence of infectious diseases in population and method in epidemiology analysis 4. Diagnostic tests in the epidemiology 5. Review studies and clinical studies 6. Laboratory diagnostics Part 1. 7. Laboratory diagnostics Part 2. 8. Epizootic investigation: measures as the infectious diseases is suspected 9. Proceedings in the disease outbreak Part.1 10. Proceedings in the disease outbreak Part 2 11. Animal health protection and rules in the control and eradication of infectious diseases 12International disease information systems 13. The use of information systems in the control and eradication of infectious diseases 14. Credit (written test) 15. Summary and pass the exercises	laboratory classes

Course advanced

Teaching methods:

text analysis, case analysis, classes, presentation / demonstration

Activities	Examination methods	Percentage in subject assessment
laboratory classes	written credit, observation of student’s work, test	100%

Entry requirements

Student know the Veterinary natomy, Biology, Veterinary histology, Statistic, Vet. microbiology

Literature

Obligatory

1. Lash T. L. Modern Epidemiology. Wyd. Lippincott William and Wilkins, 2021, London.
2. Thrusfield M., Christley R. Veterinary Epidemiology, Wyd. John Wiley & Sons, 2018, London.
3. Houe H. Introduction to Veterinary Epidemiology. Wyd. Gazelle Book Service, 2002, London.

Optional

1. Merrill R. M. Introduction to Epidemiology. JONES & BARTLETT LEARNING, 2019
2. Sarmaci R. Epidemiology. Very Short Introduction. OUP Oxford, 2010.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Veterinary pharmacology I

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J10BO.2649.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** Yes **Subject shaping practical skills** Yes

Teacher responsible for the subject	Aleksandra Pawlak
Other teachers conducting classes	Agnieszka Suszko-Pawłowska, Magdalena Lis, Aleksandra Pawlak

Period	**Examination**	**Number of ECTS points**
Semester 5	graded credit **Activities and hours** lecture: 30 laboratory classes: 30	4.0

Goals

C1	The aim of the course is to familiarize students with the issues of general and specific pharmacology. Individual groups of antibacterial, antifungal, antiparasitic and anticancer drugs are characterized: pharmacodynamic and pharmacokinetic properties, basic indications and contraindications for the use of individual groups of drugs in various animal species (basics of pharmacotherapy), side effects of drugs and pharmacodynamic and pharmacokinetic interactions of drugs. Students acquire the skills of writing down prescriptions for particular forms of drugs.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the mechanisms of operation, activity in the system, side effects and mutual interactions of the group of antibacterial, antiparasitic, anticancer and antifungal veterinary medicinal products used in target animal species	A.W16	written credit, observation of student's work
W2	Describe in detail the application of antibacterial and antiparasitic chemotherapy	A.W17	written credit, observation of student's work, participation in discussion
W3	Present the mechanisms of drug resistance, including multi-drug resistance by microorganisms and cancer cells;	A.W18	written credit, observation of student's work, participation in discussion
W4	the procedures and elements necessary to issue a prescription for veterinary medicinal products	A.W19	written credit, observation of student's work, active participation
W5	the methods of using veterinary medicinal products (antibacterial, antiparasitic, anticancer and antifungal), aimed at prophylaxis and treatment of animals, as well as at guaranteeing food chain safety	O.W5	written credit, observation of student's work
Skills – Student can:			
U1	choose and apply rational empirical and targeted antibacterial chemotherapy, taking into account the target species of animals;	A.U11	written credit, observation of student's work, participation in discussion
U2	Obtain and use information on authorised veterinary medicinal products;	B.U9	written credit, observation of student's work
U3	select, prescribe and use veterinary antibacterial, antiparasatic and anticancer medicinal products, taking into account their safe storage and utilisation; Choose and apply the appropriate treatment	B.U10, B.U13	written credit, observation of student's work, active participation
Social competences – Student is ready to:			
K1	use the objective sources of information, critically analyse veterinary literature and draw conclusions on the basis of available literature	O.K4	observation of student's work, active participation, participation in discussion
K2	deepen his/her knowledge and improve skills regarding the use of medicinal products in animals	O.K8	observation of student's work, active participation, participation in discussion

Balance of ECTS points

Activity form	Activity hours*

lecture	30
laboratory classes	30
lesson preparation	30
consultations	5
literature study	5
exam / credit preparation	20

Student workload	**Hours** 120	**ECTS** 4.0
Workload involving teacher	**Hours** 65	**ECTS** 2.3
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	Titles of lectures: 1. Basic pharmacological definitions, concepts and issues related to the action of the drugs. 2. Cellular and molecular mechanisms of drug action. 3. Pharmacokinetic properties of the drug, basic definitions of pharmacokinetic indicators. Part 1. 4. Pharmacokinetic properties of the drug, basic definitions of pharmacokinetic indicators. Part 2. 5. Monotherapy and polytherapy; pharmaceutical, pharmacodynamic and pharmacokinetic drug interactions. 6. Insensitivity and hypersensitivity of the body to the effects of drugs. 7. Antifungal drugs. Part 1. 8. Antifungal drugs. Part 2. 9. Antiprotozoal drugs. 10. Antitrematodal drugs and anticestodal agents. 11. Nematocides. Part 1. 12. Nematocides. Part 2. 13. Ectoparasiticides. 14. Written test (antiparasitic drugs). Anticancer drugs. 15. Anticancer drugs.	lecture

2.	Titles of classes: 1. Drug dosing, dosage types, routes of administration, drug excretion routes. 2. Antiseptics and disinfectants. Nitrofuranes and nitroimidazoles. 3. Sulfonamides and potentiated sulfonamides. 4. Quinolones and fluoroquinolones. 5. Written test (material from classes and lectures). Division of antibacterial antibiotics. 6. Beta-lactam antibiotics. 7. Aminoglycosides and aminocyclitoles. Polypeptide antibiotics. Ansamycins. 8. Macrolides, lincosamides, pleuromutilin derivatives. 9. Phenicols. Tetracyclines. Other antibacterial antibiotics. 10. Principles of antimicrobial drug selection and use. Antimicrobial drug combination. 11. Written test (material from classes and lectures). The rules of veterinary prescription. 12. Solid medicine forms: dosage and prescription writing. 13. Semi-solid medicine forms: dosage and prescription writing. 14. Liquid medicine forms: dosage and prescription writing. 15. Dosage and prescription writing. Written test (material from classes).	laboratory classes

Course advanced

Teaching methods:

classes, lecture, discussion, presentation / demonstration

Activities	Examination methods	Percentage in subject assessment
lecture	written credit	50%
laboratory classes	written credit, observation of student’s work, active participation, participation in discussion	50%

Entry requirements

animal anatomy, cell biology, biochemistry, veterinary immunology, veterinary physiology, pathophysiology, veterinary microbiology

Literature

Obligatory

1. - Riviere J.E. Papich M.G.: Veterinary Pharmacology and Therapeutics. 10th ed. Wiley-Blackwell, 2017 - Giquere S., Prescott J.F., Baggot J.D., Walker R.D., Dowling P.M.: Antimicrobial Therapy in Veterinary Medicine, 5th ed. Wiley-Blackwell Publishing, 2013

Optional

1. - PlumbD.C. Plumb’sVeterinary Drug Handbook 9th Wiley-Blackwell, 2018 - Boothe D.M., Small Animal Clinical Pharmacology and Therapeutics, Saunders Comp., 2001. - Maddison J.E., Page S.W., Church D.B. Small Animal Clinical Pharmacology 2nd ed., Saunders Elsevier, 2008 - Crowell-Davis S.L., Murry T. Veterinary Psychopharmacology. Blackwell Publishing, 2006

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Veterinary Pharmacy

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J10BO.2651.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** No

Teacher responsible for the subject	Magdalena Lis
Other teachers conducting classes	Magdalena Lis

Period Semester 5	**Examination** graded credit **Activities and hours** laboratory classes: 15	**Number of ECTS points** 1.0

Goals

C1	The aim of the course is to introduce students with legal aspects concerning supply and the use of veterinary medicines, the issue of registration of veterinary pharmaceuticals, as well as topics connected with establishment of withdrawal period; to introduce students with different dosage forms of drugs used in animals and issues of medicated feed.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the methods of using veterinary medicinal products, aimed at prophylaxis and treatment of animals, as well as at guaranteeing food chain safety and environmental protection;	O.W5	written credit
W2	legal standards concerning the usage of drugs in animals;	O.W14	written credit
W3	the procedures and elements necessary to issue a prescription for medicinal products used in animals	A.W19	written credit
W4	English and Latin medical nomenclature necessary for prescription writing	A.W20	written credit
Skills – Student can:			
U1	keep documentation concerning drugs administered to animals, in accordance with regulations applicable in this scope, in the form understandable to the animal owner and legible to other veterinary physicians	A.U14	written credit, active participation
U2	interpret the responsibility of veterinary physician related to the usage of drugs in animals, in regard to the animal, its owner, society, as well as the natural environment	A.U16	written credit, participation in discussion
U3	understand the need of continuing education, in the field of drugs for use in animals, in order to ensure continuous professional development	A.U21	participation in discussion
U4	use the advice and help of specialised organisational units or persons in the scope of problem solving concerning usage of drugs in animals	A.U23	participation in discussion
U5	obtain and use information on authorised veterinary medicinal products	B.U9	active participation
U6	prescribe and use medicinal products, taking into account their safe storage and utilisation	B.U10	active participation
Social competences – Student is ready to:			
K1	exhibit responsibility for his/her decisions, related to the usage of drugs in animals, made in regard to the people, animals and the natural environment	O.K1	participation in discussion
K2	use the objective sources of information concerning usage of drugs in animals	O.K4	active participation, participation in discussion
K3	deepen his/her knowledge and improve skills concerning usage of drugs in animals	O.K8	participation in discussion
K4	cooperate with representatives of other professions due to usage of drugs in animals in the scope of public health protection	O.K11	participation in discussion

Balance of ECTS points

Activity form	Activity hours*
laboratory classes	15
consultations	3
class preparation	3
exam / credit preparation	9

Student workload	**Hours** 30	**ECTS** 1.0
Workload involving teacher	**Hours** 18	**ECTS** 0.7
Practical workload	**Hours** 15	**ECTS** 0.6

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	1. Legal aspects concerning supply and the use of medicines in animals. Introduction into the issue of registration of veterinary pharmaceuticals in EU and Poland. Veterinary prescription. Overview of the most important legal acts concerning the use of drugs in animals in Poland and the EU. Legal problems regarding registration process of veterinary medicinal products. The rules of usage of psychotropic medicinal products by veterinarians. The rules of veterinary prescription writing. The rules for creating Latin nomenclature with regard to pharmaceutical raw materials. 2. Determination of the withdrawal period. Pharmaceutical equivalence and bioequivalence of the drugs. Different pharmaceutical forms, excipients. Pharmacovigilance. 3. Solid dosage forms. Presentation of solid dosage forms according to Pharmacopoeia: definitions, properties, routes of administration. Basic issues related to the production of the dosage forms. 4. Semi-solid and liquid dosage forms. Presentation of semi-solid and liquid dosage forms according to Pharmacopoeia: definitions, properties, routes of administration. Basic issues related to the production of the dosage forms. Discussion of individual dosage forms in the context of the routes of administration. 5. Usage of drugs in farm animlas. Premixes for production of medicated feed. Overview of the terms: medicated premix, intermediate product, medicated feed. Overview of the most important legal acts concerning the marketing and use of medicated feed. Issues related to the order for making medicated feed. Calculation of the content of active substances in medicated feed. Colloquium (written). Laboratory classes (15 hours) are carried out for 5 weeks, classes take place every other week.	laboratory classes

Course advanced

Teaching methods:

practical training for making chosen dosage forms of drugs, text analysis, classes, discussion, problem-solving method

Activities	Examination methods	Percentage in subject assessment
laboratory classes	written credit, active participation, participation in discussion	100%

Entry requirements

chemistry, biochemistry

Literature

Obligatory

1. REGULATION (EU) 2019/6 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2018 on veterinary medicinal products and repealing Directive 2001/82/EC
2. REGULATION (EU) 2019/4 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2018 on the manufacture, placing on the market and use of medicated feed, amending Regulation (EC) No 183/2005 of the European Parliament and of the Council and repealing Council Directive 90/167/EEC
3. Eudralex - The collection of rules and regulations governing medicinal products in the European Union.
4. Kayne S.B., Jepson M.H.: Veterinary Pharmacy, PhP London 2004

Optional

1. www.ema.europa.eu
2. European Pharmacopoeia XII

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

German language (exam)

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J10JO.0804.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** optional
Study form Full-time	**Block** foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills No

Teacher responsible for the subject	Elżbieta Bochenek-Kowalska, Mirosława Mikołajczyk
Other teachers conducting classes	Elżbieta Bochenek-Kowalska, Mirosława Mikołajczyk

Period	**Examination**	**Number of ECTS points**
Semester 5	exam **Activities and hours** e-learning: 4 foreign language (course): 26	2.0

Goals

C1	Objectives The student is made acquainted with German medical and veterinary teaching contents required at the minimum B2 level for the purpose of achieving the relevant language competences enabling him/her to pass the medical and veterinary foreign language exam at the required level.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	Knows and understands vocabulary and grammatical structures of at least one foreign language, which is a language of international communication, at the B2+ level of the Common European Framework of Reference for Languages, as well as specialised terminology in the scope of veterinary medicine, which is necessary in professional activity;	C.W1	observation of student's work, active participation, test, performing tasks, exam
Skills – Student can:			
U1	Uses at least one foreign language, which is a language of international communication, at the B2+ level of the Common European Framework of Reference for Languages, including specialised terminology in the scope of veterinary, which is necessary in professional activity	C.U1	observation of student's work, active participation, test, performing tasks, exam
U2	Uses vocabulary and grammatical structures of a foreign language, which constitutes the language of international communication, in the scope of creating and understanding written and oral statements, both general and specialised in the scope of veterinary;	O.U11	observation of student's work, active participation, test, performing tasks, exam

Balance of ECTS points

Activity form	Activity hours*
e-learning	4
foreign language (course)	26
consultations	4
lesson preparation	24
exam participation	2

Student workload	**Hours** 60	**ECTS** 2.0
Workload involving teacher	**Hours** 36	**ECTS** 1.3
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	E-learning classes The curriculum contents are partly realized on the basis of appropriate e-learning materials.	e-learning
2.	Content Foreign language classes The curriculum contents are realized on the basis of appropriate coursebooks at a given level. The detailed range of the curriculum contents is available on the SJOiNHS website.	foreign language (course)

Course advanced

Teaching methods:

classes, foreign language (conversation classes)

Activities	Examination methods	Percentage in subject assessment
e-learning	performing tasks	20%
foreign language (course)	observation of student’s work, active participation, test, exam	80%

Additional info

The student is taught the selected language for 4 semesters to take the oral exam at the minimum B2 level.
The reference for the language competence levels is in accordance with Common European Framework of Reference for Languages (CEFR).

LEVEL B2
The student, who commands a language at this level, understands the importance of main messages contained in complex texts on specific and abstract topics; can understand and participate in discussion by use of the specialist language referring to professional topics;
can communicate smoothly and spontaneously enough to have a free conversation with a native speaker, without any particular effort for either party; can formulate clear and detailed oral or written statements on many topics as well as express his/her viewpoint concerning the matters discussed along with advantages and disadvantages of different solutions.

LEVEL C1
The student, who commands a language at this level, can understand extensive and advanced texts concerning various topics. While reading and listening, the student can fully comprehend not only the gist of it, but also various overtones, implicit meanings and understand the author's attitude; can speak fluently by means of extensive vocabulary; can use the language effectively in interpersonal, social, educational and professional contexts; can formulate clear, well-structured, detailed written statements on a wide range of topics by use of grammatical rules as well as language tools in accordance with the principles of oral and written statements in a manner indicating a very good mastery of the language.
http://sjo.up.wroc.pl/o_sjoinhs/
Verification of learning outcomes
Learning outcomes are verified by means of grammatical and lexical tests, oral and written statements, reading and listening comprehension tests.
The language course is completed with an exam.
The final grade for the exam semester is the average based on the grade received as a credit for the course in semester 4 and the grade for the exam. The average is drawn only on the basis of two positive grades. The negative grade acquired for

the exam results in failure to pass the entire semester.

Entry requirements

Prerequisites
Adequate level of language is required

Group level	Minimum level
B2	--> B1, B2
C1	--> B2, C1

Literature

Obligatory

1. The course is based on the coursebook at the level of B2 or C1, while the selection of the materials supplementing the subject matter of the course is the responsibility of the teacher. Some of the classes are carried out by means of distance learning methods and techniques. The detailed curriculum contents are available on the SJOiNHS website.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Polish language (exam)

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J10JO.1733.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** optional
Study form Full-time	**Block** foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills No

Teacher responsible for the subject	Karolina Bykowska
Other teachers conducting classes	Karolina Bykowska

Period	**Examination**	**Number of ECTS points**
Semester 5	exam **Activities and hours** e-learning: 4 foreign language (course): 26	2.0

Goals

C1	The student is made acquainted with the Polish as a foreign language educational content required at the A1 level for the purpose of achieving the relevant language competence enabling to pass the examination at the required level.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	Knows and understands vocabulary and grammatical structures of at least one foreign language, which is a language of international communication, at the B2+ level of the Common European Framework of Reference for Languages, as well as specialised terminology in the scope of veterinary medicine, which is necessary in professional activity	C.W1	observation of student's work, active participation, test, performing tasks, exam
Skills – Student can:			
U1	Uses at least one foreign language, which is a language of international communication, at the B2+ level of the Common European Framework of Reference for Languages, including specialised terminology in the scope of veterinary, which is necessary in professional activity	C.U1	observation of student's work, active participation, test, performing tasks, exam
Social competences – Student is ready to:			
K1	Communicates with the co-workers and shares knowledge in everyday situations.	O.K9	observation of student's work, performing tasks

Balance of ECTS points

Activity form	Activity hours*
e-learning	4
foreign language (course)	26
consultations	4
lesson preparation	24
exam participation	2

Student workload	**Hours** 60	**ECTS** 2.0
Workload involving teacher	**Hours** 36	**ECTS** 1.3
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	The curriculum contents are partly realized on the basis of appropriate e-learning materials.	e-learning

2.	The curriculum contents are realized on the basis of appropriate coursebooks at a given level. The detailed range of the curriculum contents are available on the SJOiNHS website.	foreign language (course)

Course advanced

Teaching methods:

classes, foreign language (conversation classes)

Activities	Examination methods	Percentage in subject assessment
e-learning	performing tasks	10%
foreign language (course)	observation of student’s work, active participation, test, exam	90%

Additional info

During the examination semester, the student prepares for the examination at the A1 level.
LEVEL A1
The student, who commands a language at this level, can understand and use the learnt simple utterances for the purpose of communicating specific needs of everyday life.
The student can introduce herself/himself and others; ask questions concerning private life, residence, friends and possessions as well as answer such questions; can have simple conversations provided that the interlocutor speaks slowly and clearly, and is ready to help.
https://sjo.upwr.edu.pl/en/exam/polish-language-exam-topics
Verification of learning outcomes.
Learning outcomes are verified by grammar and lexical tests, oral and written statements, and reading and listening tests. The grade in the exam semester is the average of the grade in the 4th semester and the grade from the exam. The average is only taken for two positive grades. A negative result of the exam results in the failure to complete the entire semester.

Entry requirements

Adequate level of language is required
Group level Min. level

A1 --> A1

Literature

Obligatory

1. Małolepsza M., Szymkiewicz A., Hurra!!! Po polsku 1. Podręcznik studenta. Nowa edycja, Prolog Publishing, Kraków 2022.

Optional

1. Gworys M., Mądrecka A., Mówię po polsku. Ćwiczenia dla obcokrajowców. Poziom A1 i A2, Prolog Publishing, Kraków 2021.
2. Kołaczek E., Testuj swój polski – fonetyka, Prolog Publishing, Kraków 2017.
3. Krztoń J., Testuj swój polski – słownictwo 1, Prolog Publishing, Kraków 2019.
4. Machowska A., Gramatyka? Dlaczego nie? Ćwiczenia gramatyczne dla poziomu A1, Universitas, Kraków 2014.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Spanish language (exam)

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J10JO.2353.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** optional
Study form Full-time	**Block** foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills Yes

Teacher responsible for the subject	Agata Sikora-Jańska, Ireneusz Osak, Magdalena Zalewska, Julia Sawiłow
Other teachers conducting classes	Agata Sikora-Jańska, Ireneusz Osak, Magdalena Zalewska, Julia Sawiłow

Period	**Examination**	**Number of ECTS points**
Semester 5	exam **Activities and hours** e-learning: 4 foreign language (course): 26	2.0

Goals

C1	The student is made acquainted with Spanish medical and veterinary teaching contents required at the minimum B2+ level for the purpose of achieving the relevant language competences enabling him/her to pass the medical and veterinary foreign language exam at the required level.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	Vocabulary and grammatical structures of at least one foreign language of international communication at level B2 of the Common European Framework of Reference for Languages and specialist veterinary terminology necessary for professional activities	C.W1	oral exam, observation of student’s work, active participation, test, performing tasks
Skills – Student can:			
U1	Speak at least one foreign language of international communication at level B2 of the Common European Framework of Reference for Languages, including specialist veterinary terminology necessary for professional activity; - C.U1	C.U1	oral exam, observation of student’s work, active participation, test, performing tasks
U2	Use the vocabulary and grammatical structures of a foreign language of international communication in the field of creating and understanding written and oral statements, both general and specialized in the field of veterinary medicine.	O.U11	oral exam, observation of student’s work, active participation, test, performing tasks
Social competences – Student is ready to:			
K1	Communicate with colleagues and share knowledge in a foreign language at B2 level.	O.K9	observation of student’s work, active participation

Balance of ECTS points

Activity form	Activity hours*
e-learning	4
foreign language (course)	26
consultations	4
exam participation	2
lesson preparation	24

Student workload	**Hours** 60	**ECTS** 2.0
Workload involving teacher	**Hours** 36	**ECTS** 1.3
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	The curriculum contents are partly realized on the basis of appropriate e-learning materials.	e-learning
2.	The curriculum contents are realized on the basis of appropriate coursebooks at a given level. The detailed range of the curriculum contents is available on the SJOiNHS website.	foreign language (course)

Course advanced

Teaching methods:

classes, teamwork, foreign language (conversation classes)

Activities	Examination methods	Percentage in subject assessment
e-learning	performing tasks	10%
foreign language (course)	oral exam, observation of student’s work, active participation, test, performing tasks	90%

Literature

Obligatory

1. The lecturer makes use of the relevant popular and scientific literature, specializedcoursebooks, academic textbooks and online resourcessuitable for a given specialty. Some of the classes are carried out by means of distance learning methods and techniques: 2 to 3 meetings or more (depending on the specifics and requirements of a given specialty). The detailed contents are available on the SJOiNHS website.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Beneficial insects diseases

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J20BO.0129.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** Yes **Subject shaping practical skills** No

Teacher responsible for the subject	Paweł Chorbiński
Other teachers conducting classes	Paweł Chorbiński, Marek Bykowy

Period Semester 6	**Examination** graded credit **Activities and hours** lecture: 10 laboratory classes: 14 clinical classes: 6	**Number of ECTS points** 2.0

Goals

C1	The aim of teaching the subject is to provide students with basic knowledge about: ecology, anatomy, physiology and honey bee pathology.
C2	They learn about the etiology, pathogenesis, treatment, and rules for the control of viral, bacterial, fungal and parasitic diseases, with a particular focus compulsorily notifiable diseases and reporting
C3	Classes will also include practical work in an apiary, reviews of bee colonies and assessment of their health.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	basics of maintaining the health of the bee colony resulting from environmental conditions, breeding and its maintenance, as well as mechanisms of disease development in adult bees and brood	O.W1	test, participation in discussion, performing tasks
W2	causes, pathogenesis and clinical symptoms of the most important infectious diseases in honey bees and the principles of their spread, as well as methods of prevention, elimination or treatment	A.W13, A.W17, O.W4	test, participation in discussion, performing tasks
W3	principles and methods of monitoring the level of infection of bee colonies by Varroa destructor, and diagnostic methods used in apiary and laboratory conditions to differentiate diseases and assess the health of bee colonies, as well as principles of pharmacological therapy of varroosis	B.W10, B.W4, B.W5, B.W8, O.W4	test, participation in discussion, performing tasks
Skills – Student can:			
U1	assess and monitor the health of bee colonies based on information obtained from the beekeeper and the actual situation, along with preparing appropriate descriptions in the event of an occurrence of American foulbrood	A.U12, A.U14, O.U4	observation of student’s work, participation in discussion, performing tasks
U2	conduct an inspection of a bee colony suspected of American foulbrood in accordance with the rules for conducting inspections of bee colonies in an infectious disease outbreak	B.U1, B.U3, B.U8, O.U1	observation of student’s work, participation in discussion, performing tasks
U3	analyze and interpret information obtained on the basis of clinical symptoms and laboratory test results of samples of bee material in order to confirm or exclude the suspicion of a specific disease along with making a diagnosis and methods of its elimination	A.U14, B.U6, O.U2	observation of student’s work, participation in discussion, performing tasks
U4	conduct medical - veterinary interviews with beekeepers in order to obtain information about the environmental conditions of the bee pasture and the condition of bee colonies	A.U13, B.U2	observation of student’s work, participation in discussion, performing tasks
U5	kconduct an epizootic investigation in the presence or suspicion of American foulbrood in the apiary, regarding the determination of potential sources of infection	B.U19	observation of student’s work, participation in discussion, performing tasks
Social competences – Student is ready to:			

K1	taking responsibility for the decisions made affecting beekeepers and their bees and the possible impact on the environment, especially in terms of crop pollinators	O.K1	observation of student's work, participation in discussion, performing tasks
K2	presenting an attitude consistent with the principles of the veterinary medical code	O.K2	observation of student's work, participation in discussion, performing tasks
K3	evaluation and analysis of information obtained from various sources	O.K4	observation of student's work, participation in discussion, performing tasks
K4	self-improvement and self-education	O.K8	observation of student's work, participation in discussion, performing tasks

Balance of ECTS points

Activity form	**Activity hours***	
lecture	10	
laboratory classes	14	
clinical classes	6	
exam / credit preparation	20	
Student workload	**Hours** 50	**ECTS** 2.0
Workload involving teacher	**Hours** 30	**ECTS** 1.0
Practical workload	**Hours** 20	**ECTS** 0.8

* hour means 45 minutes

Study content

No.	**Course content**	**Activities**

1.	1. Systematic of bees. The honey bee species in Europe and in the world. The role of bees in environment. Bee as a pollinator. Biology of honey bee and of colony of honey bees. Basic topic about the breeding of honey bee. 2. Biology of bees and bee family. Fundamentals of the economy apiary. Types of hives, beekeeping equipment. Types of apiary management. 3. Honey bee immunology. Genetic and physiologic agents of honey bee resistance. 4. The role of epizootiology in honey bee diseases. Control of honey bee diseases. EU and Polish regulations for control of bee diseases. The general principle of treating an infected apiary. 5. The basic information of the silk worm breeding and pathology. The conduct of the silk worm larvae rearing. Silk worm disease: white and green muscardine disease, Nosema disease, nuclear and cytoplasmatic polyhedrosis. Etiology, pathology, control of diseases.	lecture
2.	1. Anatomy and physiology of bees, part. I. External anatomy. head, backs, abdomen, legs, wings, organs of the senses. Anatomy and physiology of bees part. II. Internal anatomy. the digestive system, nervous system, reproductive system. Basic physiology of bees. Preparation and observation of the anatomical detail. Dissection of the honey bee. (3h) 2. Embryonic development of the bees. Nosema disease, amoeba disease, acariasis of bees. Etiology, pathogenesis, control, eradication, and prevention. Laboratory and differential diagnosis. (3h) 3. Varroa disease. Viral diseases: APV, CPV, BQCV, CWV. Etiology, pathogenesis, control, eradication, and prevention. Invasion of Aethina tumida. Monitoring research, methods, and evaluation. (3h) 4. American foulbrood, European foulbrood, chalkbrood, sacbrood, stonebrood. Etiology, pathogenesis, control, eradication and prevention. Administrative proceedings in diseases controlled by law. Methods of decontamination of hives and beekeeping equipment in infectious diseases. The invasion of Vespa velutina, as a new threat to Europe's apiaries. (3h)	laboratory classes
3.	1. Training (practice) in apiary. Type of hives. Examination of hives. Receiving of honey bee and brood probes for laboratory tests. (3h) 2. Training (practice) in apiary. Individual perlustration of the bee colonies. Principles of therapy colonies. (3h)	clinical classes

Course advanced

Teaching methods:

classes, lecture, presentation / demonstration, educational film

Activities	Examination methods	Percentage in subject assessment
lecture	participation in discussion	10%
laboratory classes	observation of student’s work, test, performing tasks	60%
clinical classes	observation of student’s work, performing tasks	30%

Entry requirements

Biology, Veterinary Microbiology I, Veterinary Microbiology II, Veterinary Epidemiology

Literature

Obligatory

1. R.A. Morse, K. Flottum - Honey bee pests, predators, and diseases. Published by the A. I. Rootcompany, Medina, Ohio, USA, 1997.
2. RH.A. Dade – Anatomy and dissection of the honeybee. IBRA, 1994.
3. Miller F.P., Vandome A.F., McBrewster J. Diseases of the honey bee. Beau Bassin. Alphascript Publishing, 2011
4. Cramp D. A practical manual of beekeeping : how to keep bees and develop your full potential as an apiarist. Oxford : Spring Hill, 2012
5. Vreeland R. & Sammataro D. Beekeeping - From science to practice. Springer International Publishing AG. 2017

Optional

1. https://coloss.org/core-projects/beebook/
2. http://www.ask-force.org/web/Bees/Rosenkranz-Biology-Control-Varroa-2010.pdf
3. http://agriculture.vic.gov.au/agriculture/pests-diseases-and-weeds/animal-diseases/bees/diagnosis-of-americal-foulbrood-disease-of-honey-bee-brood
4. http://www.nationalbeeunit.com/public/beekeepingFaqs/europeanFoulbroodEfb.cfm

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Clinical and laboratory diagnostics II

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J20BO.0407.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** Yes **Subject shaping practical skills** Yes

Teacher responsible for the subject	Marcin Jankowski
Other teachers conducting classes	Maciej Grzegory, Agnieszka Cekiera, Agnieszka Sikorska-Kopyłowicz, Alicja Cepiel-Kośmieja, Marcin Wrzosek

Period	**Examination**	**Number of ECTS points**
Semester 6	exam **Activities and hours** lecture: 30 clinical classes: 30	4.0

Goals

C1	To acquaint students with the methods and techniques of diagnostic testing of individual systems
C2	Transfer of knowledge in the field of practical clinical examination and additional tests, including laboratory tests, and interpretation of results.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	The student knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W4	oral credit, test
W2	Specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes;	O.W7	oral credit, test
W3	principles of diagnostic procedure, including differential diagnosis, and therapeutic procedure	B.W4	oral credit, test
W4	rules for conducting a clinical trial and animal health monitoring	B.W5, B.W6	oral credit, test
Skills – Student can:			
U1	conducts clinical examination of the animal in accordance with the principles of medical art;	O.U1	oral credit, observation of student’s work
U2	plans the diagnostic procedure	O.U3	oral credit, observation of student’s work
U3	uses Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health, diseases, pathological changes and conditions	O.U8	oral credit, observation of student’s work
U4	act safely and humanely with animals and instruct others in this regard	B.U1	oral credit, observation of student’s work
U5	conduct a medical and veterinary interview in order get accurate information about a single the animal or group of animals and his or theirs living environment	B.U8	oral credit, observation of student’s work
U6	conduct a complete clinical examination of the animal	B.U3, B.U7	oral credit, observation of student’s work
Social competences – Student is ready to:			
K1	uses the objective sources of information	O.K4	observation of student’s work
K2	deepens his/her knowledge and improves skills	O.K8	observation of student’s work

Balance of ECTS points

Activity form	Activity hours*
lecture	30
clinical classes	30
consultations	30

class preparation	30

Student workload	**Hours** 120	**ECTS** 4.0
Workload involving teacher	**Hours** 90	**ECTS** 3.0
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Description and diagnostic significance of arterial disorders and venouspulse. 2. Additional methods used in the diagnosis of cardiovascular disease. 3. Eating disorders. 4. Description and diagnostic significance of changes in the oral cavity. 5. Description and diagnostic significance of changes in the pharynx and esophagus. 6. Description and diagnostic significance of impaired rumen. 7. Description and diagnostic significance of impaired reticulum and abomasum. 8. Description and diagnostic significance of renal abomasum and stomach in monogastric animals. 9. Description and diagnostic significance of bowel and liver dysfunction. 10. Description and diagnostic significance of changes of the pancreas, spleen, abnormal fecal excretion. 11. Description and diagnostic importance of desire and function disorders of the urinary tract. 12. Description and diagnostic significance of impaired consciousness. Clinical studies and additional ways of the nervous system examination. 13. Description and diagnostic value of cranial nerve dysfunction. Description and diagnostic value of epileptic symptoms. 14. Description and diagnostic significance dysfunction of the peripheral nervous system. 15. Description and importance of diagnostic problems within the musculoskeletal system.	lecture

2.	1. Heart examination – inspection, palpation, percussion, auscultation in horse and cattle. 2. Heart examination – inspection, palpation, percussion, auscultation in other animals. 3. Examination of blood vessels. 4. TEST, Recurrent Laryngeal Neuropathy – RLN in horses. 5. Examination of oral cavity. 6. Examination of pharynx and esophagus. 7. Examination of abdomen (topography of abdominal organs). 8. Examination of rumen and reticulum. 9. Examination of omasum and abomasum. 10. Examination of liver and pancreas. 11. Examination of urinary tract, urine test. 12. Examination of neurological and movement system. 13. TEST, repetition on clinical cases. 14. Examination of cerebrospinal fluid. Test. 15. Handling with : horse (mare with foal), cattle, sheep, goat, pig (sow with piglets), dogs, cats	clinical classes

Course advanced

Teaching methods:

classes, practical simulation training, lecture, discussion, teamwork, situation-based learning, problem-solving method, educational game, brainstorming, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	oral credit, test	20%
clinical classes	oral credit, observation of student’s work, test	80%

Entry requirements

The student should have finished the following subject Clinical Diagnosis of Animals I

Literature

Obligatory

1. Nelson, Couto: Small Animal Internal Medicine, Elsevier, 2019
2. Divers, Peek: Rehbun diseases of diary cattle, Elsevier 2008
3. Reed, Bayly, Sellon: „Equine Internal Medicine”, Elsevier – Health Sciences Division, 2009
4. Davidson M. G., Else R. W., Lumsden J. H: BSAVA Manual of Canine and Feline Clinical Pathology, BSAVA, 2016.
5. NIcpoń J.: Clinical and laboratory diagnostics of diseases in animals. UWP, 2015.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Diagnostic imaging

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J20BO.0451.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** Yes **Subject shaping practical skills** Yes

Teacher responsible for the subject	Dominika Kubiak-Nowak
Other teachers conducting classes	Dominika Kubiak-Nowak, Wojciech Borawski

Period	**Examination**	**Number of ECTS points**
Semester 6	graded credit **Activities and hours** lecture: 15 laboratory classes: 45	4.0

Goals

C1	Learning of physical basics of diagnostics imaging modalities used in veterinary medicine and indications to use the imaging methods in small and large animal diseases, especially in skeletal, thoracic and abdominal disorders

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	methods of diagnostic procedures in animals	O.W4	written credit, oral credit, active participation
W2	rules and procedures for conducting a clinical examination in animals	O.W7	written credit, oral credit, active participation
W3	principles of diagnostic procedure, including differential diagnostic	B.W4	written credit, oral credit, active participation
W4	method of analysis of clinical data, results of laboratory tests and additional tests	B.W6	written credit, oral credit, active participation
W5	describes the causes and symptoms of anatomopathological changes in individual disease entities	B.W3	written credit, oral credit, active participation
Skills – Student can:			
U1	analyze and interpret clinical symptoms, anatomopathological changes and the results of additional tests, formulate the diagnosis of the disease in the context of differential diagnostics	O.U2	oral credit
U2	plan further proceedings in the context of expanding diagnostic imaging	O.U3	oral credit
U3	use radiological and ultrasound equipment in the diagnosis of animal diseases	B.U7	oral credit
U4	prepare and describe the test result	O.U7	oral credit
Social competences – Student is ready to:			
K1	formulate conclusions in the context of thetest results	O.K5	observation of student’s work
K2	self-assessment and confrontation of the obtained results with the opinions of other doctors	O.K7	observation of student’s work
K3	supplementing knowledge and successive improvement of professional qualifications	O.K8	observation of student’s work
K4	build good relationships in the team and share their views and own experience	O.K9	observation of student’s work

Balance of ECTS points

Activity form	Activity hours*
lecture	15
laboratory classes	45
class preparation	30
exam / credit preparation	30

Student workload	**Hours** 120	**ECTS** 4.0
Workload involving teacher	**Hours** 60	**ECTS** 2.0
Practical workload	**Hours** 45	**ECTS** 1.7

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Basics of X-ray examination part 1. 2. Basics of X-ray examination part 2. 3. Basics of magnetic resonance imaging and computed tomography part 1. 4. Basics of magnetic resonance imaging and computed tomography part 2. 5. Basics of magnetic resonance imaging and computed tomography part 3. 6. Basics of ultrasound examination part 1. 7. Basics of ultrasound examination part 2. 8. Basics of ultrasound examination part 3. 9. Contrast radiographic examination part 1. 10. Contrast radiographic examination part 2. 11. Analysis of selected clinical cases in the field of diagnostic imaging part 1. 12. Analysis of selected clinical cases in the field of diagnostic imaging part 2. 13. Analysis of selected clinical cases in the field of diagnostic imaging part 3. 14. Analysis of selected clinical cases in the field of diagnostic imaging part 4. 15. Analysis of selected clinical cases in the field of imaging diagnostics part 5.	lecture

2.	1. Diagnostic imaging - introduction part 1. 2. Diagnostic imaging - introduction part 2. 3. Basics of the osteoarticular system. 4. Diseases of the joints part 1. 5. Diseases of the joints part 2. 6. Bone fractures. 7. Adolescent diseases. 8. Diagnostic imaging of the head and neck. 9. Diagnostic imaging of the spine. 10. Diagnostic imaging of the thorax cavity part 1. 11. Diagnostic imaging of the thorax cavity part 1. 12. Diagnostic imaging of the abdominal cavity part 1. 13. Diagnostic imaging of the abdominal cavity part 2. 14. Analysis of selected clinical cases - summary. 15. Test.	laboratory classes

Course advanced

Teaching methods:

classes, lecture, presentation / demonstration, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	written credit, oral credit	30%
laboratory classes	oral credit, observation of student’s work, active participation	70%

Entry requirements

Animal anatomy I, Animal anatomy II, Histology and Embryology I, Histology and Embryology II, Biophysics, Pathophysiology I, Pathophysiology II

Literature

Obligatory

1. Holloway A and r McConnell FJ (2013) "BSAVA Manual of Canine and Feline Radiography and Radiology" British Small Animal Veterinary Association

Optional

1. Thrall, DE “Textbook of Veterinary Diagnostic Radiology”, 6th or 7th Ed. Elsevier (2012, 2018)
2. Kealy, JK, McAllister, H, (2010), “Diagnostic radiology and ultrasonography of the dog and cat”, 5th Ed. WB Saunders, Philadelphia
3. J.P. Morgan, J. Doval, V. Samii, (1998) "Radiographic techniques: the dog" Schlütersche
4. Coulson A, N. Lewis N (2008) "An Atlas of Interpretative Radiographic Anatomy of the Dog & Cat" Wiley and Sons

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Diseases of fur-bearing animals

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J20BO.3614.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Anna Woźniak-Biel
Other teachers conducting classes	Anna Woźniak-Biel

Period	**Examination**	**Number of ECTS points**
Semester 6	graded credit **Activities and hours** lecture: 10 laboratory classes: 15	2.0

Goals

C1	The aim of the course is to familiarize students with the biology and breeding of fur animals (foxes, mink, rabbits, chinchillas). Diseases of fur animals, principles of therapy, and prevention programs will be discussed and presented.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	characterizes principles of fur animal raising and husbandry	B.W11	written credit, online class test (in case of COVID-19 lockdown or online teaching)
W2	explains and interprets the etiology, pathogenesis, and clinical symptoms of diseases occurring in fur animals and knows the principles of therapeutic procedures	O.W3	written credit, online class test (in case of COVID-19 lockdown or online teaching)
W3	knows the principles of diagnostic and therapeutic procedures, appropriate for the diseases occurring in fur animals	O.W4	written credit, online class test (in case of COVID-19 lockdown or online teaching)
W4	specifies the principles of conducting the clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms, and anatomopathological changes found in fur animals	O.W7	written credit, online class test (in case of COVID-19 lockdown or online teaching)
W5	describes in detail the application of antibacterial and antiparasitic chemotherapy in fur animals	A.W17	written credit, online class test (in case of COVID-19 lockdown or online teaching)
Skills – Student can:			
U1	conducts clinical examination of the selected fur animals in accordance with the principles of medical art	O.U1	written credit, active participation, online class test (in case of COVID-19 lockdown or online teaching)
U2	analyses and interprets clinical symptoms, anatomopathological changes and results of laboratory tests and additional tests, formulates the diagnosis of a given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions in fur animals	O.U2	written credit, active participation, online class test (in case of COVID-19 lockdown or online teaching)
U3	communicates with the clients and other veterinary physicians	A.U12	written credit, active participation, online class test (in case of COVID-19 lockdown or online teaching)
U4	conducts a medical-veterinary interview in order to obtain precise information regarding the group of fur animals and their living environment	B.U2	written credit, active participation, online class test (in case of COVID-19 lockdown or online teaching)
Social competences – Student is ready to:			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	active participation

Balance of ECTS points

Activity form	Activity hours*
lecture	10
laboratory classes	15
exam / credit preparation	15
collecting and studying literature	15

Student workload	**Hours** 55	**ECTS** 2.0
Workload involving teacher	**Hours** 25	**ECTS** 1.0
Practical workload	**Hours** 15	**ECTS** 0.6

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Selected topics in the biology, breeding and care of fur-bearing animals (foxes, arctic foxes, dogs, minks, raccoon dogs, rabbits, coypus, chinchillas). 2. Diseases caused by vitamin and mineral deficiencies, selected issues related to metabolic disorders. 3. Viral, bacterial, fungal and parasitic diseases of carnivorous fur-bearing animals. 4. Viral, bacterial, fungal and parasitic diseases of rabbits and chinchillas - Part I. 5. Viral, bacterial, fungal and parasitic diseases of rabbits and chinchillas - Part II.	lecture

2.	1. Principles of nutrition, standardization, and sanitary assessment of food for carnivorous and herbivorous fur animals. 2. Medical procedure on the farm of fur-bearing animals affected by the disease. Epizootic investigation. 3. Principles of the treatment of fur-bearing animals. Drugs and drug administration methods, preventive actions (immunoprophylaxis) on the farm. 4. Clinical examination of fur-bearing animals: clinical trial, samples collection, injection techniques (s.c., i.m., i.v., etc.). 5. Post-mortem examination of fur animals (carnivores) - analysis of post-mortem lesions. 6. Post-mortem examination of fur animals (herbivores) - analysis of postmortem lesions. 7. Selected veterinary procedures performed on farm-bred herbivorous fur animals. 8. Final test.	laboratory classes

Course advanced

Teaching methods:

classes, lecture, discussion, brainstorming, educational film, presentation / demonstration

Activities	Examination methods	Percentage in subject assessment
lecture	written credit	50%
laboratory classes	written credit, active participation, online class test (in case of COVID-19 lockdown or online teaching)	50%

Entry requirements

Animal anatomy I and II, Veterinary microbiology I and II, Animal physiology I and II, Pathophysiology I and II, Veterinary pharmacology I, Pathomorphology I

Literature

Obligatory

1. Hans Henrik Dietz, Per Henriksen, Tove N. Clausen & Mariann Chriél: A brief compendium of the most commonly encountered diseases in mink and foxes in Denmark.
2. National Research Institute Of Animal Production: Practical Aspects Of Rabbit Breeding And Production
3. McNitt J.I., Lukefahr S.D., Cheeke P.R., Patton N.M.: Rabbit production. CAB Int., 2013

Optional

1. Mayer J, Donnely T.M.: Clinical Veterinary Advisor, Birds and Exotic Pets. 2013, Elsevier Saunders.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Parasitology and invasiology I

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J20BO.1545.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** Yes **Subject shaping practical skills** Yes

Teacher responsible for the subject	Jolanta Piekarska
Other teachers conducting classes	Jolanta Piekarska, Jarosław Pacoń

Period Semester 6	**Examination** graded credit **Activities and hours** lecture: 30 laboratory classes: 30	**Number of ECTS points** 4.0

Goals

C1	The aim of the course is to teach students to identify different species of parasites and to assess the related threats to animals and humans. Students learn the basic concepts and terms in parasitology, zoological systematics, morphology and life cycles of parasites, clinical symptoms and pathological changes during the course of parasitic infection in different animal species (cows, sheep, goats, horses, pigs, dogs, cats, laboratory animals, poultry, fish). Students learn basic diagnostic methods and the principles of treatment, control and prophylaxis parasitic infection. Students learn about the zoonotic effects of eating infected animal products such as raw fish, meat or internal organs. Issues of cooperation with animal breeders and veterinary administrative services in the control of animal parasitic diseases are also discussed during the course.
C2	Parasites of domestic and wild animals (Protozoa and Platyhelminthes), their morphology, biology, life cycles and epizootic and epidemiological role. Interactions between hosts and parasites, diagnostic methods, anti-parasitic drugs, prevention and control of invasion.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	species characteristics of parasitic protozoa and flatworms, knows their biology, describes and explains their developmental cycles and the spread of the diseases they cause, identifies parasites and specifies the dangers they pose to health and to humans.	B.W10, B.W3, O.W3, O.W6	written credit, active participation
W2	clinical signs and anatomopathological changes in infected animals and suggests prophylaxis and treatment for invasive diseases caused by protozoa and flatworms	B.W4, O.W4, O.W5	written credit, active participation
Skills – Student can:			
U1	recognise clinical signs of parasitic infections	O.U2	active participation, test
U2	select the optimum management strategy for dealing with individual parasites	O.U3	active participation, test
U3	implement appropriate treatment and preventive measures	B.U13	active participation, test
Social competences – Student is ready to:			
K1	use the knowledge gained to plan the optimal strategy for dealing with individual invasions	O.K1, O.K8	observation of student’s work
K2	cooperation with the animal owner and consultation on parasitological cases	O.K11	observation of student’s work

Balance of ECTS points

Activity form	Activity hours*
lecture	30
laboratory classes	30
class preparation	55

consultations	5

Student workload	**Hours** 120	**ECTS** 4.0
Workload involving teacher	**Hours** 65	**ECTS** 2.3
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Definition and types of parasitism. Host – parasite relationships. Ways of infection, life cycle of parasites. Morphological, physiological and behavioral adaptation to the parasitic lifestyle. 2. Characteristics of Sarcomastigophora - blood and tissues parasites. Human and animal trypanosomiasis, ways of infection, clinical signs, pathology, epidemiology, treatment and control. Leishmaniasis of humans and animals. 3. Characteristics of Sarcomastigophora -protozoan of digestive and reproductive tracts of domestic and wild animals (Giardia spp., Trichomonas spp., Histomonas spp., Entamoeba spp.) 4. Diseases caused by protozoa (type Apicomplexa) of gastrointestinal tract and other tissues. (Cryptosporidium sp, Eimeria spp., Isospora spp., Sarcocystis sp). Coccidiosis: -ways of infection, pathogenesis diagnosis, prevention, therapy. 5. Toxoplasmosis of humans and animals. Neospora caninum - morphology, life cycle, the course of the infection in dogs and cattle. The infection of Sarcocystis sp. and Balantidium coli 6. Haemosporidiosis - caused by the Apicomplexa protozoans (Babesia spp., Theileria spp., Plasmodium spp.) 7. Biology and pathogenicity of trematodes. General characteristics, biology, the role of tegument, larval forms, routes of infection. Pathology and immunobiology of infection caused by Fasciolidae, Dicrocoelidae and Paramphistomatidae 8. Parasitic diseases of animals and humans caused by trematodes of the families Opistorchidae, Schstosomatidae, Diplostomatidae and Prosthogonimidae. 9. Tapeworms infection . General characteristics of Cestoda; biology, larval forms, the role of tegument in biology and pathogenicity. Diphyllobohtriasis, fish tapeworms. 10. Pathology, immunobiology and epidemiology of infections caused by tapeworms of the Taeniidae family in intermediate and definitive hosts. The zoonotic significance of Taenidae. 11. The Nematodes - morphology and biology . - Characteristics of eggs and larval forms. Diseases caused by nematodes of Ascaridoidea & Anisakidae (Ascaris suum, Parascaris equorum, Neoascaris vitulorum, Toxocara canis. Toxocarosis- zoonotic potential - Other nematodes of the Anisakidae family. Parasitic nematodes of poultry. Pathogenesis of infection caused by pinworms (Oxyuroidea in equids). 12. Nematodes of the respiratory tract of ruminants, poultry, and carnivores. Dictyocaulosis of cattle and horses, protostrongylosis of ruminants, metastrongylosis of pigs, angiostrongylosis of dogs syngamosis of poultry. (Pathogenesis, prevention of infection with Syngamidae, Metastrogylidae & Protostrogylidae. 13. The strongyles infections of horses ruminants and pigs. The prevalence, pathogenesis and preventive measurements against large strongyles (Strongylus vulgaris, S. equinus, S. edentatus) and small (- subfamilies Cyathostominae) infections. Chabertia sp infection of sheep. oesophagostomosis of sheep, cattle and pigs. 14. Characteristics of Strongyloidea & Ancylostomatoidaea. The incidence of infection (Strongyloides spp) in farm animals. The prevalence of hookworm (family Ancylostomatidae) in carnivores - epidemiology, the phenomenon of dormant larvae, ways of infection. The hookworm zoonotic importance (cutaneous larva migrans) Bunostomum spp infections of cattle and sheep. 15. The gastrointestinal nematodes (Trichostrongylidae) infections in ruminants, horses, poultry, rabbit , hares. The prevalence and significance of Ostertagia ostertagi, Haemonchus contortus, Trichostrongylus sp, Nematodirus sp infection in ruminants. The phenomena observed in the life cycle (self cure, spring rise).	lecture

2.	Lab.1 Protozoa Order: Trypanosomatida;Family: Trypanosomatidae /Trypanosoma equiperdum , Trypanosoma brucei , Trypanosoma gambiense , Trypanosoma rhodesiense , Trypanosoma evansi , Trypanosoma cruzi , Leishmania infantum Lab. 2 Parabasalia; Order: Trichomonadida,Family: Trichomonadidae/ Tritrichomonas foetus, Trichomonas vaginalis Phylum: Fornicata; Family: Giardiidae/Giardia duodenalis Lab. 3 Phylum: Amebozoa, Order: Amoebida , Family: Entamoebidae /Entamoeba histolytica ,Entamoeba coli Family: Acantamoebidae /Acanthamoeba castellani ,Family: Vahlkampfiidae /Naegleria fowleri Lab. 4 Phylum: Apicomplexa; Order: Eucoccidiorida,Family: Eimeriida/ Eimeria tenella, Eimeria stiedai, Cystoisospora felis, Cystoisospora canis, Isospora suis Lab. 5 Family: Sarcocystidae / Sarcocystis miescheriana , Sarcocystis suihomins ,Sarcocystis porcifelis,Sarcocystis arieticanis ,Sarcocystis gigantea Sarcocystis tenella,Sarcocystis cruzi ,Sarcocystis hirsuta ,Sarcocystis hominis , Toxoplasma gondii Family: Cryptosporidiidae /Cryptosporidium parvum Lab. 6 Order: Haemospororida,Family: Plasmodiidae / Plasmodium vivax ,Plasmodium falciparum,Plasmodium malariae, Plasmodium gallinaceum Order: Piroplasmorida,Family: Babesiidae /Babesia divergens, Babesia canis Phylum: Ciliophora ,Family: Balantidiidae/ Balantidium coli Family: Pycnotrichidae/ Buxtonella sulcata Lab. 7 Test: Protozoa Lab. 8 Plathelminthes - flatworms Class: Trematoda ,Family: Dicrocoeliidae/Dicrocoelium dendriticum,Family: Paragonimidae/Paragonimus westermani,Family: Prosthogonimidae/Prosthogonimus pellucidus ,Family: OpisthorchiidaeOpisthorchis felineus ,Clonorchis sinensis Lab. 9 Order: Echinostomida;Family: Fasciolidae/Fasciola hepatica,Fasciolopsis buski ,Family: Paramphistomidae/Paramphistomum cervi Lab. 10 Order: Echinostomida, Family: Echinostomatidae/Echinostoma revolutum,Echinochasmus perfoliatus Order: Strigeidida, Family: Diplostomatidae/Alaria alata ; Family: Schistosomatidae/ Schistosoma manson,Schistosoma japonicum,Schistosoma haematobium Lab. 11 Class: Cestoda Family: Caryophyllaeidae/Caryophyllaeus laticeps Family: Diphyllobothriidae / Diphyllobothrium latum Family: Mesocestoididae/ Mesocestoides lineatus Family: Hymenolepididae/Hymenolepis nana,, Drepanidotaenia lanceolata Family: Davaineidae/ Raillietina cesticillus Lab. 12 Class: Cestodea Order: Cyclophyllidea; Family: Taeniidae / Taenia solium ,Taenia saginata,Taenia pisiformis,Taenia hydatigena,Taenia (Hydatigera) taeniaeformis ,Echinococcus granulosus, Echinococcus multilocularis Lab. 13 Family: Dipyllidae/Dipylidium caninum ; Family: Anoplocephalidae/Anoplocephala magna, Anoplocephala perfoliate, Paranoplocephala mamillana, Moniezia expansa,Moniezia benedeni,Cittotaenia denticulata Lab. 14 Test : Trematoda and Cestoda Lab. 15 Completing overdue Labs. Credit	laboratory classes

Course advanced

Teaching methods:

classes, lecture, presentation / demonstration

Activities	Examination methods	Percentage in subject assessment
lecture	written credit, test	50%
laboratory classes	observation of student’s work, active participation, test	50%

Entry requirements

Biology, Clinical and Laboratory Diagnostics I, Pathophysiology I-II, Pathomorphology I, Veterinary Pharmacology I

Literature

Obligatory

1. Taylor MA, Coop RL, Wall RL. Veterinary Parasitology. Blackwell Publishing, 4rd edition 2017 (strongly suggested)
2. Dwight D. Bowman. Parasitology for Veterinarians, 10th Edition 2020

Optional

1. Mehlhorn H. Encyclopedic Reference of Parasitology (Diseases, Treatment, Therapy). Springer-Verlag Berlin Heildelberg, New York 2016.
2. Charles M. Hendrix, Ed Robinson. Diagnostic Parasitology for Veterinary Technicians, 5th edition, 2016

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Pathomorphology II

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J20BO.1558.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** mandatory
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** Yes
	Subject shaping practical skills Yes

Teacher responsible for the subject	Rafał Ciaputa
Other teachers conducting classes	Rafał Ciaputa, Małgorzata Kandefer-Gola, Izabela Janus, Paulina Śliwowska, Kacper Żebrowski

Period	**Examination**	**Number of ECTS points**
Semester 6	exam **Activities and hours** lecture: 45 laboratory classes: 45	6.0

Goals

C1	The aim of the course is to provide students with basic knowledge of regressive changes, circulatory disorders, inflammatory pathology, progressive changes, pathomorphology of cancer and diseases of particular organs and systems of the body as well as domestic animal infectious diseases. Subject shows the autopsy techniques, rules for the collection and protection of material for histopathological, microbiological and serological tests, and also indicates the possibility of the use of knowledge in the diagnosis of diseases, including infectious diseases

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the rgan, animal, to the entire animal population	O.W1	written exam
W2	nows to an extensive degree, describes in detail and explains the development, structure, functioning, behaviours and physiological mechanisms of animals in normal conditions, as well as the mechanisms of disorders in pathological conditions	O.W2	written exam
W3	specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes	O.W7	written exam
W4	knows to an extensive degree as well as understands disorders at the level of the cell, tissue, organ, system and organism, in the course of the disease	B.W1	written exam
W5	explains the mechanisms of organ and systemic pathologies	B.W2	written exam
W6	describes the causes and symptoms of anatomopathological changes, principles of treatment and prophylaxis in individual disease entities	B.W3	written exam
Skills – Student can:			
U1	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions	O.U2	written exam
U2	issues veterinary medical opinion and certificate	O.U7	written exam
U3	uses Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health, diseases, pathological changes and conditions	O.U8	written exam
U4	performs a full clinical examination of the animal	B.U3	practical training report
U5	collects and secures the samples for tests, as well as performs standard laboratory tests, and correctly analyses and interprets the results of laboratory tests	B.U6	practical training report
U6	is able to perform an autopsy of the animal corpse, along with the description, as well as to take samples and secure them for transport	B.U16	practical training report
Social competences – Student is ready to:			
K1	formulates conclusions from own measurements or observations	O.K5	observation of student’s work, participation in discussion
K2	deepens his/her knowledge and improves skills	O.K8	observation of student’s work, participation in discussion

K3	communicates with the co-workers and shares knowledge	O.K9	observation of student's work, participation in discussion, practical training report

Balance of ECTS points

Activity form	Activity hours*
lecture	45
laboratory classes	45
class preparation	10
consultations	10
exam participation	30
presentation/report preparation	10

Student workload	**Hours** 150	**ECTS** 6.0
Workload involving teacher	**Hours** 130	**ECTS** 5.0
Practical workload	**Hours** 45	**ECTS** 1.7

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Pathology of skeletal muscles. 3h 2. Pathology of bone and joints. 3h 3. Pathology of skin. 3h 4. Skin neoplasms. 3h 5. Pathology of female reproductive system. 3h 6. Pathology of mammary gland. 3h 7. Male reproductive system. 3h 9. Pathology of eye. 3h 10. Morphology of swine diseases. 3h 11. Morphology of swine diseases. 3h 12. Morphology of cattle diseases. 3h 13. Morphology of sheep and goat diseases. 3h 14. Morphology of dogs and cats diseases. 3h 15. Morphology of dogs and cats diseases. 3h	lecture

2.	1. Introduction, post mortem room and post mortem examination tools, post mortem technique. 3h 2. Post mortem technique and post mortem examination report. 3h 3. Post mortem examination of current cases. 3h 4. Post mortem examination of current cases. 3h 5. Presentation and discussion of former cases and post mortem examination of current cases. 3h 6. Presentation and discussion of former cases and post mortem examination of current cases. 3h 7. Presentation and discussion of former cases and post mortem examination of current cases. 3h 8. Presentation and discussion of former cases and post mortem examination of current cases. 3h 9. Presentation and discussion of former cases and post mortem examination of current cases. 3h 10. Presentation and discussion of former cases and post mortem examination of current cases. 3h 11. Presentation and discussion of former cases and post mortem examination of current cases. 3h 12. Presentation and discussion of former cases and post mortem examination of current cases. 3h 13. Presentation and discussion of former cases and post mortem examination of current cases. 3h 14. Presentation and discussion of former cases and post mortem examination of current cases. 3h 15. Final credit for a class. 3h	laboratory classes

Course advanced

Teaching methods:

classes, lecture, discussion, teamwork, presentation / demonstration, brainstorming, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	written exam, participation in discussion, practical training report	80%
laboratory classes	written exam, observation of student’s work, participation in discussion, practical training report	20%

Entry requirements

anatomy, histology, cell biology, biochemistry, physiology and pathophysiology, Pathomorphology I

Literature

Obligatory

1. Pathologic basis of veterinary disease.” M. Donald McGavin, James F. Zachary, Mosby Elsevier, 2012
2. Veterinary pathology” T. C. Jones, R. D. Hunt, N. W. King

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Public health protection in a state of disaster

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J20BO.2160.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** No

Teacher responsible for the subject	Jan Madej
Other teachers conducting classes	Marta Facon-Poroszewska, Anna Wanecka, Magdalena Florek

Period Semester 6	**Examination** graded credit **Activities and hours** laboratory classes: 30	**Number of ECTS points** 2.0

Goals

C1	To provide students with properties of microorganisms, toxins and various types of radiation - potential agents of bioterrorist attack.
C2	To familiarize students with the possibilities of counteraction against the effects of bioterrorist attacks.
C3	To provide students with knowledge of the influence of ionizing radiation on biological material, routes of contamination with radioactive elements, metabolism and distribution of radionuclides in the body and the effects of acute and chronic irradiation.
C4	To familiarize students with the tasks of the veterinary service in radiological protection.
C5	Providing students with basic knowledge of dosimetry, assessment of radioactive contamination of feed and products of animal origin and methods of decontamination, taking into account external and internal contamination.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the principles and mechanisms underlying animal health, disease formation because of radiological contamination and their treatment - from the level of cells, through the organ, animal, to the entire animal population.	O.W1	written credit, oral credit
W2	the mechanisms of disorders because of microbiological and radiological contamination.	O.W2	written credit, oral credit
W3	the etiology, pathogenesis and clinical symptoms of diseases occurring because of radiological contamination in individual animal species, and knows the principles of therapeutic procedures.	O.W3	written credit, oral credit
W4	the principles of diagnostic methods and therapeutic procedure for diseases occurring because of radiological contamination.	O.W4	written credit, oral credit
W5	the principles of conducting clinical examination of disorders caused by radiological contamination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes.	O.W7	written credit, oral credit
W6	in detail the principles of management and utilisation of animal by-products and waste associated with animal production in a situation of radiological contamination.	O.W9	written credit, oral credit
W7	the principles of examination of the slaughter animals, meat and other animal products in a situation of radiological contamination.	O.W10	written credit, oral credit
W8	the principles of consumer health protection in a situation of radiological contamination.	O.W11	written credit, oral credit
W9	the principles of appropriate supervision over the production of foodstuffs of animal origin in a situation of radiological contamination.	O.W12	written credit, oral credit

W10	legal standards associated with the activities of veterinary physicians in a situation of radiological contamination.	O.W14	written credit, oral credit
W11	disorders at the cellular, tissue, organ, body level in disease caused by radiological contamination.	B.W1	written credit, oral credit
W12	the correlation between radiation factors that disturb the balance of biological processes of the animal body and physiological and pathophysiological changes.	A.W11	written credit, oral credit
Skills – Student can:			
U1	analyse and interpret pathological changes and results of laboratory tests and additional tests, taking into account the differential diagnostics, and undertake prophylactic actions in a situation of microbiological and radiological contamination.	O.U2	written credit, oral credit
U2	perform activities that are associated with the veterinary supervision, including trade in animals, as well as sanitary and veterinary conditions of animal gathering locations and processing products of animal origin in a situation of radiological contamination.	O.U6	written credit, oral credit, participation in discussion
U3	use the knowledge of the laws of physics in order to explain the impact of ionizing radiation on the animal body.	A.U1	written credit, oral credit
U4	communicate with the clients and other veterinary physicians.	A.U12	participation in discussion
U5	work in a multidisciplinary team.	A.U15	participation in discussion
Social competences – Student is ready to:			
K1	exhibit responsibility for his/her decisions made in regard to the people, animals and the natural environment in a situation of microbiological and radiological contamination.	O.K1	participation in discussion
K2	use the objective sources of information on potential factors of a bioterrorist attack.	O.K4	participation in discussion
K3	formulate conclusions from own measurements or observations.	O.K5	participation in discussion
K4	communicate with the co-workers and shares knowledge.	O.K9	participation in discussion
K5	cooperate with representatives of other professions in the scope of public health protection in a situation of microbiological and radiological contamination.	O.K11	participation in discussion

Balance of ECTS points

Activity form	**Activity hours***
laboratory classes	30
exam / credit preparation	15
class preparation	13

consultations	2	
Student workload	**Hours** 60	**ECTS** 2.0
Workload involving teacher	**Hours** 32	**ECTS** 1.1
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	1. Bioterrorism: definition and types of bioterrorism. Categories of bioterrorist attack agents according to the Centers of Disease Control and Prevention (CDC). Properties of an "ideal" agent. Signs of bioterrorist attack. Viral agents of Category A (according to CDC): smallpox virus. 2. Viral agents of category A (cont'd): viral hemorrhagic fevers (viruses: Marburg, Ebola, Lassa, Junin, Machupo, Sabia). Viral agents of category B: venezuelan equine encephalitis virus. Viral agents of category C (Nipah virus, Hanta virus, yellow fever virus). 3. Bacterial agents of category A: Bacillus anthracis, Yersinia pestis, Francisella tularensis. 4. Bacterial agents of category B: Coxiella burnetii, Salmonella sp., Escherichia coli O157:H7, Shigella sp., Vibrio cholerae, Brucella sp., Burkholderia mallei. 5. Biological toxins as agents of bioterrorist attack: botulin toxin, enterotoxins of Staphylococcus aureus, epsilon toxin of Clostridium perfringens, ricin, trichotecenes. 6. Agroterrorism. Potential threats of bioterrorist attack for agriculture. Possible agents of agroterrorism. Threats for food processing. Genetically modified food as a potential bioweapon. 7. Identification of a bioterrorist attack. Situations constituting evidence of a bioterrorist attack. Identification of bioterrorist attack agents. Present-day diagnostic methods. Biosafety levels of micobiological laboratories. 8. The radioactivity phenomenon; the characteristic of ionizing radiation. Sources of ionizing radiation in the environment. The natural background of ionizing radiation. The artificial background of ionizing radiation. The tasks and role of veterinary services in the organization of preventive system against radiation. 9. Dosimetry of ionizing radiation; the radiation rate, the radionuclides activity, doses: exposed dose, absorbed dose, limit dose. Practical calculations and use of radioactivity units. 10. The influence of ionizing radiation on biological material; the hermetic effect of ionizing radiation, an ionization phenomenon, the target theory, the radiochemical theory. The radio-toxicity of radioactive nuclides. Cellular changes caused by ionizing radiation. The radiosensitivity of tissues and organs. Factors influencing the effect of ionizing radiation on organism. 11. Human and animal body response to the ionizing irradiation; acute syndrome, stochastic effects. 12. Contamination of animals by radionuclides; routes of contamination, critical organs, distribution and metabolism of selected radionuclides in animal body. Contamination of feed and food of animal origin by radionuclides. 13. Radiation detectors and measurement equipment. 14. Decontamination; methods for elimination of the external and internal contamination of animals. Procedures in the case of radioactive contamination, the organization of animal decontamination.	laboratory classes

Course advanced

Teaching methods:

classes, discussion, presentation / demonstration, situation-based learning, educational film

Activities	Examination methods	Percentage in subject assessment
laboratory classes	written credit, oral credit, participation in discussion	100%

Entry requirements

Completion of the courses: Chemistry, Biophysics, Biochemistry, Animal anatomy, Histology and embryology, Cell biology, Animal physiology, Pathophysiology, Veterinary immunology, Veterinary microbiology.

Literature

Obligatory

1. Fog and Alibek, Bioterrorism and infectious agents. Springer Science, New York, 2005
2. Biological disasters of animal origin. The role and preparedness of veterinary and public health services. Scientific and technological review., vol..25, OIE, 2006
3. Jarret D. G. Medical management of radiological casualties. 1st Edition, Military Medical Operation Office Armed Forces Radiobiology Research Institute, Bethesda, Maryland, 1999., http:// www.afrri.usuhs.mil
4. Articles in scientific journals concerning to the radioactivity, radiobiology and the influence of ionizing irradiation on animals and people, nuclear medicine.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Surgery and anaesthesiology

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J20BO.2408.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** Yes **Subject shaping practical skills** Yes

Teacher responsible for the subject	Joanna Tunikowska
Other teachers conducting classes	Joanna Tunikowska, Agnieszka Antończyk, Zdzisław Kiełbowicz, Bartłomiej Liszka

Period Semester 6	**Examination** graded credit **Activities and hours** lecture: 15 laboratory classes: 16 clinical classes: 14	**Number of ECTS points** 4.0

Goals

C1	The aim of the course is to familiarize students with the basics of animal anesthesia for surgical and diagnostic procedures. The goal is to provide knowledge about the types and properties of sedation drugs, anesthetics, and local anesthetics as well as techniques for general anesthesia in dogs and cats, farm animals and horses
C2	The aim of the course is also to provide knowledge on the issues of general surgery in the field of treatment of injuries, wounds, internal and external injuries, principles of management of musculoskeletal diseases, surgical treatment of specific inflammations, hernias and resection of cancerous tumors.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	Knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population;	O.W1	written credit, oral credit, observation of student's work, test
W2	Explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in individual animal species, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W3	written credit, oral credit, observation of student's work, test
W3	Presents the principles of conducting clinical examination and monitoring animal health	B.W5	written credit, oral credit, observation of student's work, test
W4	mange of clinical data and the results of laboratory and additional tests	B.W6	written credit, oral credit, observation of student's work, test
W5	Knows to an extensive degree and understands the structure of the animal organism: cells, tissues, organs and systems	A.W1	written credit, oral credit, observation of student's work, test
W6	Knows to an extensive degree and understands the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, herd of animals, to the entire animal population;	A.W10	written credit, oral credit, observation of student's work, test
Skills – Student can:			
U1	Conducts clinical examination of the animal in accordance with the principles of medical art;	O.U1	written credit, oral credit, observation of student's work
U2	Analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	written credit, oral credit, observation of student's work
U3	Plans the diagnostic procedure	O.U3	written credit, oral credit, observation of student's work

U4	Conducts a medical-veterinary interview in order to obtain precise information regarding individual animal or group of animals and its or their living environment	B.U2	written credit, oral credit, observation of student’s work
U5	Provide first aid to animals in case of haemorrhage, wounds, respiratory disorders, eye and ear injuries, loss of consciousness, cachexia, burns, tissue damage, internal injuries, and cardiac arrest	B.U4	written credit, oral credit, observation of student’s work
U6	Performs a full clinical examination of the animal	B.U3	written credit, oral credit, observation of student’s work
U7	Explains the anatomical basis of physical examination, taking into account the individual animal species;	A.U6	written credit, oral credit, observation of student’s work
U8	Uses the methods of safe sedation, general and local anaesthesia, as well as assessment and relief of pain	B.U11	written credit, oral credit, observation of student’s work
U9	Monitors the patient's condition in the intra- and post-operative period on the basis of basic life parameters	B.U12	written credit, oral credit, observation of student’s work
U10	Implements the principles of surgical antisepsis and asepsis, as well as applies appropriate methods of sterilising equipment	B.U14	written credit, oral credit, observation of student’s work
Social competences – Student is ready to:			
K1	Exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student’s work
K2	Has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	observation of student’s work
K3	Is ready for reliable self-assessment, formulating constructive criticism in the scope of veterinary practice, accepting criticism of presented solutions, reacting to such criticism in a clear and material manner, also with the use of arguments referring to the available scientific achievements in the discipline;	O.K7	observation of student’s work

Balance of ECTS points

Activity form	**Activity hours***
lecture	15
laboratory classes	16
clinical classes	14
lesson preparation	20
class preparation	20

exam / credit preparation	20

Student workload	**Hours** 105	**ECTS** 4.0
Workload involving teacher	**Hours** 45	**ECTS** 1.7
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	1. Surgery, surgical cleanliness. Infrastructure of surgical clinic with ambulatory, facilities where animals are prepared for surgery and anaesthesia. Today's requirements for the structure and operating room equipment, preparation of surgical field, surgical instruments, hand washing and preparation of the surgical team for surgery. Rules of aseptic and antiseptic conduct in the operating theatre 2. Traumatology- trauma, wounds and their treatment. Sharp and blunt trauma in veterinary medicine - abrasion, tear, wound. Wound breakdown due to their etiology and ways of healing by-primary adhesion, granulation, and the under the scab (sanatio per primam et per secundam et sub crustacea intentionem). Principles of wound treatment - excision of primary and secondary. Ways to suture wounds using absorbable and non-absorbable materials for sewing. Autogenous grafts of skin. 3. External and internal injuries - bleeding, haematoma, contusion, concussion, and their treatment The modalities of conservative and surgical treatment in arterial and venous haemorrhage. Rules of preparing dressing in haemorrhage in various parts of the body in animals. Methods of treating haematomas. The use of physiotherapy techniques in the treatment of bruises after a traffic accident. Post-traumatic concussion - diagnosis and therapy. The pathology of frostbite and burns in animals and their treatment 4. Specific inflammation of bacterial and fungal etiology. Principles of surgical treatment of abscess and empyema. Paracenteza and optimal incision and evacuation of pus. Modern antiseptics and drains used for irrigation and run off purulent exudate. Pyaemia and phlegmon in animals and their treatment. The occurrence of actinomycosis in animals and methods of diagnosis and surgical treatment. Iatrogenic complications after castration in the form of sander - conservative and surgical treatment 5. Surgical musculoskeletal disorders Consequences of twisting in the joints and methods for their treatment of physiotherapy and medication. The most common dislocation in animals, diagnostics, methods of conservative treatment for dislocation and the use of surgical methods. Fractures of long and flat bones, and vertebres in small and large animal. Divisions of bone fractures in different categories of eligibility. Methods and basic principles of conservative and surgical treatment of fractures 6. Hernias and cancers. General definition of hernias and their types. Division of hernia due to their causes. Symptoms, consequences and diagnosis of hernias. Complications at various hernias caused by lack of surgical intervention. The methods of surgery in the treatment of hernias and pseudohernias. Occurrence of tumors in animals. Cancers of soft tissue and bone. Principles of surgical removal of cancerous tumors. 7. Preparation of animals to the anaesthesia and surgical procedures. Development and progress in veterinary surgery. The most important inventions in the field of anaesthesia in large and small animals . The introduction of the principles of antisepsis and asepsis in medicine. Preparation of animals to the anaesthesia and surgery. Indications for pharmacological immobilization of the animal. Tranquilizers used for pharmacological sedation: fenotiazyne derivates, alpha-2 agonists, benzodiazepines, and derivatives of butyrofenon. Analgesic treatment in patients during and after surgery with the use of opioids and nonsteroidal anti-inflammatory drugs 8. Induction anaesthesia, the essence and indications. Definition of basic sleep and characteristics of drugs inducing this state. Hypnotics from Hypnotica group. Venous cannulation technique. Drugs causing miorelaxation having central and peripheral action. Laying large animals by using mechanical and pharmacological methods. 9. Maintenance of surgery tolerance - general infusion anaesthesia . Totally intravenous anaesthesia - TIVA. Characteristics of barbiturates short and medium long-acting. Advantages and dangers of barbiturates in anaesthesia of large and small animals . Dissociative anaesthesia with ketamine hydrochloride in combination with other hypnotic drugs. Infusion anaesthesia with propofol for treatment of animals with increased risk of anaesthesia. The use of fentanyl in a painful surgical operations. 10. Maintenance of surgery tolerance - general inhalation anaesthesia . Rules of intubation with tracheotubus and possible complications resulting from obstruction of the upper respiratory tract. The use of oral facial masks. Characteristics of drugs for inhalation anaesthesia. The most commonly used anaesthetic systems for anaesthesia of large and small animals. Procedures ad hoc or planned tracheotomy or tracheostomy 11. Local anaesthesia. The most commonly used analgesics for surface anaesthesia of the mucous membranes. Methods of infiltration anaesthesia. Perineural anaesthesia in large and small animals . Regional anaesthesia. 12. Complications of anaesthesia. Complications of local and general anaesthesia. CNS respiratory failure. Obstructive respiratory insufficiency. Restrictive respiratory failure. IPPV artificial respiration 13. Complications of cardiac anaesthesia. Causes of complications related to cardiovascular failure. Cardiovascular depression resulting in hypoglycemia and oligovolemia the rise of a shock. Therapeutic modalities for bradycardia and tachycardia. Algorithm for cardiac and respiratory arrest 14. Resuscitation and cardiopulmonary resuscitation CPR The use of mechanical-assisted breathing. Heart massage -directly and indirectly. Fluid management in the hipo and oligovolemy caused by anaesthesia and the cardiovascular system failure. Vasopresors as drugs that improve blood circulation. Positive inotropic drugs that increase capacity ejection. 15. Supervision algorithms of the animals in anaesthesia and during postoperative period. Principles of non-invasive and invasive monitoring techniques . Ethical aspects of resuscitation and euthanasia of animals. Oversight of the nervous and cardiopulmonary system by an anaesthesiologist. Monitoring the anesthetized patient with capnometer and pulse oximeter. Measurement of blood pressure, central venous pressure and gas analysis based on performance evaluation of the patient during anaesthesia	lecture

2.	Handling of Animals/ Operating room The introductory sessions to the course on Surgery and Anesthesiology provide students with fundamental insights into the principles governing safety within a clinical setting, proper animal handling, and the protocols observed in the operating room. Understanding the paramount importance of safety in veterinary clinics. Introduction to safety protocols, emergency procedures, and the significance of adherence to guidelines. Practical demonstrations on the correct techniques for handling different species to ensure the well-being of both the animals and handlers. Asepsis and Antisepsis in Surgery Familiarization with the construction and operation of autoclaves and ethylene oxide sterilizers. Practical application of aseptic and antiseptic principles in the operating room. Understanding commonly used disinfectants. Rules for handwashing, dressing in surgical clothing, and proper glove-wearing methods. Anesthetic preparation of patients for surgery and preparation of the operating field. Preparing the operating room and supporting staff for surgery. Surgical instrumentation This session focuses on the essential instruments required for successful small animal surgical procedure. During these practical exercises, students will learn fundamentals of surgical instrumentation, gaining hands-on experience in identifying and handling basic surgical tools essential in veterinary surgery. Students will be introduced to specialized instruments utilized in various veterinary procedures, including those specific to thoracic surgery, urology, orthopedic and ophthalmic procedures. Principles of Soft Tissue Surgery Students will explore the Principles of Soft Tissue Surgery, gaining comprehensive insights into techniques for tissue disection with scalpel and scisors, methods to ensure hemostasis, and fundamental knot-tying skills. Practical demonstrations and hands-on exercises will provide students with valuable experience in mastering these fundamental aspects of soft tissue surgery. Suture Materials and Basic Suture Patterns 1 During the suturing technique sessions, students will explore the principles of wound closure, with a focus on basic suture patterns and the selection and application of suturing materials. The course aims to provide a comprehensive understanding of effective wound closure through both theoretical discussions and practical demonstrations. Suture Materials and Basic Suture Patterns 2 During these sessions, students will be introduced to various tissue bonding and suturing techniques, engaging in hands-on practical exercises with sewing techniques on phantoms. This practical approach allows students to familiarize themselves with different methods of tissue approximation and suturing, enhancing their proficiency in these essential skills for surgical procedures. Test 1 Evaluation of practical skills and theoretical knowledge of students. Basics of Anesthesiology Steps of the anesthetic protocol: medical history, physical exam, anesthesia (phases: premedication, induction, maintenance, recovery). Premedication drugs: phenothiazine, benzodiazepines, alpha-2 agonists, opioids. Monitoring. General Anesthesia Induction and maintenance of general anesthesia: drugs, methods (injectable, inhalant). Inhalant anesthesia principles and mechanisms. Patient monitoring. Local Anesthesia Local anesthesia - techniques, drugs in small animals, ruminants, horses.Evaluation of practical skills and theoretical knowledge of students.	laboratory classes
3.	Clinical labs in ambulatory and operating rooms for large and small animals and in laboratory and radiology lab (digital radiography, ultrasound, endoscopy). Active participation and cooperation of students under the supervision of a veterinarian in diagnostic procedures of patients. Active preparing of animals by the students for surgery (clipping, shaving, intramuscular injections, canniulation of the vein and connecting of the infusion set under medical supervision). Active student participation in anaesthetic procedures under medical supervision and monitoring of the patient (pulse oximetry, capnometry, EKG, intubation, fluid management, control the level of general anaesthesia, mucous membrane colour, pulse, respiration, blood oxygenation, blood pressure, capillary filling time and completed the protocol of anaesthesia, use of recording equipment	clinical classes

Course advanced

Teaching methods:

classes, lecture, discussion, teamwork, presentation / demonstration, case analysis, project-based learning (PBL)

Activities	Examination methods	Percentage in subject assessment
lecture	written credit, oral credit, test	30%
laboratory classes	written credit, oral credit, test	40%
clinical classes	oral credit, observation of student’s work, test	30%

Entry requirements

Completed subjects: Animal Anatomy, Histology and Embryology, Animal Physiology.

