

Course code: 06-EMS-AGENH-SP1 / 06-EMS-AGENH-SP2

Plan position:

1. INFORMATION ABOUT THE COURSE

A. Basic information

Name of course	Animal genetics and husbandry
Field of studies	
Level of studies	
Profile of studies	general academic
Form of studies	
Specialty	
Unit responsible for the field of studies	Faculty of Animal Breeding and Biology, Department of Biotechnology and Animal Genetics
Name and academic degree of teacher(s)	Prof. Dariusz Piwczyński PhD Beata Sitkowska, prof. PBS PhD Magdalena Kolenda
Introductory courses	
Introductory requirements	Basic knowledge of biology, genetics and IT

B. Semester/week schedule of classes

Semester	Lectures (W)	Auditorium classes (Ć)	Laboratory classes (L)	Project classes (P)	Seminar (S)	Field classes (T)	Number of ECTS points
Winter / summer			40				8

2. LEARNING OUTCOME

No.	Learning outcomes description	The reference to the learning outcomes of specific field of study	The reference to the learning outcomes for the area
KNOWLEDGE			
W1	Student knows the methods of inheriting traits in animals, defines the basic methods of improving animals. Student has knowledge of the basics of inheriting traits.		
W2	Student has the knowledge of the methods used to estimate genetic parameters, breeding value and the predicted effects of selection.		
SKILLS			
U1	Student can distinguish and characterize important elements of breeding programs for different species of farm animals.		
SOCIAL COMPETENCES			

K1	Student is open to the use of modern methods in the field of genetics, is able to apply the acquired knowledge in his/hers professional work.		
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3. TEACHING METHODS

Presentations, discussions, exercises

4. METHODS OF EXAMINATION

Colloquium, presentation

5. SCOPE

Laboratories	<p>Introduction to genetics. Molecular genetics. Nucleic acids structure. Gene structure. DNA replication. Gene expression, transcription, translation. Genetic code. Methods of animal genome analysis. Theory of Mendelian genetics. Molecular genetics methods. DNA isolation methods. DNA electrophoresis. PCR.</p> <p>Measures of genetic similarity. Relationship between animals. Crossbreeding. Genup. Selection for breeding - breeding effects and goal. Estimation of genetic parameters. Estimating breeding value. SelAction. INTERBULL. Dairy Cattle Genetic Evaluation ICAR. The structure of breeding programs. Evaluation of the breeding program. Constructing selection indexes. Evaluation of the effectiveness of selection, predicted effects of selection, and breeding progress.</p>
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6. METHODS OF VERIFICATION OF LEARNING OUTCOMES

LEARNING OUTCOME	Form of assessment					
	Oral examination	Written exam	Colloquium	Project	Presentation
W1			X			
W2			X			
U1			X		X	
K1			X		X	

7. LITERATURE

Basic literature	<p>Oldenbroek, K., & van der Waaij, L. (2014). Textbook animal breeding: animal breeding and genetics for BSc students. Susan R. Wessler, Sean B. Carroll. Macmillan Higher Education</p> <p>Rutten, M. J. M., Bijma, P., Woolliams, J. A., & Van Arendonk, J. A. M. (2002). SelAction: Software to predict selection response and rate of inbreeding in livestock breeding programs. Journal of Heredity, 93(6), 456-458.</p> <p>Kinghorn, B. (2007). GENUP, Version 5.5</p>
Supplementary literature	<p>Herold, P., Rößler, R., Valle Zárate, A., & Momm, H. (2012). Development of organisation and planning in animal breeding: I. A review on breeding organisation. Archives Animal Breeding, 55(4), 402-414.</p> <p>https://www.ncbi.nlm.nih.gov/books</p> <p>https://www.ncbi.nlm.nih.gov/home/tutorials.shtml</p>

8. TOTAL STUDENT WORKLOAD REQUIRED TO ACHIEVE EXPECTED LEARNING OUTCOMES EXPRESSED IN TIME AND ECTS CREDITS

Student's activity		Student workload– number of hours
Classes conducted under a direct supervision of an academic teacher or other persons responsible for classes	Participation in classes indicated in point 1B	40
	Supervision hours	10
Student's own work	Preparation for classes	50
	Reading assignments	60
	Other (preparation for exams, tests, carrying out a project etc)	40
Total student workload		200
Number of ECTS points		8