

Module of classes:

**THE BASICS OF NUTRIGENOMICS**

ECTS	3
Status	complementary
Form of final credit	exam
Prerequisites	Basic knowledge on nutrient composition of feed, gene expression and molecular biology

**Field of study:**

**ANIMAL SCIENCE**

Profile of study	general-academic
The code of the form of study and the level of study	master of thesis
Semester of study	summer
Language of study	english

**The leading faculty, department and the lecturer of the module:**

Name of the competent unit for the coordinator	Faculty of Animal Sciences, Department of Animal Nutrition and Biotechnology, and Fisheries
Course coordinator	Paweł Górka

**Learning outcomes of the module/subject**

The code of the description component (symbol of the effect)	Description	Relation to (code)	
		field effect	discipline#

**KNOWLEDGE – the student knows and/or understands:**

TBN_W1	Basic types and types of experiments, principles, methods and techniques for conducting research work; basic theories in the field of scientific disciplines relevant to the studied field	ZOO2_W01	RZ
TBN_W2	Knows to an advanced extent the range of analytical techniques and methods used in animal sciences, allowing for the interpretation of the results of conducted research	ZOO2_W05	RZ
TBN_W3	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	ZOO2_W08	RZ

**SKILLS – the student can:**

TBN_U1	Apply methods of breeding biotechnology, use molecular genetics techniques to perform research tasks, and apply genetic engineering techniques to identify the carrier of genes that determine genetic diseases and animal traits	ZOO2_U02	RZ
TBN_U2	Assess physiological and pathological parameters in animals as well as threats resulting from exposure of animals to environmental factors and formulate the manner and procedure of dealing with animals during experiments	ZOO2_U09	RZ

**SOCIAL COMPETENCE- the student is ready to:**

TBN_K1	Solve complex decision problems related to the use of animals and is aware of the need to make a critical evaluation of the results of the use of various methods and decision support techniques in the management of the herd	ZOO2_K05	RZ
TBN_K2	Be aware of the responsibility for the transmitted professional content as part of advisory and dissemination activities	ZOO2_K09	RZ

**Teaching content:**

<b>Lectures</b>		<b>15</b>	<b>hours</b>
Subjects of lectures	Nutrigenomic – definition, basics of the concept Concept of personalized nutrition Animal models in nutrigenomics The effect of nutrients on gene expression Molecular methods used in nutrigenomic Application of nutrigenomics in animal production		
Realized learning outcomes	TBN_W1, TBN_W2, TBN_W3		
Verification methods and criteria of effects evaluation	<i>Credit - multiple choice test; a positive mark requires at least 55% of correct answers to the questions asked; the share of the lecture grade in the final grade is 60%.</i>		

<b>Classes (laboratories)</b>		<b>15</b>	<b>hours</b>
Subjects of the classes	qRT-PCR – example of analysis mRNA expression – data analysis and interpretation Review of scientific paper		
Realized learning outcomes	TBN_U1, TBN_U2, TBN_K1, TBN_K2		
Verification methods and criteria of effects evaluation	<i>Project - positive assessment should be answered correctly with 55% of questions; the share of the grade for the project exercises in the final grade is 40%.</i>		

<b>Seminars</b>		<b>0</b>	<b>hours</b>
Subjects of the seminars	not applicable		
Realized learning outcomes	<i>not applicable</i>		
Verification methods and criteria of effects evaluation	<i>not applicable</i>		

<b>Literature:</b>			
Basic	1. Nutritional genomics. Discovering the Path to Personalized Nutrition. 2006. Kaput J., Rodriguez R. L. Wiley- Interscience. 2. Nutritional genomics. Impact on Health and Disease. 2006. Brigelius-Flohé r., Joost H. G. Wiley-VCH. 3. Wydawnictwa „Biotechnology in the feed industry”(Alltech, USA).		
Supplementary	1. Flaga J., Górka P., Kowalski Z.M., Kaczor U., Pietrzak P., Zabielski R. 2011. Insulin-like growth factors 1 and 2 (IGF-1 and IGF-2) mRNA levels in relation to the gastrointestinal tract (GIT) development in newborn calves. Pol. J. Vet. Sci. 4:605-613. 2. Flaga J., Z.M. Kowalski, P. Górka. 2012. The effect of age and the type of liquid feed on the insulin and insulin receptor isoforms mRNA expression in the jejunum of neonatal calves. J. Microb. Biotech. Food Sci. 2:324:328.		

<b>Structure of learning outcomes:</b>			
Dyscipline – animal husbandry and fishery (RZ)		3	ECTS*
Dyscipline –...		...	ECTS*

<b>Structure of student's activities:</b>					
classes carried out with direct participation of the teacher		45	hours	1,8	ECTS*
including:	lectures	15	hours		
	classes and seminars	15	hours		
	consultations	8	hours		

participation in research	5	hours		
mandatory practices and internships	0	hours		
participation in the exam and credits	2	hours		
classes carried out with the use of e-learning	0	hours	0	ECTS*
student's own work	30	hours	1,2	ECTS*

) \* - Reported to the nearest to 0,1 ECTS, where 1 ECTS = 25-30 hours of classes

) # discipline code: RZ - zootechnics and fishery, PB - biological sciences