

Module code	M_WE_SEM3_ŻYW
Field of study	Veterinary medicine
Module name, also the name in English	Animal nutrition and feedingstuffs Żywienie zwierząt i paszoznawstwo
Language of instruction	English
Module type	Obligatory
Level of studies	Long-cycle master's degree studies
Form of study	Full-time
Year of study in the field of study	II
Semester of study in the field of study	III
ECTS credits, divided into contact/non-contact hours	4 (2.7/1.3)
Academic title/degree, name of the person responsible for the module	Dr hab. E. Kowalczuk-Vasilev
Unit teaching the module	Institute of Animal Nutrition and Bromatology
Module objective	To familiarise students with the physiology of nutrition, the role of nutrients in animal nutrition, norms and recommendations for animal nutrition and the nutritional value of animal feedstuffs, rations and compound feeds; to develop the ability to make decisions about proper nutrition and to critically evaluate animal nutrition.
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. Student has knowledge of the physiology of digestion and nutrient metabolism occurring in the body and their effects on the animal system,
	K2. Student has knowledge of the metabolism and energy metabolism in the animal body and the nutritional value of feedstuffs, the role of feed additives and the harmfulness of anti-nutritional factors - ANFs
	K3. Student understands the recommendations for the standards for individual animal species including nutrients, knows the principles of ration formulation and analysis
	Skills:
	S1. Student is able to make calculations and assess the nutritional value of a compound feed or ration, assess the principles of ration formulation and analysis
	S2. student is able to assess the diet in relation to the standards and dietary recommendations and assess the cause of metabolic diseases; student is able to take and secure samples for examination and perform standard laboratory tests as well as correctly analyse and interpret laboratory results
	Social competences:
	C1. student is aware of the impact of feeding on production effects and animal health and is able to share his/her knowledge outside the academic environment (on farms, among veterinarians and farmers)

	C2. Student is willing to constantly deepen his/her knowledge in the field of influence of various nutritional factors on the functioning of animal organism, using objective sources of information;
Prerequisites and additional requirements	