Literature

Obligatory

1. T.W. Fossum – Small animls surgery. Elsevier Urban&Partner Wrocław 2009
2. Anesthesia for the Pet Practitioner, Revised 3rd Edition by Banfield Pet Hospital
3. Fred Anthony Mann, Gheorghe M. Constantinescu, Hun-Young Yoon. Fundamentals of Small Animal Surgery; Wiley-Blackwell, 2011

Optional

1. Karen M. Tobias, Spencer A. Johnston, Veterinary Surgery: Small Animal (Two volume set), Saunders, 2017
2. Karen M. Tobias, Manual of Small Animal Soft Tissue Surgery, John Wiley & Sons Inc, 2017
3. Stephen Baines, Vicky Lipscomb, Tim Hutchinson, BSAVA Manual of Canine and Feline Surgical Principles - A Foundation Manual, British Small Animal Veterinary Association, 2012
4. Tanya Duke-Novakovski, Marieke de Vries and Chris Seymour, BSAVA Manual of Canine and Feline Anaesthesia and Analgesia. British Small Animal Veterinary Association, 2016

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Veterinary pharmacology II

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J20BO.2650.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** mandatory
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** Yes
	Subject shaping practical skills Yes

Teacher responsible for the subject	Aleksandra Pawlak
Other teachers conducting classes	Agnieszka Suszko-Pawłowska, Magdalena Lis, Aleksandra Pawlak

Period Semester 6	**Examination** exam **Activities and hours** lecture: 15 laboratory classes: 45	**Number of ECTS points** 6.0

Goals

C1	The aim of the course is to familiarize students with the issues of detailed pharmacology concerning drugs affecting individual systems of the animal's organism. The course presents the characteristics of individual groups of drugs (their effects and mechanisms of action (pharmacodynamics of drugs) and their fate in the living organism (pharmacokinetics of drugs), basic indications and contraindications for the use of particular groups of drugs in various animal species (basics of pharmacotherapy) and adverse drug reactions, and pharmacodynamic and pharmacokinetic drug interactions.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	methods of therapeutic management and use of veterinary medicinal products for the prevention and treatment of animals, as well as to ensure the safety of the food chain	O.W4, O.W5	written exam, written credit, participation in discussion
W2	know to an extensive degree and understand the mechanisms of operation, activity in the system, side effects and mutual interactions of the groups of veterinary medicinal products used in target animal species;	A.W16	written exam, written credit, participation in discussion
W3	know to an extensive degree the procedures and elements necessary to issue a prescription for medicinal products;	A.W19	written exam, written credit, active participation, participation in discussion
Skills – Student can:			
U1	obtain and use information on authorised veterinary medicinal products;	B.U9	written exam, written credit, participation in discussion
U2	know the methods of safe sedation, general and local anaesthesia, as well as assessment and relief of pain;	B.U11	written exam, written credit, participation in discussion
U3	select, prescribe and use veterinary medicinal products to treat animals	B.U10, B.U13	written exam, written credit, active participation, participation in discussion
Social competences – Student is ready to:			
K1	use the objective sources of information; critically analyse veterinary literature and draw conclusions on the basis of available literature;	O.K4	active participation, participation in discussion
K2	deepen his/her knowledge and improve skills;	O.K8	observation of student’s work, participation in discussion

Balance of ECTS points

Activity form	Activity hours*
lecture	15
laboratory classes	45
class preparation	30
exam / credit preparation	60

exam participation	3
collecting and studying literature	5
consultations	5

Student workload	**Hours** 163	**ECTS** 6.0
Workload involving teacher	**Hours** 68	**ECTS** 2.5
Practical workload	**Hours** 45	**ECTS** 1.7

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	Titles of lectures: 1. Behavior modifying drugs. Part 1. 2. Behavior modifying drugs. Part 2. 3. Behavior modifying drugs. Part 3. 4. Anticonvulsant agents. Part 1. 5. Anticonvulsant agents. Part 2. 6. Immunosuppressive agents. Part 1. 7. Immunosuppressive agents. Part 2. 8. Immunomodulatory drugs. Part 1. 9. Immunomodulatory drugs. Part 2. 10. Chondroprotective drugs. 11. Drugs used in endocrinopathies. Part 1. 12. Drugs used in endocrinopathies. Part 2. 13. Drugs used in endocrinopathies. Part 3. 14. Antidiabetic agents. 15. Drugs used in veterinary ophthalmology.	lecture

2.	Titles of classes: 1. Pharmacology of cholinergic system. 2. Pharmacology of adrenergic system. 3. Pharmacology of smooth muscle. Skeletal muscle relaxants. 4. Sedatives drugs. 5. Narcotic analgesics. Drugs used in the treatment of neuropatic pain. Local anaesthetics. 6. Premedication. General anesthesia drugs. Analeptic agents. 7. Written test (material from classes and lectures). Drug acting on blood and blood elements. 8. Non-steroidal anti-inflammatory drugs (NSAIDs). Irritants (irritantia). 9. Steroidal anti-inflammatory drugs. Antihistamines drugs. 10. Drug acting on the cardiovascular system. Pharmacotherapy of shock. 11. Diuretics. Drugs affecting the respiratory system. 12. Drugs affecting gastrointestinal function. 13. Drugs affecting reproduction. 14. Written test (material from classes and lectures). Rules governing of prescription writing - repetition. 15. Rules governing of prescription writing - repetition.	laboratory classes

Course advanced

Teaching methods:

discussion, classes, lecture, presentation / demonstration

Activities	Examination methods	Percentage in subject assessment
lecture	written exam, written credit	25%
laboratory classes	written exam, written credit, observation of student’s work, active participation, participation in discussion	75%

Entry requirements

animal anatomy, cell biology, biochemistry, veterinary immunology, veterinary physiology, pathophysiology, veterinary microbiology, veterinary pharmacology I

Literature

Obligatory

1. - Riviere J.E. Papich M.G.: Veterinary Pharmacology and Therapeutics. 10th ed. Wiley-Blackwell, 2017 - PlumbD.C. Plumb’s Veterinary Drug Handbook 9th Wiley-Blackwell, 2018

Optional

1. - Boothe D.M., Small Animal Clinical Pharmacology and Therapeutics, Saunders Comp., 2001. - Maddison J.E., Page S.W., Church D.B. Small Animal Clinical Pharmacology 2nd ed., Saunders Elsevier, 2008 -Crowell-Davis S.L., Murry T.Dantas L.M: Veterinary Psychopharmacology Wiley Blackwell, 2019

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Diseases of farm animals

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J40BO.0496.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** Yes **Subject shaping practical skills** Yes

Teacher responsible for the subject	Wojciech Niżański
Other teachers conducting classes	Wojciech Niżański, Krzysztof Rypuła, Ryszard Mordak, Przemysław Prządka, Michał Dzięcioł, Wiesław Bielas, Agnieszka Noszczyk-Nowak, Jarosław Popiel, Jolanta Spużak, Piotr Sławuta, Marcin Jankowski, Michał Bednarski, Krzysztof Janeczko, Robert Karczmarczyk, Małgorzata Ochota, Agnieszka Antończyk, Krzysztof Kubiak, Bartłomiej Jaśkowski, Kamila Glińska-Suchocka, Agnieszka Cekiera, Bartłomiej Liszka, Monika Szpringiel, Anna Niemiec

Period Semester 7	**Examination** exam **Activities and hours** lecture: 125 laboratory classes: 50 clinical classes: 75	**Number of ECTS points** 18.0

Goals

C1	The aim of the course is to provide students with basic knowledge about the etiological factors, caused clinical signs, necessary or possible additional tests, the final interpretation of the purpose of diagnosis, differential diagnosis, treatment and prevention of use of farm animal diseases.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	knows in depth and describes in detail the principles and mechanisms underlying the health of farm animals, the formation of diseases and their therapy.	O.W1	written exam, test
W2	the etiology, pathogenesis and clinical symptoms of livestock diseases and knows the principles of therapeutic and diagnostic procedures appropriate for disease states occurring in farm animals.	O.W3, O.W4	written exam, test
W3	in detail the methods of using veterinary medicinal products for the prevention and treatment of farm animals.	O.W5	written exam, test
W4	the mechanisms regulating the health and diseases of farm animals.	A.W10	written exam, test
W5	the principles of conducting a clinical examination and monitoring the health of farm animals as well as the principles of diagnostic (selecting diagnostic methods appropriate to the case) and therapeutic (selecting the appropriate treatment taking into account EU regulations) procedures.	B.W4, B.W5	written exam, test
W6	how to handle clinical data and the results of laboratory and additional tests to assess the health status and pathology of farm animals - appropriate interpretation of symptoms and recorded parameters in terms of making a proper diagnosis and choosing optimal countermeasures	B.W6	written exam, test
W7	the assumptions of the selection of animals for mating, methods of fertilization and biotechnology of reproduction and breeding selection in order to optimize reproduction in the herd	B.W12	written exam, test
W8	the principles of the economics of animal production - to ensure that medical conduct is correlated with the intended profit of a manufacturer	B.W22	written exam, test
Skills – Student can:			
U1	carry out a clinical examination of various species of farm animals (cattle, pigs, goats, sheep) in accordance with the principles of medical practice.	O.U1	test, performing tasks
U2	analyse and interpret pathological changes and the results of laboratory and additional tests, formulates the diagnosis of the disease, including differential diagnosis, and takes therapeutic or preventive measures in various species of farm animals.	O.U2	test, performing tasks

U3	monitor the health of the herd (through routine regular collection of appropriate materials for testing and regular clinical evaluation of groups of animals and individual animals), and also takes action in the event of finding a disease that is subject to mandatory eradication or registration.	O.U4	test, performing tasks
U4	determine and apply rational and targeted antibacterial chemotherapy in the treatment of farm animals - against various microorganisms (including opportunistic ones).	A.U11	test, performing tasks
U5	up documentation regarding the case in the form of intelligible to other veterinarians and for animal owners.	A.U14	test, performing tasks
U6	use professional skills to increase the quality of veterinary care and the welfare of farm animals - among other things, by improving the accuracy of diagnosing health emergencies as well as implementing the latest therapeutic and preventive solutions	A.U19	test, performing tasks
U7	deal with animals safely and humanely and instructs others to do so.	B.U1	test, performing tasks
U8	carry out a veterinary interview in order to obtain precise information about a single animal or group of animals and its or their habitat.	B.U2	test, performing tasks
U9	carry out a complete clinical examination of the animal (cattle, pigs, goats, sheep)	B.U3	test, performing tasks
U10	give first aid to animals (cattle, pigs, goats, sheep) in the event of haemorrhage, wounds, respiratory disorders, eye and ear injuries, loss of consciousness, cachexia, burns, tissue damage, internal injuries and cardiac arrest.	B.U4	test, performing tasks
U11	evaluate the animal's nutritional status (In cattle, among others, based on BCS assessment) and provides advice in this regard.	B.U5	test, performing tasks
U12	collect and secure samples for research (from individual animals and from a group of animals - for example bulk milk). and performs standard laboratory tests, as well as correctly analyzes and interprets the results of laboratory tests.	B.U6	test, performing tasks
U13	use diagnostic equipment, including radiological, ultrasound and endoscopic equipment (in the diagnosis of physiological conditions and diseases in cattle, pigs, sheep and goats) , in accordance with its intended use and safety rules for animals and humans, and interprets test results obtained after its use.	B.U7	test, performing tasks
U14	implement appropriate procedures in the case of finding a disease that is subject to compulsory eradication or registration.	B.U8	test, performing tasks
U15	prescribe and use veterinary medicinal products and medical materials, taking into account their safe storage and disposal.	B.U10	test, performing tasks
U16	use methods of safe sedation, general and local anesthesia as well as assessment and pain relief.	B.U11	test, performing tasks

U17	monitor the patient's condition (cattle, pigs, goats, sheep) in the intra- and postoperative period based on the basic vital signs.	B.U12	test, performing tasks
U18	select and implement appropriate treatment different for different species of farm animals, is aware of the grace period.	B.U13	test, performing tasks
U19	implement the principles of aseptics and surgical antiseptics and applies appropriate sterilization methods of used equipment.	B.U14	test, performing tasks
U20	evaluatethe need to euthanize the animal and properly informs its owner about it, and performs euthanasia of the animal in accordance with the principles of professional ethics and proper handling of the carcass	B.U15	test, performing tasks
U21	carry out an epizootic investigation to establish the period during which an infectious animal disease may have developed on the farm before its suspicion or confirmation, the origin of the infectious disease in animals, along with other farms and the routes of movement of people, animals and objects that may have been the cause of spreading an infectious disease to or from the farm.	B.U19	test, performing tasks
Social competences – Student is ready to:			
K1	showing responsibility for decisions made towards people, animals and the natural environment.	O.K1	observation of student’s work, active participation
K2	presenting an attitude consistent with ethical principles and taking actions based on the code of ethics in professional practice and showing tolerance for attitudes and behaviors resulting from different social and cultural conditions.	O.K2	observation of student’s work, active participation
K3	cooperation with representatives of other professions in the field of public health protection.	O.K11	observation of student’s work, active participation

Balance of ECTS points

Activity form	**Activity hours***
lecture	125
laboratory classes	50
clinical classes	75
exam / credit preparation	142
exam participation	8
class preparation	70
lesson preparation	30
consultations	25

presentation/report preparation	15

Student workload	**Hours** 540	**ECTS** 18.0
Workload involving teacher	**Hours** 283	**ECTS** 11.0
Practical workload	**Hours** 125	**ECTS** 5.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	Internal medicine: 1. Diseases of oral cavity, Inflammations of the mouth and throat: stomatitis cheilitis, glossitis, gingivitis, pharyngitis, tonsillitis. 2.Differential diagnosis of noninfectious and infectious lesions in oral cavity. Selected diseases of the esophagus. 3. Forestomach diseases – indigestion. Acidosis and alkalosis of the rumen. 4. Rumen overloading, omasum obstipation, acute and chronic bloat of the rumen, rumen, hyperkeratosis, peritonitis. 5. Hoflund's syndrome, traumatic reticulitis, foreign bodies indigestion., acute and chronic abomasal indigestion, dislocation and torsion of abomasum. Peritonitis. 6.Hepathopathies, pancreas diseases,. Bovine myoglobinuria, shipping fever. 7. Bovine and ovine ketosis, hepatolipidosis syndrome. Negative energy balance in dairy cows. 8. Mineral imbalance, macrolements deficieny Hypocalcemia, Hypophosphatemia, Hypomagnesemia. 9. Mineral imbalances in bones of farm animals, osteopathies (osteoporosis, osteopetrisis, osteomalacia, rachitis epiphysiolysis). 10. Physiological anemia in piglets, hypoglycemia in piglets. 11. Trace elements, vitamins – antioxidants – a role for health of farm animals and their productivity. 12. Cosequences of trace elements vitamins and electrolytes deficiency – imbalance (shortage or excess). 13. Respiratory system diseases- Acute and chronic pulmonary vesicular emphysema. Interstitial pulmonary emphysema. Lung oedema. Hyperaemia and lung oedema. Pulmonary thrombosis and embolism. 14. Bronchopneumonia, chronic interstitial pneumonia, fibrosing pneumonia, fungal pneumonia, Pleuritis. 15. Nephritis, kidney cirrhosis, pyelonephritis. 16. Cystitis, haematuria, paroxysmal haemoglobinuria, puerperal haemoglobinuria, urinary bladder paralysis, urinary bladder dislocation. 17. Neurological examination. Neurological lesion localisation. 18. Encephalitis, Meningitis, Brain abscesses, Pituitary abscesses, Differential diagnostics by non infectious and infectious diseases. 19. Thiamine insufficiency, Lead poisoning, Sulfur poisoning, Salt intoxication, Nervous Ketosis. Spinal cord diseases – Inflammation, Compressive disease. 20. Trauma, Abscessation. Degenerative Myeloencephalopathy (Weaver Syndrome). Peripheral nerve injury. 21. Dermatological health problems in farm animals 22. Differential diagnostics of noninfectious and infectious diseases of the skin. 23. Environmental and nutritional aspects of health and health problems of pigs. 24. Organisation of the health protection on pigs farms. 25. Cardiac diseases – traumatic pericarditis, myocarditis, . Endocarditis, vasculature disease. Infectious diseases 1. Foot and mouth disease and other vesicular diseases. 2. Ruminant tuberculosis. 3. Notifiable and reportable bovine diseases (bovine pleuropneumonia, rinderpest, pasterelosis). 4. Notifiable and reportable (bovine leukemia, infections reowirusowe (BTV, Hemorrhagic disease of deer) 5. Controled and registered bovine diseases (BSE, rabies, anthrax). 6. Viral and bacterial diseases of sheep part 1. (adenomatosis, Maedi-Visna, Caseous lymphadenitis – CLA, parautuberculosis). 7. Viral and bacterial diseases of sheep part 2. (PPV, Lumpy skin disease, Scrapie, Border disease). 8. Swine diseases (ASF, CSF). 9. Swine diseases (rabies, brucellosis, leptospirosis, anthrax, erysipelas). 10. PRDC part. 1 (AD, PRRS, SI, pleuropneumonia). 11. PRDC part 2 (PCV-2, streptococosis, Glasser disease) 12. PIDC (viral and bacterial alimentary diseases in pigs) 13. Infectious diseases affect pigs reproduction. 14. Exotic disease of farm animals. 15. The lecture given by visiting profesor – Ruminant infectious diseases in Europe – actual problems. Reproduction 1. Physiology of the bovine reproductive tract and specificity of bovine reproduction. 2. Induction and synchronization of estrus in cows and heifers, embriotransfer in cattle. 3. Functional ovary disorders and abnormal oestrus cycle in cattle part. I. 4. Functional ovary disorders and abnormal oestrus cycle in cattle part. II. 5. Uterus infections and disorders in cattle. 6. Effect of nutrition on fertility. 7. Disorders of pregnancy in cattle part. I. (death of embryos, non-infectious disorders of pregnancy - including abnormalities of pregnancy development, fetal anomalies, estrus during gestation, pregnancy uterus hernia, pregnancy oedema, pregnancy toxemia, mummification, fetal maceration and putrefaction). 8. Disorders of pregnancy in cattle part. II. (infectious and non-infectious causes of abortion, induced abortion, induction of parturition, prepartum recumbency). 9. Disorders of the postpartum period part. I. (uterine prolapse, postpartum hemorrhage, uterine rupture, prolapse of the bladder, tissue damage during parturation, postnatal peripheral nerve paralysis). 10. Disorders of the postpartum period part. II. (Retained fetal membranes, postpartum recumbency and milk fever). 11. Etiopathogenesis of mastitis in cattle. 12. Treatment and prevention of mastitis in the herd. 13. Supervision of the reproduction in the large swine farm. 14. Fertility disorders in pigs. 15. Fertility disorders in seep and goats. Surgery 1. Principles of general and local anesthesia in ruminants 2. Principles of general and local anesthesia in pigs 3. Bovine orthopedics: Physiology and pathology of posture and limbs built. Physiology and pathology of bovine hoof 4. Diagnosis of locomotor diseases, lameness and their categories 5. Disease of cattle fingers part I: discountinuity of hoof capsule, separated wall, double sole, laminitis, bruised and nail hole of corium, inflammation and necrosis of the wall and plantar corium 6. Disease of cattle fingers part II: deep purulent inflamation of corium, pads, skin of claw crack , corona, distal phanalx, limax. 7. Treatments and preventive care in ruminant orthopedics: correction of the claws, the treatment baths of legs, the role of diet and health monitoring of reproductive organs, the mammary gland and digestive track to reduce diseases of limbs. 8. Bovine traumatology: bones of the skull and fractures of mandible, the cornual process, spine (vertebrae, sacrum), pelvis, long bones, torticollis. 9. Ruminants: dislocation and degeneration of joints (shoulder, hip, patella) bone actinomycosis. 10. Ruminants: paralysis and inflammation of nerves (brachial plexus, radial n., ulnar n., median n., fibular n.), spastic paralysis, rupture of muscles, ligaments. 11. Ruminants: inflammation of muscles, nerves, bursa (bursitis hydrops, precarpal, intertubercular, popliteal, calcaneal bursitis), shoulder and hip lame. 12. Traumatic reticulopericarditis, abscess drainage, thoracotomy. 13. Surgical diseases of the abomasum. Conservative and operational repositioning. Fixation of abomasum to the abdominal wall on the animal standing and lying. 14. Surgical diseases of pigs I: osteoartritis and fingers phlegmon , anal atresia prolapse of the anus, ear hematoma, displacement of the bladder 15. Surgical diseases of pigs II: castration of piglets and boars, cryptorchidism, umbilical hernia, inguinal h., scrotal h., finger and tail amputation , teeth cutting, vasectomy.	lecture

2.	Surgery 1. Small ruminants, pigs. Anesthesia: a practical training: intravenous and intra-arterial injection, fixation of animals, , pharmacological immobilization of animals, local anesthetic infiltration and perineural for the head, abdomen, groin, perineum, tail, limbs surgery treatments. Surgery treatments to choose : removal of the horns, caudotomy, amputation of a finger, tongue. 2. Bovine orthopedics part I: interdigital anesthesia, local intravenous analgesia. Surgery: periodic correction of claw, treatment of sole ulcer, resection of the deep digital flexor tendon and distal interphalangeal joint tissue. 3. Bovine orthopedics part II. Distal interphalangeal arthrodesis, low and high amputation of a finger, the presentation of other diseases of movement apparatus. 4. Rumenotomy. Paravertebral and epidural anaesthesia (high and low). Surgery: laparotomy with left-side method Goetze's, Weingard's, Kulczycki's. 5. Displacement and torsion of abomasum in cattle. Surgery treatments: repositioning, omento- and abomasopexy. 6. Swine surgery: castration, cryptorchidism, hernia, shortening of the teeth, restoration of the anus, ear hematoma, caudotomy. 7. Demonstration of anesthesia and surgery in cows: perineural and epidural blockade; head, rumenand abomasum surgery. 8. Credits Reproduction 1. Gynecological examination of cows and heifers, part. 1 – anatomy and physiology of genital organs – practical aspects, rectal evaluation of uterus and ovaries. 2. Gynecological examination of cows and heifers, part. 2 – examination – external and per vaginam, pregnancy diagnosis in cows and heifers, catheterization of the bladder. 3. Obstetric aid in cattle part I (obstetrics examination, fetal-maternal disproportion, abnormal fetal postures). 4. Obstetric aid in cattle part II (abnormal fetal positions and postures, uterine torsion). 5. Test I (2 h) 6. Ultrasound of bovine genital track – practice. 7. Cesarean section in cattle. Obstetric instruments. 8. Clinical examination of the mammary gland. Field and laboratory milk tests. 9. Interpretation of tests results. Surgery of mammary gland (isolated organs). 10. Diagnosis of porcine reproductive disorders (clinical examination, USG). 11. Diagnosis of ovine and caprine reproductive disorders (clinical examination, USG). 12. Test II. Credits.	laboratory classes
3.	Internal Medicine 1. Clinical general examination and rectal examination in cattle. 2. Collection and examination of the rumen fluid in cattle. 3. Arterial and venous blood sampling for laboratory tests and drugs administration in cattle. 4. Acid base balance in venous and arterial blood. 5. Practical aspects of health protection in cattle farms. Examples of monitoring and therapy of metabolic diseases in highly productive dairy cows. 6. Urine sampling in cattle and sheep. Diagnostic puncture – rumen, omasum, thorax, pericardial sac, liver. Examination of samples. 7. Urinary bladder endoscopy. 8. Clinical general examination in other farm animals (sheep, goats and pigs). Techniques of blood sampling and drugs administration in these animals. 9. Practical aspects of health protection in swine farms. Examples of monitoring and therapy. 10. Examination of feces. 11. Neurological examination in farm animals. 12. Dermatological examination in cattle, , sheep, goats and pigs. Collection of samples. 13. Dermatological examination - continuation. Discussion of clinical lesions observed in selected diseases in ruminants and pigs. 14. Echocardiography in cattle. Electrocardiography (ECG) Clinical cases, examples in farm animals, recording in medical documentation. 15. Completing a course, corrections of tests , complementation of grades. Infectious diseases 1. Infectious diseases of farm animals (lists of notifiable and reportable diseases in Poland. Proceedings in case of outbreak of contagious disease). Class includes: reading the list of diseases occurring in Poland, medical and veterinary procedures in the event of an outbreak of infectious disease. 2.Bovine herpesvirus infection (BHV-1, Bovine malignant catarrh, BHV-2). Class includes: etiology, pathogenesis, route of infection, and clinical sings BHV-1 infection and the ability to diagnose and treatment. 3. Viral diarrhea and mucosal disease (BVD / MD), Pink eye (IBK). Class includes: etiology, pathogenesis, route of infection and the clinical sings of BVDV infection and IBK and the ability to recognize and control. 4. Chlamydiosis, chlamydophilosis, bovine and sheeep Q fever (query fever). Class includes: etiology, pathogenesis, route of infection, and clinical sings the diagnosis, treatment and control. 5. Fungal diseases in cattle, sheep and pigs. Test I. Class includes: etiology, pathogenesis, route of infection, and clinical sings, diagnosis, treatment and control. 6. Viral and bacterial diseases of bovine respiratory system (BRSV, PI-3, Adeno-, reovirus, Rhinowirus, mycoplasmosis, pasterelosis). Class includes: etiology, pathogenesis, route of infection, and clinical sings, diagnosis, treatment and control. 7. Viral and bacterial diseases of bovine gastrointestinal tract (rota-and koronawiroza, kolibakterioza, salmonellosis, infection). Class includes: etiology, pathogenesis, route of infection, and clinical sings, diagnosis, treatment and control. 8. Viral and bacterial diseases of sheep (sheep paronychia, contagious ecthyma, sheep pox). Class includes: etiology, pathogenesis, route of infection, and clinical sings, diagnosis, treatment and control. 9. Viral and bacterial diseases of sheep (Clostridium spp infections,). Class includes: etiology, pathogenesis, route of infection, and clinical sings, diagnosis, treatment and control. 10. Viral and bacterial diseases of cattle and sheep (listeriosis, leptospirosis). Test II. Class includes: etiology, pathogenesis, route of infection, and clinical sings, diagnosis, treatment and control. 11. Viral and bacterial diseases of swine respiratory tract (swine mycoplasmosis, bordetellosis, atrophical rinitis).. Class includes: etiology, pathogenesis, route of infection, and clinical sings, diagnosis, treatment and control. 12. Infections of the swine gastrointestinal tract (E. coli, Salmonella, Rotavirus and coronavirus).. Class includes: etiology, pathogenesis, route of infection, and clinical sings, diagnosis, treatment and control. 13. Infections of the swine gastrointestinal tract (dysentery, spirochetosis, adenomatosis). Class includes: etiology, pathogenesis, route of infection, and clinical sings, diagnosis, treatment and control. 14. Viral and bacterial diseases of pigs (Picorna-infection, corona-, entero-, herpesvirus). Test III. Class includes: etiology, pathogenesis, route of infection, and clinical sings, diagnosis, treatment and control. 15. Making up for classes and credit Reproduction 1. Rectal palpation of the bovine genital organs – practice on a simulator. 2. Rectal palpation of the bovine genital organs – practice. 3. Surgical procedures on vagina and vulva (isolated organs). 4. Cesarean section in cattle (isolated organs).	clinical classes

Course advanced

Teaching methods:

classes, practical simulation training, lecture, teamwork, presentation / demonstration, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	written exam	50%

Activities	Examination methods	Percentage in subject assessment
laboratory classes	active participation, test, performing tasks	20%
clinical classes	observation of student’s work, active participation, test, performing tasks	30%

Entry requirements

Completion of courses : animal anatomy I and II, biochemistry I and II, histology and embryology I and II, veterinary microbiology I and II,
animal physiology I and II, pathomorphology I and II, pathophysiology I and II, clinical and laboratory diagnostics I and II, veterinary pharmacology I and II.

Literature

Obligatory

1. Divers T.J., Peek S.F. (ed.): Rebuhn’s Diseases of Dairy Cattle Saunders Elsevier, St. Louis 2008.
2. Smith B.P. (ed.): Large Animal Internal Medicine. Saunders, Elsevier 2015.
3. Jackson P.G.G., Cockroft P. D.: Handbook of Pig Medicine. Saunders, Elsevier, London 2007.
4. Fubini S., Ducharme N.: Farm Animal Surgery, Sauders, St. Louis 2004.
5. Jackson P.G.G. : Handbook of Veterinary Obstetrics. 2nd ed. W.B. Saunders Company, Edinbourgh 2004.

Optional

1. Blowey R.W., Weaver A.D.: Color Atlas of Diseases and Disorders of Cattle. Mosby, London 2003.
2. A.H. Andrews, R.W. Blowey, H. Boyd, R.G. Eddy (ed): Bovine Medicine. Diseases and Husbandry of Cattle. Blacwell Science Ltd., Oxford 2004.
3. Greenough P.R.: Bovine Laminitis and Lameness : A Hands-on Approach. Saunders, Elsevier London 2007.
4. Coole K.G., Johnson R.A.: Veterinary Anesthetic and Monitoring Equipment. Wiley Blackwell, Oxford 2018.
5. Weaver A.D., St. Jean G., Steiner A.: Bovine Surgery and Lameness. Blackwell, Oxford 2005.
6. Radostits O.M., Gay C.C., Hinchcliff K.W., Constable P.D.: Veterinary Medicine. A textbook of the diseases of cattle, sheep, goats, pigs and horses. 10th Edition, Saunders Elsevier, London, 2007.
7. R.F. Youngquist, W.L. Threlfall (ed,) : Large Animal Theriogenology, 2nd ed. Saunders, Elsevier. 2007.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Fish diseases

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J40BO.0689.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** mandatory
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills Yes

Teacher responsible for the subject	Małgorzata Bednarska
Other teachers conducting classes	Małgorzata Bednarska

Period	**Examination**	**Number of ECTS points**
Semester 7	graded credit **Activities and hours** lecture: 10 laboratory classes: 15	2.0

Goals

C1	This course offers students basic issues of fish anatomy, immunology, correct diagnosis of fish diseases based on the clinical and postmortem examination of fish. During the course student should acquire the theoretical knowledge and practical skills necessary to diagnose fish disease, taking samples for laboratory test and treat diseases in fish. Student acquires both basic and detailed information and knowledge in the field of fish production.
C2	Student has a basic knowledge of anatomy and topography of different species of fish. Student is able to diagnose the most common contagious disease. Student has knowledge about major diseases in fish and principles of disease prevention.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	explains and interprets the etiology, pathogenesis and clinical symptoms of fish diseases	O.W3	written credit, presentation
W2	Knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedures appropriate for the diseases occurring in fish	O.W4	written credit, presentation
W3	characterises in detail the methods of using veterinary medicinal products, aimed at prophylaxis and treatment of animals, as well as at guaranteeing food chain safety and environmental protection;	O.W5	written credit, presentation
W4	specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes;	O.W7	written credit
W5	knows the principles of breeding and farming of cyprinid and salmonid fish	O.W8	written credit
W6	function of organs system and physiological processes in fish	O.W2	written credit
Skills – Student can:			
U1	conducts clinical examination of the animal in accordance with the principles of medical art;	O.U1	active participation
U2	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	active participation
U3	plans the diagnostic procedure	O.U3	active participation
U4	monitors health of the population of fish, as well as undertakes action in the case of a disease that is subject to the obligation of disease eradication or its registration;	O.U4	active participation
Social competences – Student is ready to:			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student’s work

K2	formulates conclusions from own measurements or observations	O.K5	observation of student’s work
K3	deepens his/her knowledge and improves skills	O.K8	observation of student’s work

Balance of ECTS points

Activity form	**Activity hours***
lecture	10
laboratory classes	15
presentation/report preparation	4
class preparation	7
exam / credit preparation	10
lesson preparation	10

Student workload	**Hours** 56	**ECTS** 2.0
Workload involving teacher	**Hours** 25	**ECTS** 1.0
Practical workload	**Hours** 15	**ECTS** 0.6

* hour means 45 minutes

Study content

No.	**Course content**	**Activities**

1.	1. Production cycle of cyprinid fish. Characteristic of common carp polyculture. Natural and artificial reproduction of fish. 2. Food and feeding habits of common carp. 3. Production cycle of salmonid fish. 4. Food and feeding habits of rainbow trout. 5. Infectious Pancreatic Necrosis (IPN), Viral Hemorrhagic Septicemia (VHS), Infectious Hematopoetic Necrosis (IHN), Infectious Salmon Anemia (ISA). Etiopathology, clinical signs, prevention, treatment. 6. Spring Viremia of Carp (SVC), Koi Herpesvirus (KHV), Koi Sleeping disease (KSD). Etiopathology, clinical signs, prevention, treatment. 7. Bacterial diseases. Enteric Redmouth Disease -Yersinia ruckeri, Bacterial Kidney Disease -Renibacterium salmoninarum, Columnaris Infection - Flavobacterium columnare. Etiopathology, clinical signs, prevention, treatment. 8. Bacterial diseases. Motile Aeromonad Infection, Aeromonas salmonicida Infection, Carp erythrodermatitis (CE), Streptococcosis sp. Mycobacterium sp. sp. Etiopathology, clinical signs, prevention, treatment. 9. Environmental diseases. Environmental hypoxia. Gas bubbles disease. 10. Environmental diseases. Ammonia poisoning. Nitrite poisoning. Fish toxicology.	lecture

2.	1. Biology, anatomy and physiology of freshwater fish. 2. Methods for diagnosis fish disease. 3. Clinical examination and procedures. 4. Biopsy techniques, fish disease diagnosis form. 5.Fungal disease -Typical Water Mold Infection, Branchiomycosis, Ichthyophonosis. 6. Protozoan disease : Chilodonella, Ichthyobodo, Ichthyophthirius multifiliis. Etiopathology, clinical signs, prevention, treatment. 7. Monogenean Infestation- Dactylogyrus sp. Gyrodactylus sp. Diplozoon sp. Digenea flukes – Sanguinicola sp., Diplostomum sp., Posthodiplostomum cuticola. Etiopathology, clinical signs, prevention, treatment. 8. Nematode Infection. Anisakis simplex, Capillaria sp., Philometra lusiana. Etiopathology, clinical signs, prevention, treatment. 9. Acantocephala infection. Etiopathology, clinical signs, prevention, treatment. 10. Tapeworm Infection - Bothriocephalus acheilognathi, Caryophyllaeus laticeps (cloverworm) , Khawia sinensis (khawiosis), Ligula intestinalis. 11. Copepoda Infestation - Argulus foliaceus, Ergasilus sieboldi, Lernaea cyprinacea. Etiopathology, clinical signs, prevention, treatment. 12. Zoonoses associated with fish. Fish production management. Leech Infestation. 13. Methods of drug administration. Methods of disinfection. 14.Fish production management. Treatment of fish in various aquaculture systems. 15 Final test.	laboratory classes

Course advanced

Teaching methods:

classes, lecture, discussion, presentation / demonstration, educational film, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	written credit	40%
laboratory classes	observation of student’s work, active participation, presentation	60%

Literature

Obligatory

1. Noga E. I. : Fish Disease: Diagnosis and Treatment. Wiley – Blackwell, 2010
2. Roberst R. J. : Fish Pathology. Wiley – Blackwell, 2012
3. Austin B., Austin D.A.: Bacterial Fish Pathogens: Disease of Farmed and Wild Fish. Springer, 2012
4. Whitman K.A.: Bacteriology Manual Techniques and Procedures of Finfish and Shellfish. Iowa State Press, Blackwell Publishing Company, 2004.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Food sanitary law

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J40BO.0730.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** mandatory
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills Yes

Teacher responsible for the subject	Aleksandra Tabiś, Monika Kasztura
Other teachers conducting classes	Aleksandra Tabiś, Monika Kasztura

Period	**Examination**	**Number of ECTS points**
Semester 7	graded credit **Activities and hours** lecture: 15 auditorium classes: 15	3.0

Goals

C1	Classification and structure of European Union an national law instruments, promulgation authority, principles of laws promulgation, basic concepts of law, the classification of legal rules and principles, administrative decision and appeal procedure, national law acts governing the structure of inspection and supervision over the production, processing, distribution and marketing of food of animal origin. National and UE legislation in the field of veterinary public health in the area of hazard coming from food of animal origin. Rights and responsibilities of veterinarians performing the tasks in area of supervision of food.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	explains in detail the principles of consumer health protection	O.W11	written credit
W2	explains in detail the principles of appropriate supervision over the production of foodstuffs of animal origin;	O.W12	written credit
W3	describes legal standards associated with the activities of veterinary physicians;	O.W14	written credit
W4	knows to an extensive degree, interprets and observes the principles of food law	B.W21	written credit
W5	knows and interprets the conditions of hygiene and technology of animal production;	B.W20	written credit
W6	presents the principles of consumer health protection, which are ensured by appropriate supervision over the production of foodstuffs of animal origin	B.W17	written credit
Skills – Student can:			
U1	issues veterinary medical opinion and certificate	O.U7	written credit
U2	performs activities that are associated with the veterinary supervision, including trade in animals, as well as sanitary and veterinary conditions of animal gathering locations and processing products of animal origin	O.U6	written credit
U3	is able to estimate the risk of occurrence of chemical and biological hazards in food of animal origin	B.U22	written credit
Social competences – Student is ready to:			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student’s work, active participation
K2	formulates conclusions from own measurements or observations	O.K5	observation of student’s work, active participation
K3	uses the objective sources of information	O.K4	observation of student’s work, active participation

Balance of ECTS points

Activity form	Activity hours*
lecture	15
auditorium classes	15
exam / credit preparation	30
lesson preparation	30

Student workload	**Hours** 90	**ECTS** 3.0
Workload involving teacher	**Hours** 30	**ECTS** 1.0
Practical workload	**Hours** 15	**ECTS** 0.6

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Why do we need law in the society? The concept and content of state and law. The right to health and food safety in the context of public health protection. EU law on food safety issues. 2. The definition of state, the state apparatus, the government agency, legal entity, legal person, natural person. Categories of law, legislation, rule of law, legal provision. Criteria for the division and hierarchy of legal acts. The European Union history, organization, tasks 3. EU rules of interpretation, the law-making procedures. Permanent and advisory committees acting on behalf of the EU veterinary and other organizations associated with the veterinarian profession. 4. Sources of international law in relation to food. Sources of national laws in relation to food. 5. The main objectives of regulation EC Regulation No. 178/2002 laying down general principles of food law in the EU. 6. Regulation No. 178/2002 of the organization and tasks of EFSA. Regulation No. 178/2002, Proceedings in cases of crises (failure), to establish a uniform policy on hygiene requirements for all types of food all the operators in the chain of manufacture 7. Consumer protection under the law. Veterinary Inspection - the organization, the legal basis: Act of 29 January 2004 at the State Veterinary Service.	lecture
2.	1. The main objectives of regulation EC Regulation 852/2004 on the hygiene of foodstuffs 2. The main objectives of regulation EC Regulation 853/2004 laying down specific hygiene rules for on the hygiene of foodstuff 3.The main objectives of new law: Regulation (EU) 2017/625 of the European Parliament and of the Council of 15 March 2017 Commission Implementing Regulation (EU) 2019/627 of 15 March 2019 5. The main objectives of regulation EC Regulation 1441/2007 on microbiological criteria for foodstuffs 6. Food additives under the law (REGULATION (EC) No 1333/2008) 7. Veterinary drugs. Antibiotics and other residues. Max levels allowed in food. Pharmaceutical Law.	auditorium classes

Course advanced

Teaching methods:

lecture, discussion, teamwork, presentation / demonstration, text analysis

Activities	Examination methods	Percentage in subject assessment
lecture	written credit, observation of student’s work, active participation	50%

Activities	Examination methods	Percentage in subject assessment
auditorium classes	written credit, observation of student’s work, active participation	50%

Entry requirements

- Knowledge of the structure and tasks supervised by the Veterinary Inspection.
- Knowledge of infectious diseases from OIE list A and B.
- Basics of livestock breeding.

Literature

Obligatory

1. legal acts of the European Union

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Parasitology and invasiology II

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J40BO.1546.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** Yes **Subject shaping practical skills** Yes

Teacher responsible for the subject	Jolanta Piekarska
Other teachers conducting classes	Jolanta Piekarska, Jarosław Pacoń

Period Semester 7	**Examination** exam **Activities and hours** lecture: 15 laboratory classes: 30	**Number of ECTS points** 4.0

Goals

C1	The aim of the course is to acquaint students with identification of different species of parasites. Student learns the basic concepts and terms in the field of parasitology, life cycles of parasites and zoological systematics. Student acquires knowledge concerning symptoms and pathological changes of parasitic diseases that occur in various species of animals. The course covers bases of epidemiology, clinical and laboratory diagnostics, control and preventive measurements of parasitic diseases.
C2	Parasites of domestic and wild animals (Nematoda and Arthropods), their morphology, biology, life cycles and epizootic and epidemiological role. Interactions between hosts and parasites, diagnostic methods, anti-parasitic drugs, prevention and control of invasion.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	species characteristics of parasitic nematodes and arthropods, knows their biology, describes and explains their life cycles and the spread of the diseases they cause, identifies parasites and specifies the dangers they pose to health and to humans	B.W10, B.W3, O.W3, O.W6	written exam, active participation, test
W2	clinical signs and anatomopathological changes in infected animals and suggests prophylaxis and treatment for invasive diseases caused by nematodes and arthropods	B.W4, O.W4, O.W5	written exam, active participation, test
Skills – Student can:			
U1	recognise clinical signs of parasitic infections	O.U2	active participation, test
U2	select the optimum management strategy for dealing with individual parasites	O.U3	active participation, test
U3	implement appropriate treatment and preventive measures	B.U10, B.U3	active participation, test
Social competences – Student is ready to:			
K1	use the knowledge gained to plan the optimal strategy for dealing with individual invasions	O.K1, O.K8	observation of student’s work
K2	cooperation with the animal owner and consultation on parasitological cases	O.K11	observation of student’s work

Balance of ECTS points

Activity form	Activity hours*
lecture	15
laboratory classes	30
class preparation	35
exam / credit preparation	30

Student workload	**Hours** 110	**ECTS** 4.0
Workload involving teacher	**Hours** 45	**ECTS** 1.7
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Epidemiology, pathology and clinical course of Trichinella spp. infections in animals and humans. The prevalence, pathology and immunobiolggy of Trichuroidea family (Trichuris sp, Capillaria sp) infection n birds. 2. Diseases caused by nematodes of families Spiruroidea; (Parafilaria sp, Onchocerca sp, Dirofilaria immitis and D. repens) and Filarioidea (Spirocerca sp, Habronema sp. Draschia sp, Thelazia sp., Gongylonema sp) 3. Parasitic Arthropods - : general characteristics, biology, larval forms, role in the transmission of infectious diseases. Characteristics of Ixodidae and vectored diseases. Local and systemic symptoms observed in the subsequent stages of the infection. Ticks as a vector of viral, bacterial and protozoan diseases. 4. Infection of - Argasidae. Acaroses in birds. Pathology caused by mites infection in birds. Zoonotic importance of birds mites 5. Scabies of ungulates and carnivores. The infection caused by Demodex spp. and Cheyletiella sp 6. Infestations of parasitic Diptera: Tabanidae, Hippoboscidae, Simulidae, Culicidae. The inflammatory and necrotic lesions of skin in animals affected by flies' larvae (Lucilla sp., Calliphora sp.). Gasterophilosis in horses: prevalence, clinical sings, prophylactic action. The prevalence of Oestrus ovis infections. Hypodermosis in cattle. 7. The lice infections in mammals and birds . Fleas invasion of poultry and carnivores. The importance of the flea vector diseases. Allergens of fleas. 8. Immunology of parasitic invasion. Prevention and treatment of parasitic diseases.	lecture

2.	Lab. 1 Phylum: Nemathelminthes; Class: Nematoda;Family: Ascarididae/Ascaris suum, Parascaris equorum,Toxocara canis,Toxocara cati,Toxascaris leonina; Family: Ascarididae/Ascaridia galli;Family: Heterakidae/Heterakis gallinarum,Family: Oxyuridae/Enterobius vermicularis,Oxyuris equi,Passalurus ambiguous,Skrjabinema ovis Lab. 2 Order: Strongylida Family: Metastrongylidae/Metastrongylus elongatus,Family: Dictyocaulidae/Dictyocaulus filaria, Dictyocaulus viviparus Order: Protostrongylidae/ Protostrongylus spp.;Family: Syngamidae/ Syngamus trachea Lab.3 Order: Rhabditida;Family: Strongyloididae/Strongyloides ransomi Order: Spirurida;Family: Filaridae/Dirofilaria immitis, Dirofilaria repens Order: Strongylida;Family: Ancylostomatidae/Uncinaria stenocephala, Bunostomum trigonocephalum Lab.4 Order: Strongylida;Family: Strongylidae;Subfamily: Strongylinae/Strongylus equinus, Strongylus edentates,Strongylus vulgaris Subfamily: Chabertiinae/ Chabertia ovina;Subfamily: Oesophagostominae / Oesophagostomum radiatum, Oesophagostomum dentatum. Lab. 5 Family: Trichostrongylidae/Haemonchus contortus, Ostertagia ostertagi Family: Molineidae/Nematodirus filicollis Lab.6 Family: Trichinellidae/Trichinella spiralis Family: Trichuridae/ Trichuris suis,Capillaria spp Lab.7 Test Nematoda Lab. 8 Phylum: Arthropoda Class: Arachnida; Subclass: Acaria;Family: Ixodidae/Ixodes Ricinus, Hyalomma spp.,Dermacentor reticulatus Family: Argasidae/Argas reflexus Lab. 9 Order: Gamasida Family: Dermanyssidae/Dermanyssus gallinae; Family: Varroidae/Varroa destructor Order: Actinedida;Family: Tarsonemidae/Acarapis woodi.Family: Myobidae/Myobia musculi,Family: Cheyletiellidae/ Cheyletiella blakei ,Cheyletiella yasguri Lab. 10 Family: Demodicidae, Demodex canis Order: Acaridida, Family: Sarcoptidae, Sarcoptes scabiei, Notoëdres cati Family: Knemidocoptidae, Knemidocoptes mutans Family: Psoroptidae, Psoroptes communis v. ovis, Chorioptes equi,Otodectes cynotis Lab. 11 Class: Insecta , Order: Diptera , Family: Ceratopogonidae, Culicoides spp. Family: Simuliidae, Simulium spp. Family: Phlebotomidae, Phlebotomus spp. Family: Culicidae,Culex spp., Anopheles spp., Aëdes spp. Family: Tabanidae,Tabanus spp. Family: Muscidae,Stomoxys calcitrans Family: Glossinidae, Glossina palpalis Family: Calliphoridae,Lucila serricata Lab. 12 Order: Diptera ; Hypoderma bovis, Oestrus ovis , Gasterophilus intestinalis Family: Hippoboscidae, Melophagus ovinus Order: Hemiptera , Family: Cimicidae, Cimex lectularius Lab. 13 Order: Anoplura ; Pediculus humanus ,Phtirus pubis,Haematopinus suis , Linognathus setosus Order: Amblycera: Menopon gallinae,Columbicola colombe Family: Trichodectidae, Bovicola bovis Order: Siphonaptera , Pulex irritans, Ctenocephalides canis, Xenopsylla cheopis Lab. 14 Test: Arthropoda Lab. 15 Completing overdue classes. Credit	laboratory classes

Course advanced

Teaching methods:

classes, lecture, presentation / demonstration

Activities	Examination methods	Percentage in subject assessment
lecture	written exam	50%
laboratory classes	written exam, observation of student’s work, active participation, test	50%

Entry requirements

Parasitology and Invasiology I, Biology, Clinical and Laboratory Diagnostics I - II, Pathophysiology I - II, Pathomorphology I - II, Veterinary Pharmacology I - II,

Literature

Obligatory

1. Taylor MA, Coop RL, Wall RL. Veterinary Parasitology. Blackwell Publishing, 4rd edition 2017 (strongly suggested)
2. Dwight D. Bowman. Parasitology for Veterinarians 10th Edition WB Sanders 2020

Optional

1. Mehlhorn H. Encyclopedic Reference of Parasitology (Diseases, Treatment, Therapy). Springer-Verlag Berlin Heildelberg, New York 2016.
2. Charles M. Hendrix, Ed Robinson. Diagnostic Parasitology for Veterinary Technicians, 5th edition, Mosby 2016

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Slaughter animals and meat hygiene I

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J40BO.2335.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** Yes **Subject shaping practical skills** No

Teacher responsible for the subject	Aleksandra Tabiś
Other teachers conducting classes	Aleksandra Tabiś, Ewa Wałecka-Zacharska, Sylwia Banaszkiewicz, Joanna Skonieczna

Period Semester 7	**Examination** graded credit **Activities and hours** lecture: 15 laboratory classes: 30	**Number of ECTS points** 3.0

Goals

C1	The goal of the course is to learn the student food safety hazards that occur in the process of slaughtering animals, rules governing the veterinary supervision of obtaining meat from slaughter and game animals, changes in meat induced by disease processes that affect the quality and evaluation of meat, post-mortem laboratory meat inspection.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	explains in detail the principles of consumer health protection	O.W11	written credit, oral credit
W2	explains in detail the principles of appropriate supervision over the production of foodstuffs of animal origin;	O.W12	written credit, oral credit
W3	characterises the control systems in accordance with HACCP (Hazard Analysis and Critical Control Points) procedures	B.W18	written credit, oral credit
W4	knows and describes the principles of functioning of the Veterinary Inspection, also in the aspect of public health	B.W16	written credit, oral credit
W5	knows to an extensive degree, interprets and observes the principles of food law	B.W21	written credit, oral credit
W6	Presents in detail the principles of examination of the slaughter animals, meat and other animal products	O.W10	written credit, oral credit
Skills – Student can:			
U1	performs activities that are associated with the veterinary supervision, including trade in animals, as well as sanitary and veterinary conditions of animal gathering locations and processing products of animal origin	O.U6	oral credit
U2	is able to estimate the risk of occurrence of chemical and biological hazards in food of animal origin	B.U22	oral credit
U3	Is able to collect samples for monitoring tests for the presence of prohibited substances, chemical and biological residues, medicinal products and radioactive contamination in animals, in their secretions, excretions, tissues or organs, in products of animal origin, food, in water intended for animal drinking and in the feed;	B.U23	written credit, oral credit
Social competences – Student is ready to:			
K1	communicates with the co-workers and shares knowledge	O.K9	oral credit
K2	deepens his/her knowledge and improves skills	O.K8	oral credit
K3	Exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	oral credit
K4	Has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	oral credit

Balance of ECTS points

Activity form	Activity hours*
lecture	15
laboratory classes	30
lesson preparation	30
exam / credit preparation	15

Student workload	**Hours** 90	**ECTS** 3.0
Workload involving teacher	**Hours** 45	**ECTS** 1.7
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Food hygiene - definition, concept, content, scope. The legal basis: Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety 2. Protect the health of the consumer, commodity risks slaughter microbiological factors, parazytologicznymi, chemicals. The risk analysis. 3. Food chain: feed hygiene, slaughtering, cutting, processing, distribution, transport of animals, transport of meat. Plumbing Package: EU Regulation 852, 853, 854 and 882 in 2004. 4. Monitoring, control, audit, monitoring. Role and tasks of IW. The Act of 29 January 2004 on Veterinary Inspection, 5. Slaughterhouse - definition, design, structure, functions, requirements and structure of the plant production of meat and meat products. Species specificity, equipment, technological lines 6. GMP / GHP / HACCP in meat processing plants - concepts, objectives of, well, rules. Chapter zones for clean and dirty. Principles of movement between zones, hygiene staff. 7. Animals for slaughter. Rotation, identification and marking of animals. Act of 2 April 2004 on the identification and registration of animals 8. Animal welfare, ante-mortem inspection, slaughter .. Council Regulation (EC) No 1/2005 of 22 December 2004 on the protection of animals during transport and related operations and amending Directives 64/432/EEC and 93/119/EC and Regulation (EC) No 1255/97 . 9. Meat - definitions. The slaughter of animals for slaughter - definition, types, methods. Technology slaughter of animals for slaughter. Regulation (EC) No 853/2004 of the European Parliament and of the Council of 29 April 2004 laying down specific hygiene rules for food of animal origin 10. Slaughter of pigs. Stunning, exsanguinations, scalding, odszczecinianie, evisceration, post-mortem inspection of meat samples for laboratory tests. 11. Slaughter stunning, exsanguination, skinning, evisceration, the division of the carcass, meat post-mortem inspection, sampling for laboratory tests. 12. Slaughter of horses. Stunning, exsanguination, skinning, evisceration, the division of the carcass, meat post-mortem inspection, sampling for laboratory tests. 13. The slaughter of poultry, rabbits, game animals farmed 14. Venison, definition, conduct a fishery, veterinary examination, evaluation. Proceedings in the fishery, collection game, the base game, pathological changes, 15. Rating meat after slaughter, veterinary seal character patterns, methods, and rules on labeling. Handling the meat after slaughter. Cooling, cutting, distribution,	lecture

2.	1. HACCP – system of food safety of animal origin. Part 1. - management of safety and quality of food of animal origin - idea of HACCP - prerequisites of system implementing - 7 principals - basic concepts - structure of documentation 2. HACCP – system of food safety of animal origin. Part 2. - principles for the drafting of a system - description of the product - block diagram - analysis of hazards and CCP assessment - monitoring system - loop quality - system verification 3. Cleaning and disinfection - goals of washing and disinfection - washing agents - disinfectants - washing and disinfecting techniques - effectiveness of cleaning and disinfection 4. Control of the general conditions of production hygiene. - law basis Decision 2001/471 EC - sampling methods for microbiological testing - rules for the collection of samples for microbiological testing - analysis of results - decisions 5. The task of the veterinary supervision of food establishments - law basis: Instruction GLW no GIWhig 500-7/07 - microbiological testing conducted at the premises - rules and methods of sampling to test - results of analysis and evaluation 6. Microbiological quantitative testing - MPN - total viable counts - rules for calculating results 7. The study of food in the direction of Listeria monocytogenes - food in jeopardy - law basis: Regulation 1441/2007 - microbiological mediums - methodology for microbiological testing of food 8. Study of food in the direction of Enterobakteriaceae part 1. - food in jeopardy - systematics - law basis Regulation 1441/2007 - mediums - methodology for the microbiological testing of food - spreading 8. Study of food in the direction of Enterobakteriaceae part 2 - analyses of incubated tests - interpretation of results - treats for consumers 10. Study of food in the direction of pathogenic Streptococci part 1. - food in jeopardy - systematics - law basis: Regulation 1441/2007 - mediums - methodology for the microbiological testing of food - spreading 11. The study of food in the direction of pathogenic Streptococci part 2 - analyses of incubated tests - interpretation of results - treats for consumers 12. The study of food in the direction of pathogenic Staphylococci. Part 1 - food in jeopardy - systematics - law basis: Regulation 1441/2007 - mediums - methodology for the microbiological testing of food - spreading 13. The study of food in the direction of pathogenic Staphylococci. Part 2 - analyses of incubated tests - interpretation of results - treats for consumers 14 The study of food in the direction of pathogenic bacteria. - food in jeopardy - systematics - law basis: Regulation 1441/2007 - mediums - methodology for the microbiological testing of food - spreading 15. The study of food in the direction of pathogenic bacteria. cz. 2. - analyses of incubated tests - interpretation of results - treats for consumers	laboratory classes

Course advanced

Teaching methods:

classes, practical simulation training, lecture, presentation / demonstration

Activities	Examination methods	Percentage in subject assessment
lecture	written credit	30%
laboratory classes	written credit, oral credit	70%

Entry requirements

basics of microbiology, basics of livestock breeding, knowledge of the structure and tasks of the Veterinary Inspection

Literature

Obligatory

1. Gracey’s Meat Hygiene, David S. Collins, Robert J. Huey
2. Meat Inspection and Control in the Slaughterhouse, Thimjos Ninios, Janne Lunden, Hannu Korkeala, Maria Fredriksson-Ahomaa

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Advanced pathogenesis of diseases

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J40BO.3572.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** optional
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills No

Teacher responsible for the subject	Aleksandra Pliszczak-Król
Other teachers conducting classes	Aleksandra Pliszczak-Król

Period Semester 7	**Examination** graded credit **Activities and hours** practical classes: 30	**Number of ECTS points** 2.0

Goals

C1	to familiarize students with the influence of harmful factors and uncomfortable conditions on the processes taking place in the animal body.
C2	to familiarize students with issues related to the datailed pathogenesis of local and/or systemic processes occuring in the animal body during the disease.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the principles and mechanisms underlying the disease development – from the level of cells, through tissues, organs to the animal's body.	O.W1	test, participation in discussion
W2	disturbances of the mechanisms ensuring the proper functioning of the animal organism and the mechanisms activated in pathological conditions.	O.W2	test, participation in discussion
W3	the etiology and pathogenesis of clinical symptoms of the disease.	O.W3	test, participation in discussion
W4	the correlation between factors that disturb the balance of biological processes of the animal body and pathophysiological changes.	A.W11	test, participation in discussion
W5	the morphological and functional changes occurring in the cells, tissues, organs of animal organism occuring in the disease and the mechanisms of recovery after the disease.	A.W12	test, participation in discussion
Skills – Student can:			
U1	describe the alterations in the function of the organism in disturbances in mechanisms of adaptation and in disturbances in the mechanisms maintaining the state of body homeostasis.	A.U4	test, participation in discussion
U2	define changes in the function of the organism and changes in the behavior of the animal ensuring adaptation to the environmental factors challenge.	A.U7	test, participation in discussion
U3	listen and provide answers with the use of understandable language, appropriate to the given situation.	A.U13	test, participation in discussion
Social competences – Student is ready to:			
K1	exhibit responsibility for his/her decisions made in regard to the people and animals.	O.K1	observation of student’s work, participation in discussion
K2	use the objective sources of information related to the pathogenesis of diseases and their results.	O.K4	observation of student’s work, participation in discussion
K3	formulate conclusions from the observation of the impact of harmful factors on the body and the resulting consequences.	O.K5	observation of student’s work, participation in discussion
K4	deepen his/her knowledge in the advanced pathogenesis and consequences of diseases.	O.K8	observation of student’s work, participation in discussion
K5	communicate with the co-workers and share knowledge.	O.K9	observation of student’s work, participation in discussion

Balance of ECTS points

Activity form	Activity hours*
practical classes	30
class preparation	20
exam / credit preparation	10

Student workload	**Hours** 60	**ECTS** 2.0
Workload involving teacher	**Hours** 30	**ECTS** 1.0
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	Lectures are held in compact form. I. Advanced pathogenesis of systemic diseases – molecular and cellular mechanisms. 1. Disorders of mechanisms participating in regulation of physiologic processes in cells and consequences of them; alterations of regulatory protein composition and function, disturbances in membranous transport, disturbances in transmission and transduction of the cellular signal, energetic disorders, alterations in the cell cycle, alterations in cell maturation. - 2 h. 2. Relationship disorders; anabolism – catabolism, carbohydrate-lipid-protein metabolism, water spaces, intracellular and extracellular pH. - 2 h. II. Advanced pathogenesis of systemic diseases - presentation of the relationship between the mechanism and the symptom based on the analysis of selected clinical cases. 3. Knowledge of datailed ethiopathogenesis as the basis for correect diagnosis and effective therapy: cause-pathomechanism-effect and symptom-therapy, monitoring and prognosis. - 2 h. 4-5. The gastrointestinal tract; pancreatitis and hepatitis: triaditis, icterus, enteritis, IBD, lymphoma. - 4 h. 6-7. Endocrine glands; hyperfunction and hypofunction of the thyroid gland, Cushing’s syndrome and Adisson’s disease, endocrine disfunction of pancreas and pancreatic tumors, male fieminizing syndrome, multiple endocrinopathies. - 4 h. 8-9. The respiratory system; dyspnea, pulmonary oedema, relationship between the respiratory system and the cardiovascular system. - 4 h. 10-11. Renal and urologic systems; the chronic renal failure, glomerular nephritis and interstitial nephritis, FLUTD, Fanconi-like syndrome. - 4 h. 12-13. The immunogical system; miastenia gravis, IMHA, sarcoidosis and amyloidosis immunodeficiencies and autoimmune diseases. - 4 h. 14-15. Neoplastic diseases; neoplasms and disturbances of general metabolic processes, neoplasms and male castration /ovariohysterectomy. - 4 h.	practical classes

Course advanced

Teaching methods:

educational film, lecture, discussion, presentation / demonstration, brainstorming, case analysis

Activities	Examination methods	Percentage in subject assessment
practical classes	observation of student’s work, test, participation in discussion	100%

Literature

Obligatory

1. Zachary J.F. Pathologic basis of veterinary disease. ELSEVIER, 2017, 6th edition.
2. Cheville N.F. Introduction to Veterinary Pathology. BLACKWELL PUBLISHING, 2006, 3rd edition.
3. Dunlop R.H., Malbert Ch.H. Veterinary Pathophysiology. BLACKWELL PUBLISHING, 2004.
4. Stockham S.L., Scott M.A. Fundamentals of Veterinary Clinical Pathology. IOWA STATE PRESS. A Blackwell Publishing Company, 2002.
5. Norris T.L. Porth’s Pathophysiology. Concepts of altered health states. Walters Kluwer, 2019.

Optional

1. McCance K.L., Huether S.E. Pathophysiology. The biologic basis for disease in adults and children. ELSEVIER, 2019, 8th edition.
2. Damjanov I. Pathophysiology. SAUNDERS. Elsevier, 2009.
3. Silbernagl S., Lang F. Color atlas of Pathophysiology. THIEME, 2016, 3rd edition.
4. Harvey J.W. Veterinary Hematology. A diagnostic guide and color atlas. ELSEVIER, 2012.
5. Scientific journal articles.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Anatomical propedeutics in hippiatry

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J40BO.0063.24 **Lecture languages** english **Mandatory** optional **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Aleksandra Rozwadowska
Other teachers conducting classes	Aleksandra Rozwadowska

Period	**Examination**	**Number of ECTS points**
Semester 7	graded credit **Activities and hours** laboratory classes: 30	2.0

Goals

C1	To familiarize students with the specifics of the horse's anatomy.
C2	To make listeners aware of the relationship between the horse's anatomy and diagnostic and therapeutic options in this species.
C3	Transfer of knowledge in the field of diseases occurring in horses in relation to their anatomy.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	anatomy of the horse and clinically relevant morphological aspects typical of this species.	O.W2	written credit, report
W2	diagnostic and therapeutic methods appropriate for horses, resulting from their species-specific anatomy.	O.W4	written credit, report
Skills – Student can:			
U1	analyze and initially interpret clinical symptoms in terms of diseases typical for horses resulting from the specificity of their anatomy.	O.U2	active participation
U2	pre-plan the diagnostic procedure, taking into account the procedures typical for the examination of horses.	O.U3	active participation
Social competences – Student is ready to:			
K1	use objective sources of information, with particular emphasis on current scientific publications in the field of hypiatrics and textbooks by leading authors in the field.	O.K4	observation of student's work, active participation, report
K2	expand knowledge and improve skills with the awareness of the advances in equine medicine and the resulting need for continuous education.	O.K8	observation of student's work, active participation, report

Balance of ECTS points

Activity form	Activity hours*
laboratory classes	30
exam / credit preparation	15
presentation/report preparation	10
collecting and studying literature	5

Student workload	**Hours** 60	**ECTS** 2.0
Workload involving teacher	**Hours** 30	**ECTS** 1.0
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	1. Anatomical basis on injections. 2. Clinical anatomy of the hoof. 3. Frontimb - anatomy, biomechnics, diseases, diagnostics and treatment. 4. Hindlimb - anatomy, biomechanics, diseases, diagnostics and treatment. 5. Digit - anatomy, biomechanics, diseases, diagnostics and treatment. 6. Neck and back - anatomy, biomechanics, diseases, diagnostics and treatment. 7. Paranasal sinuses - anatomy, diseaseas, anatomical basis of trephination, sinuscopy and tooth extraction. 8. Respiratory tract and guttural pouches - anatomy, diseases, anatomical basis of endoscopy and radiology. 9. Gastrointestinal tract - anatomy, anatomical basis of colic, treatment p.1 10. Gastrointestinal tract - anatomy, anatomical basis of colic, treatment p. 2 11. Heart - anatomy, species specificity of heart diseases and diagnostics. 12. Reproductive tract - anatomy, anatomical basis of medical interventions. 13. Urinary tract - anatomy, anatomical basis of catheterization in mares and stallions, ultrasonography. 14. Presentation of the reports. 15. Written credit.	laboratory classes

Course advanced

Teaching methods:

classes, practical simulation training, discussion, presentation / demonstration, educational film, case analysis

Activities	Examination methods	Percentage in subject assessment
laboratory classes	written credit, observation of student’s work, active participation, report	100%

Entry requirements

The knowledge of the anatomy of organs and systems in domestic mammals. Courses from Animal anatomy I and Animal anatomy II successfully completed.

Literature

Obligatory

1. Clinical anatomy of the horse. Hilary M. Clayton, Peter F. Flood, Diana S. Rosenstein, 2005, Mosby.
2. Color atlas of veterinary anatomy. The horse. Raymond R. Ashdown, Stanley H. Done, 2002, Mosby.
3. The equine distal limb. An atlas of clinical anatomy and comparative imaging. Jean-Marie Denoix, 2000, CRC Press.
4. Anatomy of the horse. Klaus-Dieter Budras, W.O. Sack, Sabine Rock, 2012, Schlutersche.

