Course code: 06-EMS-ABIOT-SP1 / 06-EMS-ABIOT-SP2 **Plan position:** ……

A. INFORMATION ABOUT THE COURSE

B. Basic information

Name of course	Animal Biotechnology
Profile of studies	Academic
Unit responsible for the field of studies	Faculty of Animal Breeding and Biology, Department of Animal Biotechnology and Genetics
Name and academic degree of teacher(s)	PhD Magdalena Kolenda Elżbieta Pietrzak PhD Aleksandra Bełdowska
Introductory courses	
Introductory requirements	Basic knowledge of genetics

C. 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	The student knows and understands topics in molecular genetics and genetic diagnostics and is familiar with molecular techniques used in diagnostics and animal biotechnology.		
W2	The student knows and understands basic concepts related to working with animal cell cultures.		
	SKILLS		
U1	The student is capable of selecting appropriate analytical and molecular techniques and analysing and interpreting the obtained results in the field of genetic diagnostics, biotechnology and immunology.		
U2	The student is able to independently perform basic techniques related to working with animal cell cultures.		
	SOCIAL COMPETENCES		
K1	The student is ready for continuous development by expanding practical skills and solving practical problems related to genetic diagnostics, biotechnology and immunology.		

K2	The student demonstrates responsibility and precision in working with animal cell cultures, adhering to laboratory safety rules and ethical principles.		

3. TEACHING METHODS

multimedia lectures, laboratories, discussion

4. METHODS OF EXAMINATION

Written test, report

5. SCOPE

Classes	Module 1 – Diagnostics Introduction to diagnostics and molecular genetics. Mutation diagnostics. Identification of gene polymorphisms for utility traits. Genetic modifications, creation of genetically modified organisms, and detection and monitoring of genetically modified organisms (GMO). Preparation of biological material. Isolation of DNA. Quantitative and qualitative analysis. Analysis of gene polymorphisms for animal utility traits. RNA extraction from animal tissues. Quantitative and qualitative assessment of RNA. Transcription of genetic information from mRNA to cDNA. Gene expression analysis using the RT-qPCR method. Module 2 – Cell cultures Introduction to the principles of safe work in an in vitro culture laboratory. Contamination in cell cultures. Culture media, preparation of complete medium. Establishment of secondary culture. Observation of cell culture and cell passaging. Cell counting methods.

6. METHODS OF VERIFICATION OF LEARNING OUTCOMES

LEARNING OUTCOME	Form of assessment					
	Oral examination	Written test	Colloquium	Project	Report	……
W1		X				
W2		X				
U1		X			X	
U2		X			X	
K1					X	
K2					X	

7. LITERATURE

Basic literature	Ramroop Singh N. 2023. Introduction to Genetics. THOMPSON RIVERS UNIVERSITY KAMLOOPS, BC, https://opengenetics.pressbooks.tru.ca/ Chaudhary Khushboo. 2023. Cell Technology. Academic Research Source eBooks.
Supplementary literature	Aschner Michael. 2020. Cell Culture Techniques. Humana Pr

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