<p>Module program content</p>	<p>Lectures:</p> <p>Composition and metabolism of basic nutrients. Utility in animal nutrition. Vitamins, minerals; division, role in metabolism, physiological vs. nutritional needs. Digestibility of feed nutrients. Goals of determining digestibility, methods. Metabolic and energy metabolism. Valuation systems for monogastric and ruminant feed. Influence of feed ingredients on the quality of food of animal origin. Concentrated feeds, antinutritional substances in feed. Feed additives, legal conditions forbidding the use of certain additives. Dietetic and health-promoting effects of feed on the animal organism. Components of ration standardisation, animal feeding systems and technologies. Animal feeding systems. Feeding patterns for farm animals and pets. Feeding of animals during reproduction, gestational anabolism. Nutritional management during rearing time. Principles of nutrition of ruminants (cattle, sheep, goats), horses, pigs, poultry and dogs and cats. Nutritional prevention of metabolic disorders. Reducing energy, protein and mineral deficiencies in rearing and reproduction.</p> <p>Practical classes:</p> <p>Sampling rules for analysing nutrients, unauthorised substances, chemical residues, biological residues, animal and medicinal products in their excreta, animal products, food, drinking water and feed. Laboratory methods of analysis for the determination of the content of essential components in feed. Calculation of the digestibility of feed nutrients. Calculation and interpretation of the metabolism and energy balance. Stages of energy metabolism in the animal body, calculation of the calorific value of feed for cattle, pigs, poultry and dogs and cats. Energy-protein ratio in feed. Calculation and interpretation of indicators for evaluating the biological value of feed protein. Identification and evaluation of roughage and concentrated feed. List of the most commonly used additives in animal feed. Assessment of contaminants in feed. Practical evaluation of feed and compound feed and the direct assessment of their nutritive value - comparison of methods using dedicated scales and tools. Practical balancing of rations for various species and production groups of animals. Ration structure depending on the production stage, computerised ration formulation in production groups. Analysis of ration reports for ruminants, pigs and poultry. Current systems in Poland and in the world (patterns and systems of balancing ruminant nutrition: traditional, NRC, DLG, INRA). Seasonal patterns, transition periods). Dietetic and health-promoting effects of feed on the animal organism.</p>
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List of core and supplementary literature	<ol style="list-style-type: none"> 1. Feeding recommendations and standards for specific animal species. 2. McDonald P. et al.: Animal nutrition. Pr. Hall, 2012. 3. Larbier M., Leclercq B. : Żywnienie drobiu. PWN, Warszawa, 1992. 4. Scientific articles on animal nutrition and feed science 5. Feed programs, with ration balancing and herd feeding in practice, based on NRC, INRA and DLG: Winwar, Winpasz, INRA-tion, Winmix, Win-Pasze, OptiPasz
Planned forms/activities/teaching methods	Lecture, multimedia presentations, virtual laboratory, digestibility and balance calculations, preparation of compound feed and feed rations, discussion, report from laboratory exercises.
Verification methods and ways of documenting the achieved learning outcomes.	<p>Knowledge - K1- written test, K2- oral credit, K3- written test, final grade - written exam.</p> <p>Skills - S1- assessment of the ration development and defense, S2- assessment of the performance of the report and defense.</p> <p>Competences - C1 - participation in discussion, answer to questions at the beginning of each laboratory class, C2 - assessment of open format questions on tests,</p> <p>Final grade:</p> <p>3.0 - student demonstrates a satisfactory level of knowledge or skills when he/she obtains between 51 and 60% of the sum of points determining the maximum level of knowledge or skills in a given subject,</p> <p>3.5 - student demonstrates a satisfactory plus (3.5) level of knowledge or skills when he/she obtains between 61 and 70% of the total points determining the maximum level of knowledge or skills in a given subject,</p> <p>4.0 - Student demonstrates a good level (4.0) of knowledge or skills when he/she obtains between 71 and 80% of the total points determining the maximum level of knowledge or skills in a given subject,</p> <p>4.5 - Student demonstrates a plus good level (4.5) in knowledge or skills when he/she obtains between 81 and 90% of the total points determining the maximum level of knowledge or skills in a given subject,</p> <p>5.0 - Student demonstrates a very good level (5.0) of knowledge or skills when he/she obtains more than 91% of the total points indicating the maximum level of knowledge or skills in a given subject</p>

ECTS credits	<p>Number of contact hours: Lecture – 30 h – 1.2 ECTS credits, Classes – 30 h – 1.2 ECTS credits, Consultations – 5 h – 0.2 ECTS credits, Exam – 2 h – 0.1 ECTS credits. Total: 67 h – 2.7 ECTS credits</p> <p>Number of non-contact hours Preparation for laboratory classes –15 h – 0.6 ECTS credits, Preparation for tests – 5 h – 0.2 ECTS credits, Reading the recommended literature – 3 h – 0.1 ECTS credits, Preparation for exam – 10 h – 0.4 ECTS credits, Total: 33 h – 1.3 ECTS credits</p>
The workload of activities that requires direct participation of an academic teacher	Lecture attendance – 30 hours Class attendance – 30 hours 5 hrs. consultations 2 hrs. examination Total - 67 h equivalent to 2.7 ECTS credits.
Relation of module learning outcomes to course learning outcomes.	K1 - B.W13 +++; K2 – B.W13 +++; B.W14 ++ K3 – B.W14 ++; B.W15 ++ S1 - B.U5 +++. S2 - B.U6 +++. C1 – K2 +++ C2 – K7 ++
Elements and values affecting the final grade	<p>It is possible to improve the final grade by:</p> <ul style="list-style-type: none"> - obtaining a high mark in the practical classes, - active participation in the activities of the Animal Nutrition and Feedingstuffs club - developing an original presentation on a chosen area of animal nutrition and feedingstuffs