Optional

1. Adams and Stashak's lameness in horses. Gary M. Baxter, 2011, Blackwell Publishing.
2. Diagnosis and management of lameness in the horse. Mike W. Ross, Sue J. Dyson, 2011, Elsevier Saunders.
3. Equine surgery. Jorg A. Auer, John A. Stick, 2012, Elsevier Saunders.
4. Manual of equine reproduction. Steven P. Brinsko et al., 2011, Mosby.
5. Equine Internal Medicine, 4th Edition. Stephen M. Reed, Warwick M. Bayly, Debra C. Sellon. 2017, Elsevier.
6. Clinical Radiology of the Horse, 4th Edition. Janet A. Butler, Christopher M. Colles, Sue J. Dyson, Svend E. Kold, Paul W. Poulos. 2016. Wiley-Blackwell.
7. Atlas of Equine Ultrasonography. Jessica A. Kidd, Kristina G. Lu, Michele L. Frazer. 2014, Wiley.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Immunohistochemistry in pathomorphology and cancer diagnostics

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J40BO.0939.24 **Lecture languages** english **Mandatory** optional **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** No

Teacher responsible for the subject	Rafał Ciaputa
Other teachers conducting classes	Rafał Ciaputa, Małgorzata Kandefer-Gola

Period Semester 7	**Examination** graded credit **Activities and hours** lecture: 4 laboratory classes: 11	**Number of ECTS points** 1.0

Goals

C1	In lectures and exercises, students will be presented with changes at the cellular level during the development of the cancer process. Changes in cell nucleus, cytoplasm and cell membrane. This will be presented in the form of immunohistochemical reactions and their results showing both normal cell structures and those changed by the disease process. Specific tumor antigens that are used in the differential diagnosis of cancer and its treatment will be presented. Interpretation of the results and, on their basis, estimation of the prognosis for the patient will be discussed

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	changes in the cell at the level of cell membrane, cytoplasm and nucleus initiating neoplastic processes and cell apoptosis	O.W1	oral credit
W2	procedures involved in the production of antibodies used in immunohistochemical diagnosis	B.W1	oral credit
Skills – Student can:			
U1	analyze and interpret the results of immunohistochemical tests, make a diagnosis of cancer on the basis of the obtained results including differential diagnosis	O.U2	oral credit
U2	plan immunohistochemical examination with selection of appropriate antibodies	O.U3	oral credit
Social competences – Student is ready to:			
K1	use of objective sources of information, mainly scientific journals	O.K4	oral credit
K2	draw conclusions from their own assessment of the situation	O.K5	oral credit
K3	improve knowledge and skills necessary to correctly interpret results	O.K8	oral credit

Balance of ECTS points

Activity form	Activity hours*
lecture	4
laboratory classes	11
consultations	5
collecting and studying literature	5
exam participation	5

Student workload	**Hours** 30	**ECTS** 1.0
Workload involving teacher	**Hours** 25	**ECTS** 1.0
Practical workload	**Hours** 11	**ECTS** 0.4

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	Titles of lectures: 1. introduction to immunohistochemical methods. Types of immunohistochemical reactions. Preparation of material for immunohistochemical staining. 2.Apoptosis - detection using immunohistochemical methods. Immunohistochemistry in cancer diagnosis and histogenesis- the importance of immunohistochemical studies in cancer diagnosis. 3.Immunohistochemistry in diagnosis and histogenesis of cancer- selection of chemical reactions. Immunohistochemistry in the diagnosis and histogenesis of cancer- the role of immunohistochemistry in determining tumor origin. 4.Immunohistochemistry in diagnosis and histogenesis of cancer- specific markers for certain types of cancer. Immunohistochemistry in the diagnosis and histogenesis of cancer-the importance of immunohistochemical findings in determining predictive and prognostic factors of certain cancers.	lecture
2.	Titles of classes: 1.Markers used in immunohistochemical methods. Analysis of selected histopathological preparations - own work with microscope. 2.Antibodies (detection, characterization, obtaining). Analysis of selected histopathological preparations - own work with microscope. 3. Types of immunohistochemical reactions. Analysis of selected histopathological preparations - own work with microscope. 4. Fixation of the material. Preparation of tissue. Making paraffin scrapings. Analysis of selected histopathological preparations - own work with microscope. 5. Performing immunoperoxidase reaction. Detection of marker enzymes. Control reactions. Analysis of selected histopathological preparations - own work with microscope. 6. Evaluation of immunohistochemical reactions. Methodical problems in immunohistochemistry (no reaction, artifacts, trace reaction, background). Analysis of selected histopathological preparations - own work with the microscope. 7. Immunohistochemical and related techniques used in the detection of apoptosis. Analysis of selected histopathological preparations - own work with microscope. 8. Immunohistochemistry in diagnosis and histogenesis of cancer. Analysis of selected histopathological preparations - own work with microscope. 9. Independent interpretation of selected histopathological preparations stained by classical (hematoxylin-eosin) and immunohistochemical methods. 10 and 11. credit of the course.	laboratory classes

Course advanced

Teaching methods:

classes, lecture, discussion, presentation / demonstration, brainstorming, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	oral credit	50%
laboratory classes	oral credit	50%

Entry requirements

Histology and embryology, Pathomorphology

Literature

Obligatory

1. M. Donald McGavin, James F. Zachary, "Pathologic basis of veterinary disease.” Mosbay Elsevier, 2012.
2. T. C. Jones, R. D. Hunt, N. W. King “Veterinary pathology” Wiley, 1997.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Laboratory diagnostics in veterinary mycology

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J40BO.1133.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** optional
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills Yes

Teacher responsible for the subject	Jarosław Król
Other teachers conducting classes	Jarosław Król

Period Semester 7	**Examination** graded credit **Activities and hours** laboratory classes: 15	**Number of ECTS points** 1.0

Goals

C1	The aim of the course is to provide students with knowledge on fungi pathogenic to animals and humans as well as with methods used for laboratory identification of fungi.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the etiology, pathogenesis and clinical symptoms of fungal diseases occurring in animals	O.W3	written credit
W2	principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for fungal diseases occurring in animals	O.W4	observation of student's work, active participation
W3	biology of fungi causing diseases transmitted between animals, as well as anthropozoonoses, taking into account the mechanisms of disease transmission and defense mechanisms of the macroorganism	O.W6	written credit
W4	to an extensive degree the basics of mycological diagnostics	A.W15	written credit, observation of student's work, active participation
Skills – Student can:			
U1	plan the diagnostic procedure	O.U3	observation of student's work
U2	analyse and interpret pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions	O.U2	observation of student's work, active participation
U3	perform basic mycological diagnostics	A.U10	written credit, observation of student's work, active participation
Social competences – Student is ready to:			
K1	cooperate with representatives of other professions in the scope of public health protection	O.K11	observation of student's work
K2	deepen his/her knowledge and improve skills	O.K8	observation of student's work, active participation

Balance of ECTS points

Activity form	Activity hours*
laboratory classes	15
exam / credit preparation	15

Student workload	**Hours** 30	**ECTS** 1.0
Workload involving teacher	**Hours** 15	**ECTS** 0.6
Practical workload	**Hours** 15	**ECTS** 0.6

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1-2. Classification of fungi and mycoses. Factors favouring fungal infections. Pathomechanism of fungal infections 3. Identification scheme for fungi of clinical importance. Diagnostic techniques used in clinical mycology 4-7. Dermatophytes – characteristics of the group, sampling methods, identification scheme, differential diagnosis. Dermatomycoses – clinical manifestations, infections in various animal species 8-11. Yeasts and yeast-like fungi - characteristics of the group, sampling methods, identification scheme with quantitative growth assessment, differential diagnosis. Infections caused by yeasts – superficial mycoses, systemic mycoses, infections in various animal species 12-13. Filamentous saprophytic fungi. Mycotoxins and mycotoxicoses 14. Dimorphic fungi and exotic mycoses 15. Mycoses in humans. Mycoses as zoonoses	laboratory classes

Course advanced

Teaching methods:

classes, teamwork, presentation / demonstration, case analysis

Activities	Examination methods	Percentage in subject assessment
laboratory classes	written credit, observation of student’s work, active participation	100%

Entry requirements

Veterinary microbiology

Literature

Obligatory

1. Markey B., Leonard F., Archambault M., Cullinane A., Maguire D. 2013. Clinical Veterinary Microbiology. Mosby Elsevier
2. Songer J.G., Post K.W. 2005. Veterinary Microbiology: Bacterial and Fungal Agents of Animal Disease. Elsevier Saunders
3. Hirsh D.C., MacLachlan N.J., Walker R.L. 2004. Veterinary Microbiology. Blackwell Publishing

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Physiological basis of nephrology and renal replacement therapies

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J40BO.1571.24 **Lecture languages** english **Mandatory** optional **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Jolanta Bujok
Other teachers conducting classes	Jolanta Bujok

Period Semester 7	**Examination** graded credit **Activities and hours** laboratory classes: 6 practical classes: 9	**Number of ECTS points** 1.0

Goals

C1	To broaden the knowledge of the excretory system physiology and methods used to assess the function of the excretory system.
C2	To learn to analyze the results of urine and blood tests in relation to the function of the excretory system.
C3	To familiarize with the modalities of renal replacement therapies and indications for renal replacement treatment in veterinary patients.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	knows to an extensive degree, describes in detail and explains the structure, functioning, and physiological mechanisms in the excretory system of companion animals in normal conditions, as well as the mechanisms of disorders in pathological conditions;	B.W1, O.W2	written credit
W2	knows to an extensive degree and describes in detail the principles and mechanisms underlying health of the excretory system in animals, diseases formation in this system and their treatment	A.W10, O.W1	written credit
W3	knows the principles of therapeutic procedures, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases of the excretory system occurring in animals;	B.W6, O.W4	written credit, performing tasks
Skills – Student can:			
U1	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease regarding the excretory system of companion animals	A.U4, O.U2	written credit, performing tasks
U2	collects and secures the samples for tests, as well as performs standard laboratory tests, and correctly analyses and interprets the results of laboratory tests associated with diagnostics of excretory system in companion animals	B.U6	written credit, performing tasks
Social competences – Student is ready to:			
K1	deepens his/her knowledge and improves skills in animal nephrology	O.K8	performing tasks

Balance of ECTS points

Activity form	Activity hours*
laboratory classes	6
practical classes	9
exam / credit preparation	10

Student workload	**Hours** 25	**ECTS** 1.0
Workload involving teacher	**Hours** 15	**ECTS** 0.6
Practical workload	**Hours** 15	**ECTS** 0.6

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	Students carry out urinalysis, prepare urine sediment and assess it, and compare the obtained results with the reference values for a given animal species. They become acquainted with the physical processes used during extracorporeal purification of the blood and basic rules of renal replacement therapies. Lab 1-2: Urinalysis 1- evaluation of sensory, physical and chemical parameters of urine Lab. 3-4: Urinalysis 2 - urine sediment evaluation Lab. 5-6: Renal replacement therapy - methods to obtain vascular access for hemodialysis, peritoneal catheters.	laboratory classes
2.	During the course, students broaden their knowledge of the physiology of the excretory system, including the role of kidneys in the regulation of calcium-phosphorus metabolism, erythropoiesis, blood pressure, water-electrolyte balance, and acid-base balance. They correlate normal physiological processes with the spectrum of symptoms occurring in the diseases of the excretory system and with the diagnostic and therapeutic strategies. Students learn the value of laboratory and functional tests for the assessment of the excretory system, get acquainted with the reference ranges of test results. Students become acquainted with the modalities of renal replacement therapy used in veterinary medicine and the differences between them. They learn about the indications and contraindications for renal replacement therapies in veterinary medicine. 1: Structure of the urinary system - clinical implications. Glomerular filtration - description of the process, methods of testing, regulating factors. 2-3: The role of kidney tubules in the formation of final urine. Possibilities of regulation of the processes occurring in the renal tubules, methods of evaluating renal tubule function. 4-5: Kidney as an endocrine organ - erythropoietin, renin, calcitriol. Regulation of the secretion of humoral substances by the kidney, methods of the assessment of renal endocrine function. 6: The role of the excretory system in maintaining the acid-base balance, methods for the assessment of acid-base balance. 7-8: Renal replacement therapies - modalities of renal replacement therapies and extracorporeal blood purification, veterinary indications for renal replacement therapy. Basic physical processes used in extracorporeal cleansing. Basics of dialysis prescription. 9: Peritoneal dialysis. Credit test	practical classes

Course advanced

Teaching methods:

classes, practical simulation training, lecture, presentation / demonstration

Activities	Examination methods	Percentage in subject assessment
laboratory classes	performing tasks	40%
practical classes	written credit	60%

Entry requirements

- Animal anatomy I and II
- Animal physiology I and II
- Pathophysiology I and II
- Veterinary pharmacology I and II
- Clinical and laboratory diagnostics I and II

Literature

Obligatory

1. Reece W (red.).Duke’s Physiology of Domestic Animals, wyd. 13., 2015, Wiley Blackwell.
2. Klein B.G., Cunningham's Textbook of Veterinary Physiology, wyd. 5., 2012, Elsevier.
3. Elliot J., BSAVA Manual of Canine and Feline Nephrology and Urology, 2017, British Small Animal Veterinary Association

Optional

1. IRIS Kidney (http://www.iris-kidney.com/guidelines/staging.html)
2. Journal of Veterinary Internal Medicine (https://onlinelibrary.wiley.com/journal/19391676)
3. Bartges J., Polzin D., J. (ed.), Nephrology and Urology of Small Animals, 2011, Blackwell Publishing Ltd.
4. Chew D., DiBartola S., Schenck P. (ed.), Canine and Feline Nephrology and Urology - 2nd Edition, 2010, Saunders.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

The basics of archaeozoology with palaeopathology

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J40BO.3138.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** optional
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills Yes

Teacher responsible for the subject	Edyta Pasicka
Other teachers conducting classes	Edyta Pasicka, Maciej Janeczek

Period	**Examination**	**Number of ECTS points**
Semester 7	graded credit **Activities and hours** lecture: 15 laboratory classes: 15	2.0

Goals

C1	Aim of this course is to acquaint students with selected issues of archaeozoology and palaeopathology, an expanding interdisciplinary science, which research methods have widespread use in reconstruction of human relationship with animals in prehistory and in historical times.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	W1- student has theoretical and practical knowledge in the scope of domesticated animals archaeozoology. and palaeopathology.	O.W1	oral credit
W2	W2- student identifies types of remains, performs their quantitative analyses, can recognize and name the pathologies occurring on the bones and teeth.	O.W3	oral credit
W3	W3- Processing and analysis of collected data.	O.W15	oral credit
Skills – Student can:			
U1	U1- student can perform species identification based on measurable and immeasurable animal remains.	O.U3	practical test
U2	U2- unassisted is able to carry out identification of animal remains.	O.U3	practical test
U3	U3- student has the ability to apply the acquired theoretical and practical knowledge during exploration of archaeological and paleontological sites, and also in further scientific work.	O.U10	practical test
U4	U4-student uses nomenclature used in biological, agricultural and veterinary sciences.	O.U8	practical test
Social competences – Student is ready to:			
K1	K1- understands the need to deepen knowledge and improve skills throughout their whole life.	O.K8	observation of student’s work
K2	K2- knows the methodology used in archaeozoology, that allows to estimate withers height, determine of the type of diseases, gender, age, and the way of use on the basis of animal bone remains, uses the objective sources of information.	O.K4	observation of student’s work
K3	K3- can in a conscious and responsible way conduct an analysis of animal remains, based on information and skills acquired during the course, formulates conclusions from own observations.	O.K5	observation of student’s work

Balance of ECTS points

Activity form	Activity hours*
lecture	15
laboratory classes	15
lesson preparation	10
exam / credit preparation	10

Student workload	Hours	ECTS
	50	2.0

Workload involving teacher	Hours 30	ECTS 1.0
Practical workload	**Hours** 15	**ECTS** 0.6

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Archaeozoology and its objectives. 2. Methods of animal remains exploration. 3. Characteristics and types of remains coming from excavation materials. 4. Research methods commonly used in archaeozoology, part one – osteometry. 5. Research methods commonly used in archaeozoology, part two – determining age, season, gender and interpretation of marks on bones. 6. Research methods commonly used in archaeozoology, part three – determining morphological type, estimating withers height and evaluation of pathological lesions. 7. Research methods commonly used in archaeozoology, part four – quantitative assessment of remains. 8. History of domestication of animals, part one – time and place of domestication. 9. History of domestication of animals, part two – domestication conditions and traits. 10. The most common pathological changes on bone remains. 11. Pathological changes in the context of social and cultural conditions. 12. Mammals – characteristics of selected families (Equidae, Bovidae, Cervidae). 13. Mammals – characteristics of selected families (Canidae, Felidae, Suidae). 14. Birds – characteristics of selected species (Gallus gallus f. domestica, Numida meleagris f.domestica, Meleagris gallopavo f.domestica, Anser anser f. domestica, Anas platyrhynchos f. domestica, Columbia livia f. domestica). 15. Innovative research methods in archaeozoology (radiocarbon dating, analysis of chemical elements, analysis of fossil DNA – aDNA).	lecture
2.	1. Animal remains identification to species. 2. Specifying type of animal remains. 3. Distinguishing domesticated animals from their wild ancestors – part one. 4. Distinguishing domesticated animals from their wild ancestors – part two. 5. Osteometry, determination of age, gender and morphological type, estimation of withers height – horse, donkey, mule. 6. Osteometry, determination of age, gender and morphological type, estimation of withers height – cow, sheep, goat. 7. Osteometry, determination of age, gender and morphological type, estimation of withers height – dog, wolf. 8. Osteometry, determination of age, gender and morphological type, estimation of withers height – swine, boar. 9. Osteometry on selected representatives of families Canidae and Felidae. 10. Odontometry on the example of selected mammalian species-part one. 11. Odontometry on the example of selected mammalian species-part two. 12. Osteometry – birds, selected species. 13. Identification of the most frequent pathologies on bones and teeth of mammals. 14. Identification of the most frequent pathologies on bones of birds. 15. Course evaluation.	laboratory classes

Course advanced

Teaching methods:

classes, practical simulation training, lecture, discussion, teamwork, presentation / demonstration, brainstorming, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	oral credit, practical test	50%
laboratory classes	oral credit, observation of student’s work	50%

Entry requirements

Anatomy of animals I,II, Topographical anatomy, Biostatistics and documentation methods

Literature

Obligatory

1. Bartosiewicz L., Gal E.: Pathological lesions in working animals. In: Shuffling Nags, Lame Ducks. The Archaeology of Animals Disease. Oxbow Books, Oxford, UK, 2013.
2. Bartosiewicz L., Gal E.: Care or Neglect? Evidence of Animal Disease in Archaeology. Proceedings of the 6th Meeting of the Animal Palaeopathology Working Group of the International Council for Archaeozoology (ICAZ). Oxbow Books, Budapest, Hungary, 2018.
3. Gifford-Gonzalez D.: An Introduction to Zooarchaeology. Springer International Publishing, 2018.
4. Baker J., Brothwell D.: Animal diseases in archaeology. AP ING, London, 1980.
5. Davis S.J.M.: The archaeology of animals. Routledge, London, 2002.
6. von den Driesch A.: A guide to the measurement of animal bones from archaeological sites. Cambridge, Mass., Peabody Museum of Archaeology and Ethnology, Bulletin no.1, 1976.
7. Reitz E., Wing E.: Zooarchaeology. Cambridge University Press, 2nd edition 2008.

Optional

1. Waldron T.: Palaeopathology. Cambridge University Press, 2009.
2. O’Connor T.: The archaeology of animal bones. Sutton Publishing, 2004.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Veterinary neonatology

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J40BO.2646.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** optional
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** Yes
	Subject shaping practical skills Yes

Teacher responsible for the subject	Tadeusz Stefaniak
Other teachers conducting classes	Tadeusz Stefaniak, Anna Rząsa, Paulina Jawor, Agnieszka Żak-Bochenek, Romuald Zabielski, Wiesław Bielas

Period	**Examination**	**Number of ECTS points**
Semester 7	graded credit **Activities and hours** lecture: 16 laboratory classes: 14	2.0

Goals

C1	Familiarization with the specificity of neonatal physiology and the basic problems of neonatal period. To pay attention on differences between newborn and adult animals' physiology. Preparation to unassisted treatment of of newborn puppies, kittens, foals, calves, piglets, lambs and goat kids. Preparation to unassisted recognizing the problems and starting proper improving procedures in life-threatening conditions.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	Is able to show the main differences in metabolism of the neonate in comparison to adult animals	A.W3, O.W1, O.W2	project, active participation, report
W2	Possesses the knowledge about care on healthy and problem neonate	A.W3, B.W6, O.W2	project, active participation, report
W3	understans the causes of worsened vitality in weak neonates	A.W5, O.W2, O.W3	project, active participation, report
Skills – Student can:			
U1	Is able to evaluate the vitality of the neonate	A.U7, O.U2	project, observation of student’s work, active participation, report
U2	Is able to take care on weak neonate	A.U4, A.U7, B.U1, B.U13	project, observation of student’s work, active participation, report
U3	Diagnoses the most common disturbances and malformations in the neonates of domestic mammals	A.U4, B.U2	project, observation of student’s work, active participation, report
Social competences – Student is ready to:			
K1	Can evaluate the correctness of neonatal care in livestock farms	O.K1, O.K4	observation of student’s work, active participation
K2	Is able to perform anamnesis about methods of neonatal care in the herd	O.K1, O.K4, O.K8	observation of student’s work, active participation

Balance of ECTS points

Activity form	Activity hours*
lecture	16
laboratory classes	14
consultations	1
lesson preparation	10
presentation/report preparation	19

Student workload	**Hours** 60	**ECTS** 2.0
Workload involving teacher	**Hours** 31	**ECTS** 1.0
Practical workload	**Hours** 14	**ECTS** 0.5

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1-2. Development of the embryo and the fetus. Stages of the development of immune system. The influence of maternal immunity on the immune response of the neonate. 3-4. Development and maturation of alimentary tract of the neonate. Anatomical and physiological characteristics. 5-6. Maturation of respiratory tract. Anatomical and physiological characteristics. 7. Physiology of the urinary system of the neonate. Regulation of diuresis. Neonatal proteinuria. 8. Role of placenta. Intrauterine growth retardation of the fetus. 9. Regulation of fluid and elektrolyte metabolism in the neonate. Differences in comparison to adult animals. 10. Development of the nervous system 11-12. Adaptation of the neonate to environment. Physiological processes in the perinatal period. 13-14. Differences in the levels of physiological parameters between neonates and adult animals. 15-16. Associations between pregnant dams' pathology and problems of the neonate. Weak neonate problem and perinatal mortality.	lecture
2.	1-2. Principles of the puppies care. Species specificity. Evaluation of vitality, detection of malformations, treatment in life threatening conditions. 3-4. Principles of the kittens care. Species specificity. Evaluation of vitality, detection of malformations, treatment in life threatening conditions. 5-6. Principles of the neonatal foal care. Species specificity. Evaluation of vitality, detection of malformations, treatment in life threatening conditions. 7-8. Principles of the neonatal calves care. Species specificity. Evaluation of vitality, detection of malformations, treatment in life threatening conditions. Large farm problems. 9-10. Principles of the neonatal piglets care. Species specificity. Evaluation of vitality, detection of malformations, treatment in life threatening conditions. Large farm problems. 11-12. Principles of the neonatal lambs care. Species specificity. Evaluation of vitality, detection of malformations, treatment in life threatening conditions. Large farm problems. 13-14. Principles of the neonatal goat kids care. Species specificity. Evaluation of vitality, detection of malformations, treatment in life threatening conditions. Large farm problems.	laboratory classes

Course advanced

Teaching methods:

classes, lecture, discussion, project-based learning (PBL), problem-solving method

Activities	Examination methods	Percentage in subject assessment
lecture	observation of student's work, active participation	50%
laboratory classes	project, observation of student's work, active participation, report	50%

Entry requirements

Ethology, Welfare and Animal Protection; Animal Physiology I; Animal Physiology II; Clinical and Laboratory Diagnostics I;

Literature

Obligatory

1. Mosenthin R., Zentek J., Żebrowska T.(ed.): Biology of Nutrition in Growing Animals. Elsevier,Edinburgh, London, New York, Oxford, Philadelphia, St. Louis, Sydney, Toronto 2006.
2. Acute phase proteins as early non-specific biomarkers of human and veterinary diseases (Ed. by Francisco Veas) InTech, Rijeka, Croatia, 2011,
3. Large Animal Internal Medicine, 6th Edition Bradford Smith David Van Metre Nicola Pusterla (ed.), 2019.

Optional

1. Gerbert C., Frieten D., Koch C., Dusel G., Eder K., Stefaniak, T., Bajzert J., Jawor P., Tuchscherer A., Hammon H.: Effects of ad libitum milk replacer feeding and butyrate supplementation on behavior, immune status, and health of Holstein calves in the postnatal period. J. Dairy Sci. 101:7348–7360, 2018, DOI:10.3168/jds.2018-14542
2. Jawor P., Król D., Mee J.F., Sołtysiak Z., Dzimira S., Larska M., Stefaniak T.: Infection exposure, detection and causes of death in perinatal mortalities in Polish dairy herds. Theriogenology 103 (2017) 130-136
3. Jawor P., Stefaniak T., Mee J.F.: Immune and inflammatory biomarkers in cases of bovine perinatal mortality with and without infection in utero. J. Dairy Sci.100, 1408-1416 (2017). DOI: 10.3168/jds.2016-11825
4. Liermann W., Schäff T., Gruse J., Derno M., Weitzel J.M., Kanitz E., Otten W., Hoeflich A., Stefaniak T., Sauerwein H., Bruckmaier R.M., Gross J.J., Hammon H. Effects of colostrum instead of formula feeding for the first 2 days postnatum on whole-body energy metabolism and its endocrine control in neonatal calves. J. Dairy Sci. 103:3577–3598 (2020)https://doi.org/10.3168/jds.2019-17708DOI: https://doi.org/10.3168/jds.2019-17708
5. Mee J.F , Jawor P., Stefaniak T. Role of Infection and Immunity in Bovine Perinatal Mortality: Part 1. Causes and Current Diagnostic Approaches. ANIMALS, 11, Issue: 4, Article Number: 1033, DOI: 10.3390/ani11041033 IF 2,7 Jawor, P.; Mee, J.F.; Stefaniak, T. Role of Infection and Immunity in Bovine Perinatal Mortality: Part 2. Fetomaternal Response to Infection and Novel Diagnostic Perspectives. Animals 2021, 11, 2102. https://doi.org/ 10.3390/ani110721
6. Skrzypczak W., Stefaniak T., Zabielski R.(red) Fizjologia noworodka z elementami patofizjologii. PWRiL, Warszawa 2011,

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Andrology and artificial insemination

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J80BO.0066.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** Yes **Subject shaping practical skills** Yes

Teacher responsible for the subject	Wojciech Niżański
Other teachers conducting classes	Wojciech Niżański, Wiesław Bielas, Grzegorz Dejneka, Małgorzata Ochota, Sylwia Prochowska, Agnieszka Partyka, Michał Dzięcioł, Krzysztof Janeczko, Bartłomiej Jaśkowski, Zuzanna Ligocka, Anna Niemiec, Monika Szpringiel, Mariusz Birger

Period	**Examination**	**Number of ECTS points**
Semester 8	exam **Activities and hours** lecture: 15 laboratory classes: 12 clinical classes: 18	3.0

Goals

C1	The aim of teaching the course is to provide students with knowledge about the physiology and pathology of the genital organ of male domesticated (and some wild) animals, the principles of male exploitation and their examination for fertility, as well as management of reproductive disorders.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the activities of the male reproductive system, knows the species differences. He knows the etiology, pathogenesis and clinical symptoms of diseases of the reproductive system in individuals animal species: bull and other ruminants, stallion, boar, dog, cat, rooster. He knows the rules of therapeutic procedures.	O.W4	written exam, test
W2	the mechanisms of the pathology of the reproductive system in individual species of animals.	B.W2	written exam, test
W3	the principles of conducting a clinical examination and monitoring the health and pathology of the sexual organ of male domesticated animals, some wild, dealing with reproductive disorders.	B.W5	written exam, test
W4	the assumptions of the selection of animals for mating, the methods of fertilization and biotechnology of reproduction as well as breeding selection in individual species of animals in including wild lab. Biotechnics used in bird reproduction.	B.W12	written exam, test
W5	etiology, pathogenesis and clinical symptoms of andrological diseases occurring in individual animal species (bull, stallion, boar, ram, goat, tomcat, male dog, cat, rooster) and the principles of therapeutic management	O.W3	written exam
Skills – Student can:			
U1	carry out a clinical examination of the animal in accordance with the principles of medical practice.	O.U1	active participation, test, performing tasks
U2	analyze and interpret clinical symptoms, pathological changes as well as the results of laboratory and additional tests, formulate the diagnosis of the disease state, including differential diagnosis, and undertake therapeutic or prophylactic measures.	O.U2	active participation, test, performing tasks
U3	collect and preserve samples for semen analysis, obtain male gametes and perform laboratory tests and additional examinations, analyze and interpret the results of research to assess the state of physiology and pathology of the genital organ.	B.U7	active participation, test, performing tasks
U4	collect and secure test specimens from male animals and perform standard laboratory tests, and properly analyze and interpret laboratory test results	B.U6	active participation, test, performing tasks
Social competences – Student is ready to:			
K1	showing responsibility for decisions made towards people, animals and the natural environment.	O.K1	observation of student’s work, active participation
K2	presenting an attitude consistent with ethical principles and taking actions based on the code of ethics in professional practice and showing tolerance for attitudes and behaviors resulting from different social and cultural conditions.	O.K2	observation of student’s work, active participation
K3	cooperation with representatives of other professions in the field of public health protection.	O.K11	observation of student’s work, active participation

Balance of ECTS points

Activity form	Activity hours*
lecture	15
laboratory classes	12
clinical classes	18
exam / credit preparation	25
exam participation	2
class preparation	9
lesson preparation	6
consultations	3

Student workload	**Hours** 90	**ECTS** 3.0
Workload involving teacher	**Hours** 50	**ECTS** 2.0
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	1. Male genital organs, clinical aspects of endocrine regulation of male reproductive processes, species specificity, puberty, breeding and somatic maturity in various species of domestic animal: Clinical aspects of sex differentiation process, disorder in sex differentiation and their diagnostics, description of axis hypothalamus-hypophysis-gonads functiong, feedback of endocrine axis, role of additional sexual glands, relationship between age, management, nutrition and male sexual use. 2. Spermatogenesis, physiology of fertilization process: Clinical aspects of male gametes production and maturation, practical aspects of assessment of spermatozoal features and morphometry, endocrine regulation of spermatogenesis, cycle of seminiferous epithelium, transport and reservoir of spermatozoa in female reproductive system, practical aspects of in vivo and in vitro capacitation, cryocapacitation and acrosome reaction, physiology of fertilization process. 3. Diseases of genital organs in bull:Decreased libido sexualis, disorders of ejaculation, endo- and exogenous disorders of reproduction, influence of diseases of locomotory system on the reproductive potential, diseases precluded penis protrusion and insertion, diseases resulting from a decrease of blood inflow into corpus cavernosum, diseases resulting from abnormal blood retention in corpus cavernosum 4. Infertility, ,,impotentia generandi", disorders in development of bull's reproductive system segments, segmental aplasia of Wolffian duct, cryptorchidism, testicular aplasia, monorchism, orchitis, epididymitis, degeneration of testicular tissue. 5. Diseases of genital organs in bull and other ruminants: Disorders of accessory sexual glands, primary and secondary disorders of ejaculation, diseases of reproductive organs of ram and goat-congenital and acquired defects 6. Diseases of genital organs in stallion: Endo- and exogenous causes of most common fertility disorders in stallion, disorders of development of elements of reproductive system, cryptorchidism, inflammation of individual parts of reproductive organ, injuries- diagnostics and treatment 7. Diseases of genital organs in boar: Congenital and acquired boar's fertility disorders, environmental conditioning of boar reproductive use, the most common diseases of boar's reproductive organ 8. Diseases of genital organs in boar: Endo- and exogenous causes of most common boar's fertility disorders, disorders in development of reproductive system individual parts- diagnostics and treatment 9. Diseases of genital organs in dog: Endo- and exogenous disorders of reproduction, intersexuality in dogs, defects in development of reproductive organ individual parts, acquired diseases of reproductive organ 10. Diseases genital organs in dog: Diseases of prostate, benign prostate hyperplasia- diagnostics and treatment, acute and chronic prostatitis, tumors and cysts of prostate, diseases of testes, diseases of segmental parts of reproductive system, diagnostics and treatment of diseases of reproductive system 11. Breeding centre documentation of the semen use and shipment: Documentation held by veterinarian performing artificial insemination in cows, sows, bitches. The rules of disposal of documents concerning the insemination, international exchange of insemination doses and legal requirements concerning the import, export and use of semen 12. Reproductive biotechnology in birds: Clinical aspects of bird semen collection and preservation, methods of male gametes collection, specificity of assessment of various birds species semen, methods of birds reproductive potential evaluation 13. Reproductive biotechnology in birds: Techniques of birds semen conservation, fresh, chilled semen, semen cryopreservation, techniques of artificial insemination in various birds species, methods of insemination, techniques of semen deposition in different localization in the genital tract 14. Reproductive biotechnology in felidae , wild and laboratory animals: Techniques of assisted reproduction in felids, basics of semen collection, species specificity of fertility assessment and semen analysis of domestic cat and wild felids, methods of felids semen conservation, artificial insemination in wild felids, 15. Reproductive biotechnology in felidae, wild and laboratory animals: In vitro techniques in felids reproduction, collection of female gametes, in vitro maturation of oocytes, in vitro fertilization, embryotransfer, adaptation of in vitro techniques in practice to increase in vanishing population of felids, biotechnology use in bison and Cervidae.	lecture

2.	1. Clinical aspects of morphology of genital organs in males of domestics animals (isolated organs): Details of diagnostics and therapeutic procedures used in andrology based on anatomical model of male reproductive organs, clinical aspects of reproductive system structure and functioning specificity of male of various animal species, practical demonstrations and exercises of techniques of males examination and diagnostics samples collection on isolated organs 2. Laboratory assessment of males semen- macroscopic examination, microscopic examination, CASA, flow cytometry: Laboratory tests in semen assessment, methods of sperm concentration assessment per volume, methods of sperm morphology assessment, standards of morphology of male gametes classification, sperm survival, biochemical examination of semen, examination of sperm ultrastructure, microbiological examination of semen 3. Preservation of stallion semen and artificial insemination in mares, monitoring of ovulation time: Semen preservation in liquid state, diluents used for semen extension, insemination dose, semen cryopreservation, methods of semen freezing and the use of insemination doses depending on type of semen package, technique of artificial insemination and determination of optimal time of mating, practicals - catheterization of uterine cervix 4. Andrological examination and semen collection from boar, semen assessment: Methods of semen collection from boar, mating in swine and ejaculation, sexual reflexes in boar, technique of semen collection, features of boar ejaculate, rules of semen assessment, demonstration of semen collection and assessment, practicals - collection and assessment of boar semen 5. Dog semen preservation and artificial insemination in bitches: Semen conservation in liquid state, semen diluents, rules of semen conservation and used procedures, insemination dose, semen conservation in low temperatures, methods of semen freezing and way of use of insemination doses depending on type of semen package, technique of female artificial insemination and determination of optimal time of insemination, methods of catheterization of uterine cervix 6. Test and credits.	laboratory classes

3.	1. Andrologic examination of bull and other ruminants (clinical and supplementary examination, washings, scrapings): History for herd and individual animal, clinical aspects of male age, nutrition and sexual exploitation, bull's assessment based on evaluation of offspring utility features, estimation of male health, present state, livestock-veterinary evaluation, detailed andrological examination, external and internal examination, laboratory examination, criteria of qualification of males for reproduction 2. Collection and initial assessment of semen in bull and other ruminants: Mating and ejaculation of bull, ram and goat, methods of semen collection from bull, ram and goat, rules of use artificial vagina, massage of accessory sexual glands and electroejaculation, assessment of male sexual reflexes, technique of semen collection, assessment of bull, ram and goat semen, demonstration of semen collection and assessment, practicals - semen collection and assessment 3. Preservation of semen of bull and other ruminants and techniques of artificial insemination: Semen preservation in liquid state, artificial diluents, components of diluents, basics for semen conservation and used procedures, insemination dose, semen preservation in low temperatures, cryobiological aspects of semen preservation, methods of semen freezing and the use of insemination doses depending on type of semen package, technique of female artificial insemination and determination of optimal time of insemination, practicals - catheterization of uterine cervix for semen deposition 4. Andrological examination and semen collection from stallion, semen assessment: Methods of semen collection from stallion, types of artificial vagina, the use of different types of artificial vagina, sexual reflexes in stallion, technique of semen collection, assessment of stallion semen quality, demonstration of collection and assessment of stallion semen, practicals - collection and assessment of stallion semen 5. Boar semen conservation and artificial insemination of sows: Semen conservation in liquid state, specificity of packaging systems and storage methods of diluted semen of boar, semen diluents, rules of semen conservation and used procedures, insemination dose, semen conservation in low temperatures, methods of semen freezing and the use of insemination doses depending on type of semen package, technique of artificial insemination in sows and determination of optimal time of insemination, practicals - catheterization of uterine cervix 6. Andrological examination and semen collection from dog, semen assessment: Indications to semen collection from dog, methods of semen collection from dog, massage of glans penis, artificial vagina, other methods, physiology of copulation and ejaculation, sexual reflexes in dog, technique of semen collection, rules of assessment of dog semen, demonstration of collection and assessment of dog semen, practicals - collection and assessment of dog semen 7. Collection, assessment and preservation of semen in tom cat, fox, laboratory animals and artificial insemination of females: Indications to semen collection, methods of semen collection, mating reflexes and ejaculation, assessment of cat semen, demonstration of collection and assessment of cat and rabbit semen, practicals - collection and assessment of semen. Semen chilling, insemination dose, semen cryopreservation and usually used procedures, methods of semen freezing and the use of insemination doses depending on type of semen packaging system, techniques of artificial insemination and determination of optimal time of insemination, practicals- artificial insemination 8. Semen collection and assessment in birds: Practical exercises of collection and assessment of rooster semen, dorso-abdominal massage, semen assessment using macroscopic and microscopic methods, species specific ejaculate of birds 9. Artificial insemination in cattle – field training	clinical classes

Course advanced

Teaching methods:

classes, practical simulation training, lecture, teamwork, presentation / demonstration, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	written exam	50%
laboratory classes	active participation, test, performing tasks	30%
clinical classes	observation of student's work, test, performing tasks	20%

Entry requirements

Completion of courses : animal anatomy I and II, pathomorphology I and II, animal physiology I and II, pathophysiology I and II, parasitology and invasiology I and II, veterinary pharmacology I and II, veterinary microbiology I and II, veterinary immunology, clinical and laboratory diagnostics I and II, diseases of farm animals.

Literature

Obligatory

1. Divers T.J., Peek S.F. (ed.): Rebuhn’s Diseases of Dairy Cattle Saunders Elsevier, St. Louis 2008.
2. R.F. Youngquist, W.L. Threlfall (ed.): Large Animal Theriogenology. 2nd ed. Saunders, Elsevier. 2007.
3. Chenowet P.J., Cook J.: Animal Andrology. Theories and Applications. Sydney 2014.
4. Smith B.P. (ed.): Large Animal Internal Medicine. Saunders, Elsevier 2015.

Optional

1. Blowey R.W., Weaver A.D.: Color Atlas of Diseases and Disorders of Cattle. Mosby, London 2003.
2. Hopper R.M. (ed): Bovine Reproduction. Mosby St Louis 2015
3. Veterinary Reproduction and Obstetrics. D.E. Noakes, T.J. Parkinson, G.C.W. England (editors). 9th ed. Sauders, Elsevier, 2009.
4. Bonagura J.(ed.): Kirk and Bonagura's Current Veterinary Therapy XVI, Elsevier Saunders, Philadelphia 2020.

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Diseases of horses

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J80BO.0500.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** Yes **Subject shaping practical skills** Yes

Teacher responsible for the subject	Artur Niedźwiedź
Other teachers conducting classes	Artur Niedźwiedź, Krzysztof Rypuła, Paulina Zielińska, Wojciech Niżański

Period	**Examination**	**Number of ECTS points**
Semester 8	exam **Activities and hours** lecture: 90 laboratory classes: 45 clinical classes: 85	15.0

Goals

C1	The aim of the course is to provide students with basic knowledge about the etiological factors, caused clinical signs, necessary or possible additional tests, the final interpretation of the purpose of diagnosis, differential diagnosis, treatment and prevention of equine diseases.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the rgan, whole animal, to the entire animal population;	O.W1	written exam, written credit, oral credit, observation of student's work, active participation, performing tasks
W2	explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in individual animal species, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W3	written exam, written credit, oral credit, observation of student's work, active participation, performing tasks
W3	knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W4	written exam, written credit, oral credit, observation of student's work, active participation, performing tasks
W4	characterises in detail the methods of using veterinary medicinal products, aimed at prophylaxis and treatment of animals, as well as at guaranteeing food chain safety and environmental protection;	O.W5	written exam, written credit, oral credit, observation of student's work, active participation, performing tasks
W5	knows and understands the principles of diagnostic procedure, taking into account the differential diagnostics and therapeutic procedure	B.W4	written exam, written credit, oral credit, observation of student's work, active participation, performing tasks
W6	presents the principles of conducting clinical examination and monitoring animal health	B.W5	written exam, written credit, oral credit, observation of student's work, active participation, performing tasks
W7	explains the method of handling clinical data, as well as results of laboratory tests and additional tests	B.W6	written exam, written credit, oral credit, observation of student's work, active participation, performing tasks
W8	Development, structure, functioning, behavior, and physiological mechanisms of horses in normal conditions and mechanisms of disorders in pathological conditions	O.W2	written exam, written credit, oral credit, observation of student's work, performing tasks
W9	Principles and mechanisms underlying equine health, disease formation and therapy - from the cell level, through organ, animal, herd of animals to the entire animal population	A.W10	written exam, written credit, oral credit, observation of student's work, performing tasks
Skills – Student can:			

U1	Plans the diagnostic procedure	O.U3	written exam, written credit, oral credit, performing tasks
U2	Analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of a given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	written exam, written credit, oral credit, performing tasks
U3	Conducts clinical examination of the equids in accordance with the principles of medical art;	O.U1	written exam, written credit, oral credit, performing tasks
U4	monitors health of the herd, as well as undertakes action in the case of a disease that is subject to the obligation of disease eradication or its registration;	O.U4	written exam, written credit, oral credit, performing tasks
U5	Handle horses safely and humanely and instruct others to do so	B.U1	written exam, written credit, oral credit, performing tasks
U6	Carry out a medical and veterinary anamnesis in order to obtain accurate information about a single horse or group of horses and its habitat	B.U2	written exam, written credit, oral credit, performing tasks
U7	Conduct a complete clinical trial of equidae	B.U3	written exam, written credit, oral credit, performing tasks
U8	Provide first aid to equines in case of haemorrhage, wounds, respiratory disorders, eye and ear injuries, loss of consciousness, cachexia, burns, tissue damage, internal injuries and cardiac arrest.	B.U4	written exam, written credit, oral credit, performing tasks
U9	Assess the nutritional status of equines and provide advice in this regard	B.U5	written exam, written credit, oral credit, performing tasks
U10	Collect and preserve samples for research and perform standard laboratory tests, as well as correctly analyze and interpret the results of laboratory tests in equids	B.U6	written exam, written credit, oral credit, performing tasks
U11	Use diagnostic equipment, including radiological, ultrasound, and endoscopic equipment, in accordance with its intended use and safety rules for horses and humans, and interpret the test results obtained after its use	B.U7	written exam, written credit, oral credit, performing tasks
U12	Implement appropriate procedures in case of a confirmed disease that is subject to compulsory eradication or a registration in equids	B.U8	written exam, written credit, oral credit, performing tasks
U13	Obtain and use information about authorized veterinary medicinal products in equids	B.U9	written exam, written credit, oral credit, performing tasks
U14	Prescribe and use veterinary medicinal products and medical materials in equids, taking into account their safe storage and disposal	B.U10	written exam, written credit, oral credit, performing tasks
U15	Use methods of safe sedation, general and local anesthesia, and pain assessment and relief in equids	B.U11	written exam, written credit, oral credit, performing tasks

U16	Monitor the patient's condition in the intra- and postoperative period based on vital signs	B.U12	written exam, written credit, oral credit, performing tasks
U17	Select and apply rational empirical and targeted antimicrobial chemotherapy, taking into account the target animal species - horses	A.U11	written exam, written credit, oral credit, performing tasks
U18	Prepare clear case reports and keep records in accordance with applicable regulations, in a form that is understandable to the owner of the animal and legible to other veterinarians	A.U14	written exam, written credit, oral credit, performing tasks
Social competences – Student is ready to:			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student’s work, active participation
K2	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	observation of student’s work, active participation
K3	uses the objective sources of information	O.K4	observation of student’s work, active participation
K4	deepens his/her knowledge and improves skills	O.K8	observation of student’s work, active participation

Balance of ECTS points

Activity form	**Activity hours***
lecture	90
laboratory classes	45
clinical classes	85
exam participation	5
class preparation	25
lesson preparation	50
literature study	25
consultations	10
exam / credit preparation	50

Student workload	**Hours** 385	**ECTS** 15.0
Workload involving teacher	**Hours** 235	**ECTS** 9.0

Practical workload	Hours 130	ECTS 5.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	Internal medicine: 1. Diseases of the digestive tract part 1. 2. Diseases of the digestive tract part 2 3. Colic in horses – etiology, diagnostics. 4. Colic in horses – treatment. 5. Upper respiratory tract diseases 6. Lower airway diseases part .1 7. Lower airway diseases part 2 8. Liver diseases 9. Metabolic and endocrine diseases of horses. 10. Selected diseases of the nervous system. 11. Tying up syndrome 12. Skin disease 13. Diseases of the urinary tract 14. Cardiovascular and hematologic diseases. 15. Emergency in horses. Infectious diseases 1. Diseases of horses to be reported and fighting - African horse sickness 2. Diseases of horses to be reported and fighting - horses tuberculosis, brucellosis horses 3. Diseases of horses to be reported - viral equine encephalitis (WEE, EEE, VEE, Japanese encephalitis) 4. Infectious diseases of bacterial horses – CEM, Lyme disease 5. Infectious diseases of bacterial horses - pleuropneumonia, bacterial air sacs 6. Equine infectious diseases of bacterial - infection caused by Clostridium sp 7. Infectious diseases of bacterial horses - colibacillosis, salmonellosis, adenomatosis 8. Equine infectious diseases of viral etiology - EHV-1, -2, -4, EAV, reo-and rhinovirus 9. Equine infectious diseases of viral etiology - adenovirus, rotavirus, coronavirus 10. Equine infectious diseases of viral etiology - West Nile fever, Borna disease, equine rabies 11. Infectious diseases of horses - rodoccosis 12. Infectious diseases of horses - ehrlichiosis, anaplasmosis 13. Infectious diseases of horses in international trade 14. Diagnosis and prevention of infectious diseases of horses Reproduction 1. Neurohormonal regulation and conduct of the estrous cycle in mares. Seasonality of breeding horses. The role of light. Anestrus and transition periods. Wave follicular growth and differentiation. Signs of heat. Effects on reproductive performance condition 2. Control and synchronization of oestrus and ovulation. The importance of synchronization of oestrus and ovulation. Induction heat through shortening of the luteal phase cycle (prostaglandin F2α). The extension of the luteal phase with progestogen. Induction of ovulation and hCG using GnRH-analogue deslorelin (Ovuplant) 3. Preparing the mare for mating and artificial insemination. Care mare headed for mating and artificial insemination. Determining the date of insemination. Differences in the insemination procedure depending on the type of seed. Allergic reaction to semen frozen. 4. Embryo transfer in horses. The importance of Embryo in breeding horses. Acquisition of embryos and transfer them. Factors affecting the efficiency of embryo. 5. Physiology of pregnancy. The duration of the pregnancy. Fertilization. Mobility embryos. Additional corpora lutea. Endometrial cups, the role of eCG. Progestogens and estrogens in the course of physiological pregnancy. 6. Pathology of pregnancy. Early embryonic death. Abortion (Infectious against fungal-related injuries, and others). Inflammation of the bearing. 7. Twin pregnancy. The causes, predisposing factors. Effects on fertility twins horses. One twin pregnancy and oburożona. Dealing with a twin pregnancy. 8. Childbirth and caring mare. Trailers birth. Physiology of labor. Parturition. Premature separation of placenta (red bag). Research bearing. 9. Stop bearing. The definition of predisposing factors. Methods of treatment (manual peeler and others) 10. Study after foaling mares. Puerperium. The problems associated with childbirth. Postpartum Hemorrhage. Prolapse of the uterus. Colic associated with childbirth. Postpartum metritis. Treatment of mares affected by postpartum complications. 11. Care of the newborn foal. Colostrum and its importance. Artificial feeding. Physiological parameters of the newborn foal. Toilet navel. Stop meconium. Problems associated with lactation. 12. Introduction to infertility horses. What is normal fertility in horses. 13. Endometritis (chronic and subclinical forms). The cause, diagnosis, treatment. 14. Endometriosis (impact on fertility, incidence, predisposing factors, diagnosis, treatment). Endometrial Cysts (diagnosis, incidence, effects on reproduction) 15. Dysfunction of the ovaries. Chromosome aberrations. Anovulatory, passing luteinization bubbles. Ovarian hematomas. Persistent corpus luteum. Ovarian tumors in mares. Surgery 1. Equine anesthesiology. Preparation of horses for anesthesia. Indications for pharmacological immobilization. Tranquilizers used for pharmacological sedation (phenothiazines, alpha 2 agonists, benzodiazepines, and butyrophenone derivatives. Local, perineural, general infusion and inhalation anesthesia. The most commonly used anesthetic systems for equine anesthesia. 2. Equine ophtalmology. Eye diseases and their treatment. Eyelid and anterior eye pole diseases with post-traumatic and infectious etiology in horses. Corneal pathologies with dystrophic, bacterial and fungal background. Periodic uveitis (monthly blindness). 3. Hernias and their surgical treatment. Characteristics and diagnosis of true and pseudo hernias in horses. Methods of surgical treatment of umbilical, scrotal, inguinal and traumatic abdominal hernias. Male genital diseases, castration of a stallion. Methods of surgical treatment of cryptorchidism. Castration with closed and open method. Handling after castration and treatment of post-castration complications (scrotal edema, edema and prolapse of the penis, botriomycosis). 4. Diseases of the front limbs - part I. Horse anatomy and its influence on hooves, clinical anatomy of hooves. Posture defects of the limbs and their effect on the hooves and gait of the horse. Orthopedic shoeing at faulty horse gaits. Bucked shines in racehorses and methods of their treatment with cooling and warming compresses or cryoapplication. Sesamoiditis and navicular disease. Navicular syndrome - diagnosis and treatment. 5. Diseases of the front limbs - part II. Diagnosis and treatment of acute and chronic laminitis. Acute and chronic diseases of flexor tendons and tendon sheaths. Causes of tendon diseases. Tendon diseases in draft and racing horses. Tendinitis and tendon sheaths inflammation in horses. Physiotherapeutic and surgical methods of tendon treatment. Cryotherapy. Surgical methods of treatment of tendon contractures. 6. Diseases of the hind limbs - part I. Diagnosis and treatment of chronic inflammation of the hock (bone spavin). Diagnosis of inflammation in the area of the hock. Surgical treatment of hoof cancer. Upward patella fixation. Desmotomy. 7. Diseases of the hind limbs - part II. Diseases of the fetlock, pastern and coffin joint - symptoms, recognition. Aseptic and septic arthritis and methods of their treatment. Flat and convex hoof. Sprained fetlockjoint. Treatment of the wounds in the toe region. Neurectomy in a horse. 8. Diseases of the oral cavity, teeth, tongue, mandible and maxillary bone. Examination of the oral cavity and teeth. Oral cavity inflammation. Equine dental occlusion. Determination, identification and disorders of tooth exchange. Dental diseases. Tooth extraction. Tongue diseases (wounds, inflammation, paralysis, cancer). Fractures of the maxillary and mandible bone, and methods of osteosynthesis. 9. Throat, larynx and esophagus diseases. Pharyngitis and foreign bodies in the throat, wounds and abscesses. Laryngeal hemiplegia in horses and methods of its treatment. Esophageal wounds and fistulas. Stenosis and obstruction of the esophagus. 10. Diseases of the skull, spine and pelvis. Skull fractures, maxillary sinusitis and guttular pouches diseases. Diseases of the neck and withers (bursitis). Diseases of the cervical spine (torticollis, developmental disorders, desmopathy of the nuchal ligament attachment). Diseases of the thoracolumbar spine (wounds, fractures, spondylosis and spondyloarthrosis, withers fistula). 11. Management of colic horses. Gastric and intestinal colic - etiology, symptoms, diagnostics and therapeutic management. Clinical and detailed research. Gastric intubation and rectal examination, ultrasound examination of the abdomen. Abdominal puncture. Indications for colic surgery. 12. Gastric and intestinal colic. Stomach enlargement and rupture. Small, large intestine, cecum and large and small colon obstruction. White line laparotomy . Intestinal displacement (duodenal torsion, torsion and cecum fold, large colon torsion). 13. Small and large intestine displacement. Small intestine obstruction: mechanical (obstructive and strangulative) and functional (ileus: paralytic or spastic). Methods of conservative and surgical treatment.	lecture

2.	Infectious diseases 1 Viral infections of the respiratory and reproductive horses (EHV1-4, EAV) Exercise involves the viral respiratory diseases including infection, depending on the environment, etiology, pathogenesis and clinical changes and differential diagnosis, laboratory tests, taking into account the type of material and the method of its collection and treatment and prophylaxis. 2 Influenza, and strangles in horses, equine plague chest exercise involves the bacterial respiratory diseases including infection, depending on the environment, etiology, pathogenesis and clinical changes and differential diagnosis, laboratory tests, taking into account the type of material and the method of its collection, treatment and prophylaxis non-specific and specific. 3 Glanders equine specific prevention of infectious diseases of horses exercise includes the glanders, etiology, pathogenesis and clinical changes, and depending on the infected species, differential diagnosis, laboratory tests, taking into account the type of material and the method of its collection and handling of horses suspected of glanders and maleinisation. 4 Diseases of horses no anaerobic exercise include the infections in horses: Clostridium spp, Fusobacterium necrophorum, Bacteroides spp in the context of: aetiology, pathogenesis and clinical changes, differential diagnosis, laboratory tests with the principles of sample collection for research. 5 Fungal diseases of horses - fungal infections of the skin and organ mycosis exercise involves about ringworm and fungal organ, etiology, pathogenesis and changes in clinical laboratory tests, taking into account the type of material and the method of its collection, treatment of horses with fungal infection and prophylaxis. 6 Infectious diseases of horses - SCA, leptospirosis exercise includes the SCA and leptospirosis, etiology, pathogenesis and changes in clinical laboratory tests, taking into account the type of material and how to download, depending on the form of the disease, treatment, treatment of horses. 7 The differential diagnosis of infectious diseases of horses 8 Catching-up, completion exercises Reproduction: 1 Clinical aspects of genital anatomy mares (classes on isolated organs). 2 The study mares towards fertility. Interview, external research, preparing mares for rectal examination, rectal examination rules. 3 Ultrasound genital mares. Principles, meaning, equipment, technology research, interpretation of images). 4 Rectal examination and transrectal ultrasound genital mares (in live animals). 5 Catheterisation uterine cervix in mares, technology, indication. Sampling of the uterus for laboratory tests (smears, biopsy, cytology, uterine lavage. (Classes on isolated organs) 6 Diagnosis of pregnancy (pregnancy symptoms, hormone testing, rectal palpation, ultrasound-interpretation of images) 7 Consultation and credit. 8 Rectal examination and transrectal ultrasound genital mares (in live animals). 9 Heavy parturition in mares. Improper alignment. Methods of procedure. Classes on the phantom. 10th Heavy parturition in mares. Abnormal position and attitude. Classes on the phantom. 11th Fetotomia. Classes on the dead fetus. 12th Cesarean section in mares. Indications. Methods of anesthesia and surgery. Sewing isolated uterus. 13th Hysteroscopy. Indications. Equipment. Preparing the mare to hysteroscopy. (Address on live animals)	laboratory classes
3.	Internal Medicine 1. Clinical examination of horses 2. Dermatologic examination of horses 3. Rectal examination of horses p. I 4. Endoscopy of airways in horses 5. Nasogastric intubation in horses 6. Neurologic examination of horses. Cerebrospinal fluid examination in horses. 7. Injections and blood sampling in horses 8. Test 9. Additional diagnostic procedures in horses 10. Rectal examination of horses p. II 11. Ultrasound techniques in horses p.I 12. Electrocardiography, Holter test and echokardiography in horses 13. Ultrasound techniques in horses p.II 14. Test 15. Clinical cases discussion Surgery 1. Hoof correction and opening of the hoof capsule. On cadaver distal limbs students will perform shortening of the excessively grown hoof horn, partial removal of the hoof wall and sole, antiseptic dressings for wound and exposed laminae. 2. Diagnostic and therapeutic joint injections, perineural anesthesia and basics of arthroscopy. Perineural high and low nerve anesthesia of the toe, diagnostic injections of the fetlock, pastern and coffin joint. Demonstration of operation and use of arthroscopy equipment in equine joint surgery. 3. Aseptic and septic inflammation of the hoof laminae. Practical exercises on cadaver horses' distal limbs. Methods of opening the hoof capsule, debilitating cuts, removing the hoof wall, and applying dressings. 4. Removal of soles, frog, hoof wall, pressure dressing. Deep digital flexor tendon necrosis, partial removal of the hoof capsule with superficial and deep inflammation of the hoof laminae. 5. Hoof cartilage diseases, ceratoma, hoof canker (cuts burdening the hoof capsule, pressure dressing). Surgical approaches to the hoof cartilage and methods of their resection. Removing the front wall of the hoof (removing ceratoma). Cutting burdening the hoof capsule (Lungwitza, Collin, Bayer). Practice od cadaver hoofs. 6. Diseases of tendons and tendon sheaths (ultrasound, resection of the deep flexor tendon insertion, drainage of tendon sheaths and toe joints). Clinical and ultrasound examination of the SDFT and DDFT and SL. Demonstration on slaughterhouse limb preparations tenotomy of the flexor tendons and their additional attachments. Practical exercises of injecting drugs into the toe joints. 7. Diseases of the SDFT and DDFT and SL. Injection of regenerative drugs, application of stem cells, blistering, cryotherapy, tenotomy. Orthopedic examination in tendon diseases. Demonstration of cooling and warming dressings in tendon diseases and blister demonstration. Tendon spliting. Injection of regenerative and anti-inflammatory drugs in tendon diseases. 8. Assessment. 9. Equine orthopedic examination. Examination of the lame horse in the outpatient clinic and in open space by students in the walk and trot. Algorithms for the diagnosis of lameness in a horse. 10. Equine orthopedic examination cont. Methods of orthopedic examination with the location of lameness in the horse's thoracic and pelvic limb. Assessment of correct and incorrect attitudes and their impact on the shape of the hoof capsule. 11. Rules for farrier job - shoeing. Demonstration of a horseshoe made by a farrier and shoeing a horse. 12. Pathologies of the limbs leading to a change in the shape of the hoof capsule. Abnormal posture of the limbs. Demonstration of correct and incorrect hooves on preparations. Demonstration of standard and orthopedic shoeing. 13. Diagnostics of diseases of the horse's bone and ligament system. Osteitis, bucked shines, fractures of the toe bones, dislocations, inflammation of the sesamoid and navicular bones. Conservative and surgical treatment methods. 14. Equine joint disease. Aseptic and septic arthritis of the toe joint - clinical and ultrasound examination. Methods of diagnosis and treatment of bone spavin in horses. Upward patellar fixation - diagnosis and surgery. 15. Assessment.	clinical classes

Course advanced

Teaching methods:

classes, practical simulation training, lecture, presentation / demonstration, educational film, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	written exam	50%
laboratory classes	written credit, oral credit, observation of student’s work, active participation, performing tasks	20%
clinical classes	written credit, oral credit, observation of student’s work, active participation, performing tasks	30%

Entry requirements

completion of core subjects: Animal anatomy I, Animal anatomy II, Biochemistry I, Biochemistry II, Histology and Embryology I, Histology and Embryology II, Veterinary Microbiology I, Veterinary Microbiology II, Animal Physiology I, Animal Physiology II, Clinical and Laboratory Diagnostics I, Clinical and Laboratory Diagnostic II, Veterinary Pharmacology I, Veterinary Pharmacology II

Literature

Obligatory

1. Veterinary Reproduction and Obstetrics. D.E. Noakes, T.J. Parkinson, G.C.W. England 9th ed. Sauders, Elsevier, 2009
2. Large Animal Theriogenology. R.F. Youngquist, W.L. Threlfall. 2nd ed. Saunders, Elsevier. 2007
3. Auer J.A., Stick J.A.: Equine surgery. Elsevier Saunders, 4th edition, 2012.
4. . O. M. Radostits, C.C. Gay, K. W. Hinchcliff, P. D. Constable: Veterinary Medicine 10th Edition, Saunders Elsevier, 2007
5. Equine infectious diseases, D. C. Sellon & M. T. Long, Saunders, 2007

Optional

1. Muir W.W., Hubbell J.A.E.: Equine anesthesia, monitoring and emergency therapy. Elsevier, 2nd edition, 2009.
2. Ross M.W., Dyson S.J.: Diagnosis and management of lameness of the horse, Elsevier Saunders, 1st edition, 2003.
3. Journals: The Horse, Equine Vet J, Equine Vet Educ, J Vet Res, Veterinary Medicine

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Milk hygiene

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J80BO.1296.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** Yes **Subject shaping practical skills** No

Teacher responsible for the subject	Aleksandra Tabiś, Sylwia Banaszkiewicz
Other teachers conducting classes	Aleksandra Tabiś, Sylwia Banaszkiewicz, Joanna Skonieczna

Period	**Examination**	**Number of ECTS points**
Semester 8	graded credit **Activities and hours** lecture: 15 laboratory classes: 24 clinical classes: 6	3.0

Goals

C1	During the course the student gain the knowledge on milk testing as a raw material for the dairy industry, the principles of surveillance of processing plants as well as quality and safety management systems of dairy products. Technology used in dairy plants are presented.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	knows to an extensive degree the standards, principles and conditions of animal production technology and maintaining the hygiene of technological process;	O.W13	written credit
W2	explains in detail the principles of appropriate supervision over the production of foodstuffs of animal origin;	O.W12	written credit
W3	Identifies and describes in detail the principles of management and utilisation of animal by-products and waste associated with animal production;	O.W9	written credit, active participation
W4	Presents in detail the principles of examination of the slaughter animals, meat and other animal products;	O.W10	written credit, active participation
W5	Explains in detail the principles of consumer health protection	O.W11	written credit, active participation
Skills – Student can:			
U1	is able to estimate the risk of occurrence of chemical and biological hazards in food of animal origin	B.U22	written credit, active participation
U2	is able to collect samples for monitoring tests for the presence of prohibited substances, chemical and biological residues, medicinal products and radioactive contamination in animals, in their secretions, excretions, tissues or organs, in products of animal origin, food, in water intended for animal drinking and in the feed;	B.U23	written credit, active participation
U3	assesses the risk of contamination, cross-contamination and accumulation of pathogens in veterinary facilities and in the natural environment, as well as introduces recommendations that minimise such risk.	B.U25	written credit, active participation
U4	Issues veterinary medical opinion and certificate	O.U7	written credit
Social competences – Student is ready to:			
K1	cooperates with representatives of other professions in the scope of public health protection	O.K11	active participation
K2	deepens his/her knowledge and improves skills	O.K8	active participation
K3	Communicates with the co-workers and shares knowledge	O.K9	active participation
K4	Is ready to act in the conditions of uncertainty and stres	O.K10	active participation
K5	Exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	active participation

Balance of ECTS points

Activity form	Activity hours*
lecture	15
laboratory classes	24
clinical classes	6
exam / credit preparation	15
consultations	15

Student workload	**Hours** 75	**ECTS** 3.0
Workload involving teacher	**Hours** 60	**ECTS** 2.0
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	1. Milk as main raw material in dairy business chemical milk content milk nutritional value components features allergizing properties of milk proteins 2. Physicochemical properties of milk density and viscosity of milk potential and active acidity of milk buffering system milk foaming milk fat creaming and buttering 3. Nitrogenous milk compounds milk proteins – casein and whey proteins coagulation thermal, enzymatic by ion action forces utilized for production 4. Milk microflora origin influence on hygiene and technology homo and heterofermentative bacteria usage of bacteria in dairy industry 5. Milk microflora fungi and moulds utilized in dairy production psychrophile microflora 6. Natural defense mechanisms in milk health promoting properties of lactic bacteria probiotics udder origin 7. Breed and environmental considerations of milk production milk quotas system agents influencing yield, composition and quality of milk lactaction 8. Milking conditions cowshed and milking parlor preparing for milking milking 9. Raw milk hygiene, law regulations veterinary requirements for raw milk dealings with milk after milking 10. Hygiene in milk farms law regulations veterinary requirements for animals veterinary requirements for milk farms 11. Technological processes in dairy production centrifugation homogenization thermal treatment thermization pasteurization sterilization UHT, 12. Drinking milk production collecting and grading of raw milk raw milk storing operations applied on milk packaging, storing health (veterinary) mark on dairy products 13. System HACCP in dairy business prerequisites of system implementing hazard analysis CCP, monitoring, correction actions 14. Veterinary supervision on milk processing law regulations veterinary requirements for milk companies 15. HACCP system verification cleaning and disinfection of milking machines cleaning and disinfection of technological lines	lecture

2.	1. Evaluation raw milk quality in cowshed and dairy plant - milk sampling for quality analyses - organoleptic evaluation of raw milk - evaluation of density - evaluation of potential milk acidity - evaluation of active milk acidity 2. Milk fat - evaluation of fat content in milk by technical - butyrometric method - evaluation of fatless solid - evaluation of fat content in milk by reference method - evaluation of fat content in dairy products 3. Determination of milk adulteration - water down - fat removal - neutralization - addition of hydrogen peroxide - milk addition of other animal species - cryoscopic number 4. Milk proteins. - evaluation of protein content - evaluation of casein in milk of different animal species - determination of calcium addition to milk 5. Thermal processes applied to milk - evaluation of pasteurization effectiveness - evaluation of homogenization effectiveness - test on phosphatase, - test on peroxidase - determination of amylase 6. Evaluation of raw milk usefulness for collecting and processing - quality demands - evaluation of number of somatic cells in milk - instrumental methods - evaluation of number of somatic cells in milk by microscopic method according to Polish Norm 7. Milk reception in dairy plant - antimicrobial substances in milk - determination antimicrobial substances in milk by microbiological methods - determination antimicrobial substances in milk by enzymatic methods 8. Evaluation of hygiene quality of milk part 1. - bacteriostatic features of milk - microbiological evaluation of milk - sampling of milk for microbiological testing - determination of total viable count by plate method - determination of total viable count by Petrifilm test 9. Evaluation of hygiene quality of milk part 2. - factors influencing microflora development (temperature, acidity, oxygen) - dynamics of microflora development in milk - evaluation of results of previous classes tests - evaluation of microbial quality of milk - fermentation test 10. Evaluation of organoleptic quality of dairy products - evaluation quality of cheese according Polish Norm - evaluation quality of cottage cheese according Polish Norm - evaluation quality of milk drinks according Polish Norm - evaluation quality of butter according Polish Norm 11. GMP and GHP in dairy plant - zones in dairy plant - plant environment - passage locker rooms and sluices - structural demands - technological lines	laboratory classes

3.	12. Hygiene in dairy plant (Classes in dairy plant) - cleaning and disinfection in plant - CIP - COP - verification of cleaning and disinfection effectiveness - staff personal hygiene 13. Production of milk and dairy products part 1. (Classes in dairy plant) - technological processes in dairy production - milk processing (cleaning, homogenization, deodorizing, pasteurization, sterilization) - production of dairy products (cottage cheese, butter, yogurt. butter milk, cream) - powder products (whole milk, proteins concentrates, ultrafiltrates, reversed osmosis) - dairy products packaging - dairy products storing 14. Production of milk and dairy products part 1. (Classes in dairy plant) - veterinary supervision on milk production and processing - dairy plant 15. HACCP in dairy plant. - critical control points - monitoring CCP - verification of HACCP - documentation	clinical classes

Course advanced

Teaching methods:

classes, lecture, discussion, presentation / demonstration, educational film

Activities	Examination methods	Percentage in subject assessment
lecture	written credit	30%
laboratory classes	written credit	50%
clinical classes	active participation	20%

Entry requirements

Sanitary Food Law

Literature

Obligatory

1. Milk Hygiene & Safety Mhd Rashid

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Slaughter animals and meat hygiene II

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J80BO.2336.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** Yes **Subject shaping practical skills** Yes

Teacher responsible for the subject	Aleksandra Tabiś
Other teachers conducting classes	Aleksandra Tabiś, Sylwia Banaszkiewicz, Monika Kasztura, Joanna Skonieczna

Period	**Examination**	**Number of ECTS points**
Semester 8	graded credit **Activities and hours** lecture: 15 laboratory classes: 10 clinical classes: 20	2.0

Goals

C1	The goal of the course is to learn the student food safety hazards that occur in the process of slaughtering animals, rules governing the veterinary supervision of obtaining meat from slaughter and game animals, changes in meat induced by disease processes that affect the quality and evaluation of meat, post-mortem laboratory meat inspection.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	explains in detail the principles of appropriate supervision over the production of foodstuffs of animal origin;	O.W12	written credit, oral credit
W2	presents in detail the principles of examination of the slaughter animals, meat and other animal products;	O.W10	written credit, oral credit
W3	identifies and describes in detail the principles of management and utilisation of animal by-products and waste associated with animal production;	O.W9	written credit, oral credit
W4	knows and describes the principles of functioning of the Veterinary Inspection, also in the aspect of public health	B.W16	written credit, oral credit
W5	presents the principles of consumer health protection, which are ensured by appropriate supervision over the production of foodstuffs of animal origin	B.W17	written credit, oral credit
W6	characterises the control systems in accordance with HACCP (Hazard Analysis and Critical Control Points) procedures	B.W18	written credit, oral credit
W7	knows to an extensive degree the procedures of pre- and post-mortem inspection	B.W19	written credit, oral credit
Skills – Student can:			
U1	performs pre- and post-mortem inspection of slaughter animals and examination of meat, as well as other products of animal origin;	O.U5	observation of student’s work
U2	performs activities that are associated with the veterinary supervision, including trade in animals, as well as sanitary and veterinary conditions of animal gathering locations and processing products of animal origin	O.U6	observation of student’s work
U3	is able to perform pre- and post-mortem inspection	B.U17	observation of student’s work
U4	is able to estimate the risk of occurrence of chemical and biological hazards in food of animal origin	B.U22	observation of student’s work
U5	assesses the fulfilment of requirements of the slaughter animals protection, taking into account the various methods of slaughter	B.U24	observation of student’s work
U6	Issues veterinary medical opinion and certificate	O.U7	written credit, observation of student’s work
Social competences – Student is ready to:			
K1	Exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student’s work

K2	Has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	observation of student's work
K3	Formulates conclusions from own measurements or observations	O.K5	observation of student's work
K4	Deepens his/her knowledge and improves skills	O.K8	observation of student's work
K5	Is ready to act in the conditions of uncertainty and stress	O.K10	observation of student's work

Balance of ECTS points

Activity form	**Activity hours***	
lecture	15	
laboratory classes	10	
clinical classes	20	
lesson preparation	15	
Student workload	**Hours** 60	**ECTS** 2.0
Workload involving teacher	**Hours** 45	**ECTS** 1.7
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	**Course content**	**Activities**

1.	1. Side articles slaughter. Regulation of the European Parliament and Council Regulation (EC) No 1069/2009 of 21 October 2009 laying down health rules concerning animal by-products not intended for human consumption and repealing Regulation (EC) No 1774/2002 (Regulation on animal by-products) 2. Trading conditions in meat refrigeration chain. The concept of cold chain. Temperature ranges. Monitoring of refrigerated transport. 3. Veterinary documentation, information on the food chain, books ante-mortem inspection books, records samples, laboratory records, the main instructions veterinarian. 4. Theories of food poisoning. Distribution and characterization of the most important from the standpoint of evaluation of meat microorganisms present in the meat 5. Meat - the construction, chemical composition, maturation of meat. Processes occurring after the slaughter of animals, the impact on meat quality. 6. Meat quality, stress myopathies: PSE, DFD. Preventing changes, the mechanism changes, the use of meat as amended. 7. Undesirable physical and chemical changes occurring in the meat 8. Cons meat, slaughter procedure. Watery, thinness, emaciation, penetrating acid digestion, jaundice. 9. Rating meat in the presence of infectious diseases part. First 10. Ocena meat in the presence of infectious diseases part. Second 11. Score meat in the presence of parasitic diseases 12. Laboratory testing of meat, monitoring, research directions, laboratories, accreditation 13. Method of preserving meat, curing, drying, pasteurization, sterilization, drying, modified atmosphere packaging, vacuum packaging, paskalizacja 14. The differential diagnosis of lesions in the post-mortem inspection, the impact on the assessment of the meat. Changes in internal organs. 15. The differential diagnosis of lesions in the post-mortem inspection, the impact on the assessment of the meat. Rating meat with selected diseases.	lecture

2.	1. Meat hygiene - food law basis – regulation 178/2002 - definitions - food safety - food chain 2. Dealings with slaughter animals - law basis – regulation 853/2004 i 1/2005 - animal welfare during collection, transport, preslaughter rest and slaughter - preslaughter examination - slaughter hygiene 3. Meat examination for trichinae - law basis – regulation 2075/2005 - meat sampling for examination for trichinae - digestive method of examination for trichinae - compressor method of examination for trichinae - dealing with meat - meat evaluation 4. Post mortem inspection of meat (pork and beef) - law basis – regulation 854/2004 - post mortem inspection of beef - post mortem inspection of pork - post mortem inspection of horse meat - post mortem inspection of small ruminants - post mortem inspection of poultry 5. Hygiene in slaughter house and meat plant - personal hygiene in meat plant - work and protective cloths in slaughter house - cleaning and disinfection in meat plant - verification of cleaning and disinfection - work stand environment of veterinary inspector and slaughter worker - Occupational Health and Safety in slaughter house	laboratory classes

3.	6. Structure of meat plant fulfilling HACCP requirements (Classes in meat plant) - meat plant environment - internal organization of meat plant - pig slaughter technology line - cattle slaughter technology line - protection of meat plant against rodents - protection of meat plant against flies and insects - other technological line - dirty and clean parts of plant 7. Transport of slaughter animals and ante mortem examination (Classes in meat plant) - condition of download animals from means of transport and rest - ante mortem examination and veterinary decisions - animals marking and identification - veterinary documentation - means of transport hygiene 8. Post mortem inspection of pork (Classes in meat plant) - inspection of placks - inspection of carcases - detailed inspection - examination for trichinae - veterinary documentation 9. Post mortem inspection of beef (Classes in meat plant) - inscpection of heads - inspection of placks - inspection of carcases - detailed inspection - sampling for examination for BSE - veterinary documentation 10. Dealings with meat after slaughter (Classes in meat plant) - evaluation - marking - food quality marks - meat cutting on elements - veterinary documentation - category 1 material - category 2 material - category 3 material - SRM	clinical classes

Course advanced

Teaching methods:

classes, practical simulation training, presentation / demonstration, situation-based learning, educational film, lecture

Activities	Examination methods	Percentage in subject assessment
lecture	written credit	20%
laboratory classes	written credit, oral credit	40%
clinical classes	written credit, oral credit, observation of student’s work	40%

Entry requirements

knowledge obtained on the subject of Slaughter Animals and Meat Hygiene 1 (sem. 7), knowledge obtained on the subject of Sanitary Food Law

Literature

Obligatory

1. Gracey’s Meat Hygiene, David S. Collins, Robert J. Huey
2. Meat Inspection and Control in the Slaughterhouse, Thimjos Ninios, Janne Lunden, Hannu Korkeala, Maria Fredriksson-Ahomaa

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Summer practical training: Abattoir I

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J80BO.2403.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Aleksandra Tabiś
Other teachers conducting classes	Aleksandra Tabiś

Period	**Examination**	**Number of ECTS points**
Semester 8	graded credit **Activities and hours** practical training: 80	4.0

Goals

C1	The purpose of the practice in slaughterhouses for cattle, pigs or horses is to teach students with the technology of slaughtering animals, post-slaughter meat processing, organizational structure of the plant and the technique of pre-and post-mortem inspection, as well as keeping veterinary documentation

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	explains in detail the principles of appropriate supervision over the production of foodstuffs of animal origin;	O.W12	oral credit, observation of student’s work
W2	explains in detail the principles of consumer health protection	O.W11	oral credit, observation of student’s work
W3	presents in detail the principles of examination of the slaughter animals, meat and other animal products;	O.W10	oral credit, observation of student’s work
W4	describes legal standards associated with the activities of veterinary physicians;	O.W14	oral credit, observation of student’s work
W5	identifies and describes in detail the principles of management and utilisation of animal by-products and waste associated with animal production;	O.W9	oral credit, observation of student’s work
W6	presents the principles of consumer health protection, which are ensured by appropriate supervision over the production of foodstuffs of animal origin	B.W17	oral credit, observation of student’s work
W7	knows and describes the principles of functioning of the Veterinary Inspection, also in the aspect of public health	B.W16	oral credit, observation of student’s work
W8	presents the methods of management and utilisation of animal by-products and waste associated with animal production	B.W15	oral credit, observation of student’s work
Skills – Student can:			
U1	issues veterinary medical opinion and certificate	O.U7	oral credit, observation of student’s work
U2	performs pre- and post-mortem inspection of slaughter animals and examination of meat, as well as other products of animal origin;	O.U5	oral credit, observation of student’s work
U3	performs activities that are associated with the veterinary supervision, including trade in animals, as well as sanitary and veterinary conditions of animal gathering locations and processing products of animal origin	O.U6	oral credit, observation of student’s work
U4	is able to perform pre- and post-mortem inspection	B.U17	oral credit, observation of student’s work
U5	assesses the quality of products of animal origin	B.U18	oral credit, observation of student’s work
U6	performs an epizootic investigation in order to determine the period of time, during which a contagious disease may have developed on the farm before suspecting or establishing its occurrence, place of origin of the source of the animal contagious disease, along with determination of other farms and the pathways of movement of people, animals and objects that could cause the spread of an infectious disease to or from the farm;	B.U19	oral credit, observation of student’s work

U7	is able to collect samples for monitoring tests for the presence of prohibited substances, chemical and biological residues, medicinal products and radioactive contamination in animals, in their secretions, excretions, tissues or organs, in products of animal origin, food, in water intended for animal drinking and in the feed;	B.U23	oral credit, observation of student's work
U8	is able to estimate the risk of occurrence of chemical and biological hazards in food of animal origin	B.U22	oral credit, observation of student's work
U9	uses the collected information associated with the health and welfare of animals, and in selected cases also with productivity of the herd	B.U20	oral credit, observation of student's work
U10	assesses the fulfilment of requirements of the slaughter animals protection, taking into account the various methods of slaughter	B.U24	oral credit, observation of student's work
Social competences – Student is ready to:			
K1	is ready to act in the conditions of uncertainty and stress	O.K10	oral credit, observation of student's work
K2	communicates with the co-workers and shares knowledge	O.K9	oral credit, observation of student's work
K3	deepens his/her knowledge and improves skills	O.K8	oral credit, observation of student's work
K4	cooperates with representatives of other professions in the scope of public health protection	O.K11	oral credit, observation of student's work

Balance of ECTS points

Activity form	**Activity hours***
practical training	80
exam / credit preparation	30
consultations	10

Student workload	**Hours** 120	**ECTS** 4.0
Workload involving teacher	**Hours** 90	**ECTS** 3.0
Practical workload	**Hours** 80	**ECTS** 3.0

* hour means 45 minutes

Study content

No.	**Course content**	**Activities**

1.	The organizational structure of the slaughterhouse. Health and safety regulations in force at the slaughterhouse. Tasks veterinary sanitary supervision over the purchase and transport of animals for slaughter. Tasks sanitary veterinary surveillance in slaughterhouses slaughter animals. Formal legal proceedings related to the adoption of slaughter animals to the slaughterhouse. Ante-mortem technique. Proceedings of the animals after the ante-mortem technique. Methods of stunning and slaughter of animals for slaughter. Deadweight technological processing of animal carcasses. Organization and post-mortem meat inspection technique. Principles of meat samples for laboratory tests. Trichinoscopic methods. Sanitary evaluation and labeling of meat from animals slaughtered. Handling the meat and unfit for consumption. Animal by-products Principles of cleaning and disinfection of premises, machinery and equipment and transportation of animals and meat. Principles of sewage treatment in slaughterhouses. Sanitary Requirements for the location and construction of slaughterhouses and facilities and lines. Principles of sanitary-veterinary records in a slaughterhouse. The current sanitary and veterinary regulations.	practical training

Course advanced

Teaching methods:

practical simulation training, presentation / demonstration, situation-based learning, project-based learning (PBL), problem-solving method, case analysis

Activities	Examination methods	Percentage in subject assessment
practical training	oral credit, observation of student’s work	100%

Entry requirements

nowledge of sanitary food law, in particular: Regulations no. : 178/2002, 2017/625, 2019/627, 853/2004, 852 / 2004,1 / 2005, 1069/2009, 1099/2008, 999/2001, 2015/375.
Theoretical knowledge in the field of ante-mortem and post-mortem inspection of slaughter animals.
Basic knowledge of animal identification (including age assessment based on the dental formula of cattle).
Theoretical knowledge about the symptoms of proper stunning of animals, knowledge of stunning methods and the possibilities of their application in individual animal species.
Theoretical knowledge regarding animal-by products and waste classification produced at the slaughterhouse.
Theoretical knowledge regarding the requirements for slaughterhouses.
Theoretical knowledge regarding infectious diseases and their clinical symptoms.
Theoretical knowledge in the field of anatomopathological changes in carcasses caused by OIE list A and B diseases
Theoretical knowledge of the meat sampling procedure and the diseases / residues of substances for which samples should be taken.

