Course name:

IMPACT OF ANIMAL NUTRITION ON NATURAL ENVIROMENT

ECTS	**4**
Course status	**Complementary**
Course final assessement/evaluation of outcomes	**Exam**
Prerequisites	**Knowledge and skills in animal nutrition**

Main field of study:

ANIMAL SCIENCE

Profile of study	**General-academic**
The code of studies (education level)	**SM (master)**
Semester of studies	**Winter or summer**
Language of instruction	**English**

Course offered by:

Name of faculty offering the course	**Faculty of Animal Sciences**
Name of department offering the course	**Department of Animal Nutriton and Biotechnology, and Fisheries**
Course coordinator	**Paweł Górka, PhD (pawel.gorka@urk.edu.pl)**

Learning outcomes of the course:

Symbol of outcome	Description of learning outcome	Reference to	
		main field of study outcomes	discipline#
KNOWLEDGE – student knows and/or understands:			
ZOO2_W08	the issues of digestion, metabolism and absorption of nutrients and energy conversion in animals, as well as the principles of nutrition and the consequences of improper animal nutrition	R/P7S_WG/1 R/P7S_WG/2 R/P7S_WG/4 R/P7S_WK	RZ
ZOO2_W09	the principles of safe production of feed and animal products; issues in the field of modern technologies, preparation, processing and methods of preservation of animal feed; has knowledge about obtaining health-oriented quality of animal products	R/P7S_WG1 R/P7S_WG2 R/P7S_WG4	RZ
ZOO2_W10	in a deepened degree the principles of maintaining facilities, technical systems and technologies typical for agricultural areas, specialized methods, systems and technologies used in the broadly understood breeding, animal husbandry and use, including those favouring the shaping and protection of the landscape and the natural environment; rules for the functioning of agri-environmental programs	R/P7S_WG/1 R/P7S_WG/2 R/P7S_WG/3 R/P7S_WG/4 R/P7S_WK	RZ
ZOO2_W11	to an advanced extent theoretical aspects regarding methods of animal breeding and growing; stock management; numerical methods for monitoring the herd and supporting decision-making processes in the use of animals	R/P7S_WG/1 R/P7S_WG/2 R/P7S_WG/3 R/P7S_WG/4 R/P7S_WK	RZ
SKILLS – student is able to:			

ZOO2_U05	analyse and evaluate the principles of animal maintenance and use; organize animal husbandry in accordance with the principles of well-being and environmental protection; take standard actions to prevent epizootic hazards in the environment; is able to critically analyse the assumptions and condition of the fisheries economy, and then independently formulate conclusions and recommendations regarding its rationalization; can describe the rules for the functioning of agri-environmental programs	R/P7S_UW/1 R/P7S_UW/2 R/P7S_UW/3 R/P7S_UU R/P7S_UO	RZ
ZOO2_U06	select and apply methods of preservation of raw materials of animal origin and processed food and choose the technology of food processing, storage, confectioning and marking of products	R/P7S_UW/3	RZ
ZOO2_U11	cooperate with animal breeders; provide expert advice in the field of animal nutrition and feed production and propose and justify the selection of necessary analytical	R/P7S_UK R/P7S_UU	RZ
	SOCIAL COMPETENCE- student is ready to:		
ZOO2_K04	undertake activities aimed at reducing the risk and predicting the effects of human activities in the area of animal sciences and the environment of living animals	R/P7S_KO R/P7S_KK	RZ
ZOO2_K07	think and act in an entrepreneurial manner on issues that aim to apply animal science knowledge in his professional work	R/P7S_KR	RZ

Teaching contents:

Lectures		**30**	**hours**
Topics of the lectures	Environment pollution - impact of livestock production and companion animals breeding Methods of calculation of efficiency of animals nutrition and importance of precision feeding for reducing impact of animal production on the environment Extensive vs. intensive livestock animals nutrition - pros and cons in terms of the impact on environment Solutions in dairy, beef, poultry and swine nutrition limiting negative impacts of intensive production on the environment Solutions in companion animals nutrition limiting negative impacts on the environment		
Accomplished learning outcomes	*ZOO2_W08, ZOO2_W09, ZOO2_W10, ZOO2_W11*		
Verification methods, rules and criteria of outcome assessment	*Exam in the form of single-choice test, evaluated according to a standard grading scale, pass received after reaching a minimum of 55% of correct answers. Score for exam will account for 60% of final grade.*		
Classes		**15**	**hours**
Topics of the classes	Calculation of efficiency of nutrient use by animals Prediction of nitrogen, methane and phosphorus excretion into the environment Feed processing and impact on feed efficiency Feed additives and impact on feed efficiency Practical methods of controlling efficiency of nutrient use by animals		
Accomplished learning outcomes	*ZOO2_U05, ZOO2_U06, ZOO2_U11, ZOO2_K04, ZOO2_K07*		
Verification methods, rules and criteria of outcome assessment	*Single-choice test, evaluated according to a standard grading scale, pass received after reaching a minimum of 55% of correct answers. Score for exam will account for 40% of final grade.*		
Seminars		**0**	**hours**

Topics of the seminars	

Accomplished learning outcomes	*not applicable*
Verification methods, rules and criteria of outcome assessment	*not applicable*

References:

Basic	*1. Animal Nutrition 7th edition, McDonald et al. Ed Prentice Hall, Pearson, USA. 2010.* *2. Van Soest P.J. 1994. Nutritional Ecology of the Ruminant. Comstock Publishing Associates.* *3. NRC, 2001. Nutrient Requirement of Dairy Cattle. National Academy Press, Washington, D.C.*
Supplementary	*1. Hadam D., Kański J., Burakowska K., Penner G.B., Kowalski Z.M., Górka P., 2016. Effect of canola meal use as a protein source in a starter mixture on feeding behavior and performance of calves during the weaning transition. J. Dairy Sci., 99, 1247–1252* *2. Kowalski Z.M., Górka P., Flaga J., Barteczko A., Burakowska K., Oprządek J., Zabielski R., 2015. Effect of microencapsulated sodium butyrate in close up diet on performance of dairy cows in early lactation period. J. Dairy Sci., 98, 3284-3291.* *3. Górka, P., Castillo-Lopez E., Joy F., Chibisa G.E., McKinnon J.J., Penner G.B. 2015. Effect of including high-lipid by-product pellets in substitution for barley grain and canola meal in finishing diets for beef cattle on ruminal fermentation and nutrient digestibility. J. Anim. Sci. 93:4891-4902. .*

Structure of learning outcomes:

Discipline: ZR				*4*	ECTS**
Discipline: # (*provide appripriate symbol - if the course relates to more than one academic discipline*)				…	ECTS**
Structure of student activities:					
Contact hours		12	hours	3	ECTS**
including:	lectures	30*	hours		
	classes and seminars	15*	hours		
	consultations	10	hours		
	participation in research	0	hours		
	mandatory trainerships	0	hours		
	participation in examinations	2	hours		
e-learning		0	hours	…	ECTS**
student own work		25	hours	1	ECTS**

*** where 10 hours of classes = 1 ECTC (in case of 15 h → 2 ECTS)**

** stated with an accuracy to 0.1 ECTS, where 1 ECTS = 25 - 30 hours of classes

academic discipline code: RZ - animal science and fishery, PB - biological sciences, etc.