Code of subject	MWE_SEM 3 FIZJO 1 ANG
Field of study	Veterinary medicine
Name of the training module including the Polish name	Animal physiology 1 Fizjologia zwierząt 1
Language of instruction	English
Type of the training module	*obligatory*
Level of the training module	Master level
Form of studies	Ful-time
Location in the programme (year)	II
Location in the programme (semester)	3
ECTS credits together contact / non-contact hours	5 (3,5/1,5)
Name and surname of the person in charge:	Prof. dr hab. Ewa Tomaszewska
A unit providing the course:	Department of Animal Physiology
Aim of the module	The aim of the module is to introduce students to the mechanisms of functioning of the animal body and the regulation of these mechanisms, with particular emphasis on the metabolic processes responsible for maintaining homeostasis of the body.
Learning outcomes – the total number of learning outcomes may not exceed (4-8) for the module. The description of the intended learning outcomes that a student should achieve after the completion of the module should be provided. The outcomes for all forms of classes used should be presented.	Knowledge:
	K1. the student knows the physiological processes and regulatory mechanisms related to hemopoiesis, hemostasis and blood functions.
	K2. the student knows the physiological processes and mechanisms of physiological regulation of the nervous, muscular and digestive systems at the level of cells, tissues, organs and their interaction, their dependencies and integration at the organism level
	K3. the student knows the methods of examining the basic parameters of the muscular, nervous, digestive and blood systems, determining the physiological state of the body
	Skills:
	S1. the student is able to explain the physiological mechanisms of the functioning of cells / organs / as well as muscular, nervous, digestive systems; and is able to indicate interspecies differences and the influence of various factors on their action
	S2. the student can measure, evaluate and interpret basic hematological parameters and indicate the parameters describing the physiological state of the nervous, muscular and digestive systems as indicators of the animal's health
	Social competence:
	C1. the student is ready to assess the parameters of the physiological body state and is aware of its importance for health, animal production and the quality of food of animal origin
	C2. the student is ready to constant learning about the impact of various factors on the functioning of the animal organism
	C3. The student is ready to perform basic physiological experiments

Preliminary and additional requirements	Biology, Biochemistry, Animal Anatomy
Contents of the training module – a compact description	Lectures: neuromuscular physiology: The electrophysiological basis of excitability. Postnatal changes in skeletal muscles. Molecular mechanism of muscle contraction. Energetics of muscle contraction. Skeletal muscle training changes (4 h). Synaptic phenomena, synaptic transmission in the peripheral and central nervous system, receptors (2.5 h). The functional organization of the nervous system. Functions of glial tissue. The role of the cerebellum. Physiological basis of motor activity (cerebral cortex, subcortical centers, pyramidal and extrapyramidal pathways), skeletal muscle innervation (3.5 h). Blood physiology – blood composition and functions, blood role in maintaining homeostasis (2 h), hemopoiesis and its regulation (2 h), functions of erythrocytes and hemoglobin, iron metabolism (2 h), specific and non-specific defense mechanisms (3 hours), hemostasis, blood groups in animals (2). Digestive tract physiology: Regulation of food intake (1 h). Digestive and secretory functions of the digestive tract, absorption, motor activity, specific activity of the digestive tract in various groups of animals (2.5 hours). Endocrine functions of the gastrointestinal tract (1 h). Nervous and hormonal regulation of the gastrointestinal function (1.5 h). Bone tissue physiology - structural modeling, remodeling, mineralization, functions of the growth plate. Hormonal regulation. The influence of nutrition, physical activity, environmental factors on the metabolism of bone tissue (3 h). classes: The examination of the excitability of muscles and nerves. Registration of striated (single, tetanic) muscle contractions. Muscle fatigue - causes, symptoms. Static and dynamic work. Functional features of smooth muscles. The examination of reflexes, components of the reflex arc, examination of the reflex time. Assessment of the speed of conduction through nerve fibers, the influence of various factors on the speed of conduction, types of nerve fibers. The assessment of unstained blood smears. The changes of red blood cells in solutions with different osmotic pressure, osmotic resistance, hemolysis, blood smear, white blood cell staining, distinguation of different white blood cells, leukogram. The determination of basic blood hematological parameters - Ht, Hb, E, WBC, MCH, MCV, MCHC, ESR. Influence of various factors on blood clotting. The influence of various factors on the activity of enzymes in the digestive tract, the role of bile in the digestion of fat. The specificity of digestion in ruminants - evaluation of the pH and microorganisms of the rumen fluid, motor skills of forestomach.
Recommended literature:	1 Hill, Wyse, Anderson "ANIMAL PHYSIOLOGY" 2. Robin R. Preston, Thad E. Wilson Lippincott's Illustrated Reviews: Physiology

<table>
<tr><td></td><td colspan="3">3. Scientific papers</td></tr>
<tr><td>The intended forms/activities/ teaching methods</td><td colspan="3">Lecture, multimedia presentations, films, virtual laboratory, hematological analyses, discussions, laboratory class report, laboratory analysis, reflex examination</td></tr>
<tr><td>Methods of verification and forms of documenting the achieved learning outcomes</td><td colspan="3">Knowledge: – ordinary test at the beginning of each laboratory class - lb 10 , partial test - lb 3 (neuromuscular physiology, digestive system, blood), discussion. The student have to obtain min. 30 points in ordinary tests (3-5 points) and min. 9 points in partial tests (3-5 points). The condition for passing the semester is to obtain 39 points - including the student have to pass 3 partial tests for min. 9 points
Skills: – independent analysis and measurements of physiological parameters, assesment of the experiments by the teacher, preparing a report on the exercises.
Social competence: – the participation in the discussion, answer to the verification questions during the classes and practical exercises, observation of the student's work in the laboratory by the teacher
Documentation - archiving students' written works (all tests), book with all student grades, assessment in VDO, protocol</td></tr>
<tr><td rowspan="11">ECTS credits balance:</td><td></td><td>Contact hours</td><td>ECTS</td></tr>
<tr><td>Lectures
Exercises / Classes
retake tests
Consultations</td><td>30
45
6
5</td><td>1,2
1,8
0,3
0,2</td></tr>
<tr><td>Total</td><td>86 godz.</td><td>3,5</td></tr>
<tr><td></td><td>Non-contact hours</td><td></td></tr>
<tr><td>Preparation for lab classes
Reports study
Self-preparation for
performing the tasks and
successful test completion
reading literature</td><td>11

4
21

4</td><td>0,44

0,13
0,8

0,13</td></tr>
<tr><td>The sum</td><td>40</td><td>1,5</td></tr>
<tr><td>In total</td><td>126 h</td><td>5</td></tr>
<tr><td>Workload related to the activities requiring the direct participation of an academic teacher</td><td colspan="3">lectures – 30 h – 1.2 ECTS points; classes – 45 h – 1.8 ECTS points ; retake tests 6h- 0,3 ECTS points; consultation 5 h – 0.2 ECTS points;</td></tr>
<tr><td>Relating modular learning outcomes to directional learning outcomes</td><td colspan="3">K1- AW2 +, AW4+, AW5+, AW6 +
K2 - AW9 +, AW11+
K3 - AW10 +, AW11+
S1 - AU4 +, AU5+, AU7+
S2 - AU7 +
C1 – K5+
C2 – K8+
C3 – K8+</td></tr>
<tr><td>Impact of selected compounds to final grade</td><td colspan="3">To pass the Animal Physiology 1 module, one have to obtain min. 39 points (9 in partial test, 30 points in ordinary test)
50-48 - 5
44-47 – 4.5</td></tr>
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	39-43 - 4 34-38 – 3.5 30-33 – 3 .