Literature

Obligatory

1. Gracey’s Meat Hygiene David S. Collins
2. Commission Implementing Regulation (EU) 2019/627 of 15 March 2019
3. Regulation (EU) 2017/625 of the European Parliament and of the Council of 15 March 2017

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Summer practical training: Animal clinic I

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J80BO.2404.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Kamila Glińska-Suchocka
Other teachers conducting classes	Kamila Glińska-Suchocka

Period Semester 8	**Examination** graded credit **Activities and hours** practical training: 160	**Number of ECTS points** 8.0

Goals

C1	Introduction to the specificity of work in a veterinary clinic. Performing a clinical examination and veterinary procedures in patients of a veterinary clinic.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population	O.W1	practical training report
W2	knows to an extensive degree, describes in detail and explains the development, structure, functioning, behaviours and physiological mechanisms of animals in normal conditions, as well as the mechanisms of disorders in pathological conditions	O.W2	practical training report
W3	explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in individual animal species, and knows the principles of therapeutic procedure	O.W3	practical training report
W4	explains and interprets the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals	O.W4	practical training report
W5	characterises in detail the methods of using veterinary medicinal products, aimed at prophylaxis and treatment of animals, as well as at guaranteeing food chain safety and environmental protection	O.W5	practical training report
W6	presents the biology of infectious factors that cause diseases transmitted between animals, as well as anthropozoonoses, taking into account the mechanisms of disease transmission and defense mechanisms of the macroorganism	O.W6	practical training report
W7	specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes	O.W7	practical training report
W8	knows to an extensive degree as well as understands disorders at the level of the cell, tissue, organ, system and organism, in the course of the disease	B.W1	practical training report
W9	explains the mechanisms of organ and systemic pathologies	B.W2	practical training report
W10	describes the causes and symptoms of diseasec, principles of treatment and prophylaxis in individual disease entities	B.W3	practical training report
W11	knows and understands the principles of diagnostic procedure, taking into account the differential diagnostics and therapeutic procedure	B.W4	practical training report
W12	presents the principles of conducting clinical examination and monitoring animal health	B.W5	practical training report
W13	explains the method of handling clinical data, as well as results of laboratory tests and additional tests	B.W6	practical training report
Skills – Student can:			
U1	conducts clinical examination of the animal in accordance with the principles of medical art	O.U1	practical training report

U2	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions	O.U2	practical training report
U3	plans the diagnostic procedure	O.U3	practical training report
U4	monitors health of the herd, as well as undertakes action in the case of a disease that is subject to the obligation of disease eradication or its registration	O.U4	practical training report
U5	issues veterinary medical opinion and certificate	O.U7	practical training report
U6	uses Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health, diseases, pathological changes and conditions	O.U8	practical training report
U7	applies IT systems used to support the health facility for animals, herd and analysis of epizootic situation	O.U9	practical training report
U8	safely and humanely handles animals and instructs others in this scope	A.U21	practical training report
U9	Safely and humanely handles animals and instructs others in this scope	B.U1	practical training report
U10	Conducts a medical-veterinary interview in order to obtain precise information regarding individual animal or group of animals and its or their living environment	B.U2	practical training report
U11	Performs a full clinical examination of the animal	B.U3	practical training report
U12	Is able to provide first aid to animals in the case of haemorrhage, wounds, respiratory disorders, eye and ear injuries, loss of consciousness, cachexia, burns, tissue damage, internal injuries, cardiac arrest	B.U4	practical training report
U13	Assesses the nutritional status of the animal and provides advice in this scope;	B.U5	practical training report
U14	Collects and secures the samples for tests, as well as performs standard laboratory tests, and correctly analyses and interprets the results of laboratory tests	B.U6	practical training report
U15	Uses diagnostic equipment, including radiographic, ultrasound and endoscopic equipment, in accordance with its intended purpose and safety rules for animals and people, as well as interprets the results of tests obtained after its application	B.U7	practical training report
U16	Implements the appropriate procedures in the case of diagnosing a disease subject to the obligation of eradication or registration	B.U8	practical training report
U17	Obtains and uses information on authorised veterinary medicinal products;	B.U9	practical training report
U18	Is able to prescribe and use veterinary medicinal products and medical materials, taking into account their safe storage and utilisation	B.U10	practical training report
U19	Uses the methods of safe sedation, general and local anaesthesia, as well as assessment and relief of pain	B.U11	practical training report
U20	Monitors the patient's condition in the intra- and post-operative period on the basis of basic life parameters	B.U12	practical training report

U21	Chooses and applies the appropriate treatment	B.U13	practical training report
U22	Implements the principles of surgical antisepsis and asepsis, as well as applies appropriate methods of sterilising equipment	B.U14	practical training report
U23	Assesses the need for performance of euthanasia of the animal and informs its owner about this fact in an appropriate manner, and euthanizes the animal in accordance with the principles of professional ethics and appropriate handling of corpses	B.U15	practical training report
U24	Is able to perform an autopsy of the animal corpse, along with the description, as well as to take samples and secure them for transport	B.U16	practical training report
Social competences – Student is ready to:			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	practical training report
K2	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	practical training report
K3	uses the objective sources of information	O.K4	practical training report
K4	formulates conclusions from own measurements or observations	O.K5	practical training report
K5	formulates opinions regarding various aspects of professional activity	O.K6	practical training report
K6	is ready for reliable self-assessment, formulating constructive criticism in the scope of veterinary practice, accepting criticism of presented solutions, reacting to such criticism in a clear and material manner, also with the use of arguments referring to the available scientific achievements in the discipline	O.K7	practical training report
K7	deepens his/her knowledge and improves skills	O.K8	practical training report
K8	communicates with the co-workers and shares knowledge	O.K9	practical training report

Balance of ECTS points

Activity form	**Activity hours***
practical training	160
class preparation	80

Student workload	**Hours** 240	**ECTS** 8.0
Workload involving teacher	**Hours** 160	**ECTS** 6.0
Practical workload	**Hours** 160	**ECTS** 6.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Introduction to the specificity and organization of work in the clinic, and applicable health and safety regulations. The student becomes familiar with distribution facilities (emergency room, hospital, operating room, X-ray, etc.) and the system of admitting patients. 2.Introduction to the drugs used in the practice and the way records and dispensing of medicines. Introduction to diets and dietary supplements used in a veterinary clinic. 3.Introduction to the computer program used in the practice. 4.Analysis of the cases registered in the file system of a computer-types of diseases, diagnostic methods, therapeutic methods. 5.Familiarize yourself with the program of prevention of infectious diseases and prevention systems with and combat parasitic diseases in animals treated with the practice. Familiarizing yourself with the medical interview. 6.Improving history, basic clinical examination, performing additional diagnostic methods (imaging techniques, cytological assessment, laboratory tests of blood, urine and other body fluids), collecting material for additional tests. 7.Improving the techniques restraining of the animal and performing basic veterinary procedures, eg injection, establishing access to a vein, catheterization and care treatments (eg: shortening of the claws, cleaning the perianal sinuses, cleaning the ears, etc.). 8.Introduction to the surgical procedures or their improvement: protocols and techniques of anesthesia, techniques of surgical procedures (assisting in the procedures).	practical training

Course advanced

Teaching methods:

classes, case analysis

Activities	Examination methods	Percentage in subject assessment
practical training	practical training report	100%

Entry requirements

Animal anatomy, Biochemistry, Histology and embryology, Veterinary microbiology, Animal physiology, Clinical and laboratory diagnostic, Veterinary pharmacology, Veterinary immunology, Pathophysiology, Veterinary dietetics, Parasitology and invasiology, Pathomorphology, General surgery anaesthesiology, Imaging diagnostic, Diseases of dogs and cats, Diseases of horses, Farm animal disease

Literature

Obligatory

1. R. W. Nelson, C. Couto: ,,Small Animal Internal Medicine", 2013, Mosby
2. T. W. Fossum: ,,Small Animal Surgery", 2018, Mosby
3. M. V. R. Kustritz: ,,Clinical Canine and Feline Reproduction", 2009, Wiley-Blackwell
4. C. E. Green: ,,Infectious diseases of dog and cat", 2011, Saunders

Optional

1. O. Ditz, B. Huskamp: ,,Praktyka kliniczna-konie", 2008, Galaktyka, 2008
2. Z. Gliński, K. Kostro: „Choroby zakaźne zwierząt z zarysem epidemiologii zwierząt i zoonoz", 2003, PWRiL
3. T. J. Divers, S. F. Peek: ,,Rebhu's Diseases of Dairy Cattle", 2007, Saunders
4. A. H. Andrews: ,,Bovine medicine: diseases and husbandary of cattle", 2004, Blacwell

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Veterinary dietetics

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J80BO.2639.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** mandatory
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills Yes

Teacher responsible for the subject	Piotr Sławuta
Other teachers conducting classes	Piotr Sławuta

Period	**Examination**	**Number of ECTS points**
Semester 8	graded credit **Activities and hours** lecture: 15 laboratory classes: 15	2.0

Goals

C1	The course aims to present the dietary management of specific disease with an explanation of their etiopathogenesis and development mechanisms.The aim of teaching the subject is to provide students with basic knowledge about dietary procedures in specific disease and knowledge of veterinary diets and dietary supplements applied adequately to the disease entity being treated. The subject is also intended to present dietary diagnostic tools and their application.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the rules of animal nutrition, taking into account species and age differences, as well as the rules of arranging and analyzing food doses. Has knowledge of veterinary diets and supplements used adequately to the disease being treated. knows adverse reactions to food, hypoallergenic diets, elimination diets with an atypical source of protein, mono-protein	B.W13, B.W14	test
Skills – Student can:			
U1	issues veterinary medical opinion and certificate	O.U7	observation of student’s work
U2	assess the animal's nutritional status and provide advice in this regard. I apply diets adequate to the disease entity	A.U19	observation of student’s work
U3	use professional knowledge and skills to improve the quality of veterinary care and animal welfare in terms of proper nutrition	B.U5	observation of student’s work, case study
Social competences – Student is ready to:			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student’s work
K2	uses the objective sources of information	O.K4	active participation
K3	formulates conclusions from own measurements or observations	O.K5	observation of student’s work, case study
K4	broadening knowledge and improving skills	O.K8	observation of student’s work

Balance of ECTS points

Activity form	Activity hours*
lecture	15
laboratory classes	15
exam / credit preparation	10
class preparation	20

Student workload	**Hours** 60	**ECTS** 2.0
Workload involving teacher	**Hours** 30	**ECTS** 1.0
Practical workload	**Hours** 15	**ECTS** 0.6

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	Lectures 1. Diet, concept and types of diets 2. Diet in diseases of growing animals 3. Diet in cancer 4. Diet in skin diseases 5. Lipid disorders, diet 6. Diet in diseases of the gastrointestinal tract: oral cavity, stomach diseases 7. Diet in diseases of the gastrointestinal tract: SIBO, enteropathies, IBD 8. Diet in diseases of the gastrointestinal tract: large intestine 9. Diet in liver diseases 10. Diet in osteoarticular diseases (problems of large growing dogs, older dogs, sports dogs) 11. Diet in endocrine diseases: diabetes, hypothyroidism, hyperadrenocorticism 12. Diet in heart disease: DCM, HCM, taurine 13. Diet in the aspect of production - production of dry and moist diets 14. Legislation, legal norms (PL) in the aspect of food and diets 15. Legislation of EU legal norms in the aspect of food and diets	lecture
2.	Classes 1. Diet - types of diets (commercial, home-made), label evaluation 2. Calculation of energy demand, determining the food dose for sick animals 3. Diet in metabolic diseases: diabetes, obesity, body condition scale, glycemic index, glycemic load 4. Enteral and parenteral nutrition, convalescent diets 5. Diet in diseases of the kidneys and lower urinary tract 6. Adverse reactions to food, hypoallergenic, elimination diets, diet with an unusual source of protein, mono-protein 7. Passing classes - test	laboratory classes

Course advanced

Teaching methods:

classes, lecture, discussion, presentation / demonstration, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	active participation, test	20%
laboratory classes	observation of student’s work, test, case study	80%

Entry requirements

Animal anatomy, Biochemistry, Animal physiology, Animal nutrition and feed quality, Clinical and laboratory diagnostics

Literature

Obligatory

1. FEDIAF Nutritional Guidelines for Complete and Complementary Pet Food for Cats and Dogs. www.fediaf.org
2. Pibot P. et al.: Encyclopedia of Canine Clinical Nutrition. Aniwa SAS, Royal Canin. Paris. France. 2006
3. Pibot P. et al.: Encyclopedia of Feline Clinical Nutriton. Aniwa SAS, Royal Canin. Paris. France. 2008
4. Case L. et al.: Canine and Feline Nutrition. Mosby Elsevier. USA. 2011
5. Nutritional Research Council of the National Academies: Nutrient Requirements of Dogs and Cats. The National Academic Press. Washington D.C. 2006

Optional

1. Tomasik P. et al Probiotics and Prebiotics, Cereal Chem. 2003, 80, 113–117
2. Gregor Reid G et al. New Scientific Paradigms for Probiotics and Prebiotics J Clin Gastroenterol 2003, 37, 105–118
3. Douglas L. et al. Probiotics and Prebiotics in Dietetics Practice J Am Diet Assoc. 2008, 108, 510-521
4. Figueroa-Gonzalez I.et al. Probiotics and prebiotics – perspectives and challenges. J Sci Food Agric 2011, 1341–1348

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Veterinary toxicology

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J80BO.2652.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** Yes **Subject shaping practical skills** No

Teacher responsible for the subject	Błażej Poźniak
Other teachers conducting classes	Błażej Poźniak

Period	**Examination**	**Number of ECTS points**
Semester 8	exam **Activities and hours** lecture: 30 laboratory classes: 30	3.0

Goals

C1	Familiarize students with the origin of dangerous poisons for animals and their mechanisms of action, as well as their fate in the organism.
C2	To provide students with knowledge in the field of veterinary clinical toxicology with a focus on issues leading to the correct diagnosis of poisoning, knowledge of symptoms and pathological findings as well as knowledge of laboratory methods of toxicological analysis, protection of material for analysis and conducting a toxicological interview.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	Ways to use veterinary medicinal products to prevent and treat poisoning in animals, and to ensure the safety of the food chain and protect the environment in a toxicological context	O.W5	written exam, written credit, cover letter
W2	Principles of conducting a clinical examination, analysis of clinical symptoms and pathological changes in cases of poisoning.	O.W7	written exam, written credit, cover letter
W3	Kinds of poisoning occurring in animals and principles of diagnostic and therapeutic procedures in poisoning	A.W21	written exam, written credit, cover letter
W4	Disorders at the level of tissue, organ, system and organism in the course of poisoning in animals	B.W1	written exam, written credit, cover letter
Skills – Student can:			
U1	Analyze and interpret pathological changes as well as the results of laboratory and additional tests, formulate the diagnosis of the disease, including differential diagnosis, and undertake therapeutic or prophylactic measures in cases of poisoning in animals	O.U2	written credit, active participation, cover letter
U2	Plan diagnostic procedures in cases of poisoning in animals	O.U3	written credit, active participation, cover letter
U3	Estimate the toxicological hazard in specific technological groups of farm animals	A.U17	written credit, active participation, cover letter
U4	Collect and secure samples in cases of poisonings	B.U6	written credit, active participation, cover letter
Social competences – Student is ready to:			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural enviroment in the toxicological context	O.K1	active participation
K2	uses the objective sources of information in the assessment of toxicological risks	O.K4	active participation
K3	is ready to act in the conditions of uncertainty and stress while dealing with animal poisonings	O.K10	active participation

Balance of ECTS points

Activity form	Activity hours*
lecture	30
laboratory classes	30
exam participation	2
class preparation	11

exam / credit preparation	11
consultations	6

Student workload	**Hours** 90	**ECTS** 3.0
Workload involving teacher	**Hours** 68	**ECTS** 2.5
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Introduction to toxicology. Poison and poisoning. 2. Fundamentals of toxicokinetics and mechanisms of action of poisons. 3. Cyanide, selenium, arsenic poisonings, fluorosis. 4. Poisonings with metals, part I. 5. Poisonings with metals, part II. 6. Toxicological significance of pesticides and persistent organic pollutants. 7. Poisonings with mycotoxins. 8. Poisonings caused by animal venoms and toxins produced by cyanobacteria. 9. Plant poisonings, part I. 10. Plant poisonings, part II. 11. Organ toxicity. Haematotoxicity and immunotoxicity. 12. Hepatotoxicity and nephrotoxicity. 13. Neurotoxicity, cardiotoxicity and respiratory toxicity. 14. Reproductive toxicity, dermatotoxicity and carcinogenesis. 15. Experimental toxicology and toxicometry.	lecture

2.	1. Preliminary steps in cases of farm animal poisonings. Taking a complete toxicological history and writing a cover letter to the analytical laboratory. 2. Preliminary steps in cases of dog and cat poisonings. Taking a complete toxicological history and writing a cover letter to the analytical laboratory. 3. Principles of collecting samples and shipping them for laboratory tests. Initial assessment, selection of analytical methods, extraction methods, cooperation with a toxicology laboratory. 4. Poisonings with table salt, poisonings with nitrates and nitrites. 5. Urea, ammonia, carbon monoxide and hydrogen sulphide poisonings. 6. Test no 1. 7. Poisonings with insecticides. 8. Poisonings with molluscicides, herbicides and fungicides. 9. Poisonings with rodenticides. 10. Clinical treatment of acute poisonings in animals. 11. Test no 2. 12. Poisonings with selected drugs. 13. Poisonings with psychoactive drugs and human foods. 14. Poisonings with selected household chemical products. 15. Test no 3. Test retakes.	laboratory classes

Course advanced

Teaching methods:

teamwork, classes, lecture, discussion, educational film, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	written exam	50%
laboratory classes	written credit, active participation, cover letter	50%

Entry requirements

Veterinary pharmacology I, II, Pathomorphology I, II, Clinical and laboratory diagnostics I, II

Literature

Obligatory

1. Gupta R.C. ed. Veterinary Toxicology, 3rd ed. Academy Press, 2018
2. Klaassen, Curtis D., ed. Casarett and Doull's toxicology: the basic science of poisons, 4th ed. McGraw-Hill Education, 2021.
3. Peterson, M. E., Talcott, P. A. Small animal toxicology. Elsevier Health Sciences, 2013

Optional

1. Hovda, L.R., Brutlag, A., Poppenga, R.H., Peterson, K. Blackwell's Five-Minute Veterinary Consult Clinical Companion: Small Animal Toxicology, 2nd ed. Willey-Blackwell, 2016.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Zoonoses

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J80BO.2885.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** mandatory
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills Yes

Teacher responsible for the subject	Katarzyna Płoneczka-Janeczko
Other teachers conducting classes	Katarzyna Płoneczka-Janeczko, Michał Bednarski, Robert Karczmarczyk, Krzysztof Rypuła, Aleksandra Tabiś, Jolanta Piekarska, Maciej Kuczkowski, Tomasz Piasecki, Małgorzata Klimowicz-Bodys

Period Semester 8	**Examination** graded credit **Activities and hours** laboratory classes: 3 practical classes: 12	**Number of ECTS points** 1.0

Goals

C1	The aim of the course is to familiarize students with issues concerning zoonoses.
C2	The training course includes basic definitions and terms, regarding presence of zoonoses in populations and successively (including division of animal's species like cattle, pigs, horses, dogs, cats, birds, exotic animals, products of animal origin): sources of infection, routs of disease transmission (infection/invasion).
C3	Clinical manifestation of individual diseases in animals, methods of laboratory diagnostics in veterinary medicine as well as overall conduct of diseases and diagnostics in humans (classes performed by doctor of medicine, specialist in human infectious diseases) are presented.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	Student knows the biology of infectious agents, responsible for zoonotic diseases, that are transmitted from farm and companion animals to humans, as well as from people to animals; students knows direct and indirect ways, which may be used by pathogens in order to spread, including products of animal origin; students knows mechanisms of immunity, that are activated in humans or animals due to infection.	O.W6	written credit, test
W2	Students knows the procedure in the case of suspicion or confirmation of animal diseases, which have zoonotic potential and are a subject to the reporting obligation or registration.	B.W8	written credit, active participation, test
W3	Student knows the principles of diagnostic procedures in the case of zoonotic diseases, including differential diagnosis and therapeutic procedures in animals, that are a source of infection.	B.W4	written credit, active participation, test
W4	Student knows the biology of infectious and invasive agents responsible for zoonotic diseaseses, that are species specific for horses, cats, dogs, birds, pigs and ruminants; student knows how the human organisms may respond to infection (local and general infections, symptomatic and asymptomatic infections)	A.W13	written credit, active participation, test
Skills – Student can:			
U1	The student is able to plan the diagnostic procedure in the case of zoonotic disease suspicion	O.U3	test
U2	Student is able to analyse and interpret clinical symptoms, pathological changes and results of laboratory examinations and additional tests of animals suspected of a source of zoonotic disease for humans; students is able to formulate the diagnosis of the zoonotic disease, including differential diagnosis; student is able to undertake appropriate therapy and preventive measures in animal	O.U2	written credit, test
U3	In the case of diseases with zoonotic potential student is able to conduct a medical-veterinary interview in order to obtain precise information regarding individual animal or a group of animals and its or their living environment	B.U2	test

U4	Student is able to work in a multidisciplinary team, transferring his knowledge on zoonoses	A.U15	active participation
U5	Student is able to interpret the responsibility of vetererinarians in regard to the animal and its owner, society, as well as the natural environment in view of the zoonotis diseases spread	A.U16	active participation
Social competences – Student is ready to:			
K1	Student exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment, in relation to zoonotic diseases	O.K1	active participation
K2	Student use the objective sources of information about the scope of zoonotic diseases	O.K4	active participation
K3	Students cooperates with representatives of other professions in the scope of public health protection, in the context of zoonoses	O.K11	active participation

Balance of ECTS points

Activity form	**Activity hours***
laboratory classes	3
exam / credit preparation	10
consultations	1
practical classes	12

Student workload	**Hours** 26	**ECTS** 1.0
Workload involving teacher	**Hours** 16	**ECTS** 0.6
Practical workload	**Hours** 15	**ECTS** 0.6

* hour means 45 minutes

Study content

No.	**Course content**	**Activities**
1.	1) Parasitic zoonoses transmittet by companion animals (dogs, cats) and laboratory animals: zoonotic risk during contacts, toxoplasmosis, giardiasis, toxocarosis, tapeworm diseases), prophylaxis in pets (deworming programs). 2) Parasitic zoonoses transmitted by farm animals (cattle, pigs) and horses: food-borne parasitic zoonoses and culinary customs, risk of invasion, ways of preventing. 3) “Exotic” Parasitic zoonoses: risk of invasion (climatic zones) during travels around different geographical areas and clime zones; malaria, leishmaniasis, sleeping sickness and others – human behavior and risk of invasion; other arthropod-borne diseases, Prophylaxis in “exotic “ zoonoses.	laboratory classes

2.	1) Definitions: direct zoonoses, cyclo-, meta- and saprozoonoses, „emerging zoonoses", zoonoses and transmissible diseases, Arboviral infections, conditions of occurrence of zoonoses (global climate changes, immune deficiencies). 2) Zoonoses (bacterial, viral) transmitted by cats, dogs and horses: dogs and cats: brucellosis, leptospirosis, campylobacteriosis, Rabies, Salmonellosis, Cat Scrach Disease (Bartonella henselae), chlamydiosis (Chlamydia felis), E.coli 0:157: H7, MRSA (methycylin resistant Staphylococcus aureus); horses: maleus, melioidosis, campylobacteriosis, leptospirosis, rabies, salmonellosis 3) Tick borne- and mosquito borne diseases- zoonotic Vector borne diseases (ehrlichiosis, anaplasmosis, borreliosis, RVF, RMSF Rocky Mountain Spotted Fever, WNV West Nile Virus, Arboviral encephalitis. 4) Food and animal products (meet, milk, eggs, fishes, shellfishes, honey) as a source of zoonoses (Salmonella sp, Staphylococcus aureus, Clostridium botulinum, Clostridium perfringens, Enterococus sp. Yersinia entrocolytica, Bacillus cereus, Trichinella sp., Toxoplasma gondii, tasiemce, Campylobacter jejuni, Listeria monocytogenes, ciguatera, parasites: Kudoa aliaria; w ECHO virus, Norwalk; bacteria: Aeromonas hydrophila, Vibrio parahaemolyticus, Vibrio vulnificus; risk of animal by-products and derived products not intended for human consumption. 5) Zoonoses (viral, bacterial) transmitted by swine: etiology, clinical symptoms and diagnosis, swine herds as a reservoir , collection of samples, bacterial and viral diseases (influenza, leptospirosis, tuberculosis, listeriosis, leptospirosis, E.coli, salmonellosis, Erysipelotrix rushiopathiae). 6) Ruminants as a source of zoonoses: TSE, verocytotoxic strains of E.coli (VTEC), salmonellosis, cryptosporidiosis, tuberculosis, brucellosis, Q fever, listeriosis (risk for cattle, sources of infection, diagnostics and pathogenicity for people). 7) Zoonoses transmitted by birds: etiology, clinical symptoms and pathological changes, diagnosis, prevention, routs of transmission and reservoirs, samples collection: bacterial and viral infections (salmonellosis, campylobacteriosis, avian influenza). 8) Zoonoses transmitted by exotic animals: etiology, clinical symptoms and pathological changes, diagnosis, exotic animals as a reservoirs, collection of samples; bacterial infections (salmonellosis, chlamydiosis), fungal infections (dermatophitosis), parazytoses (encephalitozoonosis, sabies). 9) Zoonotic fungal infections: fungal infections in pets and farm animals; zoonotic potential of infections; treatment and eradication; Trichophyton spp., Epidermophyton spp., Candida spp., Microsporum spp., Aspergillus spp. 10) Legislation and zoonoses: monitoring and eradication of zoonoses – existing legislation. Proceedings medical-veterinary staff in case of zoonoses threatening public health. 11) Most recognized zoonoses in clinical and diagnostic aspects: campylobacteriosis, salmonellosis, yersiniosis, STEC/VTEC, Q fever; clinical syndroms and zoonoses with practical relevance; animal bites (Rabies, RBF), toxocarosis and toxoplasosis, therapy in the selected zoonotic diseases. 12) Credit (test)	practical classes

Course advanced

Teaching methods:

practical simulation training, brainstorming, classes, discussion, presentation / demonstration, educational film, case analysis

Activities	Examination methods	Percentage in subject assessment
laboratory classes	written credit, active participation, test	30%
practical classes	written credit, active participation, test	70%

Entry requirements

Classes in accordance with the course manager's guidelines may be attended by persons who have complited the following subjects:
Veterinary microbiology (I,II), Veterinary parasitology and invasiology (I,II), Pathomorphology (I,II), Veterinary Epidemiology, Diseases of horses, dogs and cats, farm animals - (to the start of VIII th semester - the realised according to the general harmonogramm of the study an infectious part should be credited).

Literature

Obligatory

1. Colville J., Berryhil D.: Handbook of Zoonoses, Identifiaction and Prevention, , Elsevier 2007.
2. Dziubek Z.: Choroby zakaźne i pasożytnicze, Wydawnictwo Lekarskie PZWL, Warszawa 2003.
3. Gliński Z., Kostro K.: Choroby zakaźne zwierząt z elementami epidemiologii i zoonoz, PWRiL, Warszawa 2011 r.
4. Gliński Z., Kostro K., Buczek J.: Zoonozy, PWR i L, Warszawa 2008 r.
5. Zoonoses ECDC (current report) https://ecdc.europa.eu/en/zoonoses
6. Mazurkiewicz M., Wieliczko A.: Choroby Drobiu, Wyd. 3, Uniwersytet Przyrodniczy we Wrocławiu, Wrocław 2019.
7. Quessenbery K., Carpenter J.: Ferrets, Rabits and Rodents – Clinical Medicine and Surgery, Third Edition, Elsevier 2011.

Optional

1. Greene C.E.: Infectious Diseases of Dogs and Cats, Fourth Edition, Elsevier 2012.
2. Beugnet F., Halos L., Guillot J.: Clinical parasitology in dogs and cats, 2018.
3. Smith T.C., Harper A.L., Nair R., Wardyn SE, Hanson BM, Ferguson DD, Dressler AE: Emerging swine zoonoses, Vector-borne and Zoonotic diseases 2011, 11 (9).
4. Mc Daniel C.J., Cardwell D.M., Moeller R.B., Gray G.C.: Humans and Cattle: A review of Bovine Zoonoses, Vector-borne and Zoonotic Diseases 2014, 14 (1).
5. Bender J.B., Tsukayama D.T.: Horses and the risk of zoonotic infections, Vet.Clin. Equine 2004, 643-653.
6. Swayne D. E et al. Diseases of Poultry, 13th edition, 2013
7. Mayer J., Donnelly T.M. Clinical Veterinary Advisor: Birds and Exotic Pets. Elsevier Inc. 2014
8. www Centers for Disease Control and Prevention (CDC)

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Academic entrepreneurship

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J100AO.3468.24 **Lecture languages** english **Mandatory** mandatory **Block** general subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Robert Karczmarczyk
Other teachers conducting classes	Robert Karczmarczyk

Period	**Examination**	**Number of ECTS points**
Semester 9	graded credit **Activities and hours** auditorium classes: 15	1.0

Goals

C1	Practical classes of a project character are to prepare students to start, run or develop their own business. The project should relate to broadly defined academic entrepreneurship in the area of study or an anticipated/planned area of economic activity in Poland or abroad.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the relationship between the field of study and business activities, cost and revenue structure in a company	C.W2	project
W2	free market ideas and competition challange	C.W2	project, observation of student’s work
W3	the concept of profitability and economic viability of a planned undertaking	C.W2	project, active participation
Skills – Student can:			
U1	define data relevant for a given business issue, appropriately select sources and information from them	C.U2, C.U3	presentation
U2	prepare a cost and revenue structure, determine the break-even point and prepare a SWOT analysis of the planned business venture	A.U18, C.U3	presentation
U3	effectively present and defend their own business ideas	A.U22, C.U4	presentation
U4	plan and organise individual and team work	C.U4	presentation
Social competences – Student is ready to:			
K1	think and act in an entrepreneurial way, to implement projects taking into account social responsibility of business	O.K1	observation of student’s work, active participation
K2	individual and group searching for directions of economic development	O.K10, O.K11, O.K9	observation of student’s work, active participation

Balance of ECTS points

Activity form	Activity hours*
auditorium classes	15
project preparation	10
presentation/report preparation	5

Student workload	**Hours** 30	**ECTS** 1.0
Workload involving teacher	**Hours** 15	**ECTS** 0.6
Practical workload	**Hours** 15	**ECTS** 0.6

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	Students complete their own or commissioned e.g. a company project in the field of entrepreneurship using their knowledge and expertise of the tutor(s). Searching for own and/or new direction of activity also with the use of group work methods. Definition of important parameters and resources for the implementation of the project. Estimation of market size and capasity. Student ca estimate the target group for the veterinary practice. Determine fixed, variable and total costs for a selected business venture and locate the venture in real free market trends. Determine marketing tools with the respect for the veterinary self-governing regulations. Estimation of the key areas of activities and dto determind quality servis characteristics. Areas of bussines and customer relationschip responsibilities. Ethical issues of the veterinary bussiness as a profession of public trust. Preparation of a product sales forecast, determination of the break-even point (BEP). SWOT analysis and choice of future development strategy. Control of the vet practice development and progress Presentation and defence of the prepared project.	auditorium classes

Course advanced

Teaching methods:

classes, teamwork

Activities	Examination methods	Percentage in subject assessment
auditorium classes	project, observation of student’s work, active participation, presentation	100%

Entry requirements

The student has preliminary ideas about the direction he will study at veterinary medicine and about his professional career after graduation.

Literature

Obligatory

1. Blackwell's 5 minutes Veterinary Management Consult, Blackwell Publ, 2020

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Avian diseases

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J100BO.0112.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** Yes **Subject shaping practical skills** Yes

Teacher responsible for the subject	Andrzej Gaweł
Other teachers conducting classes	Maciej Kuczkowski, Kamila Bobrek, Anna Woźniak-Biel, Andrzej Gaweł

Period	**Examination**	**Number of ECTS points**
Semester 9	exam **Activities and hours** lecture: 40 laboratory classes: 16 clinical classes: 24	5.0

Goals

C1	The aim of the course is to provide students with basic knowledge on: modern technology breeding for different species of birds, physiology and pathology, breeding, breeding period diseases, nutrient deficiency, environmental background, the background of metabolic disorders, as well as the etiology of parasitic, bacterial and viral diseases. In addition, the course program includes knowledge of the veterinary laboratory diagnostic, laws relating to the prevention and control of diseases, in particular diseases from the OIE list.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the rgan, animal, to the entire animal population;	O.W1	written exam, test
W2	explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in individual animal species, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W3	written exam, test
W3	specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes;	O.W7	test
W4	the student knows and understands the principles and mechanisms underlying the health of birds, the formation of diseases and their therapy	A.W10	written exam, test
W5	the student understands the causes and symptoms of pathological changes, principles of treatment and prevention in particular disease entities of birds	B.W3	written exam, test
W6	the student knows the principles of diagnostic and therapeutic management of bird diseases	B.W4	written exam, test
W7	the student knows the methods of proceeding clinical data and the results of laboratory and additional tests - is able to interpret them and apply appropriate procedures	B.W6	active participation
W8	the student is able to act correctly in the case of suspicion or finding of diseases that are subject to mandatory control or registration in birds	B.W8	active participation
Skills – Student can:			
U1	conducts clinical examination of the animal in accordance with the principles of medical art;	O.U1	observation of student’s work, test
U2	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	written exam, observation of student’s work, test
U3	plans the diagnostic procedure	O.U3	written exam, observation of student’s work, test
U4	the student is able to choose and apply rational antibacterial, antifungal and antiparasitic chemotherapy	A.U11	observation of student’s work, test
U5	the student is able to write clear case reports and keep documentation in accordance with applicable regulations, in a form understandable to the owner of the animal and legible to other veterinarians	A.U14	observation of student’s work, active participation

Social competences – Student is ready to:			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student's work
K2	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	observation of student's work
K3	deepens his/her knowledge and improves skills	O.K8	observation of student's work, test

Balance of ECTS points

Activity form	Activity hours*
lecture	40
laboratory classes	16
clinical classes	24
lesson preparation	45
exam / credit preparation	25

Student workload	**Hours** 150	**ECTS** 5.0
Workload involving teacher	**Hours** 80	**ECTS** 3.0
Practical workload	**Hours** 40	**ECTS** 1.5

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	1. Management in poultry production 2. Diagnostics and treatment of pet birds diseases 3. Diagnostics and treatment of pigeons diseases 4. Pathology in hatches 5. Bacterial diseases of poultry: fowl typhoid, pullorum disease and paratyphoid infection 6. Bacterial diseases of poultry: colibacillosis, ornithobacteriosis and fowl cholera 7. Bacterial diseases of poultry: mycoplasma infection, mycoses and mycotoxicoses 8. Diagnosis of parasitic diseases 9. Avian influenza and Newcastle disease 10. Viral diseases of hens and chicken 11. Viral diseases of turkeys 12. Viral diseases of geese and ducks 13. Veterinary treatments on a poultry farm and principles of immunoprophylaxis 14. Necropsy of birds – field cases	lecture
2.	1. Diagnostics and treatment of pigeons diseases 2. Bacterial diseases of poultry: colibacillosis, ornithobacteriosis and fowl cholera 3. Bacterial diseases of poultry: mycoplasma infection, mycoses and mycotoxicoses 4. Viral diseases of geese and ducks 5. Veterinary treatments on a poultry farm and principles of immunoprophylaxis 6. Necropsy of birds – field cases	laboratory classes

3.	1. Anatomy and physiology of birds, necropsy of birds 2. Diagnostics and treatment of pet birds diseases 3. Pathology in hatches 4. Bacterial diseases of poultry: fowl typhoid, pullorum disease and paratyphoid infection 5. Diagnosis of parasitic diseases 6. Avian influenza and Newcastle disease 7. Viral diseases of hens and chicken 8. Viral diseases of turkeys	clinical classes

Course advanced

Teaching methods:

classes, lecture, discussion, presentation / demonstration, situation-based learning, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	written exam, test	60%
laboratory classes	written exam, observation of student’s work, active participation, test	16%
clinical classes	written exam, observation of student’s work, active participation, test	24%

Entry requirements

Obligatory course, required passed exams: Animal husbandry and breeding, animal nutrition, biochemistry,veterinary microbiology, animal anatomy, pathomorphology, veterinary pharmacology, parasitology and invasiology veterinary toxicology, avian diseases

Literature

Obligatory

1. Carpenter i Marion Exotic Animals Folmulary, Elsevier Books, 2017
2. Patison: Poultry diseases, Elsevier Urban & Partner, 2011
3. Saif: Diseases of poultry, Iowa State Press, 2003 I 2013

Optional

1. Avian Diseases (journal)
2. Avian Pathology (journal)
3. Poultry Science (journal)
4. World's Poultry Science Journal

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Clinical immunology

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J100BO.0409.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** mandatory
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills No

Teacher responsible for the subject	Anna Chełmońska-Soyta
Other teachers conducting classes	Anna Chełmońska-Soyta, Julia Miller, Agnieszka Żak-Bochenek, Bożena Obmińska-Mrukowicz, Agnieszka Cekiera, Marcin Wrzosek

Period	**Examination**	**Number of ECTS points**
Semester 9	graded credit **Activities and hours** lecture: 14 laboratory classes: 16	2.0

Goals

C1	The goal of the course is to teach the students current issues in the field of clinical immunology of dogs, cats and horses, including autoimmune diseases, neoplasia, allergies, immunodeficiencies, as well as basics of serotherapy and treatments used in immunomodulation. The students learn how to diagnose immune- mediated diseases using available diagnostic methods.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	principles and mechanisms underlying immune-related diseases and therapy	O.W1	test, participation in discussion
W2	the etiology, pathogenesis and clinical symptoms of diseases involving the immune system, including immunological deficiencies and autoimmune diseases, and the principles of therapeutic management	O.W3	test, participation in discussion
W3	mechanisms of pathology of elements of the immune system	B.W2	test, participation in discussion
W4	principles of diagnostic procedures, including differential diagnosis, and therapeutic management in the case of diseases of the immune system of dogs, cats and horses	B.W4, O.W4	test, participation in discussion, case study
W5	the principle of analysis and management based on the data obtained from the clinical investigation and the results of laboratory tests and additional examinations taking into account the pathologies of the immune system	B.W6	test, participation in discussion, case study
W6	The mechanism of action of immunomodulatory drugs, used in serotherapy or therapy with monoclonal antibodies	B.W4	test, participation in discussion, case study
Skills – Student can:			
U1	analyze and interpret clinical symptoms, anatomopathological changes, and the results of laboratory and additional investigations, formulate a diagnosis of the disease state, taking into account differential diagnosis, and take therapeutic or prophylactic measures, taking into account the pathologies of the immune system and a holistic approach	O.U2	observation of student’s work, test, participation in discussion, case study
U2	plan the diagnostic procedure in suspected diseases of the immune system	O.U3	observation of student’s work, test, participation in discussion, case study
U3	Analyze the obtained results while discussing clinical cases.	B.U6	participation in discussion, case study
U4	Selects the appropriate treatment in the case of diseases related to the immune system	B.U13	test, case study
Social competences – Student is ready to:			
K1	use objective sources of information during the diagnostic and therapeutic process, applying the principle of evidence-based medicine	O.K4	observation of student’s work, participation in discussion, case study
K2	deepens his/her knowledge and improves skills	O.K8	observation of student’s work, participation in discussion, case study
K3	Communicate with colleagues and share knowledge, collaborating while analyzing clinical cases	O.K9	observation of student’s work, participation in discussion, case study

Balance of ECTS points

Activity form	Activity hours*
lecture	14
laboratory classes	16
exam / credit preparation	20
class preparation	10

Student workload	**Hours** 60	**ECTS** 2.0
Workload involving teacher	**Hours** 30	**ECTS** 1.0
Practical workload	**Hours** 16	**ECTS** 0.6

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	Lectures include content on the following topics: 1. Pathomechanism of diseases of immunological background; Laboratory tests in diseases of immunological background; 2. Immunology of endocrine glands; Immunology of joints; 3. Immunology of muscle tissue and nervous system; Immunology of the gastrointestinal tract. 4. Systemic autoimmune diseases; 5. Immunotherapy, immunomodulation; 6. Current issues in equine immunology; 7. Immunological phenomena accompanying neoplastic processes.	lecture
2.	The classes include the following teaching content: 1. Clinical aspects of tumors of the immune system; 2. Serum, monoclonal antibodies and stem cells in therapy; 3. Immune-mediated blood cell count disorders; 4. Skin immunology; 5. Primary immunodeficiencies. Part of the course is conducted in the form of analysis of clinical cases involving dogs, cats (6-7) and horses (8), taking into account both the knowledge gained during lectures, theoretical exercises, but also the knowledge of students from other subjects.	laboratory classes

Course advanced

Teaching methods:

problem-solving method, classes, lecture, discussion, teamwork, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	test	50%
laboratory classes	observation of student’s work, test, participation in discussion, case study	50%

Entry requirements

Knowledge in the area of veterinary immunology, pathophysiology I and II, Clinical and laboratory diagnostics I and II

Literature

Obligatory

1. Day M. Clinical immunology of the dog and cat, Manson Publishing, 2008
2. Nelson R.W., Couto C.G. Small Animal Internal Medicine, Elsevier, 2019
3. Tizard I. Veterinary Immunology, Elsevier,2018
4. Felippe M.J.B., Equine clinical immunology, John Wiley & Sons, 2016

Optional

1. Day M. Veterinary Immunology - Principles and practice, Taylor & Francis Group, 2014
2. Saunders J. Veterinary hematology, Elsevier, 2011
3. Gershwin L. Case Studies in Veterinary Immunology 1st Edition, Garland Science, 2017

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Diseases of dogs and cats

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J100BO.0493.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** Yes **Subject shaping practical skills** Yes

Teacher responsible for the subject	Kamila Glińska-Suchocka
Other teachers conducting classes	Marcin Jankowski, Kamila Glińska-Suchocka, Agnieszka Cekiera, Agnieszka Noszczyk-Nowak, Wojciech Niżański, Michał Dzięcioł, Krzysztof Rypuła, Katarzyna Płoneczka-Janeczko, Agnieszka Antończyk, Wiesław Bielas, Karolina Bierowiec, Robert Karczmarczyk, Małgorzata Ochota, Sylwia Prochowska, Przemysław Prządka, Joanna Tunikowska, Maciej Grzegory, Krzysztof Kubiak, Justyn Gach, Piotr Frydrychowski, Agnieszka Sikorska-Kopyłowicz

Period Semester 9	**Examination** exam **Activities and hours** lecture: 125 clinical classes: 115	**Number of ECTS points** 17.0

Goals

C1	The aim of the course is to provide students with basic knowledge on the dogs and cats diseases, its diagnosis, differential diagnosis, treatment and additional diagnostics procedures. It can proved the additional information of illness prevention and prognosis.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, dogs and cats, to the entire dogs and cats population;	A.W10, O.W1	written exam, test
W2	nows to an extensive degree, describes in detail and explains the development, structure, functioning, behaviours and physiological mechanisms of dogs and cats in normal conditions, as well as the mechanisms of disorders in pathological conditions;	O.W2	written exam, test
W3	explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in individual dogs and cats species, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in dogs and cats;	O.W3	written exam, test
W4	knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in dogs and cats;	O.W4	written exam, test
W5	specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes;	O.W7	written exam, test
W6	knows to an extensive degree the method of procedure in the case of suspicion or diagnosing diseases that are subject to the obligation of disease eradication or its registration	B.W8	written exam, test
W7	explains the method of handling clinical data, as well as results of laboratory tests and additional tests	B.W6	written exam, test
W8	presents the principles of conducting clinical examination and monitoring dogs and cats health	B.W5	written exam, test
W9	knows and understands the principles of diagnostic procedure, taking into account the differential diagnostics and therapeutic procedure	B.W4	written exam, test
W10	explains the mechanisms of organ and systemic pathologies	B.W2	written exam, test
W11	knows to an extensive degree as well as understands disorders at the level of the cell, tissue, organ, system and organism, in the course of the disease;	B.W1	written exam, test

W12	ways of using veterinary medicinal products for the prevention and treatment of dogs and cats	O.W5	written exam, test
W13	assumptions for selecting animals for mating, methods fertilization and reproductive biotechnology and selection breeding	B.W12	written exam, test
W14	principles and mechanisms underlying canine health and cats, the emergence of diseases and their therapy - from the level cells, through an organ, an animal, to a whole population animals	A.W10	written exam, test
Skills – Student can:			
U1	conducts clinical examination of the dogs and cats in accordance with the principles of medical art;	A.U11, A.U14, O.U1	written exam, test
U2	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	written exam, test
U3	plans the diagnostic procedure	O.U3	written exam, test
U4	issues veterinary medical opinion and certificate	O.U7	written exam, test
U5	uses Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of dogs and cats health, diseases, pathological changes and conditions	O.U8	written exam, test
U6	safely and humanely handles dogs and cats and instructs others in this scope	B.U1	written exam, test
U7	conducts a medical-veterinary interview in order to obtain precise information regarding individual dog and cat or group of dogs and cats and its or their living environment	B.U2	written exam, test
U8	performs a full clinical examination of the dogs and cats	B.U3	written exam, test
U9	is able to provide first aid to dogs and cats in the case of haemorrhage, wounds, respiratory disorders, eye and ear injuries, loss of consciousness, cachexia, burns, tissue damage, internal injuries, cardiac arrest	B.U4	written exam, test
U10	assesses the nutritional status of the dogs and cats and provides advice in this scope;	B.U5	written exam, test
U11	collects and secures the samples for tests, as well as performs standard laboratory tests, and correctly analyses and interprets the results of laboratory tests	B.U6	written exam, test
U12	uses diagnostic equipment, including radiographic, ultrasound and endoscopic equipment, in accordance with its intended purpose and safety rules for dogs and cats and people, as well as interprets the results of tests obtained after its application	B.U7	written exam, test
U13	implements the appropriate procedures in the case of diagnosing a disease subject to the obligation of eradication or registration	B.U8	written exam, test
U14	is able to prescribe and use veterinary medicinal products and medical materials, taking into account their safe storage and utilisation	B.U10	written exam, test

U15	uses the methods of safe sedation, general and local anaesthesia, as well as assessment and relief of pain	B.U11	written exam, test
U16	monitors the patient's condition in the intra- and post-operative period on the basis of basic life parameters	B.U12	written exam, test
U17	chooses and applies the appropriate treatment	B.U13	written exam, test
U18	implements the principles of surgical antisepsis and asepsis, as well as applies appropriate methods of sterilising equipment	B.U14	written exam, test
U19	choose and apply rational chemotherapy, empirical and targeted antibacterial, taking into account the target animal species	A.U11	written exam, test
U20	produce clear case reports and keep records in accordance with applicable regulations regulations in this regard, in a form understandable for owner of the animal and legible for other doctors veterinary	A.U14	written exam, test
Social competences – Student is ready to:			
K1	deepens his/her knowledge and improves skills	O.K8	observation of student’s work, active participation
K2	is ready for reliable self-assessment, formulating constructive criticism in the scope of veterinary practice, accepting criticism of presented solutions, reacting to such criticism in a clear and material manner, also with the use of arguments referring to the available scientific achievements in the discipline;	O.K7	observation of student’s work, active participation
K3	uses the objective sources of information	O.K4	observation of student’s work, active participation
K4	cooperates with representatives of other professions in the scope of public health protection	O.K11	observation of student’s work, active participation
K5	exhibits responsibility for his/her decisions made in regard to the people, dogs and cats and the natural environment	O.K1	observation of student’s work, active participation
K6	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	observation of student’s work, active participation

Balance of ECTS points

Activity form	**Activity hours***
lecture	125
clinical classes	115
lesson preparation	90
exam / credit preparation	100

Student workload	**Hours**	**ECTS**
	430	17.0

Workload involving teacher	**Hours** 240	**ECTS** 9.0
Practical workload	**Hours** 115	**ECTS** 4.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	Internal Diseases of Dogs and Cats 1. Cardiovascular diseases. Part 1: dilated cardiomyopathy, endocardiosis of atrio-ventricular valves 2. Cardiovascular diseases. Part 2: hypertrophic cardiomyopathy, myocarditis, Infectious endocarditis, embolism and thrombosis 3. Cardiovascular diseases. Part 3: patent ductus arteriosus, aortic stenosis, pulmonary artery stenosis, tetralogy of Fallot, dysplasia atrioventricular valves, survived right aortic arch. 4. Skin disorders. Part 1: allergy: atopy, food allergy 5. Skin disorders. Part 2: autoimmune skin diseases, behavioral dermatosis 6. Respiratory tract disorders. Part 1: inflammation of nasal cavity, laryngitis, Respiratory syndrome of brachycephalic dogs 7. Respiratory tract disorders. Part 2: inflammation of the trachea, bronchus, bacterial pneumonia, trachea collapse, aspiration pneumonia 8. Digestive tract disorders. Part 1: stomatitis, gingivitis, salivary cysts, pharyngitis, tonsillitis 9. Digestive tract disorders. Part 2: esophageal motility disorders, 10. Digestive tract disorders. Part 3: classification of vomiting, gastritis, stomach ulcers, foreign bodies in stomach, gastric dilatation - volvulus syndrome 11. Digestive tract disorders. Part 4: acute and chronic enteritis 12. Liver, pancreas disorders: acute and chronic form of liver and pancreas diseases. Exocrine pancreas insufficiency 13. Urinary tract disorders: FLUTD, idiopathic cystitis, acute and chronic renal diseases, protein loosing nephropathy 14. Nervous system disorders. Part 1: diseases of brain, meninges, spinal cord 15. Nervous system disorders. Part 2: epilepsy – classification and treatment Surgery 1. Diseases of the eye and ear infections in dogs and cats. Bacterial inflammation of the eyelids, conjunctiva and cornea, foreign body in the conjunctival sac and cornea. Autoimmune superficial keratitis. Corneal sequestration in cats. Ocular diseases transmitted genetically. Disadvantages of the plastic lids. Tumors of the eyelids and the eyeball. Surgical ear disease. 2. Surgical diseases of the mouth, throat and esophagus. Oro-nasal fistula, Mandibulektomy and hemimandibulektomy. Tonsilektomy. Cleft of the soft and hard palate, . Cysts of the salivary glands (neck, throat, yoke, sublingual), Diverticula and achalasia of the esophagus. Foreign body in the esophagus. Cancers of the esophagus. Hiatal hernia. Vascular ring and right aortic arch. 3. Gastrointestinal disease requiring surgical intervention. Foreign bodies in the stomach. Gastrotomia, gastropexy. extension and torsion of the stomach in dogs. Neoplasms of the stomach and the method of resection of the wall. 4. Surgery within the small intestine. Foreign bodies in the small intestine. Enterotomia. Enterektomia, bowel anastomosis "end to end" and "end-to-side" anastomosis. Intussusception of the small intestine. 5. Surgical procedures in the colon and rectum. Kolopexy. Tyflektomia. Cancers of the colon. A giant colon. Prolapsed rectum. anal sinus excision. Surgical treatment of anal hernia. 6. Hernias, surgeryof hepatobiliary, adrenal, thyroid and spleen. General definition and types of hernias. Division of hernias due to their causes. Symptoms and diagnosis of hernia consequences. Complications at different hernias caused by lack of surgical intervention. Methods of surgical treatment of haernias.. Choledocholithiasis and gallbladder. tumors of adrenal gland and spleen, and surgical methods to remove them. 7. Surgical diseases of the urinary tract. Bladder stones in small animals. Surgical methods used for removing stones from the urinary bladder and urethra. Feline urological syndrome. Urinary incontinence in females. Ectopic ureters and surgical methods of treatment. Tumors of the kidneys and ureters. Uretrostomia. 8. Reproductive Surgery. Methods of castration (owariohisterektomia, orchiektomia) used in dogs and cats. Rules of conduct of mastectomy, prostate diseases - methods of surgical intervention. Plastic surgery of perineum and vulva in females 9. Thoracic Surgery in dogs and cats. Indications and rules of conduct for operating opening the chest. Foreign bodies in the thoracic esophagus. Survived the ductus arteriosus (Botall). Right-hand arch of the aorta and other vascular anomalies in the construction of a large heart. 10. Fractures in small animals. Classification of fractures and divisions in small animals, methods of conservative procedure for long bone fractures. The most commonly used method of osteosynthesis in dogs and cats (intramedullary nail, AO plate , wire, , bone ZESPOL stabilizers, POLFIX. 11. Osteosynthesis of fractures of the thoracic limbs. Orthopedic and radiological examination of the thoracic limb bone fractures in dogs and cats. Operating Procedure in fractures of the shoulder blade. Simple and complex fractures of the humerus. Monteggia fracture type. Fracture of the elbow. Procedure of fracture of metacarpal bone. 12. Osteosynthesis of fractures of the pelvic limb. Methods of fixation in fractures of the femoral shaft.. Tibial tuberosity avulsion in young dogs. Fractures of the tibia. Intramedullary Osteosynthesis of the calcaneal fracture tumor. 13. Neurosurgery of spine. Surgery: cervical spine, thoracic, lumbo- sacral spine. Surgical approaches. Methods of spinal surgery.Laminektomy and hemilaminektomy, foraminotomia, facetektomia, fenestration and ventral slot method. 14. Some joint diseases in small animals. Dislocation and subluxation in dogs and cats. Dislocation of the patella and the surgical procedure. Dysplasia of the hip and methods of surgical treatment. Diagnosis and surgical treatment for ulnar additional separate appendix. 15. Some joint diseases in small animals cont Arthropathy of the elbow caused by fragmentation of the alveolar coronary medial and lateral. Aseptic necrosis of the femoral head (Legg Calvet Perthes disease). Aseptic necrosis of the hyaline cartilage of the shoulder, elbow, ankle. Reproduction 1. Neurohormonal regulation and the course cycle in bitches; puberty and somatic maturity; hypothalamus, hypophysis-gonadal axis; hormonal feedback; relationship between age, maintenance, feeding and estrous cycle 2. Neurohormonal regulation and the course cycle in queen; puberty and somatic maturity; hypothalamus, hypophysis-gonadal axis; hormonal feedback; relationship between age, maintenance, feeding and estrous cycle 3. Disorders of estrous cycle; abnormalities of ovarian fuction: anoestrus primary and secondary, silent heat, week ovarian activity, ovulation disorders, split estrous, ovarian cysts 4. Disorders of the ovaries, uterus and vagina, part I: Vaginal prolapse, inflammation of the caudal genital tract 5. Disorders of the ovaries, uterus and vagina, part II: Genital tumors. 6. Disorders of the ovaries, uterus and vagina, part III: Cystic endometrial hyperplasia-pyometra complex; incidence, diagnosis, surgical and pharmacological treatment. 7. Disorders of sexual differentiation. Clinical aspects of sexual differentiation process. Disorders of sexual differentiation and their diagnostics, chromosomal abnormalities, gonadal abnormalities and phenotypic abnormalities. 8. Infertility infectious origin: Nonspecific infectious, specific infections: Br. Canis, CHV-1; parasitic infestation 9. Physiopathology and monitoring of pregnancy in bitches and queens, part I: Endocrinology of pregnancy. Gestational changes in maternal organism. Pregnancy diagnosis and monitoring of foetal development. Assessment of foetuses development during pregnancy and determination of parturition day. 10. Physiopathology and monitoring of pregnancy in bitches and queens, part II: Pregnancy abnormalities in a practice – clinical cases. 11. Eutocia – normal parturition Endocrinology of parturition. Initiation of parturition. Course of normal delivery. Stages of parturition. 12. Dystocia – abnormal parturition and obstetrical aid in the bitches and queens. Causes of dystocia of maternal and foetal origin. Symptoms of dytocia. Methods of obsetrical aid. Manual assistance, the use of forceps, medication – ecbolic therapy, cesarean section. 13. Mammary gland disorders in bitches and queens. Agalactia, hypogalactia, mastitis, pseudopregnancy. 14. Veterinary care on puppies and kittens from birth to weaning. Feeding of the lactating dam. Neonatal care, resuscitation, optimal environmental conditions, artificial feeding, veterinary assistance, methods of evaluation of live ability of neonates. 15. Diseases of puppies and kittens from birth to weaning. Still births in puppies/kittens. Isoerythrolises serological conflict, herpesvirosis and other specific infectious factors, abnormal development, staphyloccocal infectious: toxic milk syndrome, diarrhorea, fading puppy/ kitten syndrome. Assessment of congenital reflexes. Infectious Diseases 1. Infection diseases in dogs and cats - Rabies and Lyssavirusy infection 2. Infection diseases in dogs – canine parvovirus infection, coronavirus infection and ratovirus infection 3. Infection diseases in dogs – babesiosis in dogs, boreliosis and Lyme diseases, RMSF 4. Infection diseases in dogs – herpesvirus infection in dogs, Brucella sp., Mycoplasma sp. and Ureaplazma sp. infection 5. Infection diseases in dogs – infection of Clostridium sp. (enterotoxemia, tetanus, Clostridium botulinum infection) 6. Infection diseases in dogs – erlichiosis and anaplasmosis 7. Infection diseases in cats – retrovirus infection (FeLV, FIV) 8. Infection diseases in cats – infection of parvo-, astro- i coronavirus (FIP) 9. Infection diseases in cats – URTD syndrom 10. Diagnostics of infection diseases in dogs and cats 11. Infection diseases in cats – TSE, orthopoxvirus infection, papilomatosis 12. Mycosis in dogs and cats 13. Infection diseases in dogs and cats – haemoplasmosis and bartonellosis 14. Infection diseases in dogs and cats – ineection diseases after surgery intervention 15. Biosecurity in kennel of dogs and cats	lecture

2.	Diseases of Dogs and Cats – practical exercises 1. Endoscopic examination of nasal cavity. Laryngotracheobronchoscopy. 2. Additional diagnostic tests used in diagnosis of skin disorders – part 1 and 2 3. Additional laboratory examinations used in endocrinal disorders 4. EKG and heart USG 5. Interpretation the result of electrodiagnostic examination in neurological patients (EMG, EEG, MNCV). 6. Prevention and treatment of dentistry 7. RTG in dentistry 8. Procedures used in alimentary tract disorders 9. Liver biopsy 10. Cystocentesis and laboratory urine analysis 11. Cystoscopy, kidneys biopsy 12. Interpretation of the advanced imaging in neurological patients (X-ray, CT, MRI). 13. Organs punctures. Examinations of body fluids 14. TEST Surgery 1. Desmurgia. Approaches to the establishment wound dressings under the band. Applying a soft gauze dressings and gel. Compression bandages used for haemostasis and compression used in orthopedic surgery of large animals. Approaches to the establishment of restraining bandages, plaster and synthetic plastics bonding after contact with air or water. Making cooling and warming compresses after injuries in orthopedic diseases. 2. Surgical procedures on the head: the sublingual and submandibular salivary glands, trepanation of sinuses and nasal cavity, the opening of the frontal sinuses and nasal passages, jaw surgery. Methods of extraction of milk teeth and permanent. Cleft palate surgery. 3. Ophthalmology - selected eye diseases of dogs and cats; irrigation naso-lacrimal duct, subconjunctival injections and eyeball prolapse, third eyelid gland and operational methods of repositioning or resection, follicular inflammation of the third eyelid, eyelid plastic surgery, (entropion, ectropium, kantotomia), extirpation of the eyeball. Corrective Actions in the eyelids folded up in the medial corner of the eye, 4. Ophthalmology - clinical examination of eye of dog and cat using: slit lamp, direct and indirect ophthalmoscopy, diafanoskopii, applanation tonometer Schiötza tonometer. Clinical study of vision. 5. Orthopedic examination of small animals - Plan and test methods, the test animals lying, standing the test animal (stationary and moving), additional tests. 6 Conservative and surgical treatment of bone fractures in dogs and cats. Intramedullary osteosynthesis, fixation plate, Weber loop (types of nails, types of plates, screws, wires bone. 7. ZESPOL stabilizer bone fusion and osteosynthesis AO: classification, types and methods of setting the stabilizer ZESPOL, display and use of AO bone plates. 8. Therapeutic surgical diseases of joints: surgical approaches, sprain, ligament rupture, arthrodesis, ankiloza. 9. final test 10. Chest Surgery: thoracotomy, PDA, foreign body in the esophagus, pneumothorax, subcutaneous emphysema, diaphragmatic hernia, resection of the lobe and completed the protocol of anaesthesia, use of recording equipment 11. Surgical procedures in the abdomen - the digestive tract: laparotomy, gastrotomia, gastropexia, extension and torsion of the stomach, gastropexia, splenectomy, enterektomia. 12. Surgical procedures in the abdomen: the urinary system and sex: stones in the bladder and urethra, cystotomy, ectopic ureters, ovariectomy, owariohisterektomia, umbilical hernia, inguinal, femoral, Perineal, traumatic, rules remove cancerous tumors in the abdomen . 13. Anesthesiology - select models of small animal anesthesia, analgesia, local head of a cat and dog. Local anesthetic. Epidural anesthesia and brachial plexus. Inhalation anesthesia and types of anesthetic apparatus and methods of inhalation anesthesia. 14. Anesthesiology - cardiopulmonary resuscitation, practical exercises in the field of resuscitation and CPR for cardiac pulmonary failure in dogs and cats in life-threatening conditions. 15. final test Reproduction 1. Gyneacological examination in bitches and queens practice – clinical examination, vaginal cytology, collection, staining and interpretation of results (prac.). Introduction – basics of clinical examination and vaginal cytology, collection of vaginal swabs. Smear preparation and staining. Assessment of samples. 2. Endoscopic examination and endocrinological diagnosis of reproductive function in practice – technique, basics and result interpretation (prac.). Introduction, endoscopy of the vagina, interpretation and discussion of the results vaginoscopy catheterisation of uterine cervix. Analysing of progesterone level and discussing results, analyses of dynamic changes in sexual hormone concentration in peripheral blood. 3. Reproductive ultrasound diagnosis in small animal in practice – ultrasonographic examination of uterus and ovaries in different physiological stages and pathological conditions (prac.). Introduction, practical aspects of examination of ovaries, uterus, uterine cervix and other reproductive structures. Interpretation of ultrasound images. 4. Determination of optimal mating time (prac.). Plan of examination of the bitch to determine optimal mating time. Analyses of clinical symptoms, cytological findings, discussion of results of endoscopy, endocrinological examination and ultrasound diagnosis. Management, algorithms. 5. Reproductive surgieries in practice: students assistance, cesarean section, gonadectomy in dogs and cats, mastectomy, surgical treatment of pyometra. Discussion. Infectious Diseases 1. Rabies in dogs and cats. The exercises concern epidemiology and distribution of Rabies infection, etiology, pathogenesis, clinical and pathological disorders, diffenential diagnosis, laboratory diagnosis, with important information about taken of diagnstics material and eradication 2. Distemper (CDV), Adenovirus infection in dogs (CAV-1, CAV-2). The exercises concern: etiology, pathogenesis, clinical disorders, differential diagnosis, laboratory diagnosis wtth diagnostics samples, eradication with prophylaxis. 3. Viral and bacterial infection of digestive tract in dogs and cats (CPV and FPV) The exercises concern: etiology, pathogenesis, clinical disorders, differential diagnosis, laboratory diagnosis wtth diagnostics samples, eradication with prophylaxis. 4. Leptospirosis in dogs and pasterellosis. The exercises concern: etiology, pathogenesis, clinical disorders, differential diagnosis, laboratory diagnosis wtth diagnostics samples, eradication with prophylaxis. 5. Viral and bacterial infection of digestive tract in dogs and cats: coronavirus infection (CCV i FCoV), rotavirus infection (CRV i FRV), E. coli, staphyloccocal and streptococcal infection The exercises concern: etiology, pathogenesis, clinical disorders, differential diagnosis, laboratory diagnosis wtth diagnostics samples, eradication with prophylaxis. 6. Viral and bacterial infection of respiratory tract in dogs and cats – kennel cough. The exercises concern: etiology, pathogenesis, clinical disorders, differential diagnosis, laboratory diagnosis wtth diagnostics samples, eradication with prophylaxis. 7. Viral and bacterial infection of respiratory tract in dogs and cats – URTD syndrom. The exercises concern: etiology, pathogenesis, clinical disorders, differential diagnosis, laboratory diagnosis wtth diagnostics samples, eradication with prophylaxis. 8. Viral and bacterial infection of nervous system in dogs and cats. The exercises concern: etiology, pathogenesis, clinical disorders, differential diagnosis, laboratory diagnosis wtth diagnostics samples, eradication with prophylaxis. 9. Prophylaxis in dogs and cats. The exercises concern eradication with prophylaxis and control methods of effective proceedings. 10. Summary and credit. 8. Viral and bacterial infection	clinical classes

Course advanced

Teaching methods:

classes, practical simulation training, lecture, discussion, computer lab/laboratory, teamwork, presentation / demonstration, situation-based learning, project-based learning (PBL), problem-solving method, foreign language (conversation classes), educational game, educational film, brainstorming, text analysis, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	written exam	50%

Activities	Examination methods	Percentage in subject assessment
clinical classes	written exam, observation of student’s work, active participation, test	50%

Entry requirements

Animal anatomy I and II, biochemistry I and II, histology and embryology I and II, veterinary microbiology I and II, animal physiology I and II, clinical and laboratory diagnostics I and II, veterinary pharmacology, pathophysiology I and II, pathomorphology I and II, parasitology and invasiology.

