Module code	M_WE_SEM1 CHEM
Field of study	Veterinary medicine
Education module name, including its English name	Chemia Chemistry
Language of instruction	English
Module type	mandatory
Form of study	Long-cycle master's degree studies
Level of studies	Full-time
Year of study in the field of study	I
Semester of study in the field of study	1
ECTS credits, divided into contact/non-contact hours	4 (2,28/1,72)
Academic title/degree, name of the person responsible for the module	dr hab. Witold Kędzierski, prof. of the university
Unit teaching the course	Department of Biochemistry; Faculty of Veterinary Medicine
Module objective	Extension of high school chemistry knowledge, primarily with selected specific topics in inorganic, general, and organic chemistry (biological significance of macro- and micronutrients, buffers, water-electrolyte and acid-base balance of body fluids, biological organic compounds, reactions in organic chemistry) that are essential for understanding biochemical topics discussed in subsequent semesters. Obtaining the foundation to properly perform chemical analyses applicable to laboratories of various profiles including clinical chemistry and food testing will expand the graduate's skills.
The learning outcomes for the module include a description of the knowledge, skills and social competences that the student will gain after completing the module.	Knowledge: K1 - the student knows basic terms and phenomena of inorganic, general and organic chemistry K2 - the student explains relationships between transformations of inorganic and organic compounds in a living organism K3 - the student knows and describes water-mineral and acid-base balance in the body and homeostatic disorders in this respect Skills: S1 - the student is able to carry out chemical experiments and by acting routinely, he/she can interpret the results correctly S2 - the student is able to use basic techniques (characteristic reactions, titration) and laboratory equipment (pH-meter, burette) Social competences: Sc1 - the student continuously learns and improves oneself Sc2 - the student is able to work under time pressure
Prerequisites and additional	No additional requirements
Module program content	**Lectures:** Basic chemical concepts, atomistic theory. Biological significance of selected elements. Stoichiometry of chemical formulas and chemical equations. Solutions and ways to express concentrations. Electrolytic dissociation and ionic product of water, pH, salt hydrolysis, buffers. Oxidation-reduction processes. Fundamentals of analytical chemistry. Organic chemistry - nomenclature, representatives of major groups of

<table>
<tr><td></td><td>organic compounds, identification of functional groups of these combinations. Structure, classification and biological significance of sugars and lipids.
Exercises: Identification of selected cations and anions and functional groups of compounds, properties of buffers, acid-base titration, redox titration, adsorption on medical carbon, dialysis, identification of sugars and lipid components, determination of acid number.</td></tr>
<tr><td>List of core and supplementary literature</td><td>1. Harpers Biochemistry
2. Kaneko – Clinical biochemistry
3. Stryer – Biochemistry
4. Specialistic scientific papers</td></tr>
<tr><td>Planned forms/activities/didactic methods</td><td>Laboratory exercises, lectures, self-study materials on the unit's website and online materials available with a password (VikiWet, Casus)</td></tr>
<tr><td>Verification methods and ways of documenting the achieved learning outcomes.</td><td>Credit for the Chemistry module is earned by:
- attendance at exercises (one absence from laboratory exercises is allowed);
- obtaining a minimum number of points for activity on the laboratory classes - detailed information on the number of points is given in the regulations for the completion of the module, which can be found in the classroom; at each laboratory exercise the tutor verifies the achieved learning outcomes by giving the student from 0 to 10 points for the knowledge demonstrated in the multiple-choice preliminary test, 0-2 points for laboratory skills and 0-2 points for the course report (Student's Charter);
- earning positive grades from 2 mid-semester colloquia (Inorganic Chemistry, Organic Chemistry; written work);
- practical assessment of laboratory skills consisting in an independent quantitative determination (concentration of salicylic acid by the alkalimetric method) - student's charter;</td></tr>
<tr><td>ECTS credits</td><td>
<table>
<tr><th>Form of classes</th><th>Number of contact hours</th><th>ECTS credits</th></tr>
<tr><td>Lectures</td><td>15</td><td>0,6</td></tr>
<tr><td>Practical classes</td><td>30</td><td>1,2</td></tr>
<tr><td>Consultations</td><td>5</td><td>0,24</td></tr>
<tr><td>Examination</td><td>6</td><td>0,24</td></tr>
<tr><td></td><td>Number of non-contact hours</td><td></td></tr>
<tr><td>Preparation for classes</td><td>15</td><td>0,6</td></tr>
<tr><td>Preparation for colloquia /retake</td><td>10</td><td>0,4</td></tr>
<tr><td>Studying the recommended literature</td><td>3</td><td>0,12</td></tr>
<tr><td>Preparation for the exam</td><td>15</td><td>0,6</td></tr>
<tr><td>Total</td><td>100 godz.</td><td>4</td></tr>
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The workload of activities that requires direct participation of an academic teacher	15 hrs - lectures 30 hrs - laboratory and recitation exercises 6 hrs- colloquia/ 3 hrs - consultations 3 hrs. - exam 57 hrs total which is equivalent to 2,28 ECTS credits
Relation of module learning outcomes to course learning outcomes.	W1 - A.W6.++; W2 - A.W5.++ A.W11.+, B.W1.+; W3 - A.W6.+, B.W17.+ U1 - A.U2.++; A.U3.++; U2 - B.U7.+; U3 - A.U4.+, B.U6.+ K1 - K8)+; K2 - K9)+, K10)+
Elements and values affecting the final grade	The grade earned at the end of the module is a weighted average of the grades obtained from the credits for the exercises and the examination: 90% - grade from the final exam