Literature

Obligatory

1. Internal Disease - Small Animal Internal Medicine, 6th Edition, Authors: Richard Nelson C. Guillermo Couto, 2019
2. Reproduction - BSAVA Manual of Canine and Feline Reproduction and Neonatology. Red. G. England, A. von Heimendahl, BSAVA 2010
3. Infectious Diseases - C.E. Green: Infectious diseases of dog and cat. Elsevier, 2010
4. Surgery - Small Animal Surgery, 5th Edition, Authors: Theresa Fossum, 2018

Optional

1. Cote's Clinical veterinary Advisor: Dogs and Cats - 4th Edition
2. Small Animal Internal Medicine for Veterinary Technicians and Nurses 1st Edition
3. Small Animal Medical Differential Diagnosis: A Book of Lists 3rd Edition
4. Textbook of Veterinary Internal Medicine - 8th Edition, Ettinger ,Feldman, Cote
5. Clinical Canine and Feline Reproduction, M. V. R.Kustritz, 2009

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Hygiene of food processing I

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J100BO.0933.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Katarzyna Kosek-Paszkowska
Other teachers conducting classes	Katarzyna Kosek-Paszkowska, Jarosław Bystroń

Period	**Examination**	**Number of ECTS points**
Semester 9	graded credit **Activities and hours** lecture: 30 laboratory classes: 45	5.0

Goals

C1	The aim of the course is to give the students knowledge about most important processes used in food technology, about influence of each process on consumer health, about microbiological hazards related to different food of animal origin.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	technological processes used in production of animal origin foodstuffs	B.W17	written credit, observation of student’s work, active participation, test
W2	hazard related to technological process used during processing of food of animal origin	B.W17	written credit, observation of student’s work, active participation, test
W3	hygiene requirements and obligatory law regulations implemented in processing of food of animal origin	O.W12	written credit, observation of student’s work, active participation, test, performing tasks
W4	rules of consumer's health protection and surveillance on production of animal origin food	O.W11	written credit, observation of student’s work, test
W5	knows and interprets the conditions of animal origin food production	B.W20	written credit, observation of student’s work, test
Skills – Student can:			
U1	assess the parameters of technological processes and hygienic requirements in food industry	B.U18	observation of student’s work, active participation, performing tasks, case study
U2	evaluate the quality of food of animal origin	B.U18	observation of student’s work, active participation, performing tasks, case study
U3	interpret the results of microbiological and chemical examinations of food of animal origin	B.U22	observation of student’s work, active participation, performing tasks, case study
Social competences – Student is ready to:			
K1	is ready for reliable self-assessment, formulating constructive criticism in the scope of veterinary practice, accepting criticism of presented solutions, reacting to such criticism in a clear and material manner, also with the use of arguments referring to the available scientific achievements in the discipline	O.K7	observation of student’s work, active participation, performing tasks, case study

Balance of ECTS points

Activity form	Activity hours*
lecture	30
laboratory classes	45

lesson preparation	40
exam / credit preparation	20

Student workload	**Hours** 135	**ECTS** 5.0
Workload involving teacher	**Hours** 75	**ECTS** 3.0
Practical workload	**Hours** 45	**ECTS** 1.7

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Healthy eating, basing rules of proper nutrition, main role of food technology, how to eat to stay healthy. 2. Microbial pathogenicity: steps of microbial invasiveness, colonization, adhesis of bacteria, mechanisms of adherence 3. Factors affecting microbial activity in food: pH, water activity, redox potential, temperatures: mesophilic, psychrophilic, thermophilic bacteria; change of water activity by physical and chemical processes and its influence on bacteria, the role of pH and red-ox potential in food. 4. Food poisoning: kinds of food poisoning, food intoxications, systemic infections, mechanism of food poisoning, how to avoid food poisoning, the most popular food poisonings 5. Bacterial defense against host immune system: bacterial defense against phagocytosis, bacterial defense against adaptive immune system, intracellular parasites. 6. Foodborne protozoa: the most important protozoa transmitted by food: Giardia, Cryptosporidium, Toxoplasma, Cyclospora, life cycles, reservoirs, sources of infections, food of concern, control in food chain 7. Allergens in food: law regulation about food allergens, main food allergens, difference between food allergy and food intolerance, mechanism of food allergy and food intolerance, protection of consumer against food allergies 8. Foodborne viruses: foodborne viral infections, the most important viruses transmitted via food, viruses that cause gastroenteritis, hepatitis viruses, other viruses, sources of food contamination by viruses, epidemiology 9. Foodborne botulism: infant type botulism, food involved in botulism, botulinogenic food, prevention against botulism 10. Emergency pathogens transmitted via food : main pathogens of concern: Arcobacter butzleri, Mycobacterium avium, Aeromonas hydrophila, Hepatitis E, sources of pathogens, prevention, epidemiology. 11. Food packaging and labeling: the role of packaging in food industry, primary, secondary, tertiary packaging, materials used for packaging, law requirements for packaging, evaluation of packaging materials , law requirements concerning food labeling in EU. 12. Microflora of food processing plants and production facilities and its impact on food safety: microflora of food processing plants, microbiological contamination of production facilities and production equipment, microflora of the air in large and small food processing plants. 13. The role of veterinary inspection in food processing plants: law requirements, main tasks of vets, cooperation with other inspections. 14. Prerequisite Programs (PRPs), Sanitary Standard Operational Procedures (SSOP), Good Manufacturing Procedures, Good Hygienic Procedures (GMP/GHP) in food industry- practical approach, law regulations, methods of checking, veterinary surveillance. 15. New eating rules: new nutritional pyramid, the most popular diet- pros and cons, diet food- pros and cons, superfoods .	lecture

2.	1.Mechanical operations used in food technology: basic mechanical processes used in meat industry - grinding, mincing, mixing, filling, tumbling, characteristic of mechanical meat machineries – grinder, bowl cuter, tumbler, sanitary aspects of mechanical operations; chilling of food: classification of microorganisms according to their thermal growth conditions, characteristic of psychrotrophic and psychrophilic microorganisms, storage of food in chilling conditions. 2.Storage of raw materials, cutting and dressing operations, classes of meat trimmings: conditions during carcasses storage, temperatures of meat storage, cutting into primal cuts, meat ageing, primal pork and beef cuts, classification of pork and beef meat trimmings, veterinary examination of meat trimmings, classification of slaughter by-products- classes in meat processing plant. 3. Curing, salting and marinating: methods of curing- dry and wet curing, multi-needle injection curing, role of curing in meat technology, the role of nitrate and nitrite, health hazards connected with cured products, machines used for curing, role of salt in food preservation, microbiology of salted products, marinating as a method of food preservation. 4.Smoking, drying, freeze-drying: role of smoking in meat processing, types of smoking: cold, warm, hot smoking, smoking with smoke preparates, microbiology of smoked products, health hazards connected with smoked products, methods of food drying, natural and machine drying, machines used for drying, technology of freeze drying, triple point of water, role of freeze drying in food technology. 5.Thermal treatment – freezing of food: – shelf life, spoilage, microbiological safety, freezing of food – types, shelf life, susceptibility of microorganisms, defrost of food. 6.Hygiene and technology of animal fat processing: classification and chemical composition of fat raw materials, veterinary inspection of fat raw materials, hydrolytic and oxidative rancidity, Lea number, Kreis test, rendering of animal fat raw materials, production of lard and tallow, microbiological safety of rendered animal fat 7. Storage of food in vacuum and modified atmosphere: technology of vacuum and MAP packaging, microbiology of vacuum and MAP packed products, gases used in MAP technique, MAPAX technique in food packaging, spoilage of vacuum packed and MAP products. 8.Hygiene, technology and microbiology of egg and egg products: microbiology of eggs, good hygienic practice during egg production, production of powdered eggs, microbiology of eggs, Salmonella in eggs, spoilage mechanisms. 9. Thermal treatment - high temperatures: definition and history of food thermal processing, botulinogenic food, pasteurization of food, SSP products, sterilization of food, types of food sterilization, appertization, microbial inactivation parameters used in thermal processing of food – F, z, L, A, D, survival curve, TDT curve, termophilic microorganisms. 10.. Thermal treatment - high temperatures – botulism: intoxication, toxicoinfection, botulinum toxins, foodborne botulism, infant-type botulism, wound botulism, pathogenesis of botulism, prevention of foodborne botulism. 11. Hygiene and technology of honey production (types of honey and bee products, evaluation of honey, examination of honey, organoleptic properties, law regulations. Hygiene and technology of slaughter by products (types of slaughter by products, using of such raw material for foodstuff production, edible and inedible products, preservation, spoilage, natural casings. 12. Hygiene in food plants in practice- examination of clothes and hands: microbiological criteria for personal hygiene, swabbing, hygiene of clothes, methods of hand disinfection, microbiological status of hands, permanent and non-permanent microflora. 13. Organoleptic evaluation, sensory analysis- practical aspects and organoleptic examination of sausages: definition of sensory analysis and organoleptic examination, role of sensory analysis in food quality evaluation, gustometry, sensory analysis laboratory, taste sensitivity tests, sensory analysis of sausages – external, cross-section, mouth-feel examination, protocol of organoleptic examination. 14. Hygiene and technology of meat cans production: types of cans, sterilization and pasteurization of meat cans, F value and meat cans, durability of meat cans, chilling after thermal treatment, microbiology of meat cans, technological production processes of sterilized and pasteurized meat cans. Practical laboratory examination of meat cans: thermostatic evaluation of pasteurized and sterilized cans, examination of cans tightness, microbiology examination, sensory evaluation of meat cans, swelling of cans, types of swelling, double seam examination, spoilage of meat cans. 15. Organoleptic examinations of fish and fish products: microbiological and chemical hazards connected with fish and fish products, raw fish examination, evaluation of freshness, microbiology of fish meat and fish products, sensory evaluation of fish products-fish marinations, smoked fish, fish cans.	laboratory classes

Course advanced

Teaching methods:

tutoring, flipped classroom, classes, lecture, presentation / demonstration, situation-based learning

Activities	Examination methods	Percentage in subject assessment
lecture	test, case study	40%
laboratory classes	written credit, observation of student’s work, active participation, performing tasks	60%

Entry requirements

Animal Anatomy, Animal Physiology, Biochemistry, Veterinary Microbiology, Food law, Slaughter animals and meat hygiene

Literature

Obligatory

1. Varnam A.H, Evans M.G. “Foodborne pathogens”, Mancon Publishing, 2005;
2. Hui Y.H. “Handbook of meat and meat processing”, CRC Press, 2012
3. Shapton D.A, Shapton N.F “Principles and practices for the safe processing of foods”, Woodehead Publishing, Cambridge, 2001.
4. Feiner G. “Meat products handbook”, CRC Press, 2006.

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Preventive veterinary medicine I

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J100BO.1899.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** Yes **Subject shaping practical skills** Yes

Teacher responsible for the subject	Tadeusz Stefaniak
Other teachers conducting classes	Tadeusz Stefaniak, Anna Rząsa, Paulina Jawor

Period Semester 9	**Examination** graded credit **Activities and hours** lecture: 15 laboratory classes: 30	**Number of ECTS points** 2.0

Goals

C1	Preparation of students to work in large farms of livestock animals. During lectures, classes and tasks directed to solve real farm problems, students are prepared to play a role of modern farm veterinarian co-operating with large units, focused on the herd health protection.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	defines the rules of cooperation with the breeder	B.W5, B.W9, O.W4, O.W8	written credit, active participation, participation in discussion
W2	identifies the tasks of the farm veterinarian in large herd breeding facilities	A.W10, B.W6, B.W9, O.W3, O.W8	written credit, active participation, participation in discussion
W3	identifies the most common health problems in herds of cattle, pigs, sheep and goats	A.W10, B.W6, O.W2, O.W8	written credit, active participation, performing tasks, case study
W4	defines the basic methods of preventing and treatment diarrhea in cattle and pig herds	A.W5, B.W4, O.W3, O.W8	written credit, active participation, performing tasks, case study
W5	the role of colostral immunity in protecting the health of young farm animals	A.W1, B.W5, B.W6, O.W1, O.W2	written credit, active participation, participation in discussion
W6	rules for the use of farm data and laboratory examination in the herd health monitoring	A.W11, B.W20, B.W5, B.W6, B.W9, O.W8	written credit, active participation, performing tasks, case study
Skills – Student can:			
U1	select a representative group of animals in healthy and problem herds - preparation for animal health monitoring in the herd	A.U7, B.U2, O.U1, O.U3, O.U4, O.U7	written credit, active participation, performing tasks, case study
U2	is able to monitor animal health status in a large farm	A.U12, B.U6, O.U2, O.U4	written credit, active participation, performing tasks, case study
U3	is able to utilize the determination of acute phase proteins and selected biochemical parameters of blood, urine, milk in the monitoring the herd health	B.U6, O.U2, O.U3, O.U4	written credit, active participation, performing tasks, case study
U4	assess the status of colostral immunity of young farm animals and implement corrective measures in cases of failure	A.U7, B.U2, B.U20, B.U6, O.U10	written credit, active participation, performing tasks, case study
Social competences – Student is ready to:			
K1	skilful use of various sources of information available on the farm to protect the health of animals	O.K4, O.K5, O.K8	observation of student’s work, participation in discussion
K2	creating a way of cooperation with a breeder focused on the protection of the health of the livestock herd	O.K1, O.K11, O.K3, O.K9	observation of student’s work, participation in discussion

Balance of ECTS points

Activity form	Activity hours*

lecture	15
laboratory classes	30
presentation/report preparation	5
consultations	1
exam / credit preparation	6
lesson preparation	3

Student workload	**Hours** 60	**ECTS** 2.0
Workload involving teacher	**Hours** 46	**ECTS** 1.8
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. The idea of herd health care. Actual trends in dairy farms. Evolution of veterinary tasks in present livestock animals' keeping farms. Relations advising veterinarian - owner. Expectations of producers against farm veterinarian. How to convince the breeders for herd health protection. Tasks of preventive veterinarian. Factors affecting the herd. 2. Manners of the transfer of passive immunity from mother to the offspring. Problems in large farm systems. Consequences of the failure of passive transfer. Short- and long-term consequences of neonatal pathology.The evaluation of adequacy of the passive transfer in calves. Advantages and disadvantages of different methods of colostral immunity evaluation. Introduction of the programmes of colostral immunity in the farms of different management and size. 3. Newborn care (calves). Monitoring of the parturition. Procedures of newborn calf care. Hygiene regime of newborn calves boxes. Access to drinking water until first day of life. Bioasecuration in delivery-stall and at rearing the calves. Dynamics of blood serum immunoglobulins in calves with failure of passive transfer (FPT) during first month of life. Economical consequences of FPT. 4.Newborn care (piglets). Stillborn piglets – causes and features. Losses of piglets caused by neonatal asphyxia. Methods of piglets' vitality score. Intrauterine infection. Development of the immunity in piglets. 5-6. Preparation of rules for swine farm prophylactic programmes 7. Economical profits from supplemental rearing piglets at wet nurses. Calculation of immunoprophylactic programme based on selected example in whole production cycle.Advantages and disadvantages of different systems of pig keeping. Factors affecting pigs health and productivity. 8. Calculation of costs of pathology , losses and profitability of introduced prophylactic programmes in swine farm (on examples). Evaluation of losses (direct, indirect, utilization of different indices). Description of "health risk" and predisposing factors (relative risk, typical risk). 9. Newborn care (lambs and goat kids). Optimizing the periparturient survival of lambs/goat kids. Hypothermia treatment in neonates. The most common causes of lamb/goat kids mortality. "Downer kid syndrome" , „watery mouth" in lambs. Congenital muscle dystrophia (white muscle disease). Respiratory Distress Syndrome. Congenital copper deficiency in lambs. 10. Problems with herd immune status. Principles of immunoprophylactics in the herd. The influence of nutrition. The protection of innate immunity mechanisms. Modulating the specific immunity. Programme of herd immunity status evaluation. Risk factors in different production groups of dairy herd. 11.Herd health care. Basic requirements of farm veterinarian necessary to start the herd care. Most important principles of monitoring the herd health. Why and how do the laboratory monitoring? Proposal of monthly reports of monitoring of diseases/threats in dairy farm. Periodicity in herd health monitoring. Desired features of documentation system. Checkpoints in herd and environment evaluation. 12. Acute phase proteins (APPs) in veterinary diagnostics. Their utilization in herd health monitoring. Thye manner of the reaction to inflammatory stimuli. Selected functions of APPs in course of the inflammation. Features of haptoglobin and fibrinogen and their application in veterinary practice (examples). 13. Herd immunity monitoring. Risk factors of main production groups in dairy and beef cattle. Factors influencing the yield and the health of dairy cows. The methods of the detection of threats in the farm. 14. Homeostasis of alimentary tract and its disturbances. Digestion and absorption in different segments of digestive tract of healthy, diarrheic and convalescent calves after oral fluid therapy. Strategies of prevention of the alimentary tract infections. 15. Risk factors of the diarrhoea in barn and calfbarn. Principles of immunoprophylactic programmes management in large farms of ruminants. Prophylactic application of allo- and xenogenic immunoglobulins. Economical aspects of diarrhoea in the farm.	lecture

2.	Block I. IMMUNITY OF FARM ANIMALS 1. Differences between classical veterinarian and preventive veterinarian. Dependences in the herd between A-human, B-nutrition, C-environment. Individual patient and collective patient-herd. Target and selection of laboratory examinations. 2. Immunity of the neonate. Division of mammals according to way of transfer the maternal immunity to the progeny. Methods of checking the colostral imunity in farm animal neonates. Division of immunity factors of the colostrum: humoral specific; humoral innate; cellular specific; cellular innate. 3. Field tests of checking the colostral immunity in farm animals' neonates. Foals. Determination of serum immunoglobulins using Glutaraldehyde Coagulation Test (GCT). Interpretation of the results. Treatment of foals with failure of passive transfer (FPT) and partial failure of passive transfer(PFPT). Calculating the plasma/serum volume for interventive application in foals. 4. Calves. Zinc Sulphate Turbidity Test (ZSTT). Cooperation of calf immune mechanisms with colostral immunity. Determination of immunological value of the colostrum. Sodium Sulphite Turbidity Test (SSTT). Individual and herd level evaluation. 5. The evaluation of immune value of the colostrum. Differences in the content of Ig in the colostrum and milk – practical aspects. The influence of timing and colostrum Ig concentration on the efficiency of Ig absorption. Methods of colostrum preservation and management of „colostrum bank". Effectiveness of the colostral immunity transfer. Effectiveness of the transfer of passive immunity. Index of total Ig at 3-4th week of life. Calculation of the Index for differefent farms, their interpretation and planning of improving strategies according to farm specificity. Associations between colostral immunity and the future of heifer-calves. 6. Problems of lambs' and goat kids' immunity in large herds. Transfer of colostral immunity in sheep and goat, factors affecting the transfer associated with the dam, human and the newborn. FPT in lambs and goat kids. Criteria of evaluation the colostrum and the newborn serum Ig in lambs and goat kids. "Colostrum bank" and the application of cow colostrum, indications. Risk of hemolytic anemia. 7. Problems of piglets' immunity in large herds. Differences of Ig content in the colostrum and milk –practical importance. Factors affecting the effectiveness of passive immunity transfer (associated with the dam, human and the newborn). The influence of low and high antigenic stimulation on the rearing effects of piglets. Prevention of excessive antigenic stimulation in swine. BLOCK II. TASKS OF FARM VETERINARIAN IN HERD HEALTH MONITORING 8. TEST 1. Elaboration of management programmes of first day care of calves and piglets in relation to farm management. Case diagnosis. Tasks of type case-oriented education. 9. Acute phase proteins (APPs) – the utilization in veterinary diagnostics. Determination of fibrinogen according to Millar et al. Application of other serum proteins in the evaluation of herd health. 10. Determination of haptoglobin according to Spooner. Application of APPs in the disease monitoring. Evaluation of cases. 11.. Selection of farm representative group. Results of laboratory examinations – their sorting and methods of analysis. Performing the metabolic profiles in farms. Methods of presenting the results (table system, diagrams). Elaboration by students of the results of representative group examination (part I). Preparation of tasks for next class. 12. Elaboration by students of the results of representative group examination (part II). Interpretation of the results of representative group for the herd. Block III. LOSSES IN YOUNG STOCK REARING – CAUSED BY ALIMENTARY TRACT PATHOLOGY 13. TEST 2. Non-infectious and infectious causes of diarrhoea. Disturbances of intestinal homeostasis. 14. 1. The idea of herd health care. Actual trends in dairy farms. Evolution of veterinary tasks in present livestock animals' keeping farms. Relations advising veterinarian - owner. Expectations of producers against farm veterinarian. How to convince the breeders for herd health protection. Tasks of preventive veterinarian. Factors affecting the herd. 2. Manners of the transfer of passive immunity from mother to the offspring. Problems in large farm systems. Consequences of the failure of passive transfer. Short- and long-term consequences of neonatal pathology.The evaluation of adequacy of the passive transfer in calves. Advantages and disadvantages of different methods of colostral immunity evaluation. Introduction of the programmes of colostral immunity in the farms of different management and size. 3. Newborn care (calves). Monitoring of the parturition. Procedures of newborn calf care. Hygiene regime of newborn calves boxes. Access to drinking water until first day of life. Bioasecuration in delivery-stall and at rearing the calves. Dynamics of blood serum immunoglobulins in calves with failure of passive transfer (FPT) during first month of life. Economical consequences of FPT. 4.Newborn care (piglets). Stillborn piglets – causes and features. Losses of piglets caused by neonatal asphyxia. Methods of piglets' vitality score. Intrauterine infection. Development of the immunity in piglets. 5-6. Preparation of rules for swine farm prophylactic programmes 7. Economical profits from supplemental rearing piglets at wet nurses. Calculation of immunoprophylactic programme based on selected example in whole production cycle.Advantages and disadvantages of different systems of pig keeping. Factors affecting pigs health and productivity. 8. Calculation of costs of pathology , losses and profitability of introduced prophylactic programmes in swine farm (on examples). Evaluation of losses (direct, indirect, utilization of different indices). Description of "health risk" and predisposing factors (relative risk, typical risk). 9. Newborn care (lambs and goat kids). Optimizing the periparturient survival of lambs/goat kids. Hypothermia treatment in neonates. The most common causes of lamb/goat kids mortality. "Downer kid syndrome" , „watery mouth" in lambs. Congenital muscle dystrophia (white muscle disease). Respiratory Distress Syndrome. Congenital copper deficiency in lambs. 10. Problems with herd immune status. Principles of immunoprophylactics in the herd. The influence of nutrition. The protection of innate immunity mechanisms. Modulating the specific immunity. Programme of herd immunity status evaluation. Risk factors in different production groups of dairy herd. 11.Herd health care. Basic requirements of farm veterinarian necessary to start the herd care. Most important principles of monitoring the herd health. Why and how do the laboratory monitoring? Proposal of monthly reports of monitoring of diseases/threats in dairy farm. Periodicity in herd health monitoring. Desired features of documentation system. Checkpoints in herd and environment evaluation. 12. Acute phase proteins (APPs) in veterinary diagnostics. Their utilization in herd health monitoring. Thye manner of the reaction to inflammatory stimuli. Selected functions of APPs in course of the inflammation. Features of haptoglobin and fibrinogen and their application in veterinary practice (examples). 13. Herd immunity monitoring. Risk factors of main production groups in dairy and beef cattle. Factors influencing the yield and the health of dairy cows. The methods of the detection of threats in the farm. 14. "Full belly scour". Determination of milk coagulation time. Factors affecting calcium avalabilityand coagulation time. Short and long term prevention. Secondary role of infectious agents. Main rules in the prevention of diarrhoea. 15. Homeostasis of alimentary tract and its disturbances. Digestion and absorption in different segments of digestive tract of healthy, diarrheic and convalescent calves after oral fluid therapy. Strategies of prevention of the alimentary tract infections. 15. Dehydration: types, differential signs. Estimated and field methods of calculation of water and electrolyte losses for the individual and group of animals. Calculation of water and electrolyte deficit. Evaluation of intensity of acidosis based on clinical signs.	laboratory classes

Course advanced

Teaching methods:

classes, lecture, discussion, teamwork, presentation / demonstration, problem-solving method, educational film, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	written credit	40%
laboratory classes	written credit, observation of student's work, active participation, participation in discussion, performing tasks, case study	60%

Entry requirements

Animal Breeding; Technologies in Animal Production; Animal Nutrition; Animal Physiology I; Animal Physiology II; Biochemistry I; Biochemistry II; Microbiology I; Microbiology II; Veterinary Immunology; Ethology, Welfare and Animal Protection; Animal Hygiene; Diseases of Farm Animals

Literature

Obligatory

1. Herd Health Food Animal Production Medicine 3rd ed., ed. Radostits, 2001,
2. Large Animal Internal Medicine 5th ed. Editors: Bradford Smith, Imprint: Mosby, 2014
3. Jawor P. Stefaniak T.: Acute Phase Proteins in Cattle. in: Acute phase proteins as early non-specific biomarkers of human and veterinary diseases (Ed. by Francisco Veas) InTech, Rijeka, Croatia, 2011, pp. 381-408

Optional

1. Rząsa A., Stefaniak T., Jawor P., Gosiewski S., Toborowicz P.: The effect of HERB-mix® in piglets' diarrhea prevention. Arch. Tierz., Dummerstorf 50 (2007) Special Issue, 136-143
2. Stefaniak T.: Control of intestinal diseases by dietary supplementation with antibodies. w Mosenthin R., Zentek J., Żebrowska T.(ed.): Biology of Nutrition in Growing Animals. Elsevier,Edinburgh, London, New York, Oxford, Philadelphia, St. Louis, Sydney, Toronto 2006, 285-309.
3. Pisarska A., Stefaniak T., Popławski M., Przewoźny M., Ratajski R., Polak A., Nowacki W.: Transfer of maternal passive immunity to kids in goat herd. Pol. J. Vet. Sci. 5, 251-255 (2002)

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Slaughter animals and meat hygiene III

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J100BO.2337.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** Yes **Subject shaping practical skills** No

Teacher responsible for the subject	Aleksandra Tabiś
Other teachers conducting classes	Aleksandra Tabiś, Sylwia Banaszkiewicz, Joanna Skonieczna

Period	**Examination**	**Number of ECTS points**
Semester 9	exam **Activities and hours** laboratory classes: 25	3.0

Goals

C1	The goal of the course is to learn the student food safety hazards that occur in the process of slaughtering animals, rules governing the veterinary supervision of obtaining meat from slaughter and game animals, changes in meat induced by disease processes that affect the quality and evaluation of meat, post-mortem laboratory meat inspection.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	presents in detail the principles of examination of the slaughter animals, meat and other animal products;	O.W10	written exam, oral exam, written credit, oral credit
W2	presents the methods of management and utilisation of animal by-products and waste associated with animal production	B.W15	written exam, oral exam, written credit, oral credit
W3	presents the principles of consumer health protection, which are ensured by appropriate supervision over the production of foodstuffs of animal origin	B.W17	written exam, oral exam, written credit, oral credit
W4	characterises the control systems in accordance with HACCP (Hazard Analysis and Critical Control Points) procedures	B.W18	written exam, oral exam, written credit, oral credit
W5	knows to an extensive degree the procedures of pre- and post-mortem inspection	B.W19	written exam, oral exam, written credit, oral credit
W6	knows and interprets the conditions of hygiene and technology of animal production;	B.W20	written exam, oral exam, written credit, oral credit
W7	knows to an extensive degree, interprets and observes the principles of food law	B.W21	written exam, oral exam, written credit, oral credit
Skills – Student can:			
U1	Performs pre- and post-mortem inspection of slaughter animals and examination of meat, as well as other products of animal origin;	O.U5	oral exam, oral credit
U2	is able to perform pre- and post-mortem inspection	B.U17	oral exam, oral credit
U3	assesses the quality of products of animal origin	B.U18	oral exam, oral credit
U4	assesses the fulfilment of requirements of the slaughter animals protection, taking into account the various methods of slaughter	B.U24	oral exam, oral credit
U5	is able to collect samples for monitoring tests for the presence of prohibited substances, chemical and biological residues, medicinal products and radioactive contamination in animals, in their secretions, excretions, tissues or organs, in products of animal origin, food, in water intended for animal drinking and in the feed;	B.U23	oral exam, oral credit
Social competences – Student is ready to:			
K1	Exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	oral credit
K2	deepens his/her knowledge and improves skills	O.K8	oral credit
K3	Has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	oral credit

Balance of ECTS points

Activity form	Activity hours*
laboratory classes	25
exam / credit preparation	30
lesson preparation	15
exam participation	20

Student workload	**Hours** 90	**ECTS** 3.0
Workload involving teacher	**Hours** 45	**ECTS** 1.7
Practical workload	**Hours** 25	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Introduction to PBL - distribution of topics, discussion about the method. 2. Chemical composition of meat and methods of determination. Determination of determinants of fat decomposition: Lea number, acidity. 3. Determination of histamine in fishery products. 4. Meat quality deviations: smell, consistency, color. Handling of meat showing quality changes. 5. Presentation of PBL projects 6. Risk analysis in slaughterhouses and meat processing plants. Preconditions for implementing internal control in the establishment. 7. Analysis of threats and methodology of controlling threats in technological processes. 8. Corrective actions are taken in situations of loss of control over the threat. 9. Verification of food health quality systems. 10. Documentation of management systems. Presentation and analysis of the developed system. 11-13. Practical exam.	laboratory classes

Course advanced

Teaching methods:

classes, teamwork, presentation / demonstration, educational film, project-based learning (PBL), discussion

Activities	Examination methods	Percentage in subject assessment
laboratory classes	written exam, oral exam, written credit, oral credit	100%

Entry requirements

practical knowledge obtained during the trip to slaughterhouses in connection with the implementation of the subject

Slaughter Animals and Meat Hygiene 2 and obtained during summer practice (80h). Theoretical knowledge obtained during the implementation of the subjects Slaughter Animals and Meat Hygiene 1 and Slaughter Animals and Meat Hygiene 2, as well as Sanitary Food Law.

Literature

Obligatory

1. Gracey’s Meat Hygiene, David S. Collins, Robert J. Huey
2. Meat Inspection and Control in the Slaughterhouse, Thimjos Ninios, Janne Lunden, Hannu Korkeala, Maria Fredriksson-Ahomaa

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Avian diseases – Clinical internship

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J200BO.0113.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Andrzej Gaweł
Other teachers conducting classes	Kamila Bobrek, Anna Woźniak-Biel, Maciej Kuczkowski, Andrzej Gaweł

Period	**Examination**	**Number of ECTS points**
Semester 10	graded credit **Activities and hours** clinical classes: 40	2.0

Goals

C1	The aim of the course is to provide students with basic knowledge on: modern technology breeding for different species of birds, clinical and post-mortem examination different species of birds, analyses and interpretations results of the tests

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the rgan, animal, to the entire animal population;	O.W1	observation of student's work, active participation, presentation, case study
W2	specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes;	O.W7	observation of student's work, active participation, case study
W3	knows to an extensive degree and distinguishes the principles of animal raising and husbandry, taking into account the principles of animal nutrition, principles of maintaining their welfare and principles of production economics;	O.W8	observation of student's work, active participation, case study
W4	knows to an extensive degree and distinguishes the principles of poultry raising and husbandry, taking into account the principles of nutrition, principles of maintaining their welfare and principles of production economics	O.W13	observation of student's work, active participation, case study
W5	the student knows the principles of conducting a clinical examination and monitoring the health of poultry and ornamental birds	B.W5	observation of student's work, active participation, presentation, case study
W6	the student knows the methods of dealing with the results of laboratory and clinical tests of birds	B.W6	observation of student's work, active participation, case study
Skills – Student can:			
U1	conducts clinical examination of the animal in accordance with the principles of medical art;	O.U1	observation of student's work, active participation, case study
U2	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	observation of student's work, active participation, presentation, case study
U3	issues veterinary medical opinion and certificate	O.U7	observation of student's work, active participation, case study
U4	is able to cooperate with a breeder and manager of a poultry farm	A.U15	observation of student's work, active participation, case study
U5	the student is able to prepare transparent case reports and keep documentation in accordance with the applicable regulations	A.U14	observation of student's work, active participation, case study
U6	the student is able to conduct a medical and veterinary interview in order to obtain detailed information about the course of the disease on the farm	B.U2	observation of student's work, active participation, case study

U7	conduct a complete clinical examination of the bird	B.U3	observation of student's work, active participation, case study
U8	the student knows how to collect and secure samples for research and laboratory tests, as well as correctly analyze and interpret the results of laboratory tests	B.U6	observation of student's work, active participation, case study
U9	the student knows how to perform an autopsy of a bird with a description, take samples and secure them for laboratory tests	B.U16	observation of student's work, active participation, case study
Social competences – Student is ready to:			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student's work, active participation, presentation
K2	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	observation of student's work, active participation, presentation
K3	deepens his/her knowledge and improves skills	O.K8	observation of student's work, active participation, presentation

Balance of ECTS points

Activity form	**Activity hours***	
clinical classes	40	
class preparation	10	
project preparation	10	
Student workload	**Hours** 60	**ECTS** 2.0
Workload involving teacher	**Hours** 40	**ECTS** 1.5
Practical workload	**Hours** 40	**ECTS** 1.5

* hour means 45 minutes

Study content

No.	**Course content**	**Activities**

1.	Clinical and post-mortem examination of poultry, pigeons or ornamental birds - principles of clinical and post-mortem diagnosis of birds Microbiological, PCR and serological diagnostics of bird diseases - rules for the interpretation of results Departure to a poultry farm - poultry flock inspection, medical and veterinary treatments at a poultry farm Reproductive issues (insemination) and laying problems (egg quality) Clinical cases study - PBL	clinical classes

Course advanced

Teaching methods:

problem-based learning (PBL), classes, discussion, presentation / demonstration, case analysis

Activities	Examination methods	Percentage in subject assessment
clinical classes	observation of student’s work, active participation, presentation, case study	100%

Entry requirements

required passed exams: breeding and animal nutrition, biochemistry,veterinary microbiology, animal anatomy, pathomorphology, veterinary pharmacology, parasitology and invasiology veterinary toxicology, avian diseases

Literature

Obligatory

1. Carpenter i Marion Exotic Animals Folmulary, Elsevier Books, 2017
2. Patison: Poultry diseases, Elsevier Urban & Partner, 2011
3. Saif: Diseases of poultry, Iowa State Press, 2003 I 2013

Optional

1. Avian Diseases (journal)
2. Avian Pathology (journal)
3. Poultry Science (journal)
4. World's Poultry Science Journal

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Diseases of dogs and cats - Clinical internship I

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J200BO.0494.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Kamila Glińska-Suchocka
Other teachers conducting classes	Wojciech Niżański, Krzysztof Rypuła, Zdzisław Kiełbowicz, Alicja Cepiel-Kośmieja, Agnieszka Cekiera, Maciej Grzegory, Kamila Glińska-Suchocka, Marcin Jankowski, Grzegorz Dejneka, Joanna Tunikowska, Bartłomiej Liszka

Period	**Examination**	**Number of ECTS points**
Semester 10	graded credit **Activities and hours** clinical classes: 60	3.0

Goals

C1	The aim of the course is to provide students with practical knowledge of: clinical examination of animals, diagnosing diseases of dogs and cats and differential diagnosis of specific disease, collection and protection material for laboratory tests, interpret laboratory tests results and relate them to the clinical condition of the patient and the use of appropriate treatment (including operations) and disease prevention in dogs and cats.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire dogs and cats population;	O.W1	observation of student’s work
W2	nows to an extensive degree, describes in detail and explains the development, structure, functioning, behaviours and physiological mechanisms of dogs and cats in normal conditions, as well as the mechanisms of disorders in pathological conditions;	O.W2	observation of student’s work
W3	explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in dogs and cats, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W3	observation of student’s work
W4	knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in dogs and cats	O.W4	observation of student’s work
W5	characterises in detail the methods of using veterinary medicinal products, aimed at prophylaxis and treatment of dogs and cats, as well as at guaranteeing food chain safety and environmental protection;	O.W5	observation of student’s work
W6	presents the biology of infectious factors that cause diseases transmitted between animals, as well as anthropozoonoses, taking into account the mechanisms of disease transmission and defense mechanisms of the macroorganism;	O.W6	observation of student’s work
W7	specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes;	O.W7	observation of student’s work
W8	Describes the causes and symptoms of anatomopathological changes, principles of treatment and prophylaxis in individual disease entities in dogs and cats	B.W3	observation of student’s work
W9	Knows and understands the principles of diagnostic procedure, taking into account the differential diagnostics and therapeutic procedure in dogs and cats	B.W4	observation of student’s work
W10	Presents the principles of conducting clinical examination and monitoring animal health of dogs and cats	B.W5	observation of student’s work
W11	Knows and understands the assumptions of animal pairing, methods of fertilization, reproduction biotechnology, as well as breeding selection in dogs and cats	B.W12	observation of student’s work
Skills – Student can:			

U1	conducts clinical examination of the animal in accordance with the principles of medical art;	O.U1	observation of student’s work
U2	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	observation of student’s work
U3	plans the diagnostic procedure	O.U3	observation of student’s work
U4	monitors health of the herd, as well as undertakes action in the case of a disease that is subject to the obligation of disease eradication or its registration;	O.U4	observation of student’s work
U5	issues veterinary medical opinion and certificate	O.U7	observation of student’s work
U6	uses Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health, diseases, pathological changes and conditions	O.U8	observation of student’s work
U7	Communicates with the clients and other veterinary physicians	A.U12	observation of student’s work
U8	Prepares transparent case descriptions and keeps documentation, in accordance with regulations applicable in this scope, in the form understandable to the animal owner and legible to other veterinary physicians	A.U14	observation of student’s work
U9	Conducts a medical-veterinary interview in order to obtain precise information regarding individual animal or group of animals and its or their living environment	B.U2	observation of student’s work
U10	Performs a full clinical examination of dogs and cats	B.U3	observation of student’s work
U11	Collects and secures the samples for tests, as well as performs standard laboratory tests, and correctly analyses and interprets the results of laboratory tests of dogs and cats	B.U6	observation of student’s work
U12	Uses diagnostic equipment, including radiographic, ultrasound and endoscopic equipment, in accordance with its intended purpose and safety rules fordogs and cats and people, as well as interprets the results of tests obtained after its application	B.U7	observation of student’s work
U13	Implements the appropriate procedures in the case of diagnosing a disease subject to the obligation of eradication or registration of dogs and cats	B.U8	observation of student’s work
U14	Obtains and uses information on authorised veterinary medicinal products of dogs and cats	B.U9	observation of student’s work
U15	Is able to prescribe and use veterinary medicinal products and medical materials, taking into account their safe storage and utilisation	B.U10	observation of student’s work
U16	Uses the methods of safe sedation, general and local anaesthesia, as well as assessment and relief of pain of dogs and cats	B.U11	observation of student’s work
U17	Monitors the patient's condition in the intra- and post-operative period on the basis of basic life parameters	B.U12	observation of student’s work

U18	Chooses and applies the appropriate treatment of dogs and cats	B.U13	observation of student's work
U19	Implements the principles of surgical antisepsis and asepsis, as well as applies appropriate methods of sterilising equipment	B.U14	observation of student's work
U20	Assesses the need for performance of euthanasia of the animal and informs its owner about this fact in an appropriate manner, and euthanizes of dogs and catsl in accordance with the principles of professional ethics and appropriate handling of corpses	B.U15	observation of student's work
U21	Is able to perform an autopsy of the animal corpse, along with the description, as well as to take samples and secure them for transport	B.U16	observation of student's work
Social competences – Student is ready to:			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student's work
K2	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	observation of student's work
K3	uses the objective sources of information	O.K4	observation of student's work
K4	formulates conclusions from own measurements or observations	O.K5	observation of student's work
K5	formulates opinions regarding various aspects of professional activity	O.K6	observation of student's work
K6	is ready for reliable self-assessment, formulating constructive criticism in the scope of veterinary practice, accepting criticism of presented solutions, reacting to such criticism in a clear and material manner, also with the use of arguments referring to the available scientific achievements in the discipline;	O.K7	observation of student's work
K7	deepens his/her knowledge and improves skills	O.K8	observation of student's work
K8	communicates with the co-workers and shares knowledge	O.K9	observation of student's work
K9	is ready to act in the conditions of uncertainty and stress	O.K10	observation of student's work
K10	cooperates with representatives of other professions in the scope of public health protection	O.K11	observation of student's work

Balance of ECTS points

Activity form	**Activity hours***
clinical classes	60
class preparation	30

Student workload	**Hours** 90	**ECTS** 3.0
Workload involving teacher	**Hours** 60	**ECTS** 2.0
Practical workload	**Hours** 60	**ECTS** 2.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	INFECTIONS DISEASES 1. Epizootic management and currently binding documentation concerning management in suspected rabies in dogs and cats: rules of observing the animals suspected of rabies, differential diagnosis, intravital diagnosis. The procedure and documentation in official observation for rabies in animals observed after biting a human: taking epizootic history from the owners of animals observed for rabies, rules of official observation by a decision of the County veterinary doctor and observation at the expense of the owner conditions of the premises meeting the requirements for temporary detention of observed animals principles of cooperation with the County veterinary doctor and SANEPID. Vaccination against rabies: performance of vaccination, rule of documentation for vaccination against rabies. Collection of blood samples for testing blood samples and rules of antibody titration and interpretation of examination results in the case of dogs going abroad of Poland in respect to international requirements for rabies. 2. Serological (ELISA, DIF, IFAT, OA, Rivlta test) and microbiological (cultures) examinations of material from clinical cases (EPI-VET laboratory). Evaluation of preparations, principles for interpretation of serological tests and possible procedures in infectious diseases of dogs (distemper, leptospirosis, Rubarth disease, canine coronavirus infection, canine parvovirus infection, ehrlichiosis, borreliosis, kennel cough and FIV, FIP, FeLV, feline distemper, feline rhinitis, mycoplasmosis, chlamydophilosis, herpes viruses infection). Principles of preparation of material for diagnostic tests using techniques of molecular biology and flow cytometry (collection samples, lymphocyte raft preparation, DNA isolation, isolation of subpopulations of haemocytes in evaluation of the background immune thrombocytopenia). Interpretation of the results of PCR examination in animals at different stages of infection and in vaccinated animals. 3. Veterinary proceedings in case of infectious diseases in dogs and cats: proceeding in animals kennels, principles of vaccination and using appropriate preparations, principles for conducting therapy, principles of combining sick animals, animals after recovery, healthy animals, bioassurance. Vaccinations for dogs and cats. INTERNAL DISEASES 1. Practical diagnosis and treatment of cardiovascular diseases in dogs and cats (congenital and acquired heart diseases, vascular diseases, heart ultrasound, heart electrocardiography). 2. Practical diagnosis and treatment of skin diseases in dogs and cats (bacterial dermatitis, fungal skin diseases, allergic dermatitis, parasitic skin diseases, autoimmune skin diseases, additional tests used in the diagnosis of skin diseases). 3. Practical diagnosis and treatment of gastrointestinal diseases in dogs and cats (diseases with vomiting signs, diseases with diarrhea or difficult passing of feces, endoscopic diagnostics of anterior and posterior part of the alimentary tract). 4. Practical diagnosis and treatment of liver and pancreatic diseases in dogs and cats (inflammatory and noninflammatory diseases of the liver and biliary tract, laboratory and imaging diagnostics of liver diseases, liver biopsy, pancreatitis, exocrine pancreatic insufficiency, laboratory diagnostics of pancreatic diseases). 5. Practical diagnosis and treatment of respiratory diseases in dogs and cats (diseases with sneezing signs, diseases with cough and dyspnoea signs, endoscopic diagnostics of diseases of nasal cavities, larynx, trachea and bronchi, broncho-alveolar lavage). 6. Practical diagnosis and treatment of nervous system diseases in dogs and cats (inflammatory and noninflammatory diseases of the brain, meninges and spinal cord, differentiation of causes of epileptic seizures, laboratory and imaging diagnostics of nervous system diseases, puncture and collection of cerebrospinal fluid). 7. Practical diagnosis and treatment of urinary tract diseases in dogs and cats (diseases of kidney and lower urinary tract, laboratory and imaging diagnostics of the urinary system, cystoscopy, kidney biopsy). 8. Practical diagnosis and treatment of endocrine diseases in dogs and cats (disturbances in the function of the thyroid, adrenal gland and pancreas, laboratory diagnostics of endocrine diseases). 9. Principles of diagnosis of neoplastic diseases and the principles of tumours therapy. SURGERY 1. Surgery in the abdominal cavity in dogs and cats (the alimentary tract - surgery of the stomach, intestines and liver, the urinary system – surgery of the kidneys, ureters, urinary bladder and urethra, the reproductive system - surgery of the ovaries, testes, uterus, vagina, prostate and mammary gland; splenectomy, oncological operations). 2. Surgery in the chest in dogs and cats (thoracotomy, surgery of the thoracic part of the esophagus, surgery of the thoracic part of the trachea, vascular anomalies in the chest, the operating procedures of mediastinum, pneumothorax, subcutaneous emphysema, diaphragmatic hernia, lung lobe resection). 3. Surgery in the neck and head (surgery of the oral cavity and throat, surgery of the sinuses and nasal cavities, surgery of the larynx and cervical part of the trachea). 4. Orthopedic joint procedures (diagnostics, conservative and surgical treatment). 5. Veterinary traumatology (fractures, luxations), diagnostics, surgical and conservative treatment). 6. Anesthesiology (methods of anesthesia used in various surgical procedures, intensive care, cardiopulmonary resuscitation). 7. Imaging diagnostic of surgical patients (X-ray, ultrasound). REPRODUCTION 1. The practical gynecological examination of bitches and queens: anamnesis, anamnesis questionnaire, clinical examination, cytological examination of the vagina. Vaginal swabs collection. Swabs staining. Cytological evaluation of vaginal swabs. Review of preparations from different physiological and pathological states. Collection material from the urogenital system for additional tests. 2. Endoscopic examination of the reproductive tract: patient preparation and the technique, principles and interpretation of results, determination of the oestrus cycle phase on the basis of endoscopic examination, pathological lesions of the reproductive tract, methods for uterine cervix cathetetization. 3. The endocrinological examination of reproductive functions in small animals: collection of material, determination and analysis of concentrations of progesterone, estrogen and other sex hormones in the blood, hormonal stimulation tests, interpretation of results, analysis of the dynamics of changes in sex hormone concentrations in the blood. The principles for determining the optimum date for insemination of females. 4. The ultrasound examination of the reproductive system in small animals: ultrasound examination of the ovaries in various physiological and pathological states, ultrasound examination of the uterus and other parts of the reproductive system, interpretation of results. 5. Obstetric-gynecological procedures in small animals: caesarean section - surgical technique, preparation for surgery, postoperative proceeding, female sterilization, male castration, total and partial mastectomy, hysterectomy and ovariectomy in females with pyometra.	clinical classes

Course advanced

Teaching methods:

discussion, teamwork, situation-based learning, problem-solving method, brainstorming, case analysis

Activities	Examination methods	Percentage in subject assessment
clinical classes	observation of student’s work	100%

Entry requirements

Animal anatomy I & II , Biochemistry I & II, Histology and embryology I & II, Veterinary microbiology I & II, Animal physiology I & II, Clinical and
laboratory diagnostic I & II, Veterinary pharmacology I & II, Veterinary immunology, Pathophysiology I & II, Veterinary dietetics, Parasitology
and invasiology, Pathomorphology I & II, General surgery anaesthesiology, Imaging diagnostic, Diseases of dogs and cats, Diseases of horses, Diseases of farm animals

Literature

Obligatory

1. R. W. Nelson, C. G. Couto: ,,Small Animal Internal Medicine”, 2013, Mosby
2. M. V. R. Kustritz: ,,Clinical Canine and Feline Reproduction”, 2009, Wiley-Blackwell
3. C. E. Green: ,,Infectious diseases of dog and cat”, 2011, Saunders
4. T. W. Fossum: ,,Small Animal Surgery”, 2018, Mosby

Optional

1. M. Schaer, F. P. Gaschen: ,,Clinical Medicine of the Dog and Cat”, 2016, CRC Press
2. J. Wiley: ,,Canine Internal Medicine: What’s Your Diagnosis?, 2017, Wiley-Blackwell
3. S. J. Ettinger, E. C. Feldman, E. Cote: Textbook of Veterinary Internal Medicine Expert Consult, 2016, Elsevier

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Diseases of farm animals - Clinical internship I

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J200BO.0497.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Michał Dzięcioł
Other teachers conducting classes	Michał Dzięcioł, Ryszard Mordak, Michał Bednarski, Przemysław Prządka, Wiesław Bielas

Period	**Examination**	**Number of ECTS points**
Semester 10	graded credit **Activities and hours** clinical classes: 60	3.0

Goals

C1	The aim of the course is to provide students with practical knowledge on: clinical examination of animals, diagnosis of livestock diseases and differential diagnosis of individual disease entities, collection and preservation of material for laboratory tests, interpretation of laboratory test results and relate them to the patient's clinical condition, and apply appropriate treatment (including surgical treatment) to livestock diseases and implement preventive measures.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	in detail the uses of veterinary medicinal products for the prevention and treatment of cattle, pigs, goats and sheep.	O.W5	oral credit, active participation
W2	the principles and methods of diagnostic and therapeutic procedures applied in non-communicable and infectious diseases and reproductive disorders of farm animals	B.W4	oral credit, active participation
W3	rules for conducting a clinical examination of cattle, pigs, goats and sheep and monitoring the health of farm animals	B.W5	oral credit, active participation
W4	the principles of selection of animals for mating (selection criteria for males and females) , techniques and biotechnology of livestock breeding	B.W12	oral credit, active participation
Skills – Student can:			
U1	analyze and interpret clinical symptoms, anatomopathological changes and test results in cattle, pigs, goats and sheep, formulate a diagnosis of a disease state in farm animals and take appropriate therapeutic or prophylactic measures in various species of livestock	O.U2	observation of student’s work, active participation
U2	communicate in understandable language with the animal owner and with other veterinarians. Maintains records of cases of illnesses of livestock	A.U12, A.U14	observation of student’s work, active participation
U3	handle farm animals in a safe and humane manner	B.U1	observation of student’s work, active participation, performing tasks
U4	conduct a veterinary medical history of cattle, pigs, goats and sheep, to obtain accurate information on an individual animal or an entire herd of animals	B.U2	observation of student’s work, active participation
U5	perform a complete clinical examination (external examination - viewing, palpation and auscultation and internal examination - palpation) of individual livestock species	B.U3	observation of student’s work, active participation, performing tasks
Social competences – Student is ready to:			
K1	demonstrate responsibility for his/her decisions and presents an attitude in line with ethical principles and takes actions based on the code of ethics in professional practice	O.K2	active participation, participation in discussion
K2	be creative and to formulate conclusions from his/her own measurements or observations as well as opinions concerning various aspects of professional activities	O.K5, O.K6	active participation, participation in discussion
K3	be aware of the need to deepen knowledge and improvement of skills	O.K8	active participation, participation in discussion

K4	be aware of operating under potential conditions of uncertainty and stress	O.K10	observation of student's work, active participation, participation in discussion

Balance of ECTS points

Activity form	**Activity hours***	
clinical classes	60	
lesson preparation	5	
collecting and studying literature	10	
exam / credit preparation	10	
class preparation	5	
Student workload	**Hours** 90	**ECTS** 3.0
Workload involving teacher	**Hours** 60	**ECTS** 2.0
Practical workload	**Hours** 60	**ECTS** 2.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	INFECTIOUS DISEASES 1. Infectious diseases in farm animals: FMD, BrB, EBB. Sampling material for diagnosis FMD - in cattle, sheep, goat and swine, BrB - cattle, sheep, goat and swine, EBB – cattle. Prossidings with farm animals with suspected and after diagnosis of FMD, BrB, EBB infection. Practical procedure: identification, clinical examinations, age and time of production in cattle. Different clinical diagnosis of FMD, BrB, EBB in farm animals. 2. Infectious diseases in farm animals – Rabies. Prossidings with farm animals before and after diagnostics rabies infection. Practical procedure: identification, clinical examinations, age and time of production in cattle, sheep, goat and swine. Practical cooperation with National Veterinary Sugeron and with Sanepid (documents). Vaccination against Rabies in farm animals – prevention and special vaccination farm animals. 3. Infectious diseases sheep and goat. Material for diagnosis TBR in cattle, sheep and swine. Prossidings with farm animals after diagnostics results, practical procedure: identyfication, clinical examinations, age and time of production in cattle. Alergic diagnosis (tuberculinisation) in farm animals with Bovituberculin and Avituberculin. 4. Infectious diseases in sheep (ekhtyma and whitlow). Prossidings with sheep before and after laboratory diagnosis, Practical procedure: identyfication, clinical examinations, age and time of production in cattle. Qualification infected animals. Choice of method of therapeutics method. Practical prevention – vaccination and bath in sheep with enzootic and epidemic diseases. 5. Infectious diseases in swine. Clinical examination in the direction PRDC and PIDC. Sampling for laboratory diagnosia (blood, etc.) – serology and microbiology. Practical prevention PRDC and PIDC. 6. Infectious diseases in farm animals – laboratory diagnosis bacterial and viral diseases. Practical procedures with contagious samples. Practical diagnosis: serological tests (ELISA, iIF, dIF, OA) and bacteriology examinations from clinical cases. Practical interpretation of laboratory investigations. 7. Infectious diseases in farm animals. Practical training with documents in Veterinary Sugeron with statistics and data base about infection diseases in Poland and UE). INTERNAL DISEASES 1. Animal taming. 2. Collection of material for tests (blood, feces, urine, rumen contents, fluid from body cavities), techniques of medicaments administration. 3. Practical recognition (trichogram, scrapings, test with tape, cytology) and treatment of skin diseases. 4. Practical recognition and treatment of respiratory system diseases. 5. Practical recognition and treatment of digestive system diseases. 6. Practical recognition and treatment of musculoskeletal and nervous system disease. 7. Practical recognition and treatment of metabolic diseases. 8. Practical recognition and treatment of urinary system diseases (including endoscopy of bladder). SURGERY 1. Surgical treatment of digestive system diseases of ruminants and swine. 2. Dehorning in cattle 3. Practical performing of anesthesia in farm animals 4. Practical recognition and treatment of fingers diseases in farm animals. REPRODUCTION 1. Gynecological examinaton per rectum of cows and heifers- diagnosis of state of reproductive tract, introduction of proper treatment 2. Gynecological examinaton per vaginam of cows and heifers- diagnosis of state of reproduction tract, introduction of proper treatment 3. Ultrasound evaluation of reproductive tract of cattle- diagnosis of state of reproductive tract, introduction of proper treatment 4. Catheterization of bladder, catheterization of cervix 5. Assistance during parturition (conservative and surgical) for females of farm animals 6. Performing fetotomy 7. Examination for pregnancy in females of farm animals (external, internal, ultrasound, ultrasonic). 8. Performing of anesthesia useful in obstetrics and ginecology in farm animals 9. Clinical examination and evaluaton of mammary gland in cattle, field trial of milk and introduction of proper treatment in case of mastitis 10.Gynecological examinaton in sheeps and goats 11.Clinical examination of mammary gland in a small ruminants and swine 12.Gynecological examinaton sows– clinical and ultrasound evaluation of reproductive tract	clinical classes

Course advanced

Teaching methods:

classes, presentation / demonstration, case analysis, text analysis

Activities	Examination methods	Percentage in subject assessment
clinical classes	oral credit, observation of student's work, active participation, participation in discussion, performing tasks	100%

Entry requirements

Prior completion of subjects: Animal anatomy I and II, Biochemistry I and II, Histology and embryology I and II, Veterinary microbiology I and II, Animal physiology I and II, Clinical and laboratory diagnostic I and II, Veterinary pharmacology I and II, Veterinary immunology, Pathophysiology I and II, Veterinary dietetics, Parasitology and invasiology I and II, Pathomorphology I and II, Surgery and anesthesiology, Imaging diagnostic, Diseases of farm animals, Andrology and artificial insemination.

Literature

Obligatory

1. Blowey R.W., Weaver A.D.: Color Atlas of Diseases and Disorders of Cattle. Mosby, London 2003.
2. Jackson P.G.G., Cockroft P. D.: Handbook of Pig Medicine. Saunders, Elsevier, London 2007.
3. Divers T.J., Peek S.F. (ed.): Rebuhn's Diseases of Dairy Cattle Saunders Elsevier, St. Louis 2008.
4. Fubini S., Ducharme N.: Farm Animal Surgery, Sauders, St. Louis 2004.
5. Jackson P.G.G. : Handbook of Veterinary Obstetrics. 2nd ed. W.B. Saunders Company, Edinbourgh 2004.

Optional

1. Greenough P.R.: Bovine Laminitis and Lameness : A Hands-on Approach. Saunders, Elsevier London 2007.
2. A.H. Andrews, R.W. Blowey, H. Boyd, R.G. Eddy (ed): Bovine Medicine. Diseases and Husbandry of Cattle. Blackwell Science Ltd., Oxford 2004.
3. Radostits O.M., Gay C.C., Hinchcliff K.W., Constable P.D.: Veterinary Medicine. A textbook of the diseases of cattle, sheep, goats, pigs and horses. 10th Edition, Saunders Elsevier, London, 2007.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Diseases of horses - Clinical internship I

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J200BO.0501.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** mandatory
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills Yes

Teacher responsible for the subject	Malwina Słowikowska
Other teachers conducting classes	Artur Niedźwiedź, Malwina Słowikowska

Period Semester 10	**Examination** graded credit **Activities and hours** clinical classes: 40	**Number of ECTS points** 2.0

Goals

C1	Practical independent examination and treatment of horses - patients of the Equine Clinic, discussion of cases, presentation with a demonstration and discussion of the presented cases

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	principles and mechanisms underlying equine health, disease development and therapy - from the cell level to the organ, the animal, to the entire animal population	O.W1	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
W2	etiology, pathogenesis and clinical symptoms of diseases occurring in horses and the principles of therapeutic management	O.W3	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
W3	diagnostic and therapeutic procedures appropriate for disease states in horses	O.W4	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
W4	Causes and symptoms of pathological changes, principles of treatment and prevention in particular disease entities of horses	B.W3	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
W5	Principles of diagnostic procedures, including differential diagnosis, and therapeutic procedures in horses	B.W4	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
W6	Principles of conducting a clinical examination and monitoring of equine health	B.W5	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
W7	Handling of clinical data and the results of laboratory and additional tests in horses	B.W6	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
W8	Provisions of law, rules for issuing judgments and drawing up opinions for the purposes of courts, state and local administration bodies as well as professional self-government	B.W7	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
W9	Procedure in the event of suspicion or confirmation of diseases that are subject to compulsory eradication or registration in horses	B.W8	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks

Skills – Student can:			
U1	conducts clinical examination of the animal in accordance with the principles of medical art;	O.U1	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U2	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U3	plans the diagnostic procedure	O.U3	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U4	monitors health of the herd, as well as undertakes action in the case of a disease that is subject to the obligation of disease eradication or its registration;	O.U4	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U5	handle horses safely and humanely and instruct others to do so	B.U1	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U6	carry out a medical and veterinary interview in order to obtain accurate information about a single animal or group of animals and its or their habitat	B.U2	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U7	conduct a complete clinical examination of the horse	B.U3	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U8	give first aid to horses in case of hemorrhage, wounds, respiratory disorders, eye and ear injuries, loss of consciousness, cachexia, burns, tissue damage, internal injuries, and cardiac arrest.	B.U4	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U9	Assess the horses' nutritional status and provide advice in this regard	B.U5	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks

U10	Collect and preserve samples for research and perform standard laboratory tests, as well as correctly analyze and interpret the results of laboratory tests	B.U6	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U11	Use diagnostic equipment, including radiological, ultrasound and endoscopic equipment, in accordance with its intended use and safety rules for animals and humans, and interpret the test results obtained after its use	B.U7	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U12	Implement appropriate procedures in case of a confirmed disease that is subject to compulsory eradication or registration	B.U8	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U13	Obtain and use information about authorized veterinary medicinal products	B.U9	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U14	Prescribe and use veterinary medicinal products and medical materials, taking into account their safe storage and disposal	B.U10	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U15	Use methods of safe sedation, general and local anesthesia, and pain assessment and relief	B.U11	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U16	Monitor the patient's condition in the intra- and postoperative period based on vital signs	B.U12	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U17	Choose and apply appropriate treatment	B.U13	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U18	Implement the principles of surgical asepsis and antiseptics and use appropriate methods of equipment sterilization	B.U14	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks

U19	Assess the necessity to euthanize the horse and inform its owner in an appropriate manner, as well as perform the euthanasia of the animal in accordance with the principles of professional ethics and proper handling of the carcass	B.U15	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U20	Perform an autopsy of the horse with a description, take samples and secure them for transport	B.U16	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
Social competences – Student is ready to:			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student’s work
K2	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	observation of student’s work
K3	deepens his/her knowledge and improves skills	O.K8	observation of student’s work

Balance of ECTS points

Activity form	**Activity hours***
clinical classes	40
collecting and studying literature	15

Student workload	**Hours** 55	**ECTS** 2.0
Workload involving teacher	**Hours** 40	**ECTS** 1.5
Practical workload	**Hours** 40	**ECTS** 1.5

* hour means 45 minutes

Study content

No.	**Course content**	**Activities**

1.	Practical classes with patients of the Horse Clinic. Procedures, as the case may be, include: • diagnosis and treatment of infectious and non-infectious diseases • use of specialized diagnostic equipment • taking samples for laboratory tests (bacteriology, biochemistry, cytology, endocrinology, histopathology) • diagnosis of reproductive disorders in relation to individual animals and herds • using methods of assisted reproduction and artificial insemination of horses • diagnosing and conducting pregnancy in mares • delivering births by bloodless and bloody methods • postpartum care for mare - methods for subtracting retained fetal membranes • care for the newborn, prevention and treatment of foal diseases • examination of stallions for fitness for reproduction with semen collection and assessment • surgery on the testicles, penis, foreskin and accessory glands • the use of modern methods of therapy and prevention as well as modern drugs • moving horse examination and lameness diagnostics • use of diagnostic and therapeutic procedures in horse orthopedics • surgery on the limbs • treatment of diseases of the digestive system of horses, including oral and dental diseases • surgery in the treatment of equine diseases of horses • dietitian and horse nutrition • parasitological prevention and recognition of parasite invasion in horses • immunology and immunoprophylaxis of horses • diagnosis and treatment of eye diseases • diagnosis and treatment of cardiological diseases in horses	clinical classes

Course advanced

Teaching methods:

classes, practical simulation training, presentation / demonstration, case analysis

Activities	Examination methods	Percentage in subject assessment

Activities	Examination methods	Percentage in subject assessment
clinical classes	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks	100%

Entry requirements

Completion of core subjects: Animal anatomy I, Animal anatomy II, Biochemistry I, Biochemistry II, Histology and Embryology I, Histology and Embryology II, Veterinary Microbiology I, Veterinary Microbiology II, Animal Physiology I, Animal Physiology II, Clinical and Laboratory Diagnostics I, Clinical and Laboratory Diagnostic II, Veterinary Pharmacology I, Veterinary Pharmacology II, Diseases of horses

Literature

Obligatory

1. Veterinary Reproduction and Obstetrics. D.E. Noakes, T.J. Parkinson, G.C.W. England 9th ed. Sauders, Elsevier, 2009
2. Large Animal Theriogenology. R.F. Youngquist, W.L. Threlfall. 2nd ed. Saunders, Elsevier. 2007
3. Auer J.A., Stick J.A.: Equine surgery. Elsevier Saunders, 4th edition, 2012
4. Equine infectious diseases, D. C. Sellon & M. T. Long, Saunders, 2007
5. O. M. Radostits, C.C. Gay, K. W. Hinchcliff, P. D. Constable: Veterinary Medicine 10th Edition, Saunders Elsevier, 2007

Optional

1. Journals: The horse, Equine Vet J, Equine Vet Educ,
2. Muir W.W., Hubbell J.A.E.: Equine anesthesia, monitoring and emergency therapy. Elsevier, 2nd edition, 2009.
3. Ross M.W., Dyson S.J.: Diagnosis and management of lameness of the horse, Elsevier Saunders, 1st edition, 2003.
4. Stephen M. Reed, Warwick M. Bayly, Debra C. Sellon: Equine Internal Medicine, Fourth Edition, 2018

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Forensic veterinary medicine

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J200BO.0738.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** mandatory
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills No

Teacher responsible for the subject	Rafał Ciaputa
Other teachers conducting classes	Rafał Ciaputa, Małgorzata Kandefer-Gola, Izabela Janus, Kacper Żebrowski

Period	**Examination**	**Number of ECTS points**
Semester 10	graded credit **Activities and hours** lecture: 15 auditorium classes: 15 practical classes: 15	2.0

Goals

C1	The aim of the course is to acquaint students with the structure, organization and function of case law in Poland. Students learn how to act in accordance with the law and medical and veterinary ethics. Students are prepared to act independently as a forensic expert in the field of veterinary medicine. During the course, they learn how to formulate an expert opinion, prepare forensic documentation, learn methods of assessing animal tissues and other material evidence

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	regulations of the law, rules for issuing judgments and preparing opinions for the needs of courts, state, local government and professional administration bodies	B.W7	written credit, report
W2	legal standards associated with the activities of veterinary physicians	O.W14	written credit, report
Skills – Student can:			
U1	issue veterinary medical opinion and certificate	O.U7	written credit, report
Social competences – Student is ready to:			
K1	deepen his/her knowledge and improves skills	O.K8	observation of student’s work
K2	communicate with the co-workers and shares knowledge	O.K9	observation of student’s work
K3	formulate opinions regarding various aspects of professional activity	O.K6	observation of student’s work
K4	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	observation of student’s work
K5	formulates conclusions from own measurements or observations	O.K5	observation of student’s work
K6	exhibit responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student’s work
K7	to make reliable self-assessment, formulating constructive criticism in the scope of veterinary practice, accepting criticism of presented solutions, reacting to such criticism in a clear and material manner, also with the use of arguments referring to the available scientific achievements in the discipline	O.K7	observation of student’s work

Balance of ECTS points

Activity form	Activity hours*
lecture	15
exam participation	5
lesson preparation	5
presentation/report preparation	3
consultations	2

auditorium classes	15
practical classes	15

Student workload	**Hours** 60	**ECTS** 2.0
Workload involving teacher	**Hours** 52	**ECTS** 2.0
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Differences between forensic veterinary medicine and veterinary pathology. Who is legally the owner of the pet. Who is a forensic expert. Duties of a court expert. 2h 2. Polish law and the protection of animals. Animal Protection Act. 2h 3. Civil law and professional liability of a veterinarian. Act on the profession of a veterinarian, medical and veterinary chambers. 2h 4. Veterinary ethics. 2h 5. Collection of material and sending to the laboratory. 2h 6. Animal abuse. 2h 7. Medical and veterinary errors. 2h 8. Summary of topics. 1h	lecture
2.	1. Injuries. 2h 2. Cover letter. 2h 3. Animal abuse. 2h 4. Drowning. 2h 5. Expert opinion. Shots. 2h 6. Purchase and Sale Agreement. 2h 7. Poisoning. 2h 8. Passing the course. 1h	auditorium classes
3.	7. Medical and veterinary errors. 2h 8. Summary of topics. 1h	practical classes

Course advanced

Teaching methods:

problem-solving method, classes, lecture, discussion, teamwork, brainstorming, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	observation of student’s work, report	40%
auditorium classes	observation of student’s work, report	50%
practical classes	written credit	10%

Entry requirements

Pathomorphology, Veterinary microbiolgy, Veterinary pharmacology, Toxicology, Parasitology and Invasiology, Biochemistry, Clinical and Laboratory Diagnostics

Literature

Obligatory

1. Pathologic basis of veterinary disease.” M. Donald McGavin, James F. Zachary, Mosby Elsevier, 2012
2. ''Practical Veterinary Forensics'' David Bailey, Karl Harrison, 2016

Optional

1. Veterinary Forensics: Animal Cruelty Investigations. Melinda Merck, 2012

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Hygiene of food processing II

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J200BO.0934.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** mandatory
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills Yes

Teacher responsible for the subject	Katarzyna Kosek-Paszkowska
Other teachers conducting classes	Katarzyna Kosek-Paszkowska, Jarosław Bystroń

Period	**Examination**	**Number of ECTS points**
Semester 10	exam **Activities and hours** lecture: 30 laboratory classes: 12 clinical classes: 18	4.0

Goals

C1	The aim of the course is to give the students knowledge about most important processes used in food technology, about influence of each process on consumer health, about microbiological hazards related to different food of animal origin.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	explains in detail the principles of GMP and GHP in meat plants	B.W17	written exam, written credit, active participation, case study
W2	Characterises the control systems in accordance with HACCP (Hazard Analysis and Critical Control Points) procedures	B.W18	written exam, written credit, active participation, case study
W3	the role and duties of the official veterinary surgeon in meat, fish and poultry processing plants	B.W16	written exam, written credit, active participation, case study
W4	knows the rules of technologies and hygiene of animal origin food technology	O.W13	written exam, written credit, observation of student’s work
Skills – Student can:			
U1	estimate the risk of occurrence of chemical and biological hazards in food of animal origin and establish the most effective control measures	B.U22	observation of student’s work, active participation, case study
U2	assesses the compliance of law requirements in food plants	B.U18	observation of student’s work, active participation, case study
U3	makes activities related to veterinary supervision on production of animal origin food	O.U6	observation of student’s work, active participation, case study
U4	knows how to take samples for presence of various toxins in food	B.U23	observation of student’s work, active participation
Social competences – Student is ready to:			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student’s work, case study
K2	cooperates with representatives of other professions in the scope of public health protection	O.K11	observation of student’s work, case study

Balance of ECTS points

Activity form	Activity hours*
lecture	30
laboratory classes	12
clinical classes	18
lesson preparation	20
exam / credit preparation	30

presentation/report preparation	5

Student workload	**Hours** 115	**ECTS** 4.0
Workload involving teacher	**Hours** 60	**ECTS** 2.0
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	1. Convenience and functional food ; definitions of functional and convenience food, methods of preservation used for production of convenience food, sous vide technology, clean room technology, examples of functional food 2. Unconventional methods of food preservation- part I: positive aspects of new non thermal methods of food preservation, High Hydrostatic Pressure (history, technology, pros and cons, biological effects). 3. Unconventional methods of food preservation- part II: food irradiation (history, technology, pros and cons, biological effects, radurization, radicidation, risk for human health), microwaves radiation (history, technology, pros and cons, biological effects), atmospheric pressure plasma APP, ultrasonication. 4.Spoilage of food: chemical, microbiological, physical, enzymatic spoilage, mechanisms of food spoilage, microflora involved in spoilage, meat spoilage (aerobic and anaerobic), spoilage of other foodstuffs, prevention against food spoilage 5. Antibiotic resistant bacteria: mechanisms of antibiotic resistance, prevalence of antibiotic resistant bacteria in food chain, livestock associated MRSA, sources of contamination 6. Hygiene in food industry: basic hygienic rules in food plants, proper washing of hands, clothing, skin microbiota, transient and resistant microflora, methods of verification of hand washing in food industry, swabs, ATP 7. Supporting raw materials in food industry: spices, polyphosphates, vegetables, hydrocolloids, meat analogues- their role in food processing, natural and artificial casings, microbiology of spices. 8. Food additives: the most popular and controversial food additives: aspartame, fructose corn syrup, artificial coloring, MSG, the role of food additives, trans fats, E numbers, law regulation related to food additives in EU and other countries, 9. Bacillus cereus food poisoning: life cycle of Bacillus cereus, heat resistant endospores, emetic form and diarrheal form of Bacillus cereus food poisoning, sources, symptoms, prevention. 10. Quality management systems in food industry: ISO 22 000, FSSC, ISO 9001, BRC and IFS standards. 11. Chemical hazards in food: acrylamide, bisphenol A, melamine, dioxins, polychlorinated biphenyles, BFRs- sources, methods of prevention, maximum acceptable levels, law regulations. 12. Shelf life of food: best before date, expire date, consumer margin, testing of foodstuffs for shelf life, perishable and nonperishable food, contamination of raw materials and finished products with pathogenic bacteria, microbial durability of food, the rules for determining the margin of consumer safety. 13. Introducing into methodology of auditing in food processing plants: difference between control and audit, internal audit, audit as a tool of HACCP verification, basic rules of auditing in food industry. 14. Disinfection in the food industry: principles of disinfection in the food industry, the types of disinfectants and methods of their use, evaluation of disinfectants, characteristics of good disinfectants. 15. Hygiene and technology of wild game production: law requirements regarding wild game, processing of wild game, storage and distribution of wild game meat, veterinary surveillance,	lecture

2.	1. Hygiene and technology of rabbit slaughter and processing: steps of rabbit slaughter, law requirements, microbiology of rabbit meat, spoilage, preservation, storage, methods of processing. 2. Hygiene and technology of ostrich slaughtering; technology of slaughtering, chilling of carcasses, using of slaughter by products, microbiology of raw meat, preservation, characteristic of meat, law regulations. 3. Hygiene and technology of sausage and ham production: technology of sausage production, technology of ham production, machines used for sausage and ham productions, hygiene of sausage and ham production, microbiology of sausages and hams, fermented sausages, types of sausages, sausage yield, high yielded hams 4. Hygiene and technology of wild game processing: law regulations connected with wild game, obtaining of wild game, hygiene and microbiology of wild game meat and meat products, storage of wild game meat, ageing of wild game meat. 5. Unconventional methods of food preservation: unconventional non-thermal methods – high pressure technology, pulsed electric field, ultrasound, ultraviolet radiation, ionizing radiation, radappertization, radurization, radicidation; microwave radiation, microbiological safety of unconventional preserved food products. 6. Probiotics, prebiotics, synbiotics: definition of probiotics, probiotics microorganisms, sources of probiotics, role and use of probiotics, definition and classification of prebiotics, sources of prebiotics, inulin as natural prebiotic, definition of synbiotics.	laboratory classes
3.	1. The role of veterinary inspection in surveillance in meat processing plant- visit in meat plant. 2.The evaluation and control of implementation of HACCP system and its documentation in meat industry- visit in meat plant. 3. GMP/GHP, SSOP, Prerequisite Programs in food plants, practical approach- visit in meat processing plant 4. Hygiene and technology of edible offal processed meat products and cold (deli) products: sorts of offal and deli products, technology of production, methods of preservation, microbiology, cold chain in deli products dispatch, storage and transportation, critical control point (CCP) in production of deli and offal product. 5. Critical control points, monitoring, corrective actions, records, verification of HACCP system, practical approach- visit in meat processing plant 6. Storage, packaging and distribution in food industry- requirements, cold chain, documentation, veterinary surveillance- visit in meat plant 7.Hygiene and technology of fish and fish products: classification of fish raw materials, veterinary inspection of fish raw materials, preliminary processing of fish, preservations of fish - smoked, salted and marinated fish, microbiological spoilage of fish and fish products, nutritive value of fish, polyunsaturated fatty acids – DHA, EPA- visit in fish processing plant. 8 Hygiene and technology of poultry processing: technology of poultry slaughtering, chilling of poultry carcasses, cutting into primal cuts, microbiology of raw poultry and poultry products, microbiological hazards connected with poultry meat, preservation of poultry meat, cold chain in poultry processing- visit in poultry slaughterhouses. 9. The role of official inspections in food control and surveillance; tasks of each inspections, responsibilities, documentation- visit in meat plant.	clinical classes

Course advanced

Teaching methods:

problem-based learning (PBL), tutoring, flipped classroom, classes, lecture, situation-based learning

Activities	Examination methods	Percentage in subject assessment
lecture	written exam, active participation	30%

Activities	Examination methods	Percentage in subject assessment
laboratory classes	written exam, written credit, observation of student’s work, active participation, case study	40%
clinical classes	observation of student’s work, active participation, case study	30%

Entry requirements

Animal Anatomy, Animal Physiology, Biochemistry, Veterinary Microbiology, Food law, Meat and Slaughter Animals Hygiene, Hygiene of Food Processing I.

Literature

Obligatory

1. Owens C., Alvarado Ch., Sams A. “Poultry meat processing”, CRC Press, 2010.
2. Toldra F. “Safety of meat and Processed Meat, Springer, 2009.
3. Feiner G. “Meat products handbook”, CRC Press, 2006.
4. McLandsborough, “Food Microbiology Laboratory”, CRC Press, 2005

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Preventive veterinary medicine II

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J200BO.1900.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** Yes **Subject shaping practical skills** No

Teacher responsible for the subject	Paulina Jawor
Other teachers conducting classes	Paulina Jawor, Tadeusz Stefaniak, Anna Rząsa

Period	**Examination**	**Number of ECTS points**
Semester 10	exam **Activities and hours** lecture: 15 laboratory classes: 26 clinical classes: 4	3.0

Goals

C1	Familiarization with tasks and methods of veterinary procedures in nowadays farms of livestock animals. Conditions and methods in field work of farm veterinarian, rules in co-operation with the owner. Methods of recognition of the causes and prevention of morbidity and mortality in large farms, caused by digestive and respiratory tract diseases and metabolic disturbances.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	rules in preventing and control of the respiratory tract diseases in the herds of cattle and pigs	A.W10, A.W2, B.W9, O.W2, O.W5, O.W8	written exam, report, test, practical training report
W2	the causes of the occurrence and the principles of preventive treatment of metabolic disorders in dairy herds	A.W11, A.W4, O.W2, O.W3, O.W4	written exam, report, presentation, test, case study, practical training report
W3	the causes of the birth of weak newborns of livestock animals	A.W11, A.W3, O.W3	written exam, report, presentation, test, case study
W4	rules for the use of passive and active immunization in the prevention of infectious diseases in calves and piglets	A.W12, B.W9, O.W3, O.W5	written exam, report, test
Skills – Student can:			
U1	is able to monitor animal health in a large farm	A.U7, B.U2, B.U6, O.U2, O.U4, O.U7	written exam, observation of student’s work, active participation, report, presentation
U2	is able to independently assess the body condition of dairy cows	A.U7, B.U1, B.U2, B.U5	observation of student’s work, active participation, presentation, test
U3	can classify the degrees of lameness of animals in a group	A.U7, B.U1, O.U2	written exam, observation of student’s work, active participation, practical training report
U4	perform resuscitation of a weak newborn calf	B.U1, O.U2	written exam, active participation
Social competences – Student is ready to:			
K1	livestock herd health management	O.K1, O.K5, O.K9	observation of student’s work, active participation
K2	cooperate with the staff of livestock farms in the field of herd health protection	O.K2, O.K8, O.K9	observation of student’s work, active participation, presentation
K3	change the method of veterinary profesional activity from traditional to focused on herd health protection	O.K1, O.K11, O.K2	observation of student’s work, active participation, presentation

Balance of ECTS points

Activity form	Activity hours*

lecture	15
laboratory classes	26
clinical classes	4
consultations	1
report preparation	10
presentation/report preparation	10
lesson preparation	6
exam / credit preparation	15

Student workload	**Hours** 87	**ECTS** 3.0
Workload involving teacher	**Hours** 46	**ECTS** 1.8
Practical workload	**Hours** 40	**ECTS** 1.5

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	1-2. Herd immunity checking program. Risk factors affecting basic production groups of dairy and beef cattle. Factors affecting productivity and health of dairy cows. Methods to detect the herd threats. 3-4. Hypomagnesemia, hypocalcemia, hypokalemia, hypophosphatemia. Dietary cation-anion balance. Strategies of milk fever prevention. 5-6. Advantages and disadvantages of various systems of cattle keeping. Advantages and disadvantages of tethered and loose systems of cow keeping. Principles of dairy herd health care. Risk factors for the metabolic disturbances in the transition period in dairy cows. Monitoring of the health of the reproduction group in the transition period. 7-8. Principles of dairy herd health care. The barrier for herd diseases. Targets of the occurrence of clinical production diseases. Estimated importance of factors influencing the dairy herd profitability. Mixer feeders – types, destination, and terms of use from the veterinarian's point of view. The most common diseases and routine procedures between 1-8 weeks of lactation. Fat Cow Syndrome (FCS). Mixing wagons – types, destination, rules of use – veterinarians point of view. Connections between cow obesity and the severity of inflammatory response. Diseases accompanying the FCS. Dependences between feeding the dairy cattle and pathology of the gastrointestinal tract. Abomasum pathology and prevention in dairy cows. Factors predisposing to left abomasum translocation. 9-10. Downer cow syndrome (DCS). Diseases that may cause DCS. Prognosis. Procedures in the treatment of DCS. FCS prevention, principles of treatment, and what to do in farm at risk. Keeping the dairy cow from the dry period of the peak of lactation. Costs of pathology in dairy farms. Direct and indirect costs. The dependence of costs on the severity of disease. Aseptic laminitis in dairy cows. Dependences between feeding and rumen acidosis, bacterial diseases, and appearance of laminitis. Limitations of the diet that prevent laminitis. System of lameness evaluation in walking cows. Problem od subacute rumen acidosis in dairy and beef cattle. Risk factors of lameness in dairy cattle, feeding failures as the predisposing factor. System of cow comfort evaluation in the bed. Risk factors associated with technology. 11-12. Consequences of intrauterine infection. Evaluation of respiratory tract threats in calves. Infectious agents that cause weak calf syndrome. Consequences of chorioamnionitis. Central nervous system injury. Interpretation of pre-colostral serum immunoglobulin concentration in calves. 13-14. Losses in youngstock caused by respiratory tract pathology. Immaturity of lungs; surfactant; respiratory distress syndrome (RDS). Species-specific predispositions for lung function disturbances. Environmental risk factors for lung diseases (at the pre-and postnatal), prevention. Non-infectious risk factors. 15. Histophilus somni Syndrome. Economic importance. Principles of respiratory tract diseases immunoprophylaxis on the herd level. Immunoprophylactic programs for beef and dairy cattle.	lecture

2.	Block III. LOSSES IN YOUNGSTOCK – CAUSES ASSOCIATED WITH GASTROINTERSTINAL TRACT (CONT.) 1. Comparison of selected rehydration preparations, and calculation of the electrolyte content. Rules in rehydration, different ways of rehydration animals in the herd. Planning volume and content of rehydrating solutions in calves and piglets. 2. Analysis of the case of diarrhea outbreak in a large dairy farm. (class type: Problem-Based Learning, PBL). Block IV. LOSSES IN OFFSPRINGS AND MATERNAL HERD CAUSED BY INAPPROPRIATE FEEDING 3. Test of block III. Fat cow syndrome. Management-related and nutrition-related risk factors. Threat prognosis: zootechnical and clinical herd evaluations (cows and calves). Analysis of milking utility reports, part 1. 4. Analysis of milking utility reports, part 2. (class type: PBL). Pathogenesis of FCS. Anamnesis, laboratory and postmortem investigation, liver biopsy. Problem evaluation in the herd. Block V. LOSSES IN YOUNGSTOCK – CAUSES ASSOCIATED WITH RESPIRATORY TRACT PATHOLOGY 5. Test of block IV. Economic evaluation of prophylactic programs in large farms. Calculation of the costs of the immunoprophylactic program. Balance of profits and losses for the veterinarian and the owner. Infectious risk factors. 6. Swine pleuropneumonia. Weak Calf Syndrome (WCS). Evaluation of the vitality in newborns using different scales. (class type: PBL) 7-8. Identification of risk factors for respiratory tract infections in the herd. A case of outbreak of bronchopneumonia in calves from a dairy farm. (class type: PBL) 9. Test of block V. Recognizing the herd problems by students – review of movies/pictures. Quiz for respiratory problems in youngstock.	laboratory classes
3.	Block IV. LOSSES IN OFFSPPRINGS AND MATERNAL HERD CAUSED BY INAPPROPRIATE FEEDING 10-11. Body condition score by Mulvany. Principles of cow examination. Principles of herd evaluation, utilization of the results in herd health monitoring, and foreseeing the problems. Complexed evaluation of good and weak features of dairy farms. Technopathies – identification and the evaluation of their intensity within the herd. Calculation of the rate of cows that exhibit problems and their classification. The evaluation of cows' comfort on beds, evaluation of beds' quality. Evaluation of lameness in walking cows; principles of application of this method in the herd and the evaluation of documentation in herd health monitoring.	clinical classes

Course advanced

Teaching methods:

problem-based learning (PBL), classes, lecture, discussion, problem-solving method, brainstorming, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	written exam, test	40%
laboratory classes	written exam, active participation, report, presentation, test, case study	50%
clinical classes	written exam, observation of student's work, test, practical training report	10%

Entry requirements

Animal Breeding; Technologies in Animal Production; Animal Nutrition; Animal Physiology I; Animal Physiology II; Biochemistry I; Biochemistry II; Veterinary Microbiology I; Veterunary Microbiology II; Veterinary Immunology; Ethology, Welfare and Animal Protection; Animal Hygiene; Diseases of Farm Animals; Preventive veterinary medicine I

Literature

Obligatory

1. Herd Health Food Animal Production Medicine 3rd ed., ed. Radostits, 2001
2. Large Animal Internal Medicine 5th ed. Editors: Bradford Smith, Imprint: Mosby, 2014
3. Rebhun's Diseases of Dairy Cattle 3rd Edition - December 27, 2016. Authors: Simon F. Peek, Thomas J. Divers

Optional

1. Eduwet materials, individual review articles indicated by teachers
2. Mee J.F , Jawor P., Stefaniak T. Role of Infection and Immunity in Bovine Perinatal Mortality: Part 1. Causes and Current Diagnostic Approaches. ANIMALS, 11, Issue: 4, Article Number: 1033, DOI: 10.3390/ani11041033
3. Jawor, P.; Mee, J.F.; Stefaniak, T. Role of Infection and Immunity in Bovine Perinatal Mortality: Part 2. Fetomaternal Response to Infection and Novel Diagnostic Perspectives. Animals 2021, 11, 2102. https://doi.org/ 10.3390/ani110721
4. Veterinary Clinics of North America: Food Animal Practice.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Safety of feedstuff

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J200BO.2244.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** mandatory
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills Yes

Teacher responsible for the subject	Jarosław Bystroń
Other teachers conducting classes	Jarosław Bystroń, Katarzyna Morka, Barbara Niechciałkowska

Period Semester 10	**Examination** graded credit **Activities and hours** lecture: 10 laboratory classes: 20	**Number of ECTS points** 2.0

Goals

C1	The aim of the course is to acquaint students with the factors influencing the feed safety. During the course they are discussed problems of microbiological and chemical hazards in feed production, and presence of GMO in feed. Students learn how to identify the presence of xenogenic proteins in feed and acquaint with the current veterinary feed law. They learn the method of feed production, and sanitary-veterinary supervision of feed plants.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	law regulations connected with veterinary supervision of feedstuffs in Poland and EU	B.W16	written credit
W2	identifies and describes the principles of management and utilisation of animal by-products and waste associated with animal production;	O.W9	written credit
W3	explains the principles of consumers and animals health protection connected with use of feedstuffs	O.W11	written credit
Skills – Student can:			
U1	is able to collect samples for monitoring tests for the presence of prohibited substances, chemical and biological residues and medicinal products in water intended for animal drinking and in the feedstuffs.	B.U23	observation of student’s work
Social competences – Student is ready to:			
K1	cooperates with representatives of other professions in the scope of public health protection	O.K11	observation of student’s work, participation in discussion
K2	communicates with the co-workers and shares knowledge	O.K9	observation of student’s work, participation in discussion
K3	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student’s work, participation in discussion

Balance of ECTS points

Activity form	Activity hours*
lecture	10
laboratory classes	20
exam / credit preparation	10
class preparation	10

Student workload	**Hours** 50	**ECTS** 2.0
Workload involving teacher	**Hours** 30	**ECTS** 1.0
Practical workload	**Hours** 20	**ECTS** 0.8

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. The rules of feed supervision in the area of feed production and distribution according to actual veterinary feed law. European Parliament and Council Regulations, Feed Enactment, medicament feed. 2. Classification, processing, distribution and veterinary supervision of slaughter by–products. 3. Undesirable substances in feedsstuffs. 4. Using of GMO in feedstuffs in EU. Antibiotic resistance of feed-derived microorganisms. 5. Detection of mycotoxins in feedstuffs – chromatography methods (TLC - Thin Layer Chromatography, HPTLC, GC – Gas Chromatography), acceptable levels of some mycotoxins in feeds.	lecture
2.	1. National plan of official feed control, control plans in feed processing plants, interpretation of laboratory feed examination results. 2. Microbiological examination of feedstuffs. The rules of feed sampling used in microbiology, interpretations of feed microbiological examination results. 3. Methods of analysis referring to assessment of animal derived components in official animal feed examination. Microscopic method of detection - preparation of specimens and examination. 4. Assessment of fibre content and nitrates and nitrites presence in animal feed. Risk connected with presence of nitrites and nitrates in animal feed. Determination of nitrites and nitrates by colorimetric method with diphenylamine reagent. 5. Application of molecular techniques in identification of xenogenic protein additives. Feed DNA isolation. Preparation and application of PCR. 6. Application of molecular techniques in identification of GMO. Electrophoresis and data analysis. 7. Feed additives. Soil improvers. Organic fertilizers. Antibiotic growth stimulators. Detection of antimicrobial substances in feedstuffs. 8. Detection of coccidiostats in animal feed. General rules of feed sampling and official feed analysis. The use of coccidiostats in animal husbandry. Determination of the ionophoric coccidiostats by qualitative method and quantitative colorimetric method. 9. Production of feeds of animal origin. Visit in feed plant. 10. Technology and processing of slaughter by-products.	laboratory classes

Course advanced

Teaching methods:

classes, lecture, discussion, presentation / demonstration

Activities	Examination methods	Percentage in subject assessment
lecture	written credit	33%
laboratory classes	written credit, observation of student’s work, participation in discussion	67%

Entry requirements

Veterinary microbiolgy, chemistry.

Literature

Obligatory

1. 1. McLandsborough, “Food Microbiology Laboratory”, CRC Press, 2005
2. 2. Websites presenting the EU feed law: eur-lex.europa.eu lex.pl
3. 3. "Veterinary feed hygiene - undesirable and desirable feed additives" - International Scientific Conference in Oisztyn, Poland 2013.

Optional

1. 1. Sava Buncic “Integrated food safety and veterinary public health” Cromwell Press, Trowbridge, UK 2006
2. 2. "Science and technology in the feed industry" Proceedings of Allltech's Seventeenth Annual Symposium, Nottingham University Press 2001
3. 3. "Veterinary feed hygiene - the effects of mycotoxins on gastrointestinal function" - International Scientific Conference in Oisztyn, Poland 2011.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Summer practical training: Animal clinic II

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J200BO.2405.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Kamila Glińska-Suchocka
Other teachers conducting classes	Kamila Glińska-Suchocka

Period Semester 10	**Examination** graded credit **Activities and hours** practical training: 160	**Number of ECTS points** 8.0

Goals

C1	Introduction to the specificity of work in a veterinary clinic. Performing a clinical examination and veterinary procedures in patients of a veterinary clinic.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying animal health, disease formation and their treatment - from the level of cells, through the organ, animal, to the entire animal population	O.W1	practical training report
W2	knows to an extensive degree, describes in detail and explains the development, structure, functioning, behaviours and physiological mechanisms of animals in normal conditions, as well as the mechanisms of disorders in pathological conditions	O.W2	practical training report
W3	explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in individual animal species, and knows the principles of therapeutic procedure	O.W3	practical training report
W4	explains and interprets the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals	O.W4	practical training report
W5	characterises in detail the methods of using veterinary medicinal products, aimed at prophylaxis and treatment of animals, as well as at guaranteeing food chain safety and environmental protection	O.W5	practical training report
W6	presents the biology of infectious factors that cause diseases transmitted between animals, as well as anthropozoonoses, taking into account the mechanisms of disease transmission and defense mechanisms of the macroorganism	O.W6	practical training report
W7	specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes	O.W7	practical training report
W8	knows to an extensive degree as well as understands disorders at the level of the cell, tissue, organ, system and organism, in the course of the disease	B.W1	practical training report
W9	explains the mechanisms of organ and systemic pathologies	B.W2	practical training report
W10	describes the causes and symptoms of diseasec, principles of treatment and prophylaxis in individual disease entities	B.W3	practical training report
W11	knows and understands the principles of diagnostic procedure, taking into account the differential diagnostics and therapeutic procedure	B.W4	practical training report
W12	presents the principles of conducting clinical examination and monitoring animal health	B.W5	practical training report
W13	explains the method of handling clinical data, as well as results of laboratory tests and additional tests	B.W6	practical training report
Skills – Student can:			
U1	conducts clinical examination of the animal in accordance with the principles of medical art	O.U1	practical training report

U2	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions	O.U2	practical training report
U3	plans the diagnostic procedure	O.U3	practical training report
U4	monitors health of the herd, as well as undertakes action in the case of a disease that is subject to the obligation of disease eradication or its registration	O.U4	practical training report
U5	issues veterinary medical opinion and certificate	O.U7	practical training report
U6	uses Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health, diseases, pathological changes and conditions	O.U8	practical training report
U7	applies IT systems used to support the health facility for animals, herd and analysis of epizootic situation	O.U9	practical training report
U8	Understands the need of continuing education, in order to ensure continuous professional development	A.U21	practical training report
U9	Safely and humanely handles animals and instructs others in this scope	B.U1	practical training report
U10	Conducts a medical-veterinary interview in order to obtain precise information regarding individual animal or group of animals and its or their living environment	B.U2	practical training report
U11	Performs a full clinical examination of the animal	B.U3	practical training report
U12	Is able to provide first aid to animals in the case of haemorrhage, wounds, respiratory disorders, eye and ear injuries, loss of consciousness, cachexia, burns, tissue damage, internal injuries, cardiac arrest	B.U4	practical training report
U13	Assesses the nutritional status of the animal and provides advice in this scope	B.U5	practical training report
U14	Collects and secures the samples for tests, as well as performs standard laboratory tests, and correctly analyses and interprets the results of laboratory tests	B.U6	practical training report
U15	Uses diagnostic equipment, including radiographic, ultrasound and endoscopic equipment, in accordance with its intended purpose and safety rules for animals and people, as well as interprets the results of tests obtained after its application	B.U7	practical training report
U16	Implements the appropriate procedures in the case of diagnosing a disease subject to the obligation of eradication or registration	B.U8	practical training report
U17	Obtains and uses information on authorised veterinary medicinal products	B.U9	practical training report
U18	Is able to prescribe and use veterinary medicinal products and medical materials, taking into account their safe storage and utilisation	B.U10	practical training report
U19	Uses the methods of safe sedation, general and local anaesthesia, as well as assessment and relief of pain	B.U11	practical training report
U20	Monitors the patient's condition in the intra- and post-operative period on the basis of basic life parameters	B.U12	practical training report

U21	Chooses and applies the appropriate treatment	B.U13	practical training report
U22	Implements the principles of surgical antisepsis and asepsis, as well as applies appropriate methods of sterilising equipment	B.U14	practical training report
U23	Assesses the need for performance of euthanasia of the animal and informs its owner about this fact in an appropriate manner, and euthanizes the animal in accordance with the principles of professional ethics and appropriate handling of corpses	B.U15	practical training report
U24	Is able to perform an autopsy of the animal corpse, along with the description, as well as to take samples and secure them for transport	B.U16	practical training report
Social competences – Student is ready to:			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	practical training report
K2	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	practical training report
K3	uses the objective sources of information	O.K4	practical training report
K4	formulates conclusions from own measurements or observations	O.K5	practical training report
K5	formulates opinions regarding various aspects of professional activity	O.K6	practical training report
K6	is ready for reliable self-assessment, formulating constructive criticism in the scope of veterinary practice, accepting criticism of presented solutions, reacting to such criticism in a clear and material manner, also with the use of arguments referring to the available scientific achievements in the discipline	O.K7	practical training report
K7	deepens his/her knowledge and improves skills	O.K8	practical training report
K8	communicates with the co-workers and shares knowledge	O.K9	practical training report

Balance of ECTS points

Activity form	**Activity hours***
practical training	160
class preparation	80

Student workload	**Hours** 240	**ECTS** 8.0
Workload involving teacher	**Hours** 160	**ECTS** 6.0
Practical workload	**Hours** 160	**ECTS** 6.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Introduction to the specificity and organization of work in the clinic, and applicable health and safety regulations. The student becomes familiar with distribution facilities (emergency room, hospital, operating room, X-ray, etc.) and the system of admitting patients. 2.Introduction to the drugs used in the practice and the way records and dispensing of medicines. Introduction to diets and dietary supplements used in a veterinary clinic. 3.Introduction to the computer program used in the practice. 4.Analysis of the cases registered in the file system of a computer-types of diseases, diagnostic methods, therapeutic methods. 5.Familiarize yourself with the program of prevention of infectious diseases and prevention systems with and combat parasitic diseases in animals treated with the practice. Familiarizing yourself with the medical interview. 6.Improving history, basic clinical examination, performing additional diagnostic methods (imaging techniques, cytological assessment, laboratory tests of blood, urine and other body fluids), collecting material for additional tests. 7.Improving the techniques restraining of the animal and performing basic veterinary procedures, eg injection, establishing access to a vein, catheterization and care treatments (eg: shortening of the claws, cleaning the perianal sinuses, cleaning the ears, etc.). 8.Introduction to the surgical procedures or their improvement: protocols and techniques of anesthesia, techniques of surgical procedures (assisting in the procedures).	practical training

Course advanced

Teaching methods:

classes, case analysis

Activities	Examination methods	Percentage in subject assessment
practical training	practical training report	100%

Entry requirements

Animal anatomy, Biochemistry, Histology and embryology, Veterinary microbiology, Animal physiology, Clinical and laboratory diagnostic, Veterinary pharmacology, Veterinary immunology, Pathophysiology, Veterinary dietetics, Parasitology and invasiology, Pathomorphology, General surgery anaesthesiology, Imaging diagnostic, Diseases of dogs and cats, Diseases of horses, Farm animal disease

Literature

Obligatory

1. R. W. Nelson, C. Couto: ,,Small Animal Internal Medicine", 2013, Mosby
2. T. W. Fossum: ,,Small Animal Surgery", 2018, Mosby
3. M. V. R. Kustritz: ,,Clinical Canine and Feline Reproduction", 2009, Wiley-Blackwell
4. C. E. Green: ,,Infectious diseases of dog and cat", 2011, Saunders

Optional

1. O. Ditz, B. Huskamp: ,,Praktyka kliniczna-konie", 2008, Galaktyka, 2008
2. Z. Gliński, K. Kostro: „Choroby zakaźne zwierząt z zarysem epidemiologii zwierząt i zoonoz", 2003, PWRiL
3. T. J. Divers, S. F. Peek: ,,Rebhu's Diseases of Dairy Cattle", 2007, Saunders
4. A. H. Andrews: ,,Bovine medicine: diseases and husbandary of cattle", 2004, Blacwell

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Summer practical training: Food processing plant I

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J200BO.2407.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Aleksandra Tabiś
Other teachers conducting classes	Aleksandra Tabiś

Period Semester 10	**Examination** graded credit **Activities and hours** practical training: 80	**Number of ECTS points** 4.0

Goals

C1	The aim of the summer practice in animal products processing plants ora poultry slaughterhouses or veterinary inspection is to teach students the organization of a structure of plants and the Veterinary Inspection, technology of animal products production, implementation of the HACCP system and other quality and hygiene systems.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	explains in detail the principles of consumer health protection	O.W11	oral credit, observation of student’s work
W2	explains in detail the principles of appropriate supervision over the production of foodstuffs of animal origin;	O.W12	oral credit, observation of student’s work
W3	knows to an extensive degree the standards, principles and conditions of animal production technology and maintaining the hygiene of technological process;	O.W13	oral credit, observation of student’s work
W4	describes legal standards associated with the activities of veterinary physicians;	O.W14	oral credit, observation of student’s work
W5	presents the principles of consumer health protection, which are ensured by appropriate supervision over the production of foodstuffs of animal origin	B.W17	oral credit, observation of student’s work
W6	knows and describes the principles of functioning of the Veterinary Inspection, also in the aspect of public health	B.W16	oral credit, observation of student’s work
W7	characterises the control systems in accordance with HACCP (Hazard Analysis and Critical Control Points) procedures	B.W18	oral credit, observation of student’s work
W8	knows and interprets the conditions of hygiene and technology of animal production;	B.W20	oral credit, observation of student’s work
W9	knows to an extensive degree, interprets and observes the principles of food law	B.W21	oral credit, observation of student’s work
Skills – Student can:			
U1	issues veterinary medical opinion and certificate	O.U7	oral credit, observation of student’s work
U2	assesses the quality of products of animal origin	B.U18	oral credit, observation of student’s work
U3	uses the collected information associated with the health and welfare of animals, and in selected cases also with productivity of the herd	B.U20	oral credit, observation of student’s work
U4	is able to estimate the risk of occurrence of chemical and biological hazards in food of animal origin	B.U22	oral credit, observation of student’s work
U5	assesses the fulfilment of requirements of the slaughter animals protection, taking into account the various methods of slaughter	B.U24	oral credit, observation of student’s work
Social competences – Student is ready to:			
K1	cooperates with representatives of other professions in the scope of public health protection	O.K11	oral credit, observation of student’s work
K2	is ready to act in the conditions of uncertainty and stress	O.K10	oral credit, observation of student’s work
K3	communicates with the co-workers and shares knowledge	O.K9	oral credit, observation of student’s work

K4	deepens his/her knowledge and improves skills	O.K8	oral credit, observation of student’s work

Balance of ECTS points

Activity form	Activity hours*
practical training	80
exam / credit preparation	30
consultations	10

Student workload	**Hours** 120	**ECTS** 4.0
Workload involving teacher	**Hours** 90	**ECTS** 3.0
Practical workload	**Hours** 80	**ECTS** 3.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	The organizational structure of the slaughterhouse. Health and safety regulations in force at the slaughterhouse. Tasks veterinary sanitary supervision over the purchase and transport of animals for slaughter. Tasks sanitary veterinary surveillance in slaughterhouses slaughter animals. Formal legal proceedings related to the adoption of slaughter animals to the slaughterhouse. Ante-mortem technique. Proceedings of the animals after the ante-mortem technique. Methods of stunning and slaughter of animals for slaughter. Deadweight technological processing of animal carcasses. Organization and post-mortem meat inspection technique. Principles of meat samples for laboratory tests. Trichinoscopic methods. Sanitary evaluation and labeling of meat from animals slaughtered. Handling the meat and unfit for consumption. Animal by-products Principles of cleaning and disinfection of premises, machinery and equipment and transportation of animals and meat. Principles of sewage treatment in slaughterhouses. Sanitary Requirements for the location and construction of slaughterhouses and facilities and lines. Principles of sanitary-veterinary records in a slaughterhouse. The current sanitary and veterinary regulations.	practical training

Course advanced

Teaching methods:

practical simulation training, presentation / demonstration, situation-based learning, problem-solving method, case analysis

Activities	Examination methods	Percentage in subject assessment
practical training	oral credit, observation of student’s work	100%

Entry requirements

nowledge of sanitary food law, in particular: Regulations no. : 178/2002, 2017/625, 2019/627, 853/2004, 852 / 2004,1 / 2005, 1069/2009, 1099/2008, 999/2001, 2015/375.
Theoretical knowledge in the field of ante-mortem and post-mortem inspection of slaughter animals.
Basic knowledge of animal identification (including age assessment based on the dental formula of cattle).
Theoretical knowledge about the symptoms of proper stunning of animals, knowledge of stunning methods and the possibilities of their application in individual animal species.
Theoretical knowledge regarding animal-by products and waste classification produced at the slaughterhouse.
Theoretical knowledge regarding the requirements for slaughterhouses.
Theoretical knowledge regarding infectious diseases and their clinical symptoms.
Theoretical knowledge in the field of anatomopathological changes in carcasses caused by OIE list A and B diseases
Theoretical knowledge of the meat sampling procedure and the diseases / residues of substances for which samples should be taken.

Literature

Obligatory

1. Gracey’s Meat Hygiene David S. Collins
2. Regulation (EU) 2017/625 of the European Parliament and of the Council of 15 March 2017

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Veterinary administration and law

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J200BO.2634.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** mandatory
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** Yes
	Subject shaping practical skills Yes

Teacher responsible for the subject	Krzysztof Rypuła
Other teachers conducting classes	Krzysztof Rypuła, Agata Kosińska-Madera

Period	**Examination**	**Number of ECTS points**
Semester 10	exam **Activities and hours** lecture: 15 auditorium classes: 15	2.0

Goals

C1	The aim of the course is to acquaint students with the terminology used in the veterinary administration and legal (administrative) tools used in administrative proceedings involving the official investigation in the procedures against spread of infectious diseases in populations.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	legal norms of Veterinary Inspection. Source of veterinary law.	O.W14	written exam, active participation, presentation, test
W2	legal standards for the management and disposal of by-products and waste related to animal production	B.W15, O.W9	written exam, active participation, presentation, test
W3	rules for issuing medical and veterinary certificates and drawing up opinions for the needs of courts and state and local government administration bodies	B.W7	written exam, active participation, presentation, test
W4	the principles of the IW functioning in terms of public health and the procedure to be followed in the case of suspicion or confirmation of an infectious disease that is subject to notification and control	B.W8	written exam, active participation, presentation, test
Skills – Student can:			
U1	analyze and interpret clinical symptoms, pathological changes as well as the results of laboratory and additional tests, formulate the diagnosis of the disease state, including differential diagnosis, and undertake therapeutic or prophylactic measures	O.U6	written exam, active participation, presentation, test
U2	conduct an epizootic investigation to determine the potential source of an infectious disease and the course and development of infection in the field	B.U19	written exam, active participation, presentation, test
U3	communicate with employees of governmental and self-governmental administration control authorities and offices	C.U4	written exam, active participation, presentation, test
Social competences – Student is ready to:			
K1	showing responsibility for decisions made towards people, animals and the natural environment	O.K1	active participation
K2	cooperation with representatives of other professions in the field of public health protection	O.K11	active participation

Balance of ECTS points

Activity form	Activity hours*
lecture	15
auditorium classes	15
presentation/report preparation	6
class preparation	8
exam / credit preparation	10

exam participation	2

Student workload	**Hours** 56	**ECTS** 2.0
Workload involving teacher	**Hours** 32	**ECTS** 1.1
Practical workload	**Hours** 15	**ECTS** 0.6

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Overview of the rules of classes. History of Veterinary Administration. 2. Basic issues in the field of administration. 3. Code of Administrative Procedure part 1. 4. Code of Administrative Procedure part 2. 5. Civil Law in Veterinary Administration. 6. Veterinary border control. 7. Handling of animal by-products. 8. Pharmaceutical law part 1 9. pharmaceutical law part 2 10. Animal Health Law. 11. Control of infectious animal diseases in outbreak part. 1. 12. Control of infectious animal diseases in outbreak part. 2. 13. Control of infectious animal diseases in outbreak part. 3 14. Law on medical products for animals and medical and veterinary products. 15. Exam	lecture

2.	1. Information about Vet., including sources of law, state authorities, local governments and the Vet. Inspection 2. Veterinary Inspection Act. 3. The Act on the protection of animal health and combating animal infectious diseases 4. Official monitoring of infectious animal diseases and zoonotic agents. Pat . 1. 5. Official monitoring of infectious animal diseases and zoonotic agents. Part . 2 6. Pharmaceutical law 7. Disposal of animals and products of animal origin Part 1 8. Disposal of animals and products of animal origin Part 2 9. Medical and veterinary documentation of animal treatment. 10. Administrative proceedings in the fight against infectious diseases. Part 1. 11. Administrative proceedings in the fight against infectious diseases. Part 2. 12. Administrative proceedings in the fight against infectious diseases Part 3. 13. IT systems in veterinary medicine. Vol. 1. 14. IT systems in veterinary medicine. Vol. 2. 15. Final test	auditorium classes

Course advanced

Teaching methods:

classes, lecture, discussion, presentation / demonstration, problem-solving method, educational film

Activities	Examination methods	Percentage in subject assessment
lecture	written exam	50%
auditorium classes	active participation, presentation, test	50%

Entry requirements

Animal anatomy I, II, Biology, Biostatistics and methods of data collection, Veterinary microbiology I, II, Veterinary epidemiology, Diseases of dogs and cats, Diseases of farm animals, Diseases of horses, Slaughter animals and meat hygiene, Veterinary pharmacology I, II

Literature

Obligatory

1. Kodeks Postępowania Administracyjnego (Dz. U. 1960 Nr 30 poz. 168)
2. Ustawa z dnia 11 marca 2004r. o ochronie zdrowia zwierząt i zwalczaniu chorób zakaźnych zwierząt (Dz.U. 2004 nr 69 poz. 625)
3. Ustawa z dnia 29 listopada 2004r. o Inspekcji Weterynaryjnej (Dz.U. 2004 nr 33 poz. 287)
4. Ustawa z dnia 6 września 2001r. Prawo Farmaceutyczne (Dz.U. 2001 nr 126 poz. 1381)
5. Rozporządzenie Parlamentu Europejskiego i Rady (WE) nr 1069/2009 z dnia 21 października 2009 r. określające przepisy sanitarne dotyczące produktów ubocznych pochodzenia zwierzęcego, nieprzeznaczonych do spożycia przez ludzi, i uchylające rozporządzenie (WE) nr 1774/2002 (rozporządzenie o produktach ubocznych pochodzenia zwierzęcego (Dz. Urz. L 300, str.1)

Optional

1. www.wetgiw.gov.pl
2. https://www.gov.pl/web/rolnictwo

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Basis of veterinary haematology

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J200BO.0123.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** optional
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills Yes

Teacher responsible for the subject	Aleksandra Pliszczak-Król
Other teachers conducting classes	Aleksandra Pliszczak-Król

Period Semester 10	**Examination** graded credit **Activities and hours** lecture: 20 laboratory classes: 10	**Number of ECTS points** 2.0

Goals

C1	The aim of the course is to familiarize students with: - haematological terms; haematopoiesis, the role of blood cells and plasma, - disorders of haematopoiesis, morphological and functional disorders of blood in the various kinds of disease, - hemostasis and its role in; prevention of the body against blood and body fluid loss, healing, - differences in morphology and function of blood components depending on various species of animals. During practical part of course, students are familiarized with: - methods of collecting, handling, transport of blood and bone marrow samples, - principles of practice in haematology and coagulology laboratories, - the rules of analysis and interpretation of the laboratory tests results.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the principles and mechanisms underlying animal health, the development of haematological diseases and the course of diseases accompanied by haematological signs, their therapy - from the level of cells, through the organ, to the entire animal body.	O.W1	test
W2	the normal haemopoiesis, blood morphology and function, and disorders of them.	O.W2	test
W3	the etiology, pathogenesis and clinical symptoms of haematological diseases and occurence of haematological signs in the course of other diseases.	O.W3	test
W4	the principles of diagnostic and therapeutic procedures appropriate for haematological diseases and other diseases accompanied by haematological signs occurring in animals.	O.W4	test
W5	the principles of diagnostic and therapeutic procedures taking into account the differential diagnostics and therapeutic procedure.	B.W4	test
W6	the method of handling clinical data, as well as results of laboratory tests and additional tests.	B.W6	test
Skills – Student can:			
U1	analyse and interpret pathological changes and results of laboratory tests and additional tests, formulate the diagnosis of given disease, taking into account the differential diagnostics, and undertake therapeutic or prophylactic actions.	O.U2	observation of student’s work, test, participation in discussion
U2	issue veterinary medical opinions.	O.U7	observation of student’s work, test, participation in discussion
U3	use Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health and haematological diseases, pathological changes and conditions.	O.U8	observation of student’s work, test, participation in discussion

U4	use vocabulary and grammatical structures of a foreign language, which constitutes the language of international communication, in the scope of creating and understanding written and oral statements, both general and specialised in the scope of veterinary haematology.	O.U11	observation of student's work, test, participation in discussion
U5	safely and humanely handle animals and instruct others in this scope.	B.U1	observation of student's work, test, participation in discussion
U6	conduct a medical-veterinary interview in order to obtain precise information regarding individual animal with haematological disease or group of animals and its or their living environment.	B.U2	observation of student's work, test, participation in discussion
U7	collect and secure the samples for tests, as well as perform standard haematological laboratory tests, and correctly analyse and interpret the results of laboratory tests.	B.U6	observation of student's work, test, participation in discussion
U8	use the collected information associated with the health and welfare of animals, and in selected cases also with productivity of the herd.	B.U20	observation of student's work, test, participation in discussion
Social competences – Student is ready to:			
K1	exhibit responsibility for his/her decisions made in regard to the people and animals.	O.K1	observation of student's work, participation in discussion
K2	use the objective sources of information related to the pathogenesis and results of haematological diseases.	O.K4	observation of student's work, participation in discussion
K3	formulate conclusions from observations of the impact of harmful factors on the body and the resulting consequences.	O.K5	observation of student's work, participation in discussion
K4	deepen his/her knowledge and improve skills in haematology area.	O.K8	observation of student's work, participation in discussion
K5	communicate with the co-workers and share knowledge.	O.K9	observation of student's work, participation in discussion

Balance of ECTS points

Activity form	**Activity hours***
lecture	20
laboratory classes	10
lesson preparation	18
exam / credit preparation	10
consultations	2

Student workload	**Hours** 60	**ECTS** 2.0
Workload involving teacher	**Hours** 32	**ECTS** 1.1
Practical workload	**Hours** 10	**ECTS** 0.4

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	Lectures are held in the compact form. 1. Haemopoiesis; haemopoietic disorders and the results of them. - hours: 2. 2-3. Blood cells - erythrocytes; physiology, morphological and functional alterations in a state of various diseases. Part I and part II - hours: 4. 4-5. Blood cells - leukocytes; physiology, morphological and functional alterations in a state of various diseaes. Part I and part II - hours: 4. 6. Blood cells - thrombocytes; physiology, morphological and functional alterations in a state of various diseases. - hours: 2. 7-8. Coagulology - primary and secondary hemostasis, fibrinolysis; disturbances and the results of them. Part I and part II - hours: 4. 9-10. Specific haematology of choosen species of animals. Part I and part II - hours: 4 .	lecture
2.	The exercises are implemented in compact form. 1. Making acquainted with the rules of work at haematological and coagulological laboratories, laboratory equipment and materials used in tests - hours: 1. 2. Making acquainted with procedures of collecting, storing, preperation for transport, transport of blood, plasma, serum and bone marrow samples - hours: 1. 3. Making acquainted with procedures of preparation of blood, plasma, serum and bone marrow samples for tests - hours: 1. 4. Haematological tests - the screening, routine and "special" procedures - hours: 1. 5-9. Differentiation and counting blood and bone marrow cells. Blood picture analysis in a state of the adaptation process, the infectious diseases, the metabolic diseases and endocrinopathies. - hours: 5. 10. Coagulological tests - the screening, routine and "special" procedures - hours: 1.	laboratory classes

Course advanced

Teaching methods:

educational film, classes, lecture, discussion, teamwork, presentation / demonstration, brainstorming, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	test	50%
laboratory classes	observation of student’s work, test, participation in discussion	50%

Entry requirements

Completion of courses: chemistry, biochemistry I and II, histology and embriology I and II, cell biology, animal physiology I and II, veterinary microbiology I and II, veterinary immunology.

Literature

Obligatory

1. John W. Harvey. Veterinary hematology. A diagnostic guide and color atlas. ELSEVIER; SAUNDERS, 2012.
2. K.J. Wardrop. Schalm’s veterinary hematology. 6th ed. WILEY – BLACKWELL, 2010.
3. M.A. Thrall and all. Veterinary hematology and clinical chemistry. BLACKWELL PUBLISHING, 2006.
4. M.D. Willard, H. Tvedten. Small animal clinical diagnosis by laboratory methods. ELSEVIER, 2012.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Dogs and cats oncology

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J200BO.0512.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** optional
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills Yes

Teacher responsible for the subject	Jarosław Popiel
Other teachers conducting classes	Wojciech Hildebrand

Period	**Examination**	**Number of ECTS points**
Semester 10	graded credit **Activities and hours** lecture: 20 clinical classes: 10	2.0

Goals

C1	The aim of teaching the subject is to provide students with basic knowledge about the diagnosis and therapy of cancer occurring in dogs and cats. The subject presents basic clinical disorders resulting from disorders associated with the cancer process. Explains the mechanisms of carcinogenesis, the tumor's impact on the animal's body, and how to properly diagnose it and determine the method of therapy.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	explains and interprets the etiology, pathogenesis and clinical symptoms of neoplastic diseases occurring in individual animal species, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W3	written credit, active participation
W2	knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the neoplastic diseases occurring in animals;	O.W4	written credit, active participation
W3	specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes;	O.W7	written credit, active participation
Skills – Student can:			
U1	conducts clinical examination of the animal in accordance with the principles of medical art;	O.U1	observation of student’s work
U2	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	observation of student’s work
U3	plans the diagnostic procedure	O.U3	written credit, observation of student’s work
Social competences – Student is ready to:			
K1	formulates conclusions from own measurements or observations	O.K5	observation of student’s work, active participation
K2	uses the objective sources of information	O.K4	observation of student’s work, active participation
K3	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	observation of student’s work, active participation
K4	deepens his/her knowledge and improves skills	O.K8	observation of student’s work, active participation

Balance of ECTS points

Activity form	Activity hours*
lecture	20
clinical classes	10

exam participation	20	
Student workload	**Hours** 50	**ECTS** 2.0
Workload involving teacher	**Hours** 50	**ECTS** 2.0
Practical workload	**Hours** 10	**ECTS** 0.4

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	The etiology and pathogenesis of cancer - definition of tumor (cancer) causes tumorigenesis Ø Pathogenesis (spontaneous genetic changes, changes in chromosome and genome caused by external factors, tumor immunology) Ø predisposition (race, family) for the occurrence of cancer Ø differentiation of benign and malignant tumors Diagnosis of cancer Ø interview, clinical examination Ø Research Oncology (methods of downloading and transferring the material to study, cytological, histological examination) Ø imaging studies (X-ray, ultrasound, CT, MRI) Ø TNM classification of tumors Ø Paraneoplastic (impact of cancer on the body, metabolic disorders, hematologic, endocrine) Ø The prognosis in cancer Methods of treating tumors Ø The purpose and legitimacy of cancer treatment Ø Surgical Therapy (rules of conduct for surgery, radical resection, sparing surgery, palliative treatment, reconstructive surgery) Ø Radiation therapy of cancer Ø Other methods of therapy (immunotherapy, hyperthermia, gene therapy, photodynamic therapy, alternative therapy) Chemotherapy cancer Ø Mechanisms of action of cytostatic drugs Ø toxicity, side effects and contraindications to the use of cytostatic drugs Ø Prevention of chemotherapy side effects Ø The safety of cytostatic drugs (safety veterinarian and owner) Mastosytoma dogs (incidence, causes, symptoms, prognosis, therapy) Mastocytomas cats (incidence, causes, symptoms, prognosis, therapy) Skin cancer (incidence, causes, symptoms, prognosis, therapy) Ø Changes of epithelial origin (brodawczyca, about anal gland tumors, squamous Ø cutaneous histiocytosis Soft tissue tumors (incidence, causes, symptoms, prognosis, therapy) Ø fibroma / fibrosarcoma Ø Lipoma / liposarcoma Ø myosarcoma Ø hemangioma / angiosarcoma Tumors of bones and joints (incidence, causes, symptoms, prognosis, therapy) Ø osteoma / osteosarcoma Ø Chondrosarcoma / chrzestaniakomięsak Ø galls bone - cartilage Synovial tumors Tumors of the central nervous system (incidence, causes, symptoms, prognosis, therapy) Ø Brain tumors (neuroblastoma, meningioma, glioma, astrocytoma, adenoma) Ø spinal cord neoplasms (change pozaoponowe, intrathecal, intraspinal) Nutrition of dogs with cancer Ø The metabolism of cancer cells Ø The energy demand of an animal with cancer Ø Methods of nutrition in cancer Ø The choice of diet Hematopoietic neoplasms (incidence, causes, symptoms, prognosis, therapy) Ø Lymphoma Ø Leukemia Ø Multiple Ø Polycythemia Ø tumors of the spleen Ø thymoma Tumors of the digestive system (incidence, causes, symptoms, prognosis, therapy) Ø Cancers of the esophagus Ø Gastrointestinal Cancers Ø intestinal tumors Ø tumors of the liver and pancreas Tumors of the urinary tract (incidence, causes, symptoms, prognosis, therapy) Ø kidney tumors Ø ureteral tumors Ø bladder tumors Ø Tumors of the urethra Cancers of the reproductive system (incidence, causes, symptoms prognosis, therapy) Ø Ovarian Tumors Ø tumors of the uterus Ø Tumors of the vagina and vulva Ø Testicular Ø tumors of the penis and foreskin Ø Prostate Cancers Mammary tumors Endocrine tumors (incidence, causes, symptoms, prognosis, therapy) Ø neoplasms of the thyroid and parathyroid glands Ø pituitary tumors Ø Adrenal Tumors The reasons for the failure of cancer therapy and ethical aspects of animal euthanasia terminally ill	lecture

2.	Diagnosis of cancer Ø Research Oncology (methods of downloading and transferring the material to study, cytological, histological examination) Ø imaging studies (X-ray, ultrasound, CT, MRI) Ø TNM classification of tumors Ø Paraneoplastic (impact of cancer on the body, metabolic disorders, hematologic, endocrine) Methods of treating tumors second Ø Surgical Therapy (rules of conduct for surgery, radical resection, sparing surgery, palliative treatment, reconstructive surgery) Ø Radiation therapy of cancer Ø Other methods of therapy (immunotherapy, hyperthermia, gene therapy, photodynamic therapy, alternative therapy) Chemotherapy cancer Ø The safety of cytostatic drugs (safety veterinarian and owner) Skin cancer (incidence, causes, symptoms, prognosis, therapy) Ø Changes of epithelial origin (brodawczyca, about anal gland tumors, squamous Ø cutaneous histiocytosis Nutrition of dogs with cancer Ø Methods of nutrition in cancer Ø The choice of diet	clinical classes

Course advanced

Teaching methods:

classes, lecture, discussion, teamwork, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	written credit	80%
clinical classes	observation of student’s work, active participation	20%

Literature

Obligatory

1. 1. Dobson J.M., Lascelles B.D.X.: BSAVA Manual of Canine and Feline Oncology, BSAVA 2003
2. Withrow S.J., MacEwen E.G.: Small Animal Clinical Oncology. 2nd ed., Philadelphia, 1996,

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Hygiene and technology of fish raw materials and fish products

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J200BO.0932.24 **Lecture languages** english **Mandatory** optional **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Jarosław Bystroń
Other teachers conducting classes	Jarosław Bystroń

Period	**Examination**	**Number of ECTS points**
Semester 10	graded credit **Activities and hours** lecture: 2 laboratory classes: 13	1.0

Goals

C1	The aim of the course is to acquaint students with the factors influencing the safety of fish raw materials and fish products. During the course they are discussed problems of microbiological, parasitological and chemical hazards in production of fish and fish products. Students acquaint with technology of fish cans and salted, smoked and marinated fish. They learn how to make microbiological examination of fish, and they acquaint with current microbiological criteria used for fish and fish products.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	standards, principles and conditions of fish processing and production	O.W13	oral credit, observation of student’s work, participation in discussion, written test
W2	risk factors for consumer health connected with production and processing of fish and fish products	O.W11	oral credit, observation of student’s work, participation in discussion, written test
Skills – Student can:			
U1	performs activities that are associated with the veterinary supervision of fish production	O.U6	observation of student’s work
U2	performs pre- and post-mortem inspection of fish, and is able to make a basic microbiological examination of fish	O.U5	observation of student’s work
Social competences – Student is ready to:			
K1	cooperates with representatives of other professions in the scope of public health protection	O.K11	observation of student’s work, participation in discussion

Balance of ECTS points

Activity form	Activity hours*
lecture	2
laboratory classes	13
exam / credit preparation	5
class preparation	5
consultations	2

Student workload	**Hours** 27	**ECTS** 1.0
Workload involving teacher	**Hours** 17	**ECTS** 0.6
Practical workload	**Hours** 13	**ECTS** 0.5

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	1. Veterinary inspection of fish raw materials and fish products. Inspection of fish raw materials and fish products according to actual veterinary law regulation (2 hours).	lecture
2.	- Hygiene and technology of fish raw materials. Hygiene and technology of live, fresh and frozen fish. Hygiene and technology of freshwater and marine fish (3 hours) - Hygiene and technology of processed fish. Production of salted fish – types of salted fish, shelf-life of salted fish. Production of smoked fish – types of smoked fish, shelf-life of smoked fish. Production of marinated fish - types of marinated fish, shelf-life of marinated fish (3 hours). - Fish and fish products as a risk factor for humans health. Microbiological, chemical and parasitical contamination of fish and fish products – basic sources of contamination, ways of transmission and methods of prevention (3 hours). - Microbiological examination of fish and fish products. Microbiological examination of fish according to actual EN ISO Norms (4 hours).	laboratory classes

Course advanced

Teaching methods:

observation of student's work, classes, lecture, discussion

Activities	Examination methods	Percentage in subject assessment
lecture	oral credit, written test	10%
laboratory classes	oral credit, observation of student’s work, participation in discussion, written test	90%

Literature

Obligatory

1. Varnam A.H, Evans M.G.: Foodborne pathogens. Mancon Publishing, 2005.
2. McLandsborough: Food Microbiology Laboratory. CRC Press, 2005
3. Sava Buncic: Integrated Food Safety and Veterinary Public Health. Cromwell Press, 2006.

Optional

1. Daczkowska-Kozon G., Bonnie Sun Pan: Environmental Effects on Seafood Availability, Safety and Quality. CRC Press 2011

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Innovations (project)

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J200BO.0960.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** optional
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills No

Teacher responsible for the subject	Szymon Szewrański
Other teachers conducting classes	Szymon Szewrański

Period Semester 10	**Examination** graded credit **Activities and hours** laboratory classes: 15	**Number of ECTS points** 1.0

Goals

C1	Practical classes aimed at teaching students to use methods and tools of creative work for designing innovations and creative solutions to complex problems

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	basic problems of innovativeness, forms of innovations and strategies of their implementation	A.W23	active participation
Skills – Student can:			
U1	to work in a team with the use of workshop techniques and creative work tools that support designing innovations	A.U15	observation of student's work, active participation
Social competences – Student is ready to:			
K1	think critically and creatively to solve complex problems, share knowledge and collaborate for innovation, and make knowledge-based decisions	O.K9	observation of student's work, active participation

Balance of ECTS points

Activity form	Activity hours*
laboratory classes	15
class preparation	15

Student workload	**Hours** 30	**ECTS** 1.0
Workload involving teacher	**Hours** 15	**ECTS** 0.6
Practical workload	**Hours** 15	**ECTS** 0.6

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	Workshops scheduled for 5 days x 3 hours 1. The process of innovation. Forms of innovation (product, service, process, value). Social innovations. Group process and organization of teams' work. 2. Practical trend analysis. 3.Methods and tools of creative work. Design thinking in designing innovations. 4. Concepts mapping. Business models. 5. Critical thinking and creative solutions to complex problems.	laboratory classes

Course advanced

Teaching methods:

brainstorming

Activities	Examination methods	Percentage in subject assessment
laboratory classes	observation of student’s work, active participation	100%

Entry requirements

Literature

Obligatory

1. Oslo Manual / Guidelines for Collecting, Reporting and Using Data on Innovation, OECD
2. Johnson S., 2011: Where Good Ideas Come From: The Natural History of Innovation
3. Osterwalder A, 2010; Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers
4. Cooper et. al, 2014: About Face: The Essentials of Interaction Design
5. Knapp et al. 2016: Sprint: How to Solve Big Problems and Test New Ideas in Just Five Days

Optional

1. Osterwalder A et al., 2015; Value Proposition Design: How to Create Products and Services Customers Want
2. Florida R., 2003: The Rise of the Creative Class: And How it's Transforming Work, Leisure, Community and Everyday Life,

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Laboratory diagnosis of viral infection of horses

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J200BO.1132.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** optional
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills Yes

Teacher responsible for the subject	Barbara Bażanów
Other teachers conducting classes	Barbara Bażanów

Period Semester 10	**Examination** graded credit **Activities and hours** clinical classes: 15	**Number of ECTS points** 1.0

Goals

C1	In the course of the classes the students will become acquainted with laboratory techniques for the diagnosis of separate viral infections, and methods of obtaining material for testing and methods of its transportation . The sympthoms and pathomechanisms of diseases will also be discussed.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying equine health, disease formation and their treatment - from the level of cells, through the rgan, animal, to the entire animal population;	O.W1	observation of student's work, active participation, participation in discussion
W2	explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in horses, and knows the principles of therapeutic procedure;	O.W3	observation of student's work, active participation, participation in discussion
W3	knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in horses;	O.W4	observation of student's work, active participation, participation in discussion
W4	characterises in detail the methods of using veterinary medicinal products, aimed at prophylaxis and treatment of horses;	O.W5	observation of student's work, active participation, participation in discussion
W5	presents the biology of infectious factors that cause diseases transmitted between horses, as well as anthropozoonoses, taking into account the mechanisms of disease transmission and defense mechanisms of the macroorganism;	O.W6	observation of student's work, active participation, participation in discussion
Skills – Student can:			
U1	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	observation of student's work, active participation, participation in discussion
U2	plans the diagnostic procedure;	O.U3	observation of student's work, active participation, participation in discussion
U3	monitors health of the herd, as well as undertakes action in the case of a disease that is subject to the obligation of disease eradication or its registration;	O.U4	observation of student's work, active participation, participation in discussion
U4	issues veterinary medical opinion and certificate;	O.U7	observation of student's work, active participation, participation in discussion
Social competences – Student is ready to:			

K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment;	O.K1	observation of student's work, active participation, participation in discussion
K2	uses the objective sources of information;	O.K4	observation of student's work, active participation, participation in discussion
K3	formulates conclusions from own measurements or observations;	O.K5	observation of student's work, active participation, participation in discussion
K4	deepens his/her knowledge and improves skills;	O.K8	observation of student's work, active participation, participation in discussion

Balance of ECTS points

Activity form	**Activity hours***	
clinical classes	15	
lesson preparation	2	
consultations	5	
class preparation	3	
Student workload	**Hours** 25	**ECTS** 1.0
Workload involving teacher	**Hours** 20	**ECTS** 0.8
Practical workload	**Hours** 15	**ECTS** 0.6

* hour means 45 minutes

Study content

No.	**Course content**	**Activities**

1.	Titles of classes: 1. Viral diseases of horses - equine viral arteritis (EVA) - diseases caused by equine herpesvirus 1,4 and 3 (EHV1,4 and EHV3) - equine influenza - equine infectious anemia - West Nile Virus infection - Eastern, Western and Venezuelan equine encephalitis - African horse sickness 2. Collection of the specimens to the viral examinations. - method of collection and procedures of safe transport of specimens to the laboratory. Preparation of specimens to the viral examination. 3. Trials of virus isolation: - Embryonated chicken eggs - primary cell cultures - cell lines - nutrition requirements and other culture conditions (for cell culture growth) - cytopathic effect (CPE) 4.Methods of new isolates identification. Serological tests: - virus neutralisation (VN) - virus titration - hemagglutination 5. Serological tests: - hemagglutination inhibition test - indirect fluorescent antibody test - complement fixation test (CF) - enzyme-linked immunosorbent assay (ELISA)	clinical classes

Course advanced

Teaching methods:

classes

Activities	Examination methods	Percentage in subject assessment
clinical classes	observation of student’s work, active participation, participation in discussion	100%

Entry requirements

Veterinary microbiology and veterinary immunology.

Literature

Obligatory

1. - Murphy Frederick A. et all., Veterinary Virology. Third Edition - OIE Manual of Standards for Diagnostic Tests and Vaccines. Fourth Edition. 2000 - Sellon D.C., Long M.T. Equine infectious disease, Elsevier, 2007 - https://www.msdvetmanual.com

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Marketing in Veterinary Practice

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J200BO.1165.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** optional
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills Yes

Teacher responsible for the subject	Robert Karczmarczyk
Other teachers conducting classes	Robert Karczmarczyk

Period Semester 10	**Examination** graded credit **Activities and hours** lecture: 15	**Number of ECTS points** 1.0

Goals

C1	The aim of the course is to get the students known about marketing, public relations, practice image, information versus advertisement, creating an ethical marketing campaigns, quality of service, loyalty in business, client trends and behaviour modulation. They know how to use a modern marketing techniques to build up a practice as a bussines.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	describes legal standards associated with the activities of veterinary physicians;	O.W14	written credit
W2	knows and understands the principles of economics of the animal production	B.W22	written credit
Skills – Student can:			
U1	obtains and uses information on authorised veterinary medicinal products;	B.U9	active participation
U2	uses the collected information associated with the health and welfare of animals, and in selected cases also with productivity of the herd	B.U20	active participation
Social competences – Student is ready to:			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	participation in discussion
K2	participates in resolution of the conflicts and exhibits flexibility in reactions to social changes	O.K3	participation in discussion
K3	uses the objective sources of information	O.K4	participation in discussion
K4	formulates conclusions from own measurements or observations	O.K5	participation in discussion
K5	deepens his/her knowledge and improves skills	O.K8	participation in discussion
K6	communicates with the co-workers and shares knowledge	O.K9	participation in discussion
K7	is ready to act in the conditions of uncertainty and stress	O.K10	participation in discussion

Balance of ECTS points

Activity form	Activity hours*
lecture	15
presentation/report preparation	7
exam / credit preparation	8

Student workload	**Hours** 30	**ECTS** 1.0
Workload involving teacher	**Hours** 15	**ECTS** 0.6

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1 & 2. Marketing basics - Introduction to marketing area (elements, marketing-mix), service marketing (structure of the service, service standarization, service as a personal contact), product marketing versus service marketing 3 & 4. Quality service - quality criteria, addend value, client service, professional responsibility, specialization in profession knowledge, quality management, important details, TQM system, pricing strategy 5 & 6. Professional ethics in veterinary practice. Bussiness according to ethical rules. Self-governing relulations, bussiness responsibility of the profession of public trust, veterinary codes of ethics, Code of Good Veterinary Practice (GVP) 7 & 8. Client loyalty - loyalty in business , motivation, promotion, how to built a loyalty, AUDITORY CLASSES 1 & 2. Direct service - phone as a tool, direct contact with a client, personalization, creation of first impression, vet – clent relationship, social media, distribution of the information 3 & 4. Advertisement versus information - structure of the commercial/information, media, creating commercial campaign, ethical aspects of advertisement in profession of public trust - veterinary profession, self-governing regulation, visual information, virtual media 5 & 6. Public relations - Aaea description, internal and external use, media tools, image creation, media power, choosing the right channel, PR in crisis situations 7 & 8. Change as a challenge. Change as a process. For and against of change implementation, change and progress, change management.	lecture

Course advanced

Teaching methods:

lecture, discussion

Activities	Examination methods	Percentage in subject assessment
lecture	written credit, active participation, participation in discussion	100%

Entry requirements

Veterinary economics, summer clinical practice (after 8th semester)

Literature

Obligatory

1. J. Massonier; “Marketing your veterinary practice” vol II
2. 2. C. Jevring-Back: Managing a veterinary practice, 2nd edition
3. M. Schilcock: Veterinary Practice Management
4. Ackermann: “Veterinary Practice Management Consult

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Management in Veterinary Practice

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J200AO.1160.24 **Lecture languages** english **Mandatory** optional **Block** general subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Robert Karczmarczyk
Other teachers conducting classes	Robert Karczmarczyk

Period	**Examination**	**Number of ECTS points**
Semester 10	graded credit **Activities and hours** lecture: 15 laboratory classes: 15	2.0

Goals

C1	Students can make up the strategic decision for running business towards progress and development of veterinary practice. Students can assess the decision making process with the profit for private practice about employees, can motivate and award the staff. They can organize and manage the job to be done.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	describes legal standards associated with the activities of veterinary physicians;	O.W14	written credit
W2	knows and understands the principles of economics of the animal production	B.W22	written credit
Skills – Student can:			
U1	performs basic statistical analysis and uses appropriate methods for presentation of the results	O.U10	active participation
Social competences – Student is ready to:			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	active participation
K2	participates in resolution of the conflicts and exhibits flexibility in reactions to social changes	O.K3	active participation
K3	uses the objective sources of information	O.K4	active participation
K4	formulates conclusions from own measurements or observations	O.K5	active participation
K5	deepens his/her knowledge and improves skills	O.K8	active participation
K6	communicates with the co-workers and shares knowledge	O.K9	active participation
K7	is ready to act in the conditions of uncertainty and stress	O.K10	active participation

Balance of ECTS points

Activity form	Activity hours*
lecture	15
laboratory classes	15
lesson preparation	10
exam / credit preparation	15

Student workload	**Hours** 55	**ECTS** 2.0
Workload involving teacher	**Hours** 30	**ECTS** 1.0
Practical workload	**Hours** 15	**ECTS** 0.6

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1 and 2. Management basics. What is management? Authorities and competences, leadership versus power, operative and strategic decisions. Leadership and administration. Team work. 3 and 4. Work organization and time managenet. Priorities, job level, duties, daily routine, crisis situations, overworking. Ability to delegate some part of work. Mistakes in joband time orgnization. Negative and positive daily routine. 5 i 6. Quality service management. Work quality. Staff efficiency. Customer relationship management. Ethical challange in management decision making process. Professional ethics versus bussiness. Free market and profession of public trust. 7 i 8. Financial management. Income and profit. Margin value. Bussinessplan as planning tool. Lifetime client value. Changes in price and clinet volume and impact on financial account.	lecture
2.	1 i 2. CV, motivation letter andd interview. CV- selection of information, frame, contents. Motivation letter as the answer for the job offer - arguments, personal characteristic, layout, references. Interview - prepartion, first impression, behaviour, body languge. Questiona and answers to asked and answered. 3 i 4. Brand and bussinessplan.What is a brand - characteristic. Company brand and personal brand. Positive public relation. "Moments of truth" is service company. Bussinessplan - elements ,layout, analysis. What is it for and for whom. Control. 5 i 6. Technical and medical procedures in veterinary practice. What is a procedure. How to create a procedure. The reasons of procedure creation. Creating own procedures for basic standard situation in veterinary practice. 7 i 8. Opening of own veterinary practice. Law basis and procedures step by step. Veterinary and bussiness responsibilitie in front of customer and society. Practice regulations. Manager's statement.	laboratory classes

Course advanced

Teaching methods:

classes, lecture, teamwork

Activities	Examination methods	Percentage in subject assessment
lecture	written credit	90%
laboratory classes	active participation	10%

Literature

Obligatory

1. J. Massonier; “Marketing your veterinary practice” vol II
2. C. Jevring-Back: Managing a veterinary practice, 2nd edition
3. M. Schilcock: Veterinary Practice Management
4. Ackermann: “Veterinary Practice Management Consult"

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Ornamental fish diseases

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J200BO.3139.24 **Lecture languages** english **Mandatory** optional **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Małgorzata Bednarska
Other teachers conducting classes	Małgorzata Bednarska

Period Semester 10	**Examination** graded credit **Activities and hours** laboratory classes: 30	**Number of ECTS points** 2.0

Goals

C1	This course offers students basic issues of ornamental fish biology, anatomy, diagnosis of fish diseases based on the clinical and postmortem examination of fish. During the course student should acquire the theoretical knowledge and practical skills necessary to diagnose fish disease, taking samples for laboratory test and treat diseases in fish
C2	Student has knowledge about major diseases in ornamental fish

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	explains and interprets the etiology, pathogenesis and clinical symptoms of diseases of ornamental fish	O.W3	written credit
W2	knows the principles of therapeutic procedure and the methods of diagnostic of ornamental fish diseases	O.W4	written credit
W3	characterises in detail the methods o drug administration in aquaculture	O.W5	written credit
W4	specifies the principles of conducting clinical examination of ornamental fish	O.W7	written credit
W5	function of organs system and physiological processes in fish	O.W2	written credit
Skills – Student can:			
U1	conducts clinical examination of ornamental fish	O.U1	observation of student’s work, active participation
U2	analyses and interprets pathological changes in ornamental fish and formulates the diagnosis of disease and recommendate water quality improvement	O.U2	observation of student’s work, active participation
U3	take diagnostic material from ornamental fish and interpret result	O.U3	observation of student’s work, active participation
U4	monitoring emerging disease of ornamental fish	O.U4	observation of student’s work, active participation
Social competences – Student is ready to:			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student’s work
K2	deepens his/her knowledge and improves skills	O.K8	observation of student’s work
K3	formulates conclusions from own measurements or observations of ornamental fish	O.K5	observation of student’s work

Balance of ECTS points

Activity form	Activity hours*
laboratory classes	30
exam / credit preparation	15
lesson preparation	13
presentation/report preparation	2

Student workload	**Hours** 60	**ECTS** 2.0
Workload involving teacher	**Hours** 30	**ECTS** 1.0
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Anatomy and physiology of ornamental freshwater and marine fish. 2. Acclimation procedures for aquatic life. Monitoring environmental conditions. Water analysis. 3. Clinical examination and procedures for ornamental fish. Biopsy techniques. Shipping samples. 4. Postmortem examination. Necropsy procedures. Pet fish formulary. 5. Aquarium water filtration system. Mechanical filtation. Chemical filtration. Biological filtration. 6. Managment of the large public aquarium. Aquatic Life Support System . 7. Elasmobranch tranport techniques and equipment. Acclimatization and recovery. 8. Common freshwater aquarium fish diseases. Treatment and control. 9. Common saltwater aqarium fish diseases. Treatment and control. 10. Infectious diseases of ornamental pet fish. Treatment and control. 11. Environmental requirementes and diseases of carps, Koi and goldfish. 12. Tropical fish medicine. 13. Nutrition and nutritional diseases of ornamental fish. 14. Culture and maintenance of selected marine fish. Salt water aquarium water parameters. 15. Final test.	laboratory classes

Course advanced

Teaching methods:

discussion, presentation / demonstration, educational film, case analysis, classes

Activities	Examination methods	Percentage in subject assessment
laboratory classes	written credit, observation of student’s work, active participation	100%

Literature

Obligatory

1. Noga E. I. : Fish Disease: Diagnosis and Treatment. Wiley – Blackwell, 2010
2. Roberst R. J. : Fish Pathology. Wiley – Blackwell, 2012
3. Austin B., Austin D.A.: Bacterial Fish Pathogens: Disease of Farmed and Wild Fish. Springer, 2012

Optional

1. Whitman K.A.: Bacteriology Manual Techniques and Procedures of Finfish and Shellfish. Iowa State Press, Blackwell Publishing Company, 2004

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Poultry meat and egg hygiene and technology

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J200BO.1758.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** optional
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills Yes

Teacher responsible for the subject	Katarzyna Kosek-Paszkowska
Other teachers conducting classes	Katarzyna Kosek-Paszkowska

Period	**Examination**	**Number of ECTS points**
Semester 10	graded credit **Activities and hours** lecture: 5 laboratory classes: 10	1.0

Goals

C1	During the course, the student becomes familiar with slaughtering methods of different kind of poultry, with practical implementation of HACCP system in poultry meat plants and with the technology of egg production and egg products.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	explains in detail the hazards and risk related to egg and poultry products	O.W11	written credit, observation of student's work, active participation, case study
W2	explains in detail the principles of appropriate supervision over the production of eggs and poultry meat products	O.W12	written credit, observation of student's work, active participation, case study
W3	knows to an extensive degree the standards, principles and conditions and hygiene of technological process of processing of eggs and poultry meat;	O.W13	written credit, observation of student's work, active participation, case study
Skills – Student can:			
U1	performs examination of eggs and poultry meat products	O.U5	observation of student's work, active participation, case study
U2	performs activities associated with the veterinary supervision on eggs and poultry meat processing plants	O.U6	observation of student's work, active participation, case study
Social competences – Student is ready to:			
K1	formulates conclusions from own measurements or observations	O.K5	observation of student's work, active participation, case study
K2	cooperates with representatives of other professions in the scope of public health protection	O.K11	observation of student's work, active participation, case study

Balance of ECTS points

Activity form	**Activity hours***
lecture	5
laboratory classes	10
presentation/report preparation	10
exam / credit preparation	5

Student workload	**Hours** 30	**ECTS** 1.0
Workload involving teacher	**Hours** 15	**ECTS** 0.6
Practical workload	**Hours** 10	**ECTS** 0.4

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1.Law regulations concerning the slaughtering process of poultry, the presentation of the main EU and Polish regulations concerning the rules for the transport of poultry to the slaughter -houses, poultry slaughtering, cutting and processing meat, microbiological criteria for poultry meat, the legal basis of the HACCP system. 2.Basic principles of egg production: the presentation of environmental factors influencing the production of eggs. Microbiological criteria for environmental conditions-climate, litter, ventilation. Fundamentals of nutrition of laying hens. 3. Nutritional value of eggs: nutritional value of eggs of different species of birds and contemporary trends shaping the nutritional value. 4.Storage and preservation of eggs: cold storage and modified atmosphere packaging, modern methods of stabilizing and extending of the shelf- life of eggs. 5.Detailed technology and hygiene of slaughtering process of the different kinds of poultry including ostriches, consumer health hazards and ways to eliminate them at each stage of the slaughter process, the quality of poultry meat	lecture

2.	1.Technology and hygiene of cutting and processing of poultry meat: a detailed presentation of the cutting process of the carcasses, packaging methods and preservation of poultry meat, production of processed poultry meat products (sausages, deli, MDPM), microbiological hazards associated with poultry meat and control measures for them. 2-3. The HACCP system in poultry processing: practical development of the full documentation of the HACCP system for selected meat products, preparation of a product description and flow diagram, the hazard analysis and estimation of the risks, identification of the critical control points, identification of critical limits and establishing the ways of monitoring for each CCP, corrective actions and possible methods of verification of the HACCP system. 4. Microbiological and sensory examination of processed poultry meat products: practical microbiological examination of different sorts of poultry meat and poultry meat products for presence of: Salmonella, Listeria monocytogenes, E. coli. 5.Conducting sensory analysis of poultry meat products- assessment of taste, flavor, color and texture. 6. Detailed technology and hygiene of slaughtering process of the different kinds of poultry including ostriches, consumer health hazards and ways to eliminate them at each stage of the slaughter process, 7.The quality of poultry meat; 8Examination of eggs: evaluation of egg freshness and microbiological examination; 9.Packaging and storage of eggs- practical aspects, hazards 10. Packaging and storage of eggs- HACCP system	laboratory classes

Course advanced

Teaching methods:

problem-based learning (PBL), tutoring, classes, lecture, problem-solving method, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	written credit, active participation	40%
laboratory classes	written credit, observation of student’s work, case study	60%

Entry requirements

Animal Anatomy, Biochemistry, Animal Physiology, Microbiology, Food Law, Meat Hygiene

Literature

Obligatory

1. Mead G.C “Poultry Meat Processing and Quality”, CRC Press, 2004
2. Nollet L.M, Toldra F. “Handbook of Processed Meats and Poultry Analysis”, CRC Press, 2008
3. Nanda V. “Meat, Egg and Poultry Science & Technology”, IK International, 2013

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Swine diseases

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J200BO.2410.24 **Lecture languages** english **Mandatory** optional **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Krzysztof Rypuła
Other teachers conducting classes	Krzysztof Rypuła

Period Semester 10	**Examination** graded credit **Activities and hours** practical classes: 13 clinical classes: 17	**Number of ECTS points** 2.0

Goals

C1	The aim of the course is to acquaint students with the knowledge on infectious diseases of pigs, possibilities of their diagnosis, treatment and prevention. Teaching is an extension of the issues discussed during the teaching of the subject disease of farm animals – swine diseases.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W4	oral credit
Skills – Student can:			
U1	plans the diagnostic procedure in pigs	O.U3	oral credit
U2	monitor the health of the herd, and take action in the event of finding a disease that is subject to compulsory eradication or registration	O.U4	oral credit
U3	issues veterinary medical opinion and certificate	O.U7	oral credit
U4	conduct a clinical examination in pigs, analyze and interpret clinical signs and laboratory test results, formulate a diagnosis taking into account differential diagnosis and undertake therapeutic and preventive measures in pigs	O.U1, O.U2	oral credit
Social competences – Student is ready to:			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student’s work
K2	cooperation with representatives of other professions in the field of public health protection	O.K11	observation of student’s work

Balance of ECTS points

Activity form	Activity hours*
practical classes	13
clinical classes	17
lesson preparation	5
exam / credit preparation	10
class preparation	5

Student workload	**Hours** 50	**ECTS** 2.0
Workload involving teacher	**Hours** 30	**ECTS** 1.0
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	Student after completing faculty broadens the knowledge gained during the compulsory teaching of practical procedures veterinarians - specialist of swine disease on the pigs farm. Subject: 1. Organization of work. vet. on pig farms p.1 2. Organization of work. vet. on pig farms p. 2 3. Diagnostics in infectious diseases of pigs p.1 4. Diagnostics in infectious dieseases of pigs p.2 5. Modern biosecurity systems on pig farms 6. The use of probiotics in the therapy and prevention of diseases in pigs 7. Biosecurity on pig farms in the context of spreading ASFV 8. New pig strategies for PRRSV and PCV-2 eradication and control systems 9. Principles of the use of chemotherapeutics, metaphylaxis on pig farms	practical classes
2.	1. The student becomes familiar with this type of animal, matters necessary for the acquisition of practical skills conduct medical and veterinary work in the pig farms. Subjects: 1. The work of a veterinarian specialist in swine diseases on pig farms 2. Collection of material for diagnostic tests in piglets 3. Collection of material for diagnostic tests in weaners 4. Collection of material for diagnostic tests in fattening pigs 5. Collection of material from animals in the foundation herd 6. Clinical and pathological examination on pig farms	clinical classes

Course advanced

Teaching methods:

discussion, situation-based learning, educational film, presentation / demonstration, problem-solving method, case analysis

Activities	Examination methods	Percentage in subject assessment
practical classes	oral credit	50%
clinical classes	oral credit, observation of student’s work	50%

Literature

Obligatory

1. Straw B. Diseases of swine. Ed. 9 Blackwell Publishing Ltd, 2006.
2. Zimmerman J. Diseases of swine. AASV. Ed. 10, 2012.
3. Thrusfield M. Veterinary Epidemiology. Ed. 5 Blackwell Science, 2018

Optional

1. https://www.pigs333.com
2. https://www.pigprogress.net

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Veterinary advicement in large farms

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J200BO.2635.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** optional
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills Yes

Teacher responsible for the subject	Tadeusz Stefaniak
Other teachers conducting classes	Tadeusz Stefaniak, Paulina Jawor, Anna Rząsa

Period Semester 10	**Examination** graded credit **Activities and hours** lecture: 12 laboratory classes: 10 clinical classes: 8	**Number of ECTS points** 2.0

Goals

C1	Description of the most important tasks of the farm veterinarian, based on the example of dairy farms. At visits in the farm carrying the evaluation of the farm, and production groups of animals, collection of samples for laboratory examination, analysis of farm records, analysis of nutrition and keeping conditions, recognition of management programme. Elaboration and interpretation of the results of the material collected on the farm, preparation of the opinion about the farm, presentation the results to the owner, formulation of advisements.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	Knows the scale and types of the most important problems of large dairy cattle farms	B.W9, O.W2, O.W3	project, active participation, report
W2	understands the economical bacground of farm animal keeping	B.W4, B.W5, O.W3	project, active participation, report
Skills – Student can:			
U1	Is able independently to recognize herd problems and to apply the proper improving programme	A.U12, A.U7, B.U5, O.U3, O.U4	project, observation of student’s work, active participation, report
U2	Is able to select independetly the representative group of animals and based on their examination take diagnosis of the herd problems	A.U12, A.U15, B.U1, B.U2, B.U20, B.U21, B.U5, O.U3	project, observation of student’s work, active participation, report
Social competences – Student is ready to:			
K1	Is able perfom the anamnesis that allow to determine the most important farm problems	O.K1, O.K3, O.K5, O.K8	observation of student’s work, active participation
K2	Is able to suggest the most efficient solutions that increase the farm functioning	O.K1, O.K11, O.K3, O.K4, O.K9	observation of student’s work, active participation

Balance of ECTS points

Activity form	Activity hours*
lecture	12
laboratory classes	10
clinical classes	8
consultations	1
lesson preparation	10
presentation/report preparation	19

Student workload	**Hours** 60	**ECTS** 2.0
Workload involving teacher	**Hours** 31	**ECTS** 1.0
Practical workload	**Hours** 18	**ECTS** 0.7

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1-2. Minimal standards for field practice involved in livestock animals. Typical failures/drawback of the farm health records. Methods of financial settlements with the owner. 3-6. Monitoring and prevention of production diseases. Main fields of herd health monitoring. Główne pola monitorowania zdrowia stada. Keeping the accurate body condition (BCS) in cows. Negative Energy Balance (NEB) Milk fever and subclinical hypocalcemia. The rumen health. Micronutrient and antioxidants status. 7-8. Farm procedures associated with prevention of hypocalcemia. The influence of nutrition of the dairy cows on periparturient pathology 9-10. Pathogenesis of mineral metabolism in dairy cows at transit period 11-12. Analysis of costs of pruduction diseases and other health problems in dairy farm. Definitions of production diseases in large farm conditions.	lecture
2.	1-2. Analysis of the case of problem farm, class type application-integration 3-4.Familiarization with the software of herd management (evaluation of the possibilities of use the computer in the work of farm veterinarian). 5-8. Elaboration and interpretation of results of examination the material collected on the farm, application of computer software in the data processing. 9-10. Elaboration of the expertise and the discussion of results with the owner.	laboratory classes
3.	1-8. Farm evaluation, evaluation of respective technological groups of animals. Collection of samples for laboratory examinations, analysis of farm records, analysis of nutrition and keeping system.	clinical classes

Course advanced

Teaching methods:

case analysis, classes, lecture, discussion, project-based learning (PBL), problem-solving method

Activities	Examination methods	Percentage in subject assessment
lecture	project, active participation, report	30%
laboratory classes	project, observation of student’s work, active participation, report	40%
clinical classes	observation of student’s work, active participation, report	30%

Entry requirements

Animal breeding; Technology in animal production; Animal nutrition; Animal Physiology I, Animal Physiology II; Biochemistry I; Biochemistry II; Veterinary Microbiology I; Veterinary Microbiology II; , Ethology, Welfare and Animal Protection; Animal hygiene; Veterinary Preventive Medicine I

Literature

Obligatory

1. Herd Health: Food Animal Production Medicine, Radostits O.M., Leslie K.E., Fetrow J., 2nd edition 1994
2. Large Animal Internal Medicine, 6th Edition Bradford Smith David Van Metre Nicola Pusterla (ed.), 2019.
3. Atlas of bovine pathology. Cutler, Keith, 2017

Optional

1. Color Atlas of Farm Animal Dermatology 1st Edition, Danny W. Scott, 2018
2. Stefaniak T., Houszka M., Nowaczyk R., Rouibah K., Jawor P. 2016. Zygomycosis of the abomasum in neonatal calves during treatment of diarrhea caused by Escherichia coli: a case report. Med. Weter. 72, 263-267
3. L. Kovács*, L. Rózsa, M. Pálffy, P. Hejel, W. Baumgartner and O. Szenci. Subacute ruminal acidosis in dairy cows - physiological background, risk factors and diagnostic methods. VETERINARSKA STANICA 51 (1), 2020.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Veterinary dermatology

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J200BO.2638.24 **Lecture languages** english **Mandatory** optional **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Agnieszka Cekiera
Other teachers conducting classes	Agnieszka Cekiera, Jarosław Popiel

Period Semester 10	**Examination** graded credit **Activities and hours** lecture: 20 laboratory classes: 10	**Number of ECTS points** 2.0

Goals

C1	The aim of the Veterinary dermatology is to give the students the knowledge about diseases of skin in dogs and cats, their etiology, pathogenesis, therapeutic methods, and prevention. It concerns ectoparasitic diseases, autoimmune diseases as well as allergic diseases, genetic dermatoses, behavioral dermatoses and endocrinopathies.
C2	The aim is to give information about possible diagnostic methods and therapeutic methods use in skin diseases of dogs and cats

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	Explains and interprets the etiology, pathogenesis and clinical symptoms of skin diseases occurring in dogs and cats, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in dogs and cats;	O.W3	written credit
W2	Knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the skin diseases occurring in dogs and cats;	O.W4	written credit
W3	Characterizes in detail the methods of using veterinary medicinal products, aimed at prophylaxis and treatment of dogs and cats, as well as at guaranteeing food chain safety and environmental protection;	O.W5	written credit
W4	Knows the principles of a therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the skin diseases occurring in dogs and cats;	B.W4	written credit
W5	Knows the method of handling clinical data, as well as results of laboratory tests and additional tests used in veterinary dermatology	B.W6	written credit
Skills – Student can:			
U1	Conducts dermatological clinical examination of dogs and cats in accordance with the principles of medical art;	O.U1	active participation
U2	Analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given skin disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	active participation
U3	Plans the diagnostic procedure in skin diseases in dogs and cats	O.U3	active participation
U4	Uses Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health, diseases, pathological changes and conditions in skin diseases	O.U8	written credit
U5	Conducts a medical-veterinary interview in order to obtain precise information regarding individual dog, cat or group of animals and its or their living environment	B.U2	active participation
U6	perform clinical examination in dogs and cats	B.U3	active participation
U7	Collects and secures the samples for tests, as well as performs standard laboratory tests, and correctly analyses and interprets the results of laboratory tests used in veterinary dermatology	B.U6	active participation
U8	Chooses and applies the appropriate treatment in different skin diseases	B.U13	written credit

Social competences – Student is ready to:			
K1	Uses the objective sources of information	O.K2, O.K4	active participation
K2	Formulates conclusions from own measurements or observations	O.K5	active participation
K3	Deepens his/her knowledge and improves skills	O.K8	active participation

Balance of ECTS points

Activity form	Activity hours*
lecture	20
laboratory classes	10
exam / credit preparation	20
consultations	10

Student workload	**Hours** 60	**ECTS** 2.0
Workload involving teacher	**Hours** 40	**ECTS** 1.5
Practical workload	**Hours** 10	**ECTS** 0.4

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	Exercise 1. History and dermatological examination. History of the disease. Dermatological patient`s chart. Additional dermatological tests. Dermatological magnifier, Woods lamp examination, coat brushing, scotch test. Exercise 2. Additional dermatological tests. Principles of collecting materials for additional tests. The trichogramme, skin scraping (superficial and deep, BAC, cytology, Diff-Quick coloration, skin biopsy). Exercise 3. Main principles of allergological diagnosis. Allergens and diagnostic kits. Evaluation of disorders of skin reactivity. Skin patch tests, allergic skin tests (prick-tests, intradermal tests) provocative skin tests. Exercise 4. Otitis externa. Clinical division, diagnosis and basis of differential diagnosis, clinical signs, treatment and prophylaxis, general and local treatment. Exercise 5. Analysis of dermatological patients charts, presentation of papers prepared by students	laboratory classes

2.	Immune dermatoses part 1. Allergic skin diseases (atopy, atopic dermatitis, flea allergy dermatitis, food intolerance, food allergy- as an example for using provocative test, contact allergic dermatitis) Immune dermatoses part 2. Immune dermatoses (luphus, pemphigus) Metabolic dermatoses, skin conditions associated with behavioral disorders and complicating dermatoses. Zinc-responsive dermatoses. Complicating dermatoses. Clinical signs related to pruritus, secondary infection, keratinisation disorders; primary and secondary seborrhea, seborrheic dermatitis complex. Skin conditions associated with behavioral problems. Genetic skin diseases. Genetic melanin pigmentary disorders, genetic disorder of colagen production- EDS complex, dermoid sinus. Skin neoplasmas. Epithelial tumors, mezenchymal tumors (connective tissue), melanocytes tumors. Main feline dermatoses. Extensive alopecia, milliary dermatitis, feline eosinophilic granuloma complex Endocrine dermatoses. Sertolli cell tumor, male feminisation syndrome, hyperandrogenism, hyper- and hypoestrogenism, acromegaly, alopecia X. Bacterial skin diseases. Types of pyoderma. Surface Pyodermas. Superficial Pyodermas. Deep Pyodermas. Diagnosis and treatment. Laboratory and exozitc animals dermatoses. Dermatoses of guinea pigs, hamsters, rats and rabbits. Ectoparasites and dermatophytosis. Drugs used in treatment of skin diseases. Principles of therapy, protocols of treatment, methods of treatment.	lecture

Course advanced

Teaching methods:

practical simulation training, classes, lecture, discussion, brainstorming, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	written credit	80%
laboratory classes	active participation	20%

Entry requirements

veterinary pharmacology I & II, veterinary microbiology I & II, veterinary immunology, parasitology and invasiology, clinical and
laboratory diagnostics I & II, diseases of dogs and cats

Literature

Obligatory

1. L. Medleau, K. A. Hanilica; Small animal dermatology, Elsevier Books, 2016
2. P. Prelaud, Practical guide to Cananie Dermatology, Springer Nature, 2019
3. R.G. Harvey, P.J. Harvey; Skin diseases of the Dog and Cat, Taylor and Francis, 2018
4. E. C Feldman, Canine and Feline Endocrinology, 2014
5. F. Albanese, Canine and feline cytology, 2016
6. N. Heinrich, M. Eisenschenk, R. Harvey, T. Nuttall, Skin Diseases of The Dog and Cat

Optional

1. Muller and Kirk's Small Animal Dermatology. Miller, William H. 7th Edition, Elsevier, 2012

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Surgical oncology

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J200BO.3573.24 **Lecture languages** english **Mandatory** optional **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Joanna Tunikowska
Other teachers conducting classes	Joanna Tunikowska, Przemysław Prządka, Agnieszka Antończyk

Period	**Examination**	**Number of ECTS points**
Semester 10	graded credit **Activities and hours** lecture: 8 clinical classes: 7	1.0

Goals

C1	During the classes participants will learn the basic principles and methods of surgical oncology. The goal of the course is also to introduce students to the basics of minimally invasive surgery and possibilities of using modern techniques in oncological patients. Students will be able to plan the treatment in some oncological cases, conduct a conversation with the owner on the ways and possibilities of treatment as well as practically perform basic procedures in oncological surgery.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	basic principles of surgical oncology and additional therapy.	O.W3, O.W4, O.W7	test
Skills – Student can:			
U1	plan the treatment, remove small skin lesion and do basic skin reconstruction.	O.U2	active participation
Social competences – Student is ready to:			
K1	to discuss and explain to the owner the treatment options.	O.K10, O.K2, O.K9	active participation

Balance of ECTS points

Activity form	Activity hours*
lecture	8
clinical classes	7
lesson preparation	5
project preparation	5

Student workload	**Hours** 25	**ECTS** 1.0
Workload involving teacher	**Hours** 15	**ECTS** 0.6
Practical workload	**Hours** 7	**ECTS** 0.2

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	Principles of surgical oncology. Reconstructive surgery. Palliative treatment in oncological surgery. Basics of minimally invasive surgery in oncology.	lecture

2.	Skin reconstruction – practical classes in surgical technique. Suturing, tension reliving sutures, grafts. Electrochemotherapy – practical application, technique, equipment. Pain in oncological patients – case analysis, anesthesia and palliative protocols planning, case study. Laparoscopy – components of the equipment, laparoscopy in practice. Clinical cases – case study, treatment planning. How to talk with the owner of the oncological patient? Clinical case analysis and test of knowledge	clinical classes

Course advanced

Teaching methods:

practical simulation training, lecture, problem-solving method, case analysis, project-based learning (PBL)

Activities	Examination methods	Percentage in subject assessment
lecture	test	50%
clinical classes	active participation	50%

Literature

Obligatory

1. Kudnig, Simon T., and Bernard Séguin, eds. Veterinary surgical oncology. John Wiley & Sons, 2012.
2. Tozon, Nataša, Nina Milevoj, and Joseph Impellizeri. "Electrochemotherapy in veterinary oncology." Electroporation in Veterinary Oncology Practice. Springer, Cham, 2021. 63-112.
3. Biller, Barb, et al. "2016 AAHA oncology guidelines for dogs and cats." Journal of the American Animal Hospital Association 52.4 (2016): 181-204
4. Farese, J. P., et al. "Introduction to oncologic surgery for the general surgeon." Veterinary Surgery: Small Animal. St. Louis: Saunders Elsevier (2017): 325-345.

Optional

1. Tobias, Karen. Manual of small animal soft tissue surgery. John Wiley & Sons, 2017.
2. Villalobos, Alice. Canine and feline geriatric oncology: honoring the human-animal bond. John Wiley & Sons, 2017.
3. Fransson, Boel A., and Philipp D. Mayhew. Small animal laparoscopy and thoracoscopy. John Wiley & Sons, 2022

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Rational antimicrobial therapy in animals-practical aspects

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J200B.3766.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** optional
Study form Full-time	**Block** major subjects
Education profile General academic	**Subject related to scientific research** Yes
	Subject shaping practical skills Yes

Teacher responsible for the subject	Maciej Kuczkowski
Other teachers conducting classes	Maciej Kuczkowski, Marianna Szczypka, Tomasz Piasecki, Michał Bednarski, Magdalena Lis, Magdalena Florek

Period	**Examination**	**Number of ECTS points**
Semester 10	graded credit **Activities and hours** laboratory classes: 30	2.0

Goals

C1	The aim of the course is to popularize among students the issues related to drug resistance of microorganisms and the need to apply the principles of rational antimicrobial therapy in individual animals species.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	Characterises in detail the methods of using veterinary antimicrobial products, aimed at prophylaxis and treatment of animals, as well as at guaranteeing food chain safety and environmental protection	A.W17, O.W5	test, participation in discussion
W2	Knows and understands the principles of diagnostic and therapeutic antimicrobial procedure	B.W4, O.W4	test, participation in discussion
W3	Knows and understands the mechanisms of drug resistance, including multi-drug resistance by microorganisms	A.W18	test, participation in discussion
Skills – Student can:			
U1	Collect and secure the samples for tests for microbiological tests, Plans the isolation and identification procedure , determination of its drug susceptibility, interpret the results of microbiological tests	A.U10, B.U6, O.U2, O.U3	observation of student's work, active participation, test
U2	Choose and applies the appropriate antimicrobial therapy, including target animal species	A.U11, B.U13, O.U2	active participation, test, participation in discussion
U3	Interpret the responsibility of veterinary physician related to the usage of drugs in animals, in regard to the animal, its owner, society, as well as the natural environment, with regard to the growing problem of drug resistance of microorganisms	A.U16	test, participation in discussion
U4	use the advice and help of specialised organisational units or persons in the scope of solving the problems concerning drug resistance of microorganisms	A.U23	test, participation in discussion
Social competences – Student is ready to:			
K1	Exhibit responsibility for his/her decisions made in regard to the people, animals and the natural environment in relation to antimicrobials rsistance problems	O.K1	observation of student's work, participation in discussion
K2	Use the objective sources of information o about the use of antimicrobial drugs in animals and resistance problems microbes	O.K4	participation in discussion
K3	Cooperate with representatives of other professions in the scope of public health protection	O.K11	participation in discussion

Balance of ECTS points

Activity form	Activity hours*
laboratory classes	30
collecting and studying literature	4
consultations	2

lesson preparation	4
exam / credit preparation	10

Student workload	**Hours** 50	**ECTS** 2.0
Workload involving teacher	**Hours** 32	**ECTS** 1.1
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Threats to human and animal health and life resulting from antimicrobial bacterial resistance. Legal regulations concerning the use of antimicrobial drugs in animals. 2. Systems for monitoring the consumption of antimicrobial drugs in animals. Drug susceptibility reporting. 3. Ways of formation and transmission of antimicrobial bacterial resistance to individual groups of antimicrobial drugs and antiseptics and disinfectants. 4. Other issues related to antimicrobial resistance (e.g. selection pathogens, critical pathogens, resistance categories, biofilm). 5. Principles of selection of antimicrobial drugs when performing antibiogram for individual animal species. Classification od antibiotycs (bactericidal, bacteriostatic, time-dependent, concentration dependent). 6. Collection, storage and transport of material for microbiological tests. cover letter. Isolation of microorganisms - selection of microbiological media and clinical culture methods. Inoculation and incubation. 7. Isolation of microorganisms - interpretation of growth on media. Methods identification. Bacterial drug susceptibility testing using the disc diffusion method. 8. Reading and interpretation of disc diffusion test results. Other methods of drug susceptibility testing of bacteria and fungi. 9. Rational antimicrobial therapy in dogs and cats. 10. Rational antimicrobial therapy in horses. 11. Rational antimicrobial therapy in ruminants. 12. Rational antimicrobial therapy in pigs. 13. Rational antimicrobial therapy in poultry. 14. Rational antimicrobial therapy in other animal species. 15. Farming without antibiotics. Alternatives to antimicrobial drugs. Written test.	laboratory classes

Course advanced

Teaching methods:

discussion, classes, practical simulation training

Activities	Examination methods	Percentage in subject assessment
laboratory classes	observation of student’s work, active participation, test, participation in discussion	100%

Entry requirements

veterinary pharmacology, veterinary microbiology

Literature

Obligatory

1. 1. www.ema.europa.eu - strona internetowa Europejskiej Agencji Leków (EMA) 2. Giguere S., Precsott JF, Dowling PM. Antimicrobial therapy in veterinary medicine. Blackwell Publishing, 2013

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Diseases of horses - Clinical internship II

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J400BO.0502.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Malwina Słowikowska
Other teachers conducting classes	Paulina Zielińska, Artur Niedźwiedź, Malwina Słowikowska

Period Semester 11	**Examination** graded credit **Activities and hours** clinical classes: 40	**Number of ECTS points** 2.0

Goals

C1	During the internship, students will independently conduct a medical history, conduct a general and detailed examination of all systems of the horse's body, collect material for diagnostic tests, perform additional imaging tests, analyze differential diagnosis, make a diagnosis based on the results of the conducted test, perform therapeutic procedures and present methods disease prevention.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	principles and mechanisms underlying equine health, disease development and therapy - from the cell level to the organ, the animal, to the entire animal population	O.W1	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
W2	etiology, pathogenesis and clinical symptoms of diseases occurring in horses and the principles of therapeutic management	O.W3	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
W3	diagnostic and therapeutic procedures appropriate for disease states in horses	O.W4	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
W4	causes and symptoms of pathological changes, principles of treatment and prevention in particular disease entities of horses	B.W3	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
W5	principles of diagnostic procedures, including differential diagnosis, and therapeutic procedures in horses	B.W4	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
W6	Principles of conducting a clinical examination and monitoring of equine health	B.W5	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
W7	Handling of clinical data and the results of laboratory and additional tests in horses	B.W6	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
W8	Provisions of law, rules for issuing judgments and drawing up opinions for the purposes of courts, state and local administration bodies as well as professional self-government	B.W7	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks

W9	Procedure in the event of suspicion or confirmation of diseases that are subject to compulsory eradication or registration in horses	B.W8	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
Skills – Student can:			
U1	conducts clinical examination of the animal in accordance with the principles of medical art;	O.U1	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U2	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U3	plans the diagnostic procedure	O.U3	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U4	Handle horses safely and humanely and instruct others to do so	B.U1	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U5	Carry out a medical and veterinary interview in order to obtain accurate information about a single animal or group of animals and its or their habitat	B.U2	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U6	Conduct a complete clinical examination of the horse	B.U3	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U7	Give first aid to horses in case of hemorrhage, wounds, respiratory disorders, eye and ear injuries, loss of consciousness, cachexia, burns, tissue damage, internal injuries, and cardiac arrest.	B.U4	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U8	Assess the horses' nutritional status and provide advice in this regard	B.U5	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks

U9	Collect and preserve samples for research and perform standard laboratory tests, as well as correctly analyze and interpret the results of laboratory tests	B.U6	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U10	Use diagnostic equipment, including radiological, ultrasound and endoscopic equipment, in accordance with its intended use and safety rules for animals and humans, and interpret the test results obtained after its use	B.U7	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U11	Implement appropriate procedures in case of a confirmed disease that is subject to compulsory eradication or registration	B.U8	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U12	Obtain and use information about authorized veterinary medicinal products	B.U9	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U13	Prescribe and use veterinary medicinal products and medical materials, taking into account their safe storage and disposal	B.U10	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U14	Use methods of safe sedation, general and local anesthesia, and pain assessment and relief	B.U11	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U15	Monitor the patient's condition in the intra- and postoperative period based on vital signs	B.U12	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U16	Choose and apply appropriate treatment	B.U13	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks
U17	Implement the principles of surgical asepsis and antiseptics and use appropriate methods of equipment sterilization	B.U14	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks

U18	Assess the necessity to euthanize the horse and inform its owner in an appropriate manner, as well as perform the euthanasia of the animal in accordance with the principles of professional ethics and proper handling of the carcass	B.U15	oral credit, observation of student's work, active participation, participation in discussion, performing tasks
U19	Perform an autopsy of the horse with a description, take samples and secure them for transport	B.U16	oral credit, observation of student's work, active participation, participation in discussion, performing tasks
Social competences – Student is ready to:			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student's work
K2	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	observation of student's work
K3	is ready for reliable self-assessment, formulating constructive criticism in the scope of veterinary practice, accepting criticism of presented solutions, reacting to such criticism in a clear and material manner, also with the use of arguments referring to the available scientific achievements in the discipline;	O.K7	observation of student's work

Balance of ECTS points

Activity form	**Activity hours***	
clinical classes	40	
literature study	10	
Student workload	**Hours** 50	**ECTS** 2.0
Workload involving teacher	**Hours** 40	**ECTS** 1.5
Practical workload	**Hours** 40	**ECTS** 1.5

* hour means 45 minutes

Study content

No.	**Course content**	**Activities**

1.	Practical classes with patients of the Horse Clinic. Procedures, as the case may be, include: • diagnosis and treatment of infectious and non-infectious diseases • use of specialized diagnostic equipment • taking samples for laboratory tests (bacteriology, biochemistry, cytology, endocrinology, histopathology) • diagnosis of reproductive disorders in relation to individual animals and herds • using methods of assisted reproduction and artificial insemination of horses • diagnosing and conducting pregnancy in mares • delivering births by bloodless and bloody methods • postpartum care for mare - methods for subtracting retained fetal membranes • care for the newborn, prevention and treatment of foal diseases • examination of stallions for fitness for reproduction with semen collection and assessment • surgery on the testicles, penis, foreskin and accessory glands • the use of modern methods of therapy and prevention as well as modern drugs • moving horse examination and lameness diagnostics • use of diagnostic and therapeutic procedures in horse orthopedics • surgery on the limbs • treatment of diseases of the digestive system of horses, including oral and dental diseases • surgery in the treatment of equine diseases of horses • dietitian and horse nutrition • parasitological prevention and recognition of parasite invasion in horses • immunology and immunoprophylaxis of horses • diagnosis and treatment of eye diseases • diagnosis and treatment of cardiological diseases in horses	clinical classes

Course advanced

Teaching methods:

discussion, teamwork, situation-based learning, problem-solving method, case analysis

Activities	Examination methods	Percentage in subject assessment
clinical classes	oral credit, observation of student’s work, active participation, participation in discussion, performing tasks	100%

Entry requirements

Completion of core subjects: Animal anatomy I, Animal anatomy II, Biochemistry I, Biochemistry II, Histology and Embryology I, Histology and Embryology II, Veterinary Microbiology I, Veterinary Microbiology II, Animal Physiology I, Animal Physiology II, Clinical and Laboratory Diagnostics I, Clinical and Laboratory Diagnostic II, Veterinary Pharmacology I, Veterinary Pharmacology II, Diseases of horses, Diseases of horses - Clinical internship I

Literature

Obligatory

1. Veterinary Reproduction and Obstetrics. D.E. Noakes, T.J. Parkinson, G.C.W. England 9th ed. Sauders, Elsevier, 2009
2. O. M. Radostits, C.C. Gay, K. W. Hinchcliff, P. D. Constable: Veterinary Medicine 10th Edition, Saunders Elsevier, 2007
3. Equine infectious diseases, D. C. Sellon & M. T. Long, Saunders, 2007
4. Auer J.A., Stick J.A.: Equine surgery. Elsevier Saunders, 4th edition, 2012.

Optional

1. Muir W.W., Hubbell J.A.E.: Equine anesthesia, monitoring and emergency therapy. Elsevier, 2nd edition, 2009.
2. Journals: The horse, Equine Vet J, Equine Vet Educ
3. Stephen M. Reed, Warwick M. Bayly, Debra C. Sellon: Equine Internal Medicine, Fourth Edition, 2018

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Diseases of dogs and cats - Clinical internship II

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J400BO.0495.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Joanna Tunikowska, Kamila Glińska-Suchocka
Other teachers conducting classes	Wojciech Niżański, Krzysztof Rypuła, Katarzyna Płoneczka-Janeczko, Zdzisław Kiełbowicz, Joanna Tunikowska, Alicja Cepiel-Kośmieja, Agnieszka Cekiera, Marcin Jankowski, Maciej Grzegory, Kamila Glińska-Suchocka, Grzegorz Dejneka

Period Semester 11	**Examination** graded credit **Activities and hours** clinical classes: 60	**Number of ECTS points** 5.0

Goals

C1	The aim of the course is to provide students with practical knowledge of: clinical examination of animals, diagnosing diseases of dogs and cats and differential diagnosis of specific disease, collection and protection material for laboratory tests, interpret laboratory tests results and relate them to the clinical condition of the patient and the use of appropriate treatment (including operations) and disease prevention in dogs and cats.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying dogs and cats health, disease formation and their treatment - from the level of cells, through the rgan, animal, to the entire animal population;	O.W1	observation of student’s work
W2	nows to an extensive degree, describes in detail and explains the development, structure, functioning, behaviours and physiological mechanisms of dogs and cats in normal conditions, as well as the mechanisms of disorders in pathological conditions;	O.W2	observation of student’s work
W3	explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in dogs and cats, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W3	observation of student’s work
W4	knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in dogs and cats;	O.W4	observation of student’s work
W5	characterises in detail the methods of using veterinary medicinal products, aimed at prophylaxis and treatment of dogs and cats, as well as at guaranteeing food chain safety and environmental protection;	O.W5	observation of student’s work
W6	presents the biology of infectious factors that cause diseases transmitted between animals, as well as anthropozoonoses, taking into account the mechanisms of disease transmission and defense mechanisms of the macroorganism;	O.W6	observation of student’s work
W7	specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes;	O.W7	observation of student’s work
W8	Describes the causes and symptoms of anatomopathological changes, principles of treatment and prophylaxis in individual disease entities in dogs and cat	B.W3	observation of student’s work
W9	Knows and understands the principles of diagnostic procedure, taking into account the differential diagnostics and therapeutic procedure in dogs and cats	B.W4	observation of student’s work
W10	Presents the principles of conducting clinical examination and monitoring animal health in dogs and cats	B.W5	observation of student’s work
W11	Knows and understands the assumptions of animal pairing, methods of fertilization, reproduction biotechnology, as well as breeding selection in dogs and cats	B.W12	observation of student’s work
Skills – Student can:			

U1	conducts clinical examination of the animal in accordance with the principles of medical art;	O.U1	observation of student’s work
U2	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	observation of student’s work
U3	plans the diagnostic procedure	O.U3	observation of student’s work
U4	monitors health of the herd, as well as undertakes action in the case of a disease that is subject to the obligation of disease eradication or its registration;	O.U4	observation of student’s work
U5	issues veterinary medical opinion and certificate	O.U7	observation of student’s work
U6	uses Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health, diseases, pathological changes and conditions	O.U8	observation of student’s work
U7	Communicates with the clients and other veterinary physicians	A.U12	observation of student’s work
U8	Prepares transparent case descriptions and keeps documentation, in accordance with regulations applicable in this scope, in the form understandable to the animal owner and legible to other veterinary physicians	A.U14	observation of student’s work
U9	Conducts a medical-veterinary interview in order to obtain precise information regarding individual animal or group of animals and its or their living environment	B.U2	observation of student’s work
U10	Performs a full clinical examination of the animal	B.U3	observation of student’s work
U11	Collects and secures the samples for tests, as well as performs standard laboratory tests, and correctly analyses and interprets the results of laboratory tests in dogs and cats	B.U6	observation of student’s work
U12	Uses diagnostic equipment, including radiographic, ultrasound and endoscopic equipment, in accordance with its intended purpose and safety rules for dogs and cats and people, as well as interprets the results of tests obtained after its application	B.U7	observation of student’s work
U13	Implements the appropriate procedures in the case of diagnosing a disease subject to the obligation of eradication or registration in dogs and cats	B.U8	observation of student’s work
U14	Obtains and uses information on authorised veterinary medicinal products in dogs and cats	B.U9	observation of student’s work
U15	Is able to prescribe and use veterinary medicinal products and medical materials in dogs and cats, taking into account their safe storage and utilisation	B.U10	observation of student’s work
U16	Uses the methods of safe sedation, general and local anaesthesia, as well as assessment and relief of pain in dogs and cats	B.U11	observation of student’s work
U17	Monitors the patient's condition in the intra- and post-operative period on the basis of basic life parameters	B.U12	observation of student’s work

U18	Chooses and applies the appropriate treatment in dogs and cats	B.U13	observation of student's work
U19	Implements the principles of surgical antisepsis and asepsis, as well as applies appropriate methods of sterilising equipment	B.U14	observation of student's work
U20	Assesses the need for performance of euthanasia of dogs and cats and informs its owner about this fact in an appropriate manner, and euthanizes the dogs and cats in accordance with the principles of professional ethics and appropriate handling of corpses	B.U15	observation of student's work
U21	Is able to perform an autopsy of the dogs and cats corpse, along with the description, as well as to take samples and secure them for transport	B.U16	observation of student's work
Social competences – Student is ready to:			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student's work
K2	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	observation of student's work
K3	uses the objective sources of information	O.K4	observation of student's work
K4	formulates conclusions from own measurements or observations	O.K5	observation of student's work
K5	formulates opinions regarding various aspects of professional activity	O.K6	observation of student's work
K6	is ready for reliable self-assessment, formulating constructive criticism in the scope of veterinary practice, accepting criticism of presented solutions, reacting to such criticism in a clear and material manner, also with the use of arguments referring to the available scientific achievements in the discipline;	O.K7	observation of student's work
K7	deepens his/her knowledge and improves skills	O.K8	observation of student's work
K8	communicates with the co-workers and shares knowledge	O.K9	observation of student's work
K9	is ready to act in the conditions of uncertainty and stress	O.K10	observation of student's work
K10	cooperates with representatives of other professions in the scope of public health protection	O.K11	observation of student's work

Balance of ECTS points

Activity form	**Activity hours***
clinical classes	60
class preparation	90

Student workload	**Hours** 150	**ECTS** 5.0
Workload involving teacher	**Hours** 60	**ECTS** 2.0
Practical workload	**Hours** 60	**ECTS** 2.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	INFECTIONS DISEASES 1. Epizootic management and currently binding documentation concerning management in suspected rabies in dogs and cats: rules of observing the animals suspected of rabies, differential diagnosis, intravital diagnosis. The procedure and documentation in official observation for rabies in animals observed after biting a human: taking epizootic history from the owners of animals observed for rabies, rules of official observation by a decision of the County veterinary doctor and observation at the expense of the owner conditions of the premises meeting the requirements for temporary detention of observed animals principles of cooperation with the County veterinary doctor and SANEPID. Vaccination against rabies: performance of vaccination, rule of documentation for vaccination against rabies. Collection of blood samples for testing blood samples and rules of antibody titration and interpretation of examination results in the case of dogs going abroad of Poland in respect to international requirements for rabies. 2. Serological (ELISA, DIF, IFAT, OA, Rivlta test) and microbiological (cultures) examinations of material from clinical cases (EPIVET laboratory). Evaluation of preparations, principles for interpretation of serological tests and possible procedures in infectious diseases of dogs (distemper, leptospirosis, Rubarth disease, canine coronavirus infection, canine parvovirus infection, ehrlichiosis, borreliosis, kennel cough and FIV, FIP, FeLV, feline distemper, feline rhinitis, mycoplasmosis, chlamydophilosis, herpes viruses infection). Principles of preparation of material for diagnostic tests using techniques of molecular biology and flow cytometry (collection samples, lymphocyte raft preparation, DNA isolation, isolation of subpopulations of haemocytes in evaluation of the background immune thrombocytopenia). Interpretation of the results of PCR examination in animals at different stages of infection and in vaccinated animals. 3. Veterinary proceedings in case of infectious diseases in dogs and cats: proceeding in animals kennels, principles of vaccination and using appropriate preparations, principles for conducting therapy, principles of combining sick animals, animals after recovery, healthy animals, bioassurance. Vaccinations for dogs and cats. INTERNAL DISEASES 1. Practical diagnosis and treatment of cardiovascular diseases in dogs and cats (congenital and acquired heart diseases, vascular diseases, heart ultrasound, heart electrocardiography). 2. Practical diagnosis and treatment of skin diseases in dogs and cats (bacterial dermatitis, fungal skin diseases, allergic dermatitis, parasitic skin diseases, autoimmune skin diseases, additional tests used in the diagnosis of skin diseases). 3. Practical diagnosis and treatment of gastrointestinal diseases in dogs and cats (diseases with vomiting signs, diseases with diarrhea or difficult passing of feces, endoscopic diagnostics of anterior and posterior part of the alimentary tract). 4. Practical diagnosis and treatment of liver and pancreatic diseases in dogs and cats (inflammatory and noninflammatory diseases of the liver and biliary tract, laboratory and imaging diagnostics of liver diseases, liver biopsy, pancreatitis, exocrine pancreatic insufficiency, laboratory diagnostics of pancreatic diseases). 5. Practical diagnosis and treatment of respiratory diseases in dogs and cats (diseases with sneezing signs, diseases with cough and dyspnoea signs, endoscopic diagnostics of diseases of nasal cavities, larynx, trachea and bronchi, broncho-alveolar lavage). 6. Practical diagnosis and treatment of nervous system diseases in dogs and cats (inflammatory and noninflammatory diseases of the brain, meninges and spinal cord, differentiation of causes of epileptic seizures, laboratory and imaging diagnostics of nervous system diseases, puncture and collection of cerebrospinal fluid). 7. Practical diagnosis and treatment of urinary tract diseases in dogs and cats (diseases of kidney and lower urinary tract, laboratory and imaging diagnostics of the urinary system, cystoscopy, kidney biopsy). 8. Practical diagnosis and treatment of endocrine diseases in dogs and cats (disturbances in the function of the thyroid, adrenal gland and pancreas, laboratory diagnostics of endocrine diseases). 9. Principles of diagnosis of neoplastic diseases and the principles of tumours therapy. SURGERY 1. Surgery in the abdominal cavity in dogs and cats (the alimentary tract - surgery of the stomach, intestines and liver, the urinary system – surgery of the kidneys, ureters, urinary bladder and urethra, the reproductive system - surgery of the ovaries, testes, uterus, vagina, prostate and mammary gland; splenectomy, oncological operations). 2. Surgery in the chest in dogs and cats (thoracotomy, surgery of the thoracic part of the esophagus, surgery of the thoracic part of the trachea, vascular anomalies in the chest, the operating procedures of mediastinum, pneumothorax, subcutaneous emphysema, diaphragmatic hernia, lung lobe resection). 3. Surgery in the neck and head (surgery of the oral cavity and throat, surgery of the sinuses and nasal cavities, surgery of the larynx and cervical part of the trachea). 4. Orthopedic joint procedures (diagnostics, conservative and surgical treatment). 5. Veterinary traumatology (fractures, luxations), diagnostics, surgical and conservative treatment). 6. Anesthesiology (methods of anesthesia used in various surgical procedures, intensive care, cardiopulmonary resuscitation). 7. Imaging diagnostic of surgical patients (X-ray, ultrasound). REPRODUCTION 1. The practical gynecological examination of bitches and queens: anamnesis, anamnesis questionnaire, clinical examination, cytological examination of the vagina. Vaginal swabs collection. Swabs staining. Cytological evaluation of vaginal swabs. Review of preparations from different physiological and pathological states. Collection material from the urogenital system for additional tests. 2. Endoscopic examination of the reproductive tract: patient preparation and the technique, principles and interpretation of results, determination of the oestrus cycle phase on the basis of endoscopic examination, pathological lesions of the reproductive tract, methods for uterine cervix cathetetization. 3. The endocrinological examination of reproductive functions in small animals: collection of material, determination and analysis of concentrations of progesterone, estrogen and other sex hormones in the blood, hormonal stimulation tests, interpretation of results, analysis of the dynamics of changes in sex hormone concentrations in the blood. The principles for determining the optimum date for insemination of females. 4. The ultrasound examination of the reproductive system in small animals: ultrasound examination of the ovaries in various physiological and pathological states, ultrasound examination of the uterus and other parts of the reproductive system, interpretation of results. 5. Obstetric-gynecological procedures in small animals: caesarean section - surgical technique, preparation for surgery, postoperative proceeding, female sterilization, male castration, total and partial mastectomy, hysterectomy and ovariectomy in females with pyometra.	clinical classes

Course advanced

Teaching methods:

discussion, teamwork, situation-based learning, problem-solving method, educational game, brainstorming, case analysis

Activities	Examination methods	Percentage in subject assessment
clinical classes	observation of student's work	100%

Entry requirements

Animal anatomy I & II , Biochemistry I & II, Histology and embryology I & II, Veterinary microbiology I & II, Animal physiology I & II, Clinical and
laboratory diagnostic I & II, Veterinary pharmacology I & II, Veterinary immunology, Pathophysiology I & II, Veterinary dietetics, Parasitology
and invasiology, Pathomorphology I & II, General surgery anaesthesiology, Imaging diagnostic, Diseases of dogs and cats, Diseases of horses, Diseases of farm animals

Literature

Obligatory

1. R. W. Nelson, C. G. Couto: ,,Small Animal Internal Medicine", 2013, Mosby
2. M. V. R. Kustritz: ,,Clinical Canine and Feline Reproduction", 2009, Wiley-Blackwell
3. C. E. Green: ,,Infectious diseases of dog and cat", 2011, Saunders
4. T. W. Fossum: ,,Small Animal Surgery", 2018, Mosby

Optional

1. M. Schaer, F. P. Gaschen: ,,Clinical Medicine of the Dog and Cat", 2016, CRC Press
2. S. J. Ettinger, E. C. Feldman, E. Cote: Textbook of Veterinary Internal Medicine Expert Consult, 2016, Elsevier
3. J. Wiley: ,,Canine Internal Medicine: What's Your Diagnosis?, 2017, Wiley-Blackwell

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Diseases of farm animals - Clinical internship II

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J400BO.0498.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** mandatory
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills No

Teacher responsible for the subject	Michał Dzięcioł
Other teachers conducting classes	Michał Dzięcioł, Ryszard Mordak, Michał Bednarski, Przemysław Prządka, Wiesław Bielas

Period	**Examination**	**Number of ECTS points**
Semester 11	graded credit **Activities and hours** clinical classes: 60	5.0

Goals

C1	The aim of the course is to provide students with practical knowledge about: clinical examination of animals, diagnosis of livestock diseases and differential diagnosis of individual disease entities, collection and preservation of material for laboratory tests, interpretation of laboratory tests results and referring them to the patient's clinical condition and appropriate treatment (in including operational) and prevention diseases of farm animals.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the principles of diagnostic management, and therapeutic management (both conservative and surgical) of diseases of cattle, pigs, goats and sheep	B.W4	oral credit, active participation
W2	handling of clinical data and results of laboratory tests used in the treatment of cattle, pigs, goats and sheep	B.W6	oral credit, active participation
W3	how to proceed in case of suspicion or confirmation of diseases which are subject to compulsory eradication or registration for individual animal livestock species	B.W8	oral credit, active participation
W4	the possibility of practical application of breeding selection in cattle , pigs , sheep and goats and the implementation of modern reproductive techniques to optimize reproductive rates	B.W12	oral credit, active participation
Skills – Student can:			
U1	analyze and interpret clinical symptoms (both during external and internal examination), anatomopathological changes and test results, recognizes diagnose pathological conditions in farm animals and undertakes therapeutic or prophylactic measures	O.U2	observation of student’s work, active participation, performing tasks
U2	communicate in an understandable language with livestock owners and with other veterinarians. Prepares case descriptions and maintains records in a correct manner	A.U12, A.U14	observation of student’s work, active participation
U3	collect and secures specimens for testing (both from individual animals and from hedr) and performs standard laboratory tests, as well as correctly analyze and interpret laboratory test results used in the treatment of livestock diseases	B.U6	observation of student’s work, active participation, performing tasks
U4	select and applies appropriate treatment taking into account the species specificity of cattle, pigs, sheep and goats	B.U13	observation of student’s work, active participation
U5	develop and implements appropriate prophylactic programmes appropriate to the livestock species	B.U21	observation of student’s work, active participation
Social competences – Student is ready to:			
K1	demonstrate responsibility for decisions made towards people, animals and the natural environment	O.K1	active participation, participation in discussion
K2	to be open to other opinions and willing to use objective sources of information	O.K4	active participation, participation in discussion
K3	discusse and is willing to formulate conclusions from own measurements or observations	O.K5	active participation, participation in discussion
K4	operate under conditions of uncertainty and stress	O.K10	observation of student’s work, active participation, participation in discussion

Balance of ECTS points

Activity form	Activity hours*
clinical classes	60
lesson preparation	20
collecting and studying literature	20
exam / credit preparation	20
class preparation	10

Student workload	**Hours** 130	**ECTS** 5.0
Workload involving teacher	**Hours** 60	**ECTS** 2.0
Practical workload	**Hours** 60	**ECTS** 2.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	INFECTIOUS DISEASES 1. Infectious diseases in farm animals: FMD, BrB, EBB. Sampling material for diagnosis FMD - in cattle, sheep, goat and swine, BrB - cattle, sheep, goat and swine, EBB – cattle. Prossidings with farm animals with suspected and after diagnosis of FMD, BrB, EBB infection. Practical procedure: identification, clinical examinations, age and time of production in cattle. Different clinical diagnosis of FMD, BrB, EBB in farm animals. 2. Infectious diseases in farm animals – Rabies. Prossidings with farm animals before and after diagnostics rabies infection. Practical procedure: identification, clinical examinations, age and time of production in cattle, sheep, goat and swine. Practical cooperation with National Veterinary Sugeron and with Sanepid (documents). Vaccination against Rabies in farm animals – prevention and special vaccination farm animals. 3. Infectious diseases sheep and goat. Material for diagnosis TBR in cattle, sheep and swine. Prossidings with farm animals after diagnostics results, practical procedure: identyfication, clinical examinations, age and time of production in cattle. Alergic diagnosis (tuberculinisation) in farm animals with Bovituberculin and Avituberculin. 4. Infectious diseases in sheep (ekhtyma and whitlow). Prossidings with sheep before and after laboratory diagnosis, Practical procedure: identyfication, clinical examinations, age and time of production in cattle. Qualification infected animals. Choice of method of therapeutics method. Practical prevention – vaccination and bath in sheep with enzootic and epidemic diseases. 5. Infectious diseases in swine. Clinical examination in the direction PRDC and PIDC. Sampling for laboratory diagnosia (blood, etc.) – serology and microbiology. Practical prevention PRDC and PIDC. 6. Infectious diseases in farm animals – laboratory diagnosis bacterial and viral diseases. Practical procedures with contagious samples. Practical diagnosis: serological tests (ELISA, iIF, dIF, OA) and bacteriology examinations from clinical cases. Practical interpretation of laboratory investigations. 7. Infectious diseases in farm animals. Practical training with documents in Veterinary Sugeron with statistics and data base about infection diseases in Poland and UE). INTERNAL DISEASES 1. Animal taming. 2. Collection of material for tests (blood, feces, urine, rumen contents, fluid from body cavities), techniques of medicaments administration. 3. Practical recognition (trichogram, scrapings, test with tape, cytology) and treatment of skin diseases. 4. Practical recognition and treatment of respiratory system diseases. 5. Practical recognition and treatment of digestive system diseases. 6. Practical recognition and treatment of musculoskeletal and nervous system disease. 7. Practical recognition and treatment of metabolic diseases. 8. Practical recognition and treatment of urinary system diseases (including endoscopy of bladder). SURGERY 1. Surgical treatment of digestive system diseases of ruminants and swine. 2. Dehorning in cattle 3. Practical performing of anesthesia in farm animals 4. Practical recognition and treatment of fingers diseases in farm animals. REPRODUCTION 1. Gynecological examinaton per rectum of cows and heifers- diagnosis of state of reproductive tract, introduction of proper treatment 2. Gynecological examinaton per vaginam of cows and heifers- diagnosis of state of reproduction tract, introduction of proper treatment 3. Ultrasound evaluation of reproductive tract of cattle- diagnosis of state of reproductive tract, introduction of proper treatment 4. Catheterization of bladder, catheterization of cervix 5. Assistance during parturition (conservative and surgical) for females of farm animals 6. Performing fetotomy 7. Examination for pregnancy in females of farm animals (external, internal, ultrasound, ultrasonic). 8. Performing of anesthesia useful in obstetrics and ginecology in farm animals 9. Clinical examination and evaluaton of mammary gland in cattle, field trial of milk and introduction of proper treatment in case of mastitis 10.Gynecological examinaton in sheeps and goats 11.Clinical examination of mammary gland in a small ruminants and swine 12.Gynecological examinaton sows– clinical and ultrasound evaluation of reproductive tract	clinical classes

Course advanced

Teaching methods:

classes, presentation / demonstration, text analysis, case analysis

Activities	Examination methods	Percentage in subject assessment
clinical classes	oral credit, observation of student's work, active participation, participation in discussion, performing tasks	100%

Entry requirements

Prior completion of subjects: Animal anatomy I and II, Biochemistry I and II, Histology and embryology I and II, Veterinary microbiology I and II, Animal physiology I and II, Clinical and laboratory diagnostic I and II, Veterinary pharmacology I and II, Veterinary immunology, Pathophysiology I and II, Veterinary dietetics, Parasitology and invasiology I and II, Pathomorphology I and II, Surgery and anesthesiology, Imaging diagnostic,
Diseases of farm animals, Andrology and artificial insemination, Diseases of farm animals - Clinical internship I

Literature

Obligatory

1. Blowey R.W., Weaver A.D.: Color Atlas of Diseases and Disorders of Cattle. Mosby, London 2003.
2. Jackson P.G.G., Cockroft P. D.: Handbook of Pig Medicine. Saunders, Elsevier, London 2007.
3. Divers T.J., Peek S.F. (ed.): Rebuhn's Diseases of Dairy Cattle Saunders Elsevier, St. Louis 2008.
4. Fubini S., Ducharme N.: Farm Animal Surgery, Sauders, St. Louis 2004.
5. 5. Jackson P.G.G. : Handbook of Veterinary Obstetrics. 2nd ed. W.B. Saunders Company, Edinbourgh 2004.

Optional

1. Greenough P.R.: Bovine Laminitis and Lameness : A Hands-on Approach. Saunders, Elsevier London 2007.
2. A.H. Andrews, R.W. Blowey, H. Boyd, R.G. Eddy (ed): Bovine Medicine. Diseases and Husbandry of Cattle. Blackwell Science Ltd., Oxford 2004.
3. Radostits O.M., Gay C.C., Hinchcliff K.W., Constable P.D.: Veterinary Medicine. A textbook of the diseases of cattle, sheep, goats, pigs and horses. 10th Edition, Saunders Elsevier, London, 2007.
4. Veterinary Reproduction and Obstetrics. D.E. Noakes, T.J. Parkinson, G.C.W. England (editors). 9th ed. Sauders, Elsevier, 2009.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Health herd managment

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J400BO.3571.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Anna Rząsa
Other teachers conducting classes	Anna Rząsa, Paulina Jawor, Paweł Spyrka, Aleksandra Tabiś, Joanna Skonieczna, Maciej Kuczkowski, Agnieszka Żak-Bochenek

Period	**Examination**	**Number of ECTS points**
Semester 11	graded credit **Activities and hours** lecture: 12 laboratory classes: 18	4.0

Goals

C1	Expanding theoretical knowledge and practical skills in animal health management on farms in order to obtain satisfactory production results
C2	Presentation of the specificity of constructing prophylactic and immunoprophylactic programs for various species depending on herd size, production group and epizootiological evaluation taking into account the reduction of used antibiotics
C3	Showing various methods of assessing the economic effects of introduced procedures and programs.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the use of health monitoring in different herds	B.W19, B.W20, B.W3, B.W5, B.W9, O.W1, O.W10, O.W11, O.W13, O.W4, O.W8	written credit, observation of student's work, active participation, test, participation in discussion
W2	the relationship between environment antygen preasure and prophylactic programme at farm	B.W10, B.W11, B.W5, O.W11, O.W13, O.W3	written credit, active participation, test, participation in discussion
W3	what should be taken into account when preparing preventive programs and procedures for various farms	B.W20, B.W22, B.W6, B.W9, O.W5	written credit, observation of student's work, active participation, test
Skills – Student can:			
U1	assess the health risk at farm	B.U17, B.U2, B.U20, B.U5, B.U6, O.U2, O.U3, O.U4, O.U5	observation of student's work, active participation, test, participation in discussion
U2	construct the prophylactic programmes for different pigs and cattle production groups	B.U20, B.U21, B.U5, B.U9, O.U2	observation of student's work, active participation, presentation, test, participation in discussion
U3	intregate knowledge from different disciplines	B.U2, B.U20, B.U21, B.U5, O.U10	observation of student's work, active participation, test
Social competences – Student is ready to:			
K1	cooperate with stockman	O.K1, O.K11	observation of student's work, active participation
K2	to define the principles of cooperation between veterynarian, farmers and other people working in livestock area to counteract diseases occurence at cattle and pigs farms	O.K11, O.K5, O.K8	observation of student's work, active participation, participation in discussion

Balance of ECTS points

Activity form	Activity hours*
lecture	12
laboratory classes	18
presentation/report preparation	20
exam / credit preparation	10
lesson preparation	20
consultations	20

Student workload	**Hours** 100	**ECTS** 4.0
Workload involving teacher	**Hours** 50	**ECTS** 2.0
Practical workload	**Hours** 18	**ECTS** 0.7

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1,2,3. Monitoring the health status of animals on farms. Practical basics of cooperation with a large-scale farm. Acquisition and interpretation of production results and diagnostic tests. On-site examination, use of various technological tools, rapid tests.Presentation of principles for creating a variety of prophylactic and immunoprophylactic programs on large-scale pig farms depending on existing / identified risk. Introducing various procedures. 4,5,6. The specificity of constructing prevention and immunophylaxis programs on poultry farms (chickens, turkeys, ducks, geese). 7,8. Assumptions for the immunoprophylaxis program in cattle, possibilities and requirements. Overview of the principles and conditions for the introduction of immunoprophylaxis in cattle herds. 9,10. General assumptions for a preventive program (routine activities) for a dairy farm. Presentation of the principles of creating preventive programs on dairy cattle farms for individual production groups. 11,12. General assumtions for preventive procedures at horse farms	lecture

2.	1,2. Therapeutic strategies on pig farms, proposals for further intervention and therapeutic steps in herds after taking into account the results of clinical examination and post-mortem assessment. 3,4,5. Pig health monitoring based on post-mortem inspection using the Ceva Lung Program (CLP). Assessment of the health status of pigs based on lung assessment using the CLP mobile application. 6,7,8,9. Presentations and discussion about the prepared procedures for pig farms. Assessment of the health status of pigs based on the clinical evaluation of the animals - a case study. 10. Test 11,12,13,14. Case studies for dairy and beef cattle farms. Selection of best preventive actions (routine activities and possible vaccinations) depending on the farm's reality. Proposing solutions for various cattle farms taking into account the current farm abilities and problems. 15,16. Propose of different biosecurity strategies for horse farms. 17,18. Test. Repetytory.	laboratory classes

Course advanced

Teaching methods:

additionally the use of commercial applications, classes, lecture, discussion, presentation / demonstration, situation-based learning, problem-solving method, brainstorming, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	observation of student’s work, active participation	30%
laboratory classes	written credit, observation of student’s work, active participation, presentation, test, participation in discussion	70%

Entry requirements

A student should be after courses: Animal Breeding; Animal Nutrition; Technologies in Animal Production; Veterinary immunology; Farm practice; Slaughter animals and meat hygiene I, II, III; Diseases of Farm Animals; Avian disease; Veterinary prevention I & II; Clinical immunology

Literature

Obligatory

1. Zimmerman J.J et al.: Diseases of swine. Wiley-Blackwell 2012 or a newer release
2. Smith B.S.: Large Animal Internal Medicine. Second edition Mosby 1996 or a newer release
3. Pattison M. et al. Poultry Diseases Elsevier 6th edition 2007
4. Nielsem M.K., Reinemeyer C.R. Handbook of Equine Parasite Control, 2nd Edition, John Wiley & Sons, Inc. 2018
5. Reed S.M., Bayly W.M., Sellon D.C. Equine Internal Medicine. Elsevier 2017
6. D.C. Sellon. Equine Infectious Diseases, Elsevier 2013
7. Own notes form lectures and classes

Optional

1. Trade journals and www pages

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Professional ethics

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J400BO.1941.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** mandatory
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills No

Teacher responsible for the subject	Robert Karczmarczyk
Other teachers conducting classes	Robert Karczmarczyk

Period	**Examination**	**Number of ECTS points**
Semester 11	graded credit **Activities and hours** lecture: 15	1.0

Goals

C1	Showing to the students the ethical problems concerning professional veterinarians. Giving the knowledge in the area of Guide to Professional Conduct of veterinary surgeons. Making the students aware of various range of responsibilities connected with profession of public trust.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	describes legal standards associated with the activities of veterinary physicians;	O.W14	written credit
W2	explains in detail the principles of consumer health protection	O.W11	written credit
W3	knows and understands the veterinary physician’s code of ethics	A.W22	written credit
Skills – Student can:			
U1	communicates with the clients and other veterinary physicians	A.U12	written credit
U2	is able to listen and provide answers with the use of understandable language, appropriate to the given situation	A.U13	written credit
U3	assesses the economic and social conditions, in which the profession of veterinary physician is performed;	A.U18	written credit
U4	uses his/her professional skills to improve the quality of veterinary care, animal welfare, as well as public health;	A.U19	written credit
U5	understands the need of continuing education, in order to ensure continuous professional development	A.U21	written credit
Social competences – Student is ready to:			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	participation in discussion
K2	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	participation in discussion
K3	gets involved in the activities of professional and local government organisations	O.K12	participation in discussion

Balance of ECTS points

Activity form	Activity hours*	
lecture	15	
lesson preparation	8	
exam / credit preparation	7	
Student workload	**Hours** 30	**ECTS** 1.0

Workload involving teacher	Hours 15	ECTS 0.6

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. What is a profession of public trust?, Historical outline of self-governing organizations. Law basis of a profession. Role of the professions of public trust in the society. 2. Structure: National General Assembly of Veterinary Surgeons, Regional Assembly of Veterinary Surgeons, National Council of Veterinary Surgeons, Regional Councils of Veterinary Surgeons, Intercessor of professional Responsibility, National and Regional Veterinary Courts of Veterinary Surgeons, National and Regional Revision Commissions. 3. Principles of ethics based on the Code of Ethics of Veterinary Profession. Ethical issue In everyday practice. Cooperation with other vets, professional organizations and animal owners. 4. Professional responsibility on ethical, medical and law basis. Skills and competences. Professional mistake and medical and professional consequences. Use of animals in research and medical experiments. 5. Clients demands and requirements and complaints. Professional procedures with client’s complaints. 6. European Code of Professional conduct. Federation of Veterinarians in Europe. EAEVE (European Establishment for Evaluation of Veterinary Education). 7. Free market versus ethics. Is it possibile to coexistence? Area of common interest. Doubts. Free market dylemas in the light of ethical codes of profession of public trust.	lecture

Course advanced

Teaching methods:

lecture, discussion

Activities	Examination methods	Percentage in subject assessment
lecture	written credit, participation in discussion	100%

Entry requirements

Humanistic subjects according to study curriculum

Literature

Obligatory

1. 1. Code of Veterinary Professional Ethics (Poland) 2. Good Veterinary Practice Code 3. European Veterinary Code of Conduct

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Laboratory analytic

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J400BO.1131.24 **Lecture languages** english **Mandatory** mandatory **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Jarosław Popiel
Other teachers conducting classes	Agnieszka Noszczyk-Nowak, Marcin Wrzosek, Marcin Jankowski, Kamila Glińska-Suchocka, Agnieszka Sikorska-Kopyłowicz, Alicja Cepiel-Kośmieja, Piotr Sławuta, Agnieszka Cekiera

Period	**Examination**	**Number of ECTS points**
Semester 11	exam **Activities and hours** laboratory classes: 25	2.0

Goals

C1	The aim of teaching the subject is to provide students with basic knowledge about the profiles of laboratory tests performed for selected animal diseases, possible deviations occurring in laboratory tests in selected animal diseases, and cells occurring in the bone marrow in selected disease units. To familiarize students with the equipment necessary to perform laboratory tests, blood, bone marrow, feces, urine and tissue fluids. Knowledge about adequate sets of additional tests necessary to monitor health and disease, ways of interpreting laboratory results, methods of collecting and testing blood, bone marrow, feces, urine and tissue fluids,

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	diagnostic and therapeutic methods appropriate for disease states occurring in companion animals (dogs and cats) and farm animals (horses, cattle and small ruminants),	O.W4	written exam
W2	principles of diagnostic procedures, including differential diagnosis, and therapeutic procedures in the case of blood and bone marrow diseases in companion animals (dogs and cats) and farm animals (horses, cattle and small ruminants),	B.W4	written exam
W3	handling of clinical data and the results of laboratory and additional tests, rules for storing personal data, use of data for scientific research	B.W6	written exam, active participation
Skills – Student can:			
U1	analyze and interpret the results of laboratory and additional tests, formulate the diagnosis of the disease state, including differential diagnosis, and undertake therapeutic or prophylactic measures in companion animals (dogs and cats) and farm animals (horses, cattle and small ruminants),	O.U2	written exam, active participation
U2	plan diagnostic procedures in the case of blood and bone marrow diseases in companion animals (dogs and cats) and farm animals (horses, cattle and small ruminants),	O.U3	written exam
U3	collect and secure blood and bone marrow samples for testing and perform standard laboratory tests, as well as correctly analyze and interpret the results of laboratory tests in companion animals (dogs and cats) and farm animals (horses, cattle and small ruminants),	B.U6	written exam, observation of student’s work, active participation
Social competences – Student is ready to:			
K1	uses the objective sources of information	O.K4	observation of student’s work, active participation
K2	-formulating conclusions from own measurements or observations -presenting an attitude consistent with ethical principles and taking actions based on the code of ethics in professional practice and to show tolerance for attitudes and behaviors resulting from different social and cultural conditions	O.K2, O.K5	observation of student’s work, active participation
K3	broadening knowledge and improving skills	O.K8	observation of student’s work, active participation

Balance of ECTS points

Activity form	Activity hours*
laboratory classes	25
lesson preparation	15

exam / credit preparation	20

Student workload	**Hours** 60	**ECTS** 2.0
Workload involving teacher	**Hours** 25	**ECTS** 1.0
Practical workload	**Hours** 25	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Failures in laboratory diagnostics 2. Laboratory tests in the diagnosis of cardiovascular diseases. 3. Practical interpretation of the results of examinations of patients with urinary tract diseases 4. Technique of blood collection and preparation of samples for the laboratory. Classical and modern techniques of blood morphology 5. Practical interpretation of laboratory results 6. Blood smear technique and practical performance and evaluation of blood smears 7. Bone marrow harvesting technique and practical interpretation of marrow smears - part I myelogram. 8. Bone marrow harvesting technique and practical interpretation of marrow smears - myelogram part II 9. Practical interpretation of leukocyte pathological images and ed cell pathological images. 10. Biochemical profiles in various diseases of the gastrointestinal tract and practical interpretation of laboratory results 11. Biochemical profiles and morphological studies of fluids from body cavities. Practical interpretation of laboratory test results 12. Laboratory examination in the diagnosis of diseases of the nervous system and practical interpretation of the results of the examination of the nervous system 13. Test.	laboratory classes

Course advanced

Teaching methods:

classes, teamwork, case analysis

Activities	Examination methods	Percentage in subject assessment
laboratory classes	written exam, observation of student’s work, active participation	100%

Entry requirements

Animal anatomy I and II, Biochemistry I, Biochemistry II, Histology and embryology I, Histology and embryology II, Veterinary microbiology I, Veterinary microbiology II, Animal physiology I, Animal physiology II, Clinical and laboratory diagnostics I, Clinical and laboratory diagnostics II, Veterinary pharmacology I, Veterinary pharmacology II.

Literature

Obligatory

1. Veterinary Laboratory Medicine: Interpretation & Diagnosis. Front Cover. Dennis J. Meyer, John W. Harvey. Saunders, 2004
2. Small Animal Clinical Diagnosis by Laboratory Methods. Michael D. Willard, Harold Tvedten Saunders 2012,

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Auditing of quality management systems in food industry

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J400BO.0105.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** optional
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills Yes

Teacher responsible for the subject	Katarzyna Kosek-Paszkowska
Other teachers conducting classes	Katarzyna Kosek-Paszkowska

Period	**Examination**	**Number of ECTS points**
Semester 11	graded credit **Activities and hours** lecture: 3 laboratory classes: 12	2.0

Goals

C1	During the course, the student becomes familiar with the methodology of auditing of quality management systems on the example of the HACCP system.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	rules of the leading the audit in food industry	B.W16	observation of student’s work, active participation, test
W2	procedures of auditing of HACCP system in food industry	B.W18	observation of student’s work, active participation, test
Skills – Student can:			
U1	estimate implementation of HACCP system documentation .	B.U25	observation of student’s work, active participation, case study
U2	lead practically HACCP audit in food plant	B.U18	observation of student’s work, active participation, case study
Social competences – Student is ready to:			
K1	is ready for reliable self-assessment, formulating constructive criticism in the scope of veterinary practice, accepting criticism of presented solutions, reacting to such criticism in a clear and material manner, also with the use of arguments referring to the available scientific achievements in the discipline	O.K7	observation of student’s work, active participation, case study
K2	is ready to act in the conditions of uncertainty and stress	O.K10	observation of student’s work, active participation, case study

Balance of ECTS points

Activity form	Activity hours*
lecture	3
laboratory classes	12
presentation/report preparation	10
lesson preparation	20
exam / credit preparation	10

Student workload	**Hours** 55	**ECTS** 2.0
Workload involving teacher	**Hours** 15	**ECTS** 0.6
Practical workload	**Hours** 12	**ECTS** 0.4

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	Procedures of auditing the HACCP and other quality management systems used in the food industry: auditor qualifications and standards on auditing (ISO 19011), the most important standards and norms as reference documents for auditing quality systems (HACCP, BRC, IFS, ISO 9001, ISO 22000, GMP +), the requirements for auditors, the types of audits, audit objectives, audit methodology.	lecture
2.	• Preparing and initiating an audit: preparation of audit working papers (schedules of the audits, specific audit plan, checklists), preparing for the opening meeting. • Practical audit of documentation: the types of documentation of quality management systems, preparing the proper procedures and instructions, the methodology of auditing, searching for nonconformities in the documentation. • .Practical auditing methods "on site": "upstream" and “downstream”, the types of questions, examinations on site in food processing plant, "body language. • .Discrepancies/ nonconformities and their classification: a practical search for non-compliances during the manufacturing process of foods, preparing of non-compliance papers, preparation of audit report. • Preparation of the closing meeting, summary of the audit: conducting the final meeting, audit findings, the potentials for improvement, strong and weak points. • Post audit actions: corrective actions for each non-compliance, checking audit, preventive actions.	laboratory classes

Course advanced

Teaching methods:

problem-based learning (PBL), classes, tutoring, practical simulation training, lecture, teamwork, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	test	40%
laboratory classes	observation of student’s work, active participation, case study	60%

Entry requirements

Veterinary Microbiology, Food law, Hygiene of Meat and Slaughter Animals, Hygiene of Food Processing I and II

Literature

Obligatory

1. Shapton D.A, Shapton N.F “Principles and practices for the safe processing of foods”, Woodehead Publishing, Cambridge, 2001.
2. Mayes T., Mortimore S., “Making the most of HACCP- learning from others’ experience”, Woodehead Publishing, Cambridge, 2001
3. Dillon M, Griffith C. “Auditing in the food industry”, Woodehead Publishing, Cambridge, 2001.
4. Mortimore S., Wallace C., HACCP a practical approach”, Springer, 2013

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Cancer pharmacotherapy

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J400BO.0328.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** optional
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** Yes
	Subject shaping practical skills No

Teacher responsible for the subject	Aleksandra Pawlak
Other teachers conducting classes	Aleksandra Pawlak

Period Semester 11	**Examination** graded credit **Activities and hours** laboratory classes: 30	**Number of ECTS points** 4.0

Goals

C1	To provide knowledge of the molecular basis of cancer development.
C2	To familiarize students with the groups of drugs used in animal anticancer chemotherapy.
C3	To familiarize students with the principles of cancer chemotherapy, adverse drug reactions, and causes of cancer cell resistance.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	Etiology, pathogenesis and clinical signs of cancers in dogs and cats and the principles of antineoplastic chemotherapy.	O.W3	oral credit, observation of student’s work, active participation, participation in discussion
W2	Methods of diagnostic and therapeutic procedures appropriate for neoplastic diseases occurring in dogs and cats.	O.W4	oral credit, observation of student’s work, active participation, participation in discussion
W3	Mechanisms of drug resistance acquisition, including multidrug resistance by neoplastic cells.	A.W18	oral credit, observation of student’s work, active participation, participation in discussion
W4	Principles of diagnostic procedure in case of suspicion of neoplastic disease, including differential diagnosis and therapeutic management.	B.W4	oral credit, observation of student’s work, active participation, participation in discussion
Skills – Student can:			
U1	Analyze and interpret the results of molecular tests, formulate the diagnosis of the disease, including differential diagnosis, in animals suffering from various types of cancer and implement appropriate anti-cancer treatment on their basis.	O.U2	oral credit, active participation
U2	Select and apply appropriate anti-cancer treatment in dogs and cats.	B.U13	oral credit, active participation
Social competences – Student is ready to:			
K1	Demonstrating responsibility for decisions made towards people, animals and the natural environment in the context of the use of anti-cancer chemotherapy.	O.K1	observation of student’s work
K2	Reliable self-assessment, formulating constructive criticism in the field of veterinary anti-cancer treatment of animals, accepting criticism of the solutions presented by them, responding to it in a clear and substantive manner, also using arguments referring to the available scientific achievements in the discipline of cancer chemotherapy.	O.K7	observation of student’s work
K3	Is ready to act under conditions of uncertainty and stress in the course of anticancer chemotherapy in animals.	O.K10	observation of student’s work

Balance of ECTS points

Activity form	Activity hours*
laboratory classes	30

consultations	30
literature study	30
collecting and studying literature	30

Student workload	**Hours** 120	**ECTS** 4.0
Workload involving teacher	**Hours** 60	**ECTS** 2.0
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	1. The molecular basis of cancer. Definition of cancer. Discussion of the process of cancer formation and progression. Discussion of the molecular basis of cancer. Oncogenes and suppressor genes. Carcinogens. 2. Basics of chemotherapy and side effects of anti-cancer drugs. Presentation of the principles of cancer chemotherapy. Discussion on the dosage of anticancer drugs. Safety of drugs used in cancer therapy. Side effects of anti-cancer drugs. Interactions between anticancer drugs and other drugs used in animals. 3. Preparation of staff and office for the use of cancer chemotherapy. Tumor cell resistance to drugs used in cancer therapy. Storage and anticancer drugs preparation for administration. Discussion of the legal provisions regarding the purchase and issue of prescriptions for cancer medicines by veterinarians. Ethical and legal issues. Mechanisms of tumor cell resistance: primary and secondary resistance. 4. Alkylating agents and enzymes. Characteristics of alkylating drugs. Discussion of individual drugs belonging to the group of alkylating agents: cyclophosphamide, ifosfamide, chlorambucil, busulfan, melphalan, thiotepa, mechloretamine, carmustine, lomustine, dacarbazine, procarbazine, temozolomide. Characteristics of enzymes used in cancer therapy: L-asparaginase. 5. Antimetabolites and hormones. Characteristics of antimetabolites. Discussion of individual antimetabolite drugs: methotrexate, 5-fluorouracil, cytosine arabinoside, 6-mercaptopurine, gemcitabine. Characteristics of hormones used in cancer therapy: glucocorticosteroids, tamoxifen. 6. Platinum derivatives. Antimicrotubule Agents. Characteristics of platinum derivatives. Discussion of individual platinum derivatives used in cancer therapy: cisplatin, carboplatin, oxaliplatin. Antimicrotubule Agents. Overview of Vinca alkaloids: vincristine, vinblastine. Characteristics of taxanes. Paclitaxel and docetaxel. 7. Anticancer antibiotics. Topoisomerase inhibitors. Tyrosine kinase inhibitors. Characteristics of anti-cancer antibiotics. Discussion of individual drugs in this group: doxorubicin, dactinomycin, bleomycin, mitoxantrone. Characteristics of topoisomerase inhibitors: topotecan, irinotecan, etoposide, teniposide. Characterization of tyrosine kinase inhibitors: masitinib, toceranib. 8. Pharmacotherapy of hematopoietic cancers. Discussing the principles of hematopoietic cancer chemotherapy and the drugs used. Lymphoma and leukemia chemotherapy. Multiple myeloma chemotherapy. 9. Pharmacotherapy of skin and soft tissue cancers. Discussing the principles of chemotherapy for skin and soft tissue cancers and the drugs used. Chemotherapy for particular types of cancer. 10. Pharmacotherapy of selected solid tumors. Discussion of the principles of chemotherapy for solid tumors. Chemotherapy for mammary gland cancer, bone cancer and discussion of the drugs used in their therapy. 11. Pharmacotherapy of respiratory, digestive and genitourinary cancers. Discussing the principles of chemotherapy for respiratory, digestive and genitourinary cancers and discussing the drugs used in their therapy. 12. Pharmacotherapy of neoplasms of the nervous system and endocrine glands. Discussing the principles of chemotherapy for neoplasms of the nervous system and endocrine glands, and discussing the drugs used in their therapy. 13. Chemotherapy in various animal species. Tumors in various animal species. The possibility of using chemotherapy in large and exotic animals. 14. Molecular targeted therapies and immunotherapy. Presentation of the idea of personalized medicine and molecular targeted treatment. Possibilities of using molecularly targeted drugs in animals. Basics of cancer immunotherapy in veterinary medicine. 15. Experimental oncology - research in veterinary and comparative oncology. Definition of experimental oncology. Discussion of the research methodology used in experimental oncology. Discussion of the basic principles of tumor cell culture. Basics of the principles of testing the cytotoxic effects of drugs, apoptosis, DNA damage.	laboratory classes

Course advanced

Teaching methods:

Problem-based learning, teamwork, brainstorming, classes, lecture, discussion, presentation / demonstration, case analysis

Activities	Examination methods	Percentage in subject assessment
laboratory classes	oral credit, observation of student’s work, active participation, participation in discussion	100%

Entry requirements

Biochemistry, Veterinary pharmacology I, Veterinary pharmacology II, cell biology

Literature

Obligatory

1. Argyle D.J., Brearley M.J., Turek M.M.: Decision making in small animal oncology, Wiley-Blackwell, Ames 2008
2. Morris J., Dobson J.: Small animal oncology, Blackwell Science Ltd, London 2001
3. Joyce E. Obradovich: Small Animal Clinical Oncology - Self-Assessment Color Review, CRC Press, 2016

Optional

1. Withrow S.J.: Withrow and MacEwen's Small Animal Clinical Oncology, Saunders, St. Luis 2012
2. Pawlak A, Kutkowska J, Obmińska-Mrukowicz B, Rapak A. Methotrexate induces high level of apoptosis in canine lymphoma/leukemia cell lines. Research in Veterinary Science 2017, 114:518-523.
3. Pawlak A, Bajzert J, Bugiel K, Hernández Suárez B, Kutkowska J, Rapak A, Hildebrand W, Obmińska-Mrukowicz B., Freie R, Smits, V. A. Ubiquitin-specific protease 7 as a potential therapeutic target in dogs with hematopoietic malignancies. Journal of veterinary internal medicine 2021, 1–11. https://doi.org/10.1111/jvim

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Case based physiology

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J400BO.0333.24 **Lecture languages** english **Mandatory** optional **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** No

Teacher responsible for the subject	Jolanta Bujok
Other teachers conducting classes	Jolanta Bujok

Period Semester 11	**Examination** graded credit **Activities and hours** practical classes: 15	**Number of ECTS points** 2.0

Goals

C1	To present the importance of a knowledge of physiology in making diagnostic and therapeutic decisions in clinical work.
C2	To systematize the knowledge of the organ system physiology in a way that directly translates into clinical practice.
C3	Acquiring the skills in presenting clinical cases in a way that enables discussion with other veterinarians.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	knows to an extensive degree as well as understands disorders at the level of the cell, tissue, organ, system and organism, in the course of the internal diseases of companion animals.	B.W1	written credit, case study
W2	nows to an extensive degree, describes in detail and explains the functioning and physiological mechanisms of companion animals in normal conditions, as well as the mechanisms of disorders in pathological conditions.	A.W2, O.W2	written credit, case study
W3	explains the mechanisms of organ and systemic pathologies as the disarrangement of physiological processes in the course of internal diseases in companion animals.	B.W2	written credit, case study
Skills – Student can:			
U1	analyse and interpret pathological changes and results of laboratory tests and additional tests and compare them to physiological conditions, is able to formulate the diagnosis of given disease, taking into account the differential diagnostics, and can undertake therapeutic or prophylactic actions in the course of internal diseases of companion animals.	O.U2	written credit, case study
U2	plan the diagnostic procedure in internal diseases of small animals based on the knowledge of physiology.	O.U3	written credit, case study
U3	prepare transparent clinical case descriptions together with the explanation of disarrangements in normal physiology in the course of internal diseases of small animals.	A.U14	case study
Social competences – Student is ready to:			
K1	deepen his/her knowledge and improves skills in physiology and internal medicine of companion animals.	O.K8	case study
K2	communicate with the co-workers and share knowledge.	O.K9	case study

Balance of ECTS points

Activity form	Activity hours*
practical classes	15
presentation/report preparation	20
exam / credit preparation	15
consultations	10

Student workload	**Hours** 60	**ECTS** 2.0
Workload involving teacher	**Hours** 25	**ECTS** 1.0
Practical workload	**Hours** 15	**ECTS** 0.6

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	The subject is based on the analysis of clinical cases described in the literature to link knowledge of normal, physiological processes in the body with the selection of diagnostic tests and treatment methods for patients. During subsequent classes in auditory groups, clinical cases are presented, based on which students discuss and justify the presented diagnostic and therapeutic procedures and symptoms based on knowledge in animal physiology. Topics of classes: 1-2: Clinical cases in neurology - physiology of the central and peripheral nervous system 3-4: Clinical cases in endocrinology - endocrine physiology 5-7: Clinical cases in the field of cardiology - physiology of the cardiovascular system 8-9: Clinical cases in pulmonology - respiratory physiology 10: Clinical gastroenterology and hepatology cases - digestive system and liver physiology 11-12: Clinical cases in nephrology and urology - excretory system physiology 13: Neonatology cases - selected aspects of neonatal physiology 14: Critical care cases - homeostasis 15: Summary and test of knowledge - presentation of clinical cases by the students	practical classes

Course advanced

Teaching methods:

lecture, discussion, teamwork, brainstorming, case analysis

Activities	Examination methods	Percentage in subject assessment
practical classes	written credit, case study	100%

Entry requirements

- animal anatomy

- animal physiology
- pathophysiology
- veterinary pharmacology
- clinical and laboratory diagnostics
- diseases of dogs and cats

Literature

Obligatory

1. Klein B.G., Cunningham's Textbook of Veterinary Physiology, 5th ed.., 2012, Elsevier.
2. Reece W. (ed.), Duke’s Physiology of Domestic Animals, 13th ed., 2015, Wiley Blackwell.
3. Hall J.E. (ed.), Guyton and Hall Textbook of Medical Physiology, 14th ed, 2020, Elsevier.

Optional

1. Veterinary Clinics of North America: Small Animal Practice - journal
2. Journal of Veterinary Internal Medicine - journal
3. Clinician’s Brief – journal

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Clinical pathomorphology of dogs and cats

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J400BO.0413.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** optional
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills No

Teacher responsible for the subject	Rafał Ciaputa, Małgorzata Kandefer-Gola
Other teachers conducting classes	Rafał Ciaputa, Małgorzata Kandefer-Gola

Period Semester 11	**Examination** graded credit **Activities and hours** clinical classes: 30	**Number of ECTS points** 4.0

Goals

C1	The aim of teaching the subject is to provide students with the knowledge and skills to analyze and combine various pathomorphological changes in relation to the clinical knowledge acquired so far. The acquired clinical knowledge, combined with pathomorphological tests and selected additional laboratory tests that the student will be able to perform himself, will allow you to learn in detail about various cases of clinical diseases with the translation into the effects that these diseases can cause, ultimately leading to the death of the patient. The student will be able to choose the appropriate way to perform an autopsy or laboratory examination in conditions other than a professional autopsy room, which will help him to know the cause of the patient's death

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes;	O.W7	written credit
W2	presents the biology of infectious factors that cause diseases transmitted between animals, as well as anthropozoonoses, taking into account the mechanisms of disease transmission and defense mechanisms of the macroorganism	O.W6	written credit
W3	knows to an extensive degree as well as understands disorders at the level of the cell, tissue, organ, system and organism, in the course of the disease	B.W1	written credit
W4	explains the mechanisms of organ and systemic pathologies	B.W2	written credit
W5	describes the causes and symptoms of anatomopathological changes, principles of treatment and prophylaxis in individual disease entities	B.W3	written credit
Skills – Student can:			
U1	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions	O.U2	written credit
U2	issues veterinary medical opinion and certificate	O.U7	written credit
U3	uses Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health, diseases, pathological changes and conditions	O.U8	written credit
U4	performs a full clinical examination of the animal	B.U3	observation of student’s work
U5	collects and secures the samples for tests, as well as performs standard laboratory tests, and correctly analyses and interprets the results of laboratory tests	B.U6	observation of student’s work
U6	is able to perform an autopsy of the animal corpse, along with the description, as well as to take samples and secure them for transport	B.U16	observation of student’s work
U7	Plans the diagnostic procedure	O.U3	written credit
Social competences – Student is ready to:			
K1	formulates conclusions from own measurements or observations	O.K5	written credit, observation of student’s work
K2	deepens his/her knowledge and improves skills	O.K8	written credit, observation of student’s work

Balance of ECTS points

Activity form	Activity hours*
clinical classes	30
presentation/report preparation	30
consultations	20
class preparation	20
exam participation	10

Student workload	**Hours** 110	**ECTS** 4.0
Workload involving teacher	**Hours** 60	**ECTS** 2.0
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	Titles of classes: 1. Various autopsy technics cats and dogs. 3h 2. Selection of appropriate pathomorphological and laboratory tests and other diagnostic techniques in selected clinical cases of dogs and cats. 3h 3.Practical performance of selected, additional tests necessary in the clinical pathology of dogs and cats. 3h 4. Performing the autopsy dogs and cats with usage the obtained knowledge. 3h 5. Performing the autopsy dogs and cats with sampling, analysis of laboratory results. Practical test results interpretation. 3h 6. Performing the autopsy dogs and cats with sampling, analysis of laboratory results. Practical test results interpretation. 3h 7. Performing the autopsy dogs and cats with sampling, analysis of laboratory results. Practical test results interpretation. 3h 8. Performing the autopsy dogs and cats with sampling, analysis of laboratory results. Practical test results interpretation. 3h 9. Performing the autopsy dogs and cats with sampling, analysis of laboratory results. Practical test results interpretation. 3h 10. Final test. 3h	clinical classes

Course advanced

Teaching methods:

classes, lecture, discussion, teamwork, presentation / demonstration, brainstorming, case analysis

Activities	Examination methods	Percentage in subject assessment
clinical classes	written credit, observation of student’s work	100%

Entry requirements

Animal anatomy, Histology and embryology, Veterinary microbiology, Animal physiology, Pathomorphology, Clinical and laboratory diagnostics, Veterinary toxicology, Dogs and cats diseases, Forensic veterinary

Literature

Obligatory

1. J. F. Zachary, M Donald McGavin. Pathologic Basis of Veterinary Disease, Elsever
2. R. E. Raskin, D. J. Meyer. Canine and feline cytology. Elsevier. 2014
3. R. L. Cowell and all. Diagnostic cytology and hematology of dog and cat. Elsevier. 2008

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Clinical pharmacology of dogs and cats

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J400BO.0414.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** optional
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills Yes

Teacher responsible for the subject	Błażej Poźniak
Other teachers conducting classes	Błażej Poźniak, Aleksandra Pawlak

Period Semester 11	**Examination** graded credit **Activities and hours** lecture: 6 laboratory classes: 24	**Number of ECTS points** 4.0

Goals

C1	The aim of the course is to familiarize students with the rules of drug dosage in the treatment of dogs and cats, taking into account therapeutic indications and pharmacokinetic issues. In addition, students recognize the side effects of these drugs and interactions in multi-drug therapies, and learn the principles of monitored therapy as a method of personalizing pharmacotherapy in companion animals.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	ways of using veterinary medicinal products for disease prevention and treatment of dogs and cats, taking into account the maximization of the therapeutic effect and minimization of the risk of side effects	A.W16, O.W5	written credit, active participation
W2	pharmacotherapeutic approaches appropriate to disease states in companion animals	A.W17, O.W4	written credit, active participation
W3	basics of clinical pharmacokinetics and methods of monitored therapy as a tool for optimizing the use of drugs in dogs and cats	B.W4, O.W15	written credit, active participation
Skills – Student can:			
U1	analyze and interpret clinical symptoms as well as the results of laboratory and additional tests, formulate the diagnosis of the disease, including differential diagnosis, and undertake pharmacotherapeutic activities in dogs and cats	B.U13, O.U2	written credit, active participation
U2	Select and administer rational empirical and targeted antimicrobial chemotherapy in companion animals	A.U11	written credit, active participation
Social competences – Student is ready to:			
K1	use of new guidelines in the field of pharmacotherapy of dogs and cats	O.K4	active participation
K2	expand knowledge and improve skills in the field of pharmacotherapy of dogs and cats	O.K8	active participation
K3	formulating conclusions related to treatment modifications based on laboratory results and own calculations	O.K5	active participation

Balance of ECTS points

Activity form	Activity hours*
lecture	6
laboratory classes	24
class preparation	35
exam / credit preparation	35
exam participation	1

Student workload	**Hours** 101	**ECTS** 4.0
Workload involving teacher	**Hours** 31	**ECTS** 1.0

Practical workload	Hours 24	ECTS 0.9

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Pharmacological interactions. Mechanisms of pharmacodynamic, pharmacokinetic and pharmaceutical interactions. Interactions based on metabolic induction and inhibition. The review of most common drug interactions encountered in the treatment of dogs and cats. 2. Side effects and drug caused diseases of dogs and cats. Dose-dependent and dose-independent side effects. Drug toxicity and the mechanisms of drug-caused organ damage.	lecture
2.	1. Anti-inflammatory pharmacotherapy – non-steroid anti-inflammatory drugs and chondroprotectants used in cats and dogs. 2. Anti-inflammatory pharmacotherapy – glucocorticoids used in cats and dogs. Monitoring of adverse reactions and pharmacokinetic interactions. 3. The principles of a correct antimicrobial therapy in dogs and cats: the review of available formulations, prophyllactic and therapeutic indications, adverse effects and dangerous interactions, disposition of antimicrobial drugs in animal tissues. Factors that influence the efficacy of antimicrobial treatment and most common mistakes in treatment. 4. Therpeutic drug monitoring. Clinical pharmacokinetics. Practical classes on drug dosage optimization in monitored patients (case studies). 5. Pharmacotherapy in endocrine disorders and endocrinopathies. The review of drugs used in hyper- and hypothyroidism, hyper- and hypoadrenocorticism, hyper- and hypoparathyroidism. The review of antidiabetic drugs. Drug and hormone dosing based on functional diagnostic tests. 6. Pharmacotherapy of reproductive system diseases. Review of drugs used in the prevention and therapy of reproductive system diseases. Drug dosage and side effects. 7. Pharmacotherapy of cancer. Review of drugs used in cancer chemotherapy. Rules for the use of cancer chemotherapy, dosage of drugs and their side effects. 8. Antiepileptic drugs. The review of drugs used in epileptic state in dogs and cats. Monitored therapy on an example of epilepsy treatment. Adverse effects and interactions	laboratory classes

Course advanced

Teaching methods:

classes, lecture, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	written credit, active participation	20%

Activities	Examination methods	Percentage in subject assessment
laboratory classes	written credit, active participation	80%

Entry requirements

veterinary pharmacology, veterinary toxicology, veterinary pharmacy, clinical and laboratory diagnostics, veterinary microbiology

Literature

Obligatory

1. Maddison, J. E., Page, S. W., & Church, D. B. (Eds.). Small animal clinical pharmacology, 2nd ed., Elsevier Health Sciences, 2008.
2. Boothe, D. M. Small Animal Clinical Pharmacology and Therapeutics, 2nd ed., Elsevier Health Sciences, 2011.
3. Riviere, J. E., & Papich, M. G. Veterinary pharmacology and therapeutics. John Wiley & Sons, 2018

Optional

1. Hovda, L., Brutlag, A., Poppenga, R. & Petersen, K.. (Eds.). Blackwell's Five-Minute Veterinary Consult Clinical Companion: Small Animal Toxicology, 2nd ed., John Wiley & Sons, 2016.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Clinical psychology of animals

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J400BO.0415.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** optional
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** Yes
	Subject shaping practical skills No

Teacher responsible for the subject	Julia Miller
Other teachers conducting classes	Julia Miller

Period Semester 11	**Examination** graded credit **Activities and hours** laboratory classes: 15	**Number of ECTS points** 2.0

Goals

C1	The goal of the course is to familiarize the students with leading theories in the field of animal psychology and concepts of learning. In the course the students learn most important definitions associates with animal psychology and behavioural medicine. Additionally, the students will be introduced to these elements of behavioural problems and their treatment, that are most important from the perspecitve of a vetarinarian (the impact of diseases on behaviour, main drugs groups used in the treatment of behavioural problems).

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	knows and understands the principles of diagnostic procedure in cases of behavioral problems, taking into account the differential diagnostics and therapeutic procedure	B.W4	presentation, case study
W2	species-specific welfare needs of dogs and cats	B.W9	presentation, case study
Skills – Student can:			
U1	chooses and applies appropriate training and treatment protocols for behavioral problems in dogs and cats	B.U13	presentation, case study
U2	conducts a medical-veterinary interview in cases of behavioral problems in dogs and cats, taking into consideration their living environment	B.U2	presentation, case study
U3	teaches the owners how to recognize human and abusive methods of animal training	B.U1	presentation, case study
Social competences – Student is ready to:			
K1	takes response for the implemented therapeutic methods in the context in their impact on the human-animal bond and animal welfare	O.K1	presentation, case study
K2	cooperates with the owner in order to increase animal welfare	O.K2	presentation, case study

Balance of ECTS points

Activity form	Activity hours*
laboratory classes	15
presentation/report preparation	25
collecting and studying literature	10

Student workload	**Hours** 50	**ECTS** 2.0
Workload involving teacher	**Hours** 15	**ECTS** 0.6
Practical workload	**Hours** 15	**ECTS** 0.6

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	1. Basic terms in psychology and methods of learning. 2. The significance of species-specific needs and behavioral patterns for animals in the man-made environment. 3. Dog training methods and therapies in the light of modern science. 4. Behavioural methods used for behavioral therapies (desensitization, classical and operant conditioning) 5. The role of veterinary surgeons in behavioral therapy: influence of somatic problems on behavior; Impact of neutering on behavioral changes in dogs an cats. Farmacotherapy of behavioral problems in dogs and cats. 6. Clinical case analysys	laboratory classes

Course advanced

Teaching methods:

classes, discussion, teamwork, case analysis

Activities	Examination methods	Percentage in subject assessment
laboratory classes	presentation, case study	100%

Entry requirements

Ethology and animal welfare, Veterinary pharmacology, Diseases of dogs and cats

Literature

Obligatory

1. "Manual of canine and feline behavioural medicine" Debra F. Horwitz, Daniel Mills, 2009
2. "Oh Behave!: Dogs from Pavlov to Premack to Pinker", Jean Donaldson, 2008

Optional

1. „Help for Your Fearful Dog: A Step-by-Step Guide to Helping Your Dog Conquer His Fears" Nicole Wilde 2006
2. „Dominance in dogs – fact or fiction?" Barry Eaton, 2006
3. „The Emotional Lives of Animals: A Leading Scientist Explores Animal Joy, Sorrow, and Empathy — and Why They Matter" Marc Bekoff 2008

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Diagnostics and treatment of ruminant diseases

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J400BO.0453.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** optional
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills Yes

Teacher responsible for the subject	Tadeusz Stefaniak
Other teachers conducting classes	Tadeusz Stefaniak, Paulina Jawor, Michał Bednarski, Grzegorz Dejneka

Period Semester 11	**Examination** graded credit **Activities and hours** lecture: 10 clinical classes: 5	**Number of ECTS points** 2.0

Goals

C1	Target of the course is the development of the learning of the diagnostics and treatment of infectious and uninfectious diseases not presented or presented in abbreviation during obligatory programme of Farm animals' diseases by the participation of academic teachers from West Europe. Special interest is dedicated to less known in Poland diseases of cattle, sheep and goats. Clinical classes are focused on the presentation of the model of clinical diagnosis and treatment of gastrointestinal tract pathology in calves and adult cattle utilized in Clinic for Ruminants in West Europe.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	knows to an extensive degree, describes in detail and explains the etiology, pathogenesis and clinical signs of infestious and non-infectious diseases in ruminants and rules of their treatment	B.W4, B.W5, O.W3, O.W4	project, observation of student’s work, active participation, report, participation in discussion
W2	knows to an extensive degree and describes in detail the methods of diagnostics and therapy proper in the diseases occurring in domestic ruminants	B.W5, O.W4	project, observation of student’s work, active participation, report, participation in discussion
W3	rules in the clinical examination in agreement with the clinical examination plan, is able to analyse clinical symptoms and necropsy findings	B.W4, B.W5, O.W7	project, observation of student’s work, active participation, report, participation in discussion
W4	knows the principles of diagnostic and therapeutic procedures appropriate at the diseases of ruminants	B.W5, O.W4	project, observation of student’s work, active participation, report, participation in discussion
Skills – Student can:			
U1	conducts clinical examination of the respiratory and gastrointestinal tract in ruminants in accordance with the principles of medical art;	B.U2, B.U3, O.U1	project, observation of student’s work, active participation, report, participation in discussion
U2	analyses and interprets clinical findings and results of laboratory tests, formulates the diagnosis of given disease, taking into account the differential diagnostics in ruminants	B.U2, B.U3, O.U2	project, observation of student’s work, active participation, report, participation in discussion
U3	plans the diagnostic procedure of infectious and non-infectious diseases in ruminants	B.U6, O.U3	project, observation of student’s work, active participation, report, participation in discussion
U4	conducts a medical-veterinary interview in order to obtain precise information regarding individual ruminant or the herd	B.U2, B.U3	project, observation of student’s work, active participation, report, participation in discussion
U5	safely and humanely handles animals and instructs others in this scope	B.U13	project, observation of student’s work, active participation, report, participation in discussion
Social competences – Student is ready to:			

K1	exhibits attitudes in accordance with professional ethics at circumstances that request the tolerance for specific beliefs of ruminant owners	O.K2, O.K5	observation of student's work, active participation, participation in discussion
K2	critical assessment of the situation and choosing impartial criteria in the veterinary procedures	O.K4	observation of student's work, active participation, participation in discussion
K3	ability to evaluate the problem independently, and make the decisions	O.K5	observation of student's work, active participation, participation in discussion

Balance of ECTS points

Activity form	**Activity hours***
lecture	10
clinical classes	5
consultations	1
lesson preparation	14
presentation/report preparation	30

Student workload	**Hours** 60	**ECTS** 2.0
Workload involving teacher	**Hours** 16	**ECTS** 0.6
Practical workload	**Hours** 5	**ECTS** 0.2

* hour means 45 minutes

Study content

No.	**Course content**	**Activities**

1.	1-2. Deficiency diseases in cattle students may recognize problems of most commonly occurring deficiency diseases. The etiology, history, clinical examination, signs, differential diagnosis, prognosis, treatment, prevention, in individual diseases will be discussed. 3-4. intoxications in cattle –students recognize problems of most common intoxications in cattle. The etiology, history, clinical examination, signs, differential diagnosis, prognosis, treatment, prevention, in individual types of intoxications will be discussed. 5. Pregnancy toxemia, osteodystrophia, osteomalacia, hemoglobinuria puerperalis–students may recognize specific aspects of metabolic diseases that induce signs connected with central nervous system and bones in cattle. The etiology, history, clinical examination, signs, differential diagnosis, prognosis, treatment, prevention will be discussed 6. Intensive treatment of recumbent cows –students may become familiar with possible causes of cows' recumbency. The methods that differentiate different recumbency types from downer cow syndrome coused by hyocalcemiacwill be described. Therapy of recumbent animals and veterinary treatment will be described 7.Mastitis in small ruminants – students become familiar with inflammations of the mammary gland in small ruminants. The etiology, history, clinical examination, signs, differential diagnosis, prognosis, treatment and prevention will be discussed. 8. Tetanus, Bovine malignant catarrhal fever – students become familiar with important aspects of mentioned diseases. Some aspects like: etiology, history, clinical examination, signs, differential diagnosis, prognosis, treatment, prevention and administrative procedures will be discussed. 9. Rumen acidosis – students become familiar with ruminal indigestion in cattle. Some aspects like: etiology, history, clinical examination, signs, differential diagnosis, prognosis, treatment and preventive procedures will be discussed. 10. Paratuberculosis in cattle – students become familiar with important aspects of Johne's disease in cattle. Some aspects like: etiology, history, clinical examination, signs, differential diagnosis, prognosis, treatment, prevention and administrative procedures will be discussed. Themes of lectures may be modified in the relation to skills of invited academic teacher	lecture
2.	1-3. Diagnostics of gastrointestinal tract diseases in cattle - history, clinical examination, signs, differential diagnosis, prognosis, treatment. Practical diagnostics of oral cavity, oesophagus, rumen, omasum, reticulum, abomasum, small intestine, large intestine. Techniques of sampling for laboratory examination. 4-5. Diarrhoea in calves – causes and treatment. Main causes and diagnostic methods in calf diarrhoea. Establishing etiology and treatment procedures in respective clinical cases. Students become familiar with proper methods of rehydration in calves. Themes of classes may be modified according to skills of invited academic teacher.	clinical classes

Course advanced

Teaching methods:

classes, lecture, discussion, project-based learning (PBL), problem-solving method, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	project, active participation	60%

Activities	Examination methods	Percentage in subject assessment
clinical classes	observation of student’s work, active participation, report, participation in discussion	40%

Entry requirements

Animal anatomy I; Animal anatomy II; Pathomorphology, Animal physiology I; Animal physiology II; Pathophysiology; Veterinary pharmacology I; Veterinary pharmacology II; Veterinary microbiology I; Veterinary microbiology II; Veterinary immunology; Clinical immunology; Clinical diagnostics; Farm animal diseases

Literature

Obligatory

1. Large Animal Internal Medicine, 6th Edition Bradford Smith David Van Metre Nicola Pusterla (ed.), 2019.
2. Atlas of bovine pathology. Cutler, Keith, 2017
3. Color Atlas of Farm Animal Dermatology 1st Edition, Danny W. Scott, 2018

Optional

1. Stefaniak T., Houszka M., Nowaczyk R., Rouibah K., Jawor P. 2016. Zygomycosis of the abomasum in neonatal calves during treatment of diarrhea caused by Escherichia coli: a case report. Med. Weter. 72, 263-267
2. Jawor P., Stefaniak T., Mee J.F.: Immune and inflammatory biomarkers in cases of bovine perinatal mortality with and without infection in utero. J. Dairy Sci.100, 1408-1416 (2017)
3. L. Kovács*, L. Rózsa, M. Pálffy, P. Hejel, W. Baumgartner and O. Szenci. Subacute ruminal acidosis in dairy cows - physiological background, risk factors and diagnostic methods. VETERINARSKA STANICA 51 (1), 2020.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Diagnostic ultrasound of small animals

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J400BO.0452.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** optional
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** Yes
	Subject shaping practical skills Yes

Teacher responsible for the subject	Dominika Kubiak-Nowak
Other teachers conducting classes	Dominika Kubiak-Nowak, Wojciech Borawski

Period Semester 11	**Examination** graded credit **Activities and hours** laboratory classes: 30	**Number of ECTS points** 4.0

Goals

C1	Practical training of performing abdominal ultrasound examination. Learning of fundamentals of diagnostics ultrasound, indications to perform the ultrasound examination in small animals and recognizing ultrasound image of abdominal organs and their common pathologies.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in animals;	O.W4	oral credit, test
W2	specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes;	O.W7	oral credit, test
W3	describes the causes and symptoms of anatomopathological changes, principles of treatment and prophylaxis in individual disease entities	B.W3	oral credit, test
W4	knows and understands the principles of diagnostic procedure, taking into account the differential diagnostics and therapeutic procedure	B.W4	oral credit, test
W5	explains the method of handling clinical data, as well as results of laboratory tests and additional tests	B.W6	oral credit, test
Skills – Student can:			
U1	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	oral credit, test
U2	plans the diagnostic procedure	O.U3	oral credit, test
U3	collects and secures the samples for tests, as well as performs standard laboratory tests, and correctly analyses and interprets the results of laboratory tests	B.U6	oral credit, test
U4	uses diagnostic equipment, including radiographic, ultrasound and endoscopic equipment, in accordance with its intended purpose and safety rules for animals and people, as well as interprets the results of tests obtained after its application	B.U7	oral credit, test
Social competences – Student is ready to:			
K1	formulates conclusions from own measurements or observations	O.K5	observation of student’s work
K2	is ready for reliable self-assessment, formulating constructive criticism in the scope of veterinary practice, accepting criticism of presented solutions, reacting to such criticism in a clear and material manner, also with the use of arguments referring to the available scientific achievements in the discipline;	O.K7	observation of student’s work
K3	deepens his/her knowledge and improves skills	O.K8	observation of student’s work
K4	communicates with the co-workers and shares knowledge	O.K9	observation of student’s work

Balance of ECTS points

Activity form	Activity hours*
laboratory classes	30
class preparation	30
exam / credit preparation	40

Student workload	**Hours** 100	**ECTS** 4.0
Workload involving teacher	**Hours** 30	**ECTS** 1.0
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Ultrasound units, physical basics of ultrasound, artefacts, preparing the patient for the examination. 2. Ultrasound imaging of the urinary system. 3. Ultrasound imaging of the reproductive system. 4. Ultrasound imaging of the spleen, limph nodes and major blood vessels. 5. Ultrasound imaging of the adrenal glands. 6. Ultrasound imaging of the liver. 7. Ultrasound imaging of the gastrointestinal system and pancreas. 8. Basics of Doppler ultrasonography. 9. Methods of ultrasound guided biopsy. 10. Summary.	laboratory classes

Course advanced

Teaching methods:

classes, presentation / demonstration, case analysis

Activities	Examination methods	Percentage in subject assessment
laboratory classes	oral credit, observation of student’s work, test	100%

Entry requirements

Animal anatomy I, Animal anatomy II, Topographic anatomy, Clinical and laboratory diagnostics I, Clinical and laboratory diagnostics II, Diagnostic imaging.

Literature

Obligatory

1. Barr F. Gaschen L. „BSAVA Manual of Canine and Feline Ultrasonography”, BSAVA 2011
2. Penninck D, d’Anjou M. Atlas of Small Animal Ultrasonography 2nd Ed. Wiley Blackwell 2015

Optional

1. Mannion P: Diagnostic Ultrasound in Small Animal Practice” Blackwell Publishing 2006
2. Nyland, TG, Mattoon, JS, “Small Animal Diagnostic Ultrasound”. Elsevier 2015

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Internal medicine of foals

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J400BO.0988.24 **Lecture languages** english **Mandatory** optional **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Malwina Słowikowska
Other teachers conducting classes	Malwina Słowikowska, Natalia Siwińska, Agnieszka Żak-Bochenek

Period	**Examination**	**Number of ECTS points**
Semester 11	graded credit **Activities and hours** lecture: 9 clinical classes: 6	2.0

Goals

C1	Introducing students to common foals disease
C2	Show differences between foal and adult horse
C3	Deliver the knowledge about diagnostic procedures in assessing a foal current state of health
C4	Train with students how to approach a foal and a mare to be safe and examine a foal properly
C5	Deliver the knowledge about the realistic prediction of the chance for survival and normal use in the future
C6	Deliver the knowledge of how to perform the assessment of the newborn and calculation of the foal score, collect detailed history from the owner and its correlation with the clinical exam

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the method of handling clinical data, as well as the results of laboratory tests and additional tests of foals	B.W6	project, observation of student’s work, active participation, participation in discussion, performing tasks, case study
W2	how to present the principles of conducting a clinical examination and monitoring foal health	B.W5	project, observation of student’s work, active participation, participation in discussion, performing tasks, case study
W3	knows and understands the principles of diagnostic procedure, taking into account the differential diagnostics and therapeutic procedure for foals	B.W4	project, observation of student’s work, active participation, participation in discussion, performing tasks, case study
W4	describes the causes and symptoms of anatomopathological changes, principles of treatment and prophylaxis in individual disease entities of foal diseses	B.W3	project, observation of student’s work, active participation, participation in discussion, performing tasks, case study
W5	how to specify the principles of conducting a clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes of the foal;	O.W7	project, observation of student’s work, active participation, participation in discussion, performing tasks, case study
W6	the principles of a therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in foals;	O.W4	project, observation of student’s work, active participation, participation in discussion, performing tasks, case study

W7	explains and interprets the etiology, pathogenesis and clinical symptoms of diseases occurring in individual foals, and knows the principles of a therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in foals;	O.W3	project, observation of student’s work, active participation, participation in discussion, performing tasks, case study
Skills – Student can:			
U1	conducts clinical examination of the foal in accordance with the principles of medical art;	O.U1	project, observation of student’s work, active participation, participation in discussion, performing tasks, case study
U2	analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions;	O.U2	project, observation of student’s work, active participation, participation in discussion, performing tasks, case study
U3	plan the diagnostic procedure for a foal	O.U3	project, observation of student’s work, active participation, participation in discussion, performing tasks, case study
U4	safely and humanely handle foals and instructs others in this scope	B.U1	project, observation of student’s work, active participation, participation in discussion, performing tasks, case study
U5	conduct a medical-veterinary interview in order to obtain precise information regarding individual foal or group of animals and its or their living environment	B.U2	project, observation of student’s work, active participation, participation in discussion, performing tasks, case study
U6	performs a full clinical examination of the foal	B.U3	project, observation of student’s work, active participation, participation in discussion, performing tasks, case study
U7	collect and secure the samples for tests, as well as perform standard laboratory tests, and correctly analyze and interpret the results of laboratory tests	B.U6	project, observation of student’s work, active participation, participation in discussion, performing tasks, case study
U8	prescribe and use veterinary medicinal products and medical materials, taking into account their safe storage and utilization	B.U10	project, observation of student’s work, active participation, participation in discussion, performing tasks, case study

U9	choose and apply the appropriate treatment	B.U13	project, observation of student’s work, active participation, participation in discussion, performing tasks, case study
Social competences – Student is ready to:			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student’s work, active participation, participation in discussion, performing tasks, case study
K2	has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	observation of student’s work, active participation, participation in discussion, performing tasks, case study
K3	uses the objective sources of information	O.K4	observation of student’s work, active participation, participation in discussion, performing tasks, case study
K4	deepens his/her knowledge and improves skills	O.K8	observation of student’s work, active participation, participation in discussion, performing tasks, case study
K5	communicates with the co-workers and shares knowledge	O.K9	observation of student’s work, active participation, participation in discussion, performing tasks, case study
K6	is ready to act in the conditions of uncertainty and stress	O.K10	observation of student’s work, active participation, participation in discussion, performing tasks, case study

Balance of ECTS points

Activity form	**Activity hours***
lecture	9
clinical classes	6
presentation/report preparation	5
literature study	10

collecting and studying literature	10
lesson preparation	10

Student workload	**Hours** 50	**ECTS** 2.0
Workload involving teacher	**Hours** 15	**ECTS** 0.6
Practical workload	**Hours** 6	**ECTS** 0.2

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	1. Immunoglobulin transfer, immune-mediated congenital disorders. Immunoglobulin transfer in foals, mechanism and abnormalities. Clinical signs of selected immune-mediated congenital disorders. Approach and diagnosis. Treatment options and prevention. Analysis of additional procedures and prediction of the chance for survival. 2. Dummy foal, foal score. Causes and clinical appearance of dummy foals. Approach to the suspected case, diagnosis and treatment options. The use of foal score, how to calculate, prediction of the chance for survival based on the foal score. Analysis of additional procedures in the diagnostic process. 3. Foal septicemia. Causes and clinical appearance of foal septicemia, analysis of causative agents. Approach to the suspected case, diagnosis and treatment options. Analysis of additional procedures in the diagnostic process and prediction of the chance for survival. 4. Respiratory diseases. A practical approach to selected respiratory diseases in foals. Causes and clinical appearance, analysis of causative agents. Approach to the suspected case, diagnosis and treatment options. Analysis of additional procedures in the diagnostic process and prediction of the chance for survival and normal use in the future. 5. Gastrointestinal disorders. A practical approach to selected gastrointestinal disorders in foals. Causes and clinical appearance, analysis of causative agents. Approach to the suspected case, diagnosis and treatment options. Analysis of additional procedures in the diagnostic process and prediction of the chance for survival and normal use in the future. 6. Cardiovascular and urinary disorders. A practical approach to selected cardiovascular and urinary disorders in foals. Causes and clinical appearance, analysis of causative agents. Approach to the suspected case, diagnosis and treatment options. Analysis of additional procedures in the diagnostic process and prediction of the chance for survival and normal use in the future. 7. Ophthalmology and dermatology. A practical approach to selected ophthalmologic and dermatologic disorders in foals. Causes and clinical appearance, analysis of causative agents. Approach to the suspected case, diagnosis and treatment options. Analysis of additional procedures in diagnostic process and prediction of the chance for survival and normal use in future. 8. Neurological disorders A practical approach to selected neurological disorders in foals. Causes and clinical appearance, analysis of causative agents. Approach to the suspected case, diagnosis and treatment options. Analysis of additional procedures in diagnostic process and prediction of the chance for survival and normal use in future. 9. Muscle disorders and other diseases Practical approach to selected muscle and other disorders in foals. Causes and clinical appearance, analysis of causative agents. Approach to the suspected case, diagnosis and treatment options. Analysis of additional procedures in the diagnostic process and prediction of the chance for survival and normal use in future.	lecture

2.	1. Clinical assessment and examination of the foal - Clinical exam of the foal, differences regarding the age of the foal. Normal values of clinical parameters and assessment methods. Assessment of the newborn and calculation of the foal score. Collecting detailed history from the owner and its correlation with the clinical exam. 2. Injection sites and drug delivery - Injection sites for different drug delivery routes. Places for intravenous injections and blood collection. Possible adverse reactions and approaches to such situations. 3. Respiratory examination - detailed examination with an analysis of needed additional tests. Performing the ultrasound of the area. Analysis of the lab results. 4. Gastrointestinal examination - detailed examination with an analysis of needed additional tests. Performing the ultrasound of the area. Analysis of the lab results. 5. Neurologic examination - detailed examination with an analysis of needed additional tests. Performing the additional tests. Analysis of the lab results. 6. Ophthalmology examination - detailed examination with an analysis of needed additional tests. Performing the ultrasound of the area. Analysis of the lab results.	clinical classes

Course advanced

Teaching methods:

classes, lecture, discussion, teamwork, presentation / demonstration, brainstorming, case analysis, problem-solving method, project-based learning (PBL), situation-based learning, practical simulation training

Activities	Examination methods	Percentage in subject assessment
lecture	project, active participation, performing tasks, case study	50%
clinical classes	observation of student’s work, participation in discussion, performing tasks	50%

Entry requirements

Diseases of horses

Literature

Obligatory

1. Siobhan McAuliffe, Nathan Slovis - Color Atlas of Diseases and Disorders of the Foal.- Elsevier 2008.
2. Mary Paradis – Equine neonatal medicine – Elsevier 2006.
3. Siobhan Brid McAuliffe - Knottenbelt and Pascoe's Color Atlas of Diseases and Disorders of the Horse - Saunders Ltd. 2013

Optional

1. David Willson – Clinical veterinary advisor The Horse – Elsevier 2012
2. Stephen M. Reed, Warwick M. Bayly, Debra C. Sellon: Equine Internal Medicine, Fourth Edition, 2018
3. James A. Orsini & Thomas J. Divers - Equine Emergencies - Saunders 2014

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Pigeon diseases

Educational subject description sheet

Basic information

Field of study Veterinary Medicine **Speciality** - **Department** The Faculty of Veterinary Medicine **Study level** Long-cycle programme **Study form** Full-time **Education profile** General academic	**Education cycle** 2024/25 **Subject code** MD000000MWW-AJS.J400BO.1574.24 **Lecture languages** english **Mandatory** optional **Block** major subjects (conducted) in foreign languages **Subject related to scientific research** No **Subject shaping practical skills** Yes

Teacher responsible for the subject	Anna Woźniak-Biel
Other teachers conducting classes	Anna Woźniak-Biel

Period Semester 11	**Examination** graded credit **Activities and hours** clinical classes: 20 laboratory classes: 10	**Number of ECTS points** 4.0

Goals

C1	The aim of the course is to acquaint students with the biology and breeding of pigeons. During the course they become familiar with diseases of pigeons (bacterial, viral, parasitic, and fungal), principles of treatment, prevention programs, the techniques of restraining and clinical examination, sample collection for laboratory tests, and medication. The specificity of individual treatment and groups of pigeons.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	etiology, pathogenesis and clinical symptoms of pigeon diseases and the principles of therapeutic management	O.W3	written credit
W2	diagnostic and therapeutic methods used in pigeons	O.W4	written credit
W3	ways of using veterinary medicinal products for the prevention and treatment of pigeons	O.W5	written credit
W4	the biology of infectious agents that cause diseases that are transmitted between pigeons and transmitted from pigeons to humans, taking into account the mechanisms of disease transmission	O.W6	written credit
W5	principles of clinical examination and monitoring of pigeons' health	B.W5	written credit
W6	causes and symptoms of pathological changes, principles of treatment and prevention in particular disease entities of pigeons	B.W3	written credit
W7	mechanisms of organ and systemic pathologies in pigeons	B.W2	written credit
W8	principles of diagnostic procedures, including differential diagnosis, and therapeutic procedures in pigeons	B.W4	written credit
Skills – Student can:			
U1	conduct a clinical examination of pigeons in accordance with the principles of medical practice	O.U1	written credit, observation of student’s work, active participation
U2	analyze and interpret clinical symptoms, pathological changes, and the results of laboratory tests of pigeons, formulate a diagnosis of the disease state, including differential diagnosis, and take therapeutic or preventive measures in pigeon flocks	O.U2	written credit, observation of student’s work, active participation
U3	plans the diagnostic procedure	O.U3	written credit, observation of student’s work, active participation
U4	conduct a medical and veterinary interview in order to obtain detailed information about the pigeons' health and living conditions	B.U2	written credit, observation of student’s work, active participation
U5	perform a complete clinical examination of pigeons	B.U3	written credit, observation of student’s work, active participation
U6	collect and preserve samples for research and perform standard laboratory tests, as well as correctly analyze and interpret the results of laboratory tests	B.U6	written credit, observation of student’s work, active participation
Social competences – Student is ready to:			
K1	showing responsibility for decisions made towards people, birds, and the natural environment	O.K1	observation of student’s work, active participation

K2	presenting an attitude consistent with ethical principles and taking actions based on the code of ethics in professional practice and showing tolerance for attitudes and behaviors resulting from different social and cultural conditions	O.K2	observation of student's work, active participation
K3	use of objective sources of information	O.K4	observation of student's work, active participation
K4	broadening knowledge and improving skills	O.K8	observation of student's work, active participation

Balance of ECTS points

Activity form	**Activity hours***
clinical classes	20
collecting and studying literature	40
exam / credit preparation	30
exam participation	2
laboratory classes	10

Student workload	**Hours** 102	**ECTS** 4.0
Workload involving teacher	**Hours** 32	**ECTS** 1.1
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	**Course content**	**Activities**

1.	3. Principles of feeding racing and ornamental pigeons. The student becomes familiar with the dietary requirements for different groups of pigeons (racing and ornamental pigeons) and nutrition programs for these birds, depending on the breeding period (the period of reproduction, shows/races). The student examines the types of food available on the Polish market (food demonstration, analysis of their composition depending on the demand in a specific period of the year). 6. Selected viral diseases of pigeons. The student becomes familiar with the most common viral diseases of pigeons and diagnostic methods to detect them (techniques of molecular biology: PCR, RT-PCR, histopathology, serological tests: ELISA, HA). Discussion of ways to prevent (including immunoprophylaxis) and the combating of viral diseases in pigeon flocks. 7. Selected bacterial diseases of pigeons. The student becomes familiar with the most common bacterial diseases of pigeons and diagnostic methods to detect them (microbiological tests, rules of sample transport to the laboratory, preparing a cover letter). The discussion about prevention (including immunoprophylaxis) and combating bacterial diseases in pigeon flocks. Students independently perform microbiological cultures in the laboratory of the Clinic. 10. Principles of pharmacological therapy in a pigeon flock. The student becomes familiar with medicinal products and nutritional supplements available on the Polish market, and can independently choose the appropriate treatment depending on the diagnosed etiologic agent. The student becomes familiar with the rules for conducting proper pharmacotherapy in the flock depending on the period of breeding and used therapeutic agents. 15. Final test.	laboratory classes

2.	1. Principles of organization of breeding pigeons. The student becomes familiar with the environmental conditions for different groups of pigeons (ornamental and racing pigeons). In addition, the student takes note of the principles of the loft organization and the proper parameters to maintain birds (relevant biosecurity). 2. Overview of the most commonly kept breeds of racing and ornamental pigeons. During the classes are presented the most common species of ornamental and racing pigeons coming from the Clinic and from private fanciers. The student becomes familiar with specific for each breed requirements of nutrition, care, maintenance, and predisposition to certain diseases. 4. Anatomy and clinical physiology of pigeons. The student becomes familiar with the anatomy and physiology of pigeons. 5. The clinical examination and techniques of pigeon restraint. The student becomes familiar with the techniques of catching, and restraint of pigeons and learns to conduct a clinical examination. The student independently performs subcutaneous, intramuscular, and intravenous injections, learns to collect blood and administers medications to the crop. From taken swabs from the crop or collected blood student independently performs smears, stains them, and assesses them. 8. Selected fungal and parasitic diseases of pigeons. The student becomes familiar with the most common fungal and parasitic diseases of pigeons and diagnostic methods to detect them (flotation, sedimentation, direct examination of faeces smears, evaluation of preparations subjected to dyeing and colouring). Taking swabs from the crop and swabs for the presence of fungi and/or parasites and their evaluation under the microscope. Discussion of ways to prevent and combat fungal diseases and parasitic diseases (annual prevention programs) in pigeon flocks. The student performs faecal flotation and sedimentation. 9. Principles of diagnostics of pigeon diseases. The student becomes familiar with the possibilities and principles of diagnostics of viral, bacterial, and parasitic diseases of pigeons. The student analyzes and interprets the results of laboratory tests. The student learns to perform properly the necropsy of pigeons, collect material for laboratory research, and learns to prepare preparations of cytological stains and assesses them under a microscope. 11. Prevention in racing and ornamental pigeon husbandry. The student becomes familiar with the rules of proper maintenance flock of pigeons on an annual basis (prevention during the winter, spring and summer period, loft hygiene depending on the time of year, food hygiene, and prevention during the breeding, racing and rest season). 12. Anesthesia, surgical procedures performed in pigeons. Preparing birds for surgery and post-operative care. Students participate in procedures most commonly performed in pigeons (suturing wounds, removing breeding rings), convert doses of anaesthetics used for anaesthesia, and learn the rules of induction of inhaled anaesthesia. In addition, classes are conducted with dressing and the treatment of bone (stabilization of broken limbs). 13. Principles of endoscopy and X-ray examination in pigeons. The student becomes familiar with the principles of preparing pigeons for endoscopy and X-ray (with or without contrast). During the class indications for performing diagnostic tests, protocols for conducting anaesthesia and most frequently performed X-ray projections (depending on an organ) are discussed. Students independently evaluate radiographs. 14. Participation in the exhibition of racing and ornamental pigeons. Class away (if possible due to the current epidemiological status of COVID-19). The student can see the most popular breeds of racing and ornamental pigeons and learn the rules for judging the birds.	clinical classes

Course advanced

Teaching methods:

classes, discussion, teamwork, presentation / demonstration, educational film, brainstorming, case analysis, project-based learning (PBL)

Activities	Examination methods	Percentage in subject assessment
clinical classes	written credit, observation of student’s work, active participation	50%
laboratory classes	written credit, observation of student’s work, active participation	50%

Entry requirements

Animal anatomy I and II, Veterinary microbiology I and II, Animal physiology I and II, Pathophysiology I and II, Veterinary pharmacology I and II, Pathomorphology I and II, Veterinary immunology, Parasitology and invasiology I and II, Clinical and laboratory diagnostics I and II, Animal nutrition and feed quality

Literature

Obligatory

1. Chitty J., Lierz M.: BSAVA manual of raptors, pigeons and passerine birds. Quedgeley, Gloucester: British Small Animal Veterinary Association, 2008.
2. Walker C.: The flying Vet’s, Pigeon Health and Management. Wantrina South, Dr Colin Walker, 2000.
3. Samour J (ed.): Avian medicine. Mosby Elsevier, 2008.
4. Chitty J., Lierz M.: BSAVA Manual of Raptors, Pigeons and Passerine Birds. British Small Animal Veterinary Association, Waterwells, 2008.

Optional

1. Carpenter J.W., Mashima T.Y., Rupier D.J.: Exotic Animal Formulary. 2005. Manual of Exotic Pets. P.H. Benyon (Editor), J.E. Cooper (Editor), Anna Meredith (Editor), Sharon Redrobe (Editor), BSAVA, 2003.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Selected issues of gastroenterology in dogs and cats

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J400BO.3575.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** optional
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills Yes

Teacher responsible for the subject	Marcin Jankowski
Other teachers conducting classes	Marcin Jankowski, Krzysztof Kubiak, Jolanta Spużak, Kamila Glińska-Suchocka

Period Semester 11	**Examination** graded credit **Activities and hours** lecture: 20 clinical classes: 10	**Number of ECTS points** 4.0

Goals

C1	The aim of the course is to provide students with basic knowledge on the dogs and cats diseases of alimentary tract, its pathogenesis, diagnosis and treatment.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	Knows to an extensive degree and describes in detail the principles and mechanisms underlying dogs and cats health, the alimentary tract disease formation and their treatment - from the level of cells, through the rgan, animal, to the entire animal population	O.W1	written credit
W2	Knows to an extensive degree, describes in detail and explains the development, structure, functioning, behaviours and physiological mechanisms of dogs and cats in normal conditions, as well as the mechanisms of disorders in pathological conditions	O.W2	written credit
W3	Explains and interprets the etiology, pathogenesis and clinical symptoms of alimentary tract diseases occurring in dogs and cats, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the diseases occurring in dogs and cats	O.W3	written credit
W4	Knows and understands the principles of diagnostic procedure, taking into account the differential diagnostics and therapeutic procedurę in diseases of the alimentary tract of dogs and cats	O.W4	written credit
W5	Characterises in detail the methods of using veterinary medicinal products, aimed at prophylaxis and treatment of animals, as well as at guaranteeing food chain safety and environmental protection	O.W5	written credit
W6	Specifies the principles of conducting clinical examination, in accordance with the plan of clinical examination, analysis of clinical symptoms and anatomopathological changes	O.W7	written credit
W7	Knows and understands the principles of diagnostic procedure, taking into account the differential diagnostics and therapeutic procedure in diseases of the alimentary tract of dogs and cats	B.W4	written credit
W8	Presents the principles of conducting clinical examination and monitoring health of dogs and cats with alimentary tract diseases	B.W5	written credit
W9	Explains the method of handling clinical data, as well as results of laboratory tests and additional tests in dogs and cats with alimentary tract diseases	B.W6	written credit
W10	Presents the principles of dogs and cats with alimentary tract disesaes nutrition	B.W13	written credit
Skills – Student can:			
U1	Conducts clinical examination of the animal in accordance with the principles of medical art	O.U1	oral credit, project, observation of student’s work, active participation
U2	Analyses and interprets pathological changes and results of laboratory tests and additional tests, formulates the diagnosis of given disease, taking into account the differential diagnostics, and undertakes therapeutic or prophylactic actions	O.U2	oral credit, project, observation of student’s work, active participation

U3	Plans the diagnostic procedure	O.U3	oral credit, project, observation of student's work, active participation
U4	Issues veterinary medical opinion and certificate	O.U7	oral credit, project, observation of student's work, active participation
U5	Uses Latin medical nomenclature to the extent necessary to understand and describe medical activities, as well as state of animal health, diseases, pathological changes and conditions	O.U8	oral credit, project, observation of student's work, active participation
U6	Safely and humanely handles dogas and cats and instructs others in this scope	B.U1	oral credit, project, observation of student's work, active participation
U7	Conducts a medical-veterinary interview in order to obtain precise information about dogs and cats with alimentary tract diseases	B.U2	oral credit, project, observation of student's work, active participation
U8	Performs a full clinical examination of the dogs and cats with alimentary tracy diseases	B.U3	oral credit, project, observation of student's work, active participation
U9	Assesses the nutritional status of the dogs and cats with alimentary tract disaeses and provides advice in this scope	B.U5	oral credit, project, observation of student's work, active participation
U10	Collects and secures the samples for tests, as well as performs standard laboratory tests, and correctly analyses and interprets the results of laboratory tests in dogs and cats with alimentary tract diseases	B.U6	oral credit, project, observation of student's work, active participation
U11	Uses diagnostic equipment, including radiographic, ultrasound and endoscopic equipment, in accordance with its intended purpose and safety rules for dogs, cats and people, as well as interprets the results of tests obtained after its application	B.U7	oral credit, project, observation of student's work, active participation
U12	Is able to prescribe and use veterinary medicinal products and medical materials for dogs and cats with alimentary tract diseases, taking into account their safe storage and utilisation	B.U10	oral credit, project, observation of student's work, active participation
U13	Chooses and applies the appropriate treatment for dogs and cats with alimentary tract diseases	B.U13	oral credit, project, observation of student's work, active participation
Social competences – Student is ready to:			
K1	Exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student's work
K2	Has an attitude consistent with ethical principles and undertakes actions based on the code of ethics in professional practice, as well as exhibits tolerance for attitudes and behaviours resulting from various social and cultural conditions	O.K2	observation of student's work
K3	Uses the objective sources of information	O.K4	observation of student's work
K4	Formulates conclusions from own measurements or observations	O.K5	observation of student's work

K5	Is ready for reliable self-assessment, formulating constructive criticism in the scope of veterinary practice, accepting criticism of presented solutions, reacting to such criticism in a clear and material manner, also with the use of arguments referring to the available scientific achievements in the discipline	O.K7	observation of student's work
K6	Deepens his/her knowledge and improves skills	O.K8	observation of student's work
K7	Communicates with the co-workers and shares knowledge	O.K9	observation of student's work
K8	Is ready to act in the conditions of uncertainty and stress	O.K10	observation of student's work

Balance of ECTS points

Activity form	**Activity hours***	
lecture	20	
clinical classes	10	
lesson preparation	50	
presentation/report preparation	40	
Student workload	**Hours** 120	**ECTS** 4.0
Workload involving teacher	**Hours** 30	**ECTS** 1.0
Practical workload	**Hours** 10	**ECTS** 0.4

* hour means 45 minutes

Study content

No.	**Course content**	**Activities**

1.	1. Diseases of the oesophagus – part I. Etiopathogenesis and diagnostics of the: oesophagitis, gastro-oesophageal reflux, megaoesophagus. 2. Diseases of the oesophagus – part II. Etiopathogenesis, diagnostics and treatment of the: oesophageal stenosis, hiatal hernias, neoplasms, Barrett oesophagus. 3. Diseases of the stomach – part I. Etiopathogenesis, diagnostics and treatment of the acute and chronic gastritis. Classification of gastritis based on the endoscopic result including Sidney system. 4. Diseases of the stomach – part II. Etipoathogenesis, diagnostics and treatment of the gastric ulcers. Diagnostic and therapeutic procedures in the case of foreign bodies and neoplasms in the stomach. Syndrome of the acute dilation and volvulus of the stomach. 5. Intestinal diseases – part I. Idiopathic chronic inflammatory diseases of the intestines (IBD). Hypersensitivity to food, allergy and food intolerance. Antibiotic responsive enteropathy. 6. Intestinal diseases – part II. Protein-losing enteropathy. The sensitive colon syndrome. The megacolon syndrome. The short intestine syndrome. Intestinal neoplasms. 7. Differential diagnosis of causes of vomits in dogs and cats. 8. Differential diagnosis of the causes of diarrhea in dogs and cats. 9. Selected liver diseases of dogs and cats. 10. Discussion of the interesting gastroenterological cases.	lecture
2.	1. The performing of oesophagogastroduodenoscopy – work on the simulator. 2. The performing of recto- and colonoscopy – work on the simulator. 3. The performing of oesophagogastroduodenoscopy in dogs or cats. 4. The performing of recto- and colonoscopy in dogs or cats 5. The performing of the liver biopsy in dogs and cats.	clinical classes

Course advanced

Teaching methods:

practical simulation training, classes, lecture, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	written credit	55%
clinical classes	oral credit, project, observation of student’s work, active participation	45%

Entry requirements

animal anatomy I and II, histology and embryology I and II, topographic anatomy, pathomorphology I and II, animal physiology I and II, pathophysiology I and II, parasitology and invasiology I and II, veterinary pharmacology I and II, veterinary pharmacy, veterinary microbiology I and II, veterinary immunology, clinical and laboratory diagnostics I and II, general surgery anaesthesiology, imaging diagnostics, diseases of dogs and cats, veterinary dietetics

Literature

Obligatory

1. J. Mott, J. A. Morrison: ,,Blackwell's Five-Minute Veterinary Consult Clinical Companion Small Animal Gastrointestinal Diseases", 2019, Wiley Blackwell
2. R. J. Washabau, M. J. Day: ,,Canine & Feline Gastroenterology", 2012, Elsevier
3. J. Steiner: ,,Small Animal Gastroenterology", 2008, Schlutersche
4. M. Chandler: ,,Saunders Solutions in Veterinary Practice: Small Animal Gastroenterology", 2011, Saunders

Optional

1. E. J. Hall, D. A. Williams, A. Kathrani: ,,BSAVA Manual of Canine and Feline Gastroenterology, 2019, BSAVA

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Selected issues of pulmonology in dogs and cats

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J400BO.2252.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** optional
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills Yes

Teacher responsible for the subject	Jolanta Spużak
Other teachers conducting classes	Jolanta Spużak, Krzysztof Kubiak, Marcin Jankowski, Kamila Glińska-Suchocka

Period Semester 11	**Examination** graded credit **Activities and hours** lecture: 18 clinical classes: 12	**Number of ECTS points** 4.0

Goals

C1	The aim of the course is to provide students with basic knowledge on the dogs and cats diseases of respiratory system, its pathogenesis, diagnosis and treatment.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the principles and mechanisms underlying the health of dogs and cats, as well as the emergence of respiratory diseases and their treatment - from the level of cells, through the organ, animal, to the entire animal population	O.W1	written credit, oral credit
W2	etiology, pathogenesis and clinical symptoms of respiratory diseases occurring in dogs and cats and the principles of therapeutic management	O.W3	written credit, oral credit
W3	diagnostic and therapeutic procedures in respiratory diseases in dogs and cats	O.W4	written credit, oral credit
W4	the principles of conducting clinical examination, in accordance with the plan of clinical examination (with particular emphasis on the respiratory system), analysis of clinical symptoms and pathological changes;	O.W7	written credit, oral credit
W5	explains the method of handling clinical data, as well as results of laboratory tests and additional tests	B.W6	written credit, oral credit
Skills – Student can:			
U1	conducts clinical examination of the dog and cat in accordance with the principles of medical art;	O.U1	oral credit, observation of student’s work, active participation
U2	analyze and interpret clinical symptoms, pathological changes and the results of laboratory and additional tests, formulate the diagnosis of respiratory diseases in dogs and cats, taking into account the differential diagnosis, and take therapeutic or prophylactic measures	O.U2	oral credit, observation of student’s work
U3	plan diagnostic procedures in respiratory diseases in dogs and cats	O.U3	oral credit
U4	safely and humanely handles animals and instructs others in this scope	B.U1	oral credit, observation of student’s work
U5	conducts a medical-veterinary interview in order to obtain precise information regarding individual animal or group of animals and its or their living environment	B.U2	oral credit, observation of student’s work, active participation
U6	collects and secures the samples for tests and correctly analyses and interprets the results of laboratory tests	B.U6	oral credit, observation of student’s work
U7	uses diagnostic equipment, including ultrasound and endoscopic equipment, in accordance with its intended purpose and safety rules for animals and people, as well as interprets the results of tests obtained after its application	B.U7	oral credit, observation of student’s work
U8	select and apply appropriate treatment in respiratory diseases in dogs and cats	B.U13	oral credit
Social competences – Student is ready to:			

K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	observation of student’s work
K2	uses the objective sources of information	O.K4	observation of student’s work
K3	formulates conclusions from own measurements or observations	O.K5	observation of student’s work
K4	deepens his/her knowledge and improves skills	O.K8	observation of student’s work

Balance of ECTS points

Activity form	**Activity hours***	
lecture	18	
clinical classes	12	
lesson preparation	10	
exam / credit preparation	68	
exam participation	2	
class preparation	10	
Student workload	**Hours** 120	**ECTS** 4.0
Workload involving teacher	**Hours** 32	**ECTS** 1.1
Practical workload	**Hours** 12	**ECTS** 0.4

* hour means 45 minutes

Study content

No.	**Course content**	**Activities**

1.	1. Symptoms of respiratory diseases in dogs and cats. X-ray examination, endoscopy, biopsy of the bronchi, the tracheal lavage, the broncho-alveolar lavage (BAL), transthoracic lungs biopsy. 2. Etiopathogenesis, diagnostics and treatment of nasal cavities diseases (part I) – lymphoplasmocytic rhinitis, allergic inflammation of the nasal cavities, bacterial inflammation of the nasal cavities, nasal parasites, neoplasms. 3. Etiopathogenesis, diagnostics and treatment of nasal cavities diseases (part II) – mycotic inflammation of the nasal cavities, foreign bodies. 4. Etiopathogenesis, diagnostics and therapy of laryngeal diseases: laryngeal paralysis, laryngeal hypoplasia. 5. Brachycephalic obstructive airway syndrome, laryngitis, laryngeal collapse and evertet laryngeal saccules, the larynx neoplasms and foreign bodies – etiopathogenesis, diagnostics and treatment. 6. Tracheitis, tracheal hypoplasia, tracheal stenosis, tracheal collapse, parasitic diseases, neoplasms - etiopathogenesis, diagnostics and treatment. 7. Etiopathogenesis, diagnostics and treatment of bronchial diseases – allergic bronchitis, chronic recurrent (idiopathic) bronchitis, foreign bodies, neoplasms. 8. Etiopathogenesis, diagnostics and treatment of the lungs diseases – pneumonia, lung cancer, pulmonary fibrosis, embolic and/or thrombotic lungs disease. 9. The pleura abscess, chylothorax, hydrothorax, pneumothorax - etiopathogenesis, diagnostics and treatment.	lecture
2.	1. Rhinoscopy in dogs and cats (part I). 2. Rhinoscopy in dogs and cats (part II). 3. Laryngotracheobronchoscopy in dogs and cats (part I). 4. Laryngotracheobronchoscopy in dogs and cats (part II). 5. Bronchoalveolar lavage in dogs and cats and examination of the collected washings. 6. The lung biopsy and puncture of the pleural cavity.	clinical classes

Course advanced

Teaching methods:

practical training, classes, lecture, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	written credit, oral credit	50%
clinical classes	written credit, oral credit, observation of student’s work, active participation	50%

Entry requirements

Prerequisites: Animal anatomy I, Animal anatomy II, Histology and embryology I, Histology and embryology II, Topographic anatomy, Animal physiology I, Animal physiology II, Veterinary microbiology I, Veterinary microbiology II, Veterinary immunology, Pathophysiology I, Pathophysiology II, Pathomorphology I, Pathomorphology II, Veterinary pharmacology I, Veterinary pharmacology II, Veterinary pharmacy, Clinical and laboratory diagnostics I, Clinical and laboratory diagnostics II, Parasitology and invasiology I, Parasitology and invasiology II, General surgery and anesthesiology, Diagnostic imaging, Dietetics, Diseases of dogs and cats.

Literature

Obligatory

1. L. R. Johnson: Clinical Canine and Feline Respiratory Medicine, Wiley-Blackwell, 2010.
2. R. W. Nelson, C. G. Couto: Small Animal Internal Medicine, Mosby, 2013.
3. M. Schaer, F. P. Gaschen: Clinical Medicine of the Dog and Cat, CRC Press, 2016.
4. J. Wiley: Canine Internal Medicine: What’s Your Diagnosis? Wiley-Blackwell, 2017.
5. S. J. Ettinger, E. C. Feldman, E. Cote: Textbook of Veterinary Internal Medicine Expert Consult, Elsevier, 2016.

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Veterinary care on reproduction in breeding dogs and cats

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J400BO.2637.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** optional
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills Yes

Teacher responsible for the subject	Wojciech Niżański
Other teachers conducting classes	Wojciech Niżański, Sylwia Prochowska, Małgorzata Ochota, Wiesław Bielas, Michał Dzięcioł, Zuzanna Ligocka

Period Semester 11	**Examination** graded credit **Activities and hours** lecture: 20 laboratory classes: 2 clinical classes: 8	**Number of ECTS points** 4.0

Goals

C1	The aim of teaching the subject is to provide students with knowledge about controlling reproductive processes in dog and cat breeding, taking actions to improve those processes and the principles of comprehensive veterinary care in dog and cat breeding.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	etiology, pathogenesis and clinical signs of reproductive disorders in dogs and cats and the principles therapeutic management.	O.W3	written credit, active participation
W2	the principles of selecting animals for mating, methods fertilization and biotechnology of reproduction and selection breeding in dogs and cats.	B.W12	written credit, active participation
Skills – Student can:			
U1	plan the diagnostic procedure in the aspect diagnosis of reproductive disorders in the herd breeding dogs or cats	O.U3	observation of student’s work, active participation, participation in discussion
Social competences – Student is ready to:			
K1	demonstrating responsibility for actions taken decisions for people, animals and the environment natural - when supervising reproduction in breeding dogs or cats	O.K1	observation of student’s work, active participation, participation in discussion

Balance of ECTS points

Activity form	Activity hours*
lecture	20
laboratory classes	2
clinical classes	8
exam / credit preparation	45
collecting and studying literature	30
class preparation	10
exam participation	3
consultations	2

Student workload	**Hours** 120	**ECTS** 4.0
Workload involving teacher	**Hours** 35	**ECTS** 1.2
Practical workload	**Hours** 10	**ECTS** 0.4

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Veterinary supervision of parturition in dogs and cats. 2. Obstetric procedure in dystocia. 3. Veterinary supervision of pregnancy, endangered pregnancy, estimation of the delivery date in bitch and queen. 4. Surgical obstetrics. 5. General rules in pediatrics and pediatrics surgery 6. Infertility in cats. 7. Diseases in puppies 8. Diseases in kittens 9. Reproductive disorders in most popular breeds of dogs and cats 10. Main genetic disorders in pedigree dogs and cats	lecture
2.	1. Veterinary supervision over pregnant bitch and queen (examination, nutrition, prevention). 2. Dog breeds. Dog and cat breeding in the aspect of the Kennel Club regulations	laboratory classes
3.	1. Neonatal resuscitation. Veterinary care for newborns. 2. Surgical obstetrics.	clinical classes

Course advanced

Teaching methods:

classes, lecture, presentation / demonstration, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	written credit	80%
laboratory classes	written credit, observation of student’s work, active participation, participation in discussion	10%
clinical classes	written credit, observation of student’s work, active participation, participation in discussion	10%

Entry requirements

Completion of courses: animal anatomy I and II, pathomorphology I and II, animal physiology I and II, pathophysiology I and

II, parasitology and
invasionology I and II, veterinary pharmacology I and II, veterinary microbiology I and II, veterinary immunology, clinical diagnostics I and II,
diseases of dogs and cats.

Literature

Obligatory

1. Jackson P.G.G.: Handbook of Veterinary Obstetrics, Saunders, London, 2004
2. S. D.Johnston , M. V. R.Kustritz , P. N. S.Olson Ed.): Canine and Feline Theriogenology, Saunders, Philadelphia, 2001
3. England G., von Heimendahl A.: BSAVA Manual of Canine and Feline Reproduction and Neonatology. BSAVA 2010.

Optional

1. J. S. Bell, K. E. Cavanagh, L.P. Tilley. Francis W. K. Smith: Veterinary Medical Guide to Dog and Cat Breeds, 2012
2. M. V. R.Kustritz: Clinical Canine and Feline Reproduction, 2009
3. D. Noakes, T. Parkinson, G. England (ed.).: Arthur’s Veterinary Reproduction and Obstetrics, Saunders, London 2009
4. Greer M.L.: Canine Reproduction and Neonatology. Teton NewMedia, Jackson 2014

UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Veterinary Ophthalmology

Educational subject description sheet

Basic information

Field of study Veterinary Medicine	**Education cycle** 2024/25
Speciality -	**Subject code** MD000000MWW-AJS.J400BO.3625.24
Department The Faculty of Veterinary Medicine	**Lecture languages** english
Study level Long-cycle programme	**Mandatory** optional
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Subject related to scientific research** No
	Subject shaping practical skills Yes

Teacher responsible for the subject	Joanna Tunikowska
Other teachers conducting classes	Joanna Tunikowska, Agnieszka Antończyk, Dominika Kubiak-Nowak, Bartłomiej Liszka

Period	**Examination**	**Number of ECTS points**
Semester 11	graded credit **Activities and hours** lecture: 10 practical classes: 5	2.0

Goals

C1	During the course, students will learn about ophthalmic surgical instrumentation and principles of ophthalmic surgery. Students will gain basic knowledge about the diagnosis and treatment of most common ophthalmic diseases of dogs and cats. During the auditory classes, students will learn how to provide first aid after ophthalmic emergencies and local anesthesia.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	knows to an extensive degree and describes in detail the principles and mechanisms underlying eye disease formation and their treatment	O.W1	test, participation in discussion
W2	knows to an extensive degree, describes in detail and explains the development, structure of a properly functioning organ of vision, as well as the mechanisms of disorders in pathological conditions;	O.W2	test, participation in discussion
W3	explains and interprets the etiology, pathogenesis and clinical symptoms of organ of vision diseases, and knows the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for these diseases;	O.W3	test, participation in discussion
W4	the principles of therapeutic procedure, as well as the methods of diagnostic and therapeutic procedure appropriate for the ophthalmic diseases occurring in dogs and cats	O.W4	test, participation in discussion
Skills – Student can:			
U1	conducts ophthalmologic examination of the animal in accordance with the principles of medical art;	O.U1	observation of student’s work, active participation
U2	make a correct diagnosis of the eye disease, taking into account the differential diagnosis, based on the analysis and interpretation of clinical symptoms, pathological changes as well as the results of laboratory and additional tests, and undertakes therapeutic or prophylactic actions	O.U2	observation of student’s work, active participation
U3	plan the procedure of eye examination	O.U3	observation of student’s work, active participation
U4	performs a full clinical examination of the dog and cat ncluding ophthalmologic examination	B.U3, O.U1	observation of student’s work, active participation
Social competences – Student is ready to:			
K1	exhibits responsibility for his/her decisions made in regard to the people, animals and the natural environment	O.K1	participation in discussion
K2	formulates opinions regarding various aspects of professional activity	O.K6	participation in discussion
K3	communicates with the co-workers and shares knowledge	O.K9	participation in discussion

Balance of ECTS points

Activity form	Activity hours*
lecture	10
practical classes	5

collecting and studying literature	15
lesson preparation	5
consultations	25

Student workload	**Hours** 60	**ECTS** 2.0
Workload involving teacher	**Hours** 40	**ECTS** 1.5
Practical workload	**Hours** 5	**ECTS** 0.2

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	The planned time for each topic is 1 hour. 1. Clinical anatomy of the eye. Histological Structure of corneal and impact of its hydration on transparency, role of photoreceptors in the process of perception and transduction of light stimuli on the bioelectric. Morphology of the eye with particular reference to its vasculature in the central field. 2. Basics of Ophthalmic Surgery: intruments, patient preaparation, suture materials, sutures, hemostasis techniques, basic operative approach. 3. Anesthesia for ophthalmic surgery. Basic problems and complications. 4. Surgical diseases of the cornea. 5 .Ancillary diagnostic in ophtahlmology: USG, TK, RTG, Schirmer Test, Fluorescein Dye Test, Fundoscopy, 6. Surgical management of entropion and ectropion. 7. Lasers in ophthalmology. 8. Emergencies in Ophthalmology. 9. Cataract – diagnosis and treatment. 10.Glaucoma - diagnosis and treatment.	lecture
2.	The planned time for each topic is 1 hour. 1. Patient ophthalmic examination in practice. 2. Methods of the local anesthesia in ophthalmology. technique and complications. 3. Surgical emergencies in ophthalmology – tarsorrhaphy and enucleation. 4. CO2 laser surgery in ophthalmology – presentation of the clinical cases. 5. Basic of canine blepharoplasty - principles and complications.	practical classes

Course advanced

Teaching methods:

classes, lecture, discussion, presentation / demonstration, case analysis

Activities	Examination methods	Percentage in subject assessment
lecture	test, participation in discussion	60%
practical classes	observation of student’s work, active participation	40%

Entry requirements

Animal anatomy I, Animal anatomy II, Histology and embryology I, Histology and embryology II, Animal physiology I, Diseases of dogs and cats , Surgery and anaesthesiology.

Literature

Obligatory

1. Gelatt, Kirk N., ed. Essentials of veterinary ophthalmology. John Wiley & Sons, 2013.
2. Maggs, David J., et al. Slatter's fundamentals of veterinary ophthalmology. Elsevier Health Sciences, 2013.
3. Gelatt, Kirk N., Janice P. Gelatt, and Caryn Plummer. Veterinary Ophthalmic Surgery-E-Book. Elsevier Health Sciences, 2021.
4. Gould, D. and McLellan, G. (2014). BSAVA Manual of Canine and Feline Ophthalmology. 3rd ed. Gloucester, UK: BSAVA.

Optional

1. Turner, Sally M. Saunders Solutions in Veterinary Practice: Small Animal Ophthalmology. Elsevier Health Sciences, 2008.
2. Gelatt, Kirk N., and Caryn E. Plummer. Color atlas of veterinary ophthalmology. John Wiley & Sons, 2017.
3. Barnett, Keith C. Diagnostic atlas of veterinary ophthalmology. Elsevier Health Sciences, 2006.
4. Mandell, Deborah C. "Ophthalmic emergencies." Clinical techniques in small animal practice 15.2 (2000): 94-100.
5. Wynne, R. M. (2020). Ocular Emergencies in Small Animal Patients. Veterinary Clinics: Small Animal Practice, 50(6), 1261-1276