SYLLABUS

Name of the course (as specified in the approved curriculum) **Animal Models in Physiological Research**			Number of ECTS credits 5
Name of the course in Polish **Modele zwierzęce w badaniach fizjologicznych**			
Unit providing the course **Department of Animal Physiology and Biochemistry**			
Course co-ordinator **Dr hab. Marek Skrzypski, Dr hab. Paweł A. Kołodziejski**			
Field of study Animal Production Management	Level II – master studies	Profile Academic-general	Semester 1

TYPE OF CLASSES AND COURSE LOAD
(Classes with teacher and student's own work)

Mode of studies: full-time		Mode of studies: part-time	-
- lectures	10	- lectures	-
- practical classes	0	- practical classes	-
- field classes	0	- field classes	-
- labs	20	- labs	-
- consultations	5	- consultations	-
- own student's work	65	- own student's work	-
- others	25	- others	-
Total number of hours	125	Total number of hours	-

OBJECTIVE OF THE COURSE

Cardiovascular System: The Heart, Blood and Blood Vessels, Circulation, Respiratory System.
The Digestive System.
Endocrine system and reproduction.
Ethical aspects of animal experiments and law.
Animal models in physiology.

TEACHING METHODS

Lectures: Presentations, discussion, questions and discussion, and solving current problems
Labs: Presentations, performing basic physiological experiments, discussions, questions, tutorial movies, and working with laboratory animals.
Preparation of a phased project verified by the teacher.

	Course learning outcomes	The reference to the study field learning outcomes
Knowledge	O1: The student has advanced knowledge of the principles of developing, applying, and validating nutritional models used in intensive animal production. The student demonstrates a thorough understanding of Weende analyses, energy balance, nutrient digestibility, and the presence and effects of antinutritional substances. O2: The student has advanced knowledge of gastrointestinal tract function in ruminant and non-ruminant species and its implications for productivity and efficiency in intensive production systems. O3: The student has advanced knowledge of the application of the latest nutritional models in the nutrition of various animal species, including performance prediction, microbiota dynamics, and support of animal welfare. O4: The student understands the impact of different feed additives, feed materials, and alternative feed sources on animal health, product quality (meat and eggs), greenhouse gas emissions, and nutrient digestibility efficiency within the framework of nutritional modeling.	AP2A_W10 AP2A_W11

Skills	O5: The student is able to prepare written assignments and/or oral presentations on selected topics related to nutritional models, using scientific databases, and can critically search, analyse, interpret, and communicate scientific information in oral, written, and graphical forms. O6: The student is able to work individually or in teams, using scientific literature to interpret selected issues in nutritional modelling and to identify potential consequences of improper diet formulation. The student can discuss these topics with specialists from various fields in English at the B2+ level, in accordance with the Common European Framework of Reference for Languages, using appropriate terminology in animal science. O7: The student is able to use specialized software to formulate diets and feed ratios and to assess the nutritional value of feeds. The student can perform a practical evaluation of total mixed rations (TMR) using the Penn State Separator during field classes on farms. O8: The student is able to discuss and apply different methods for evaluating nutrient utilisation efficiency, including protein efficiency, energy availability, and digestibility coefficients, within the framework of nutritional modelling. O9: The student is able to coordinate the work of animal caretakers, organize appropriate feeding programmes for various animal species, and supervise the production of high-quality feed in compliance with feed law regulations.	AP2A_U01 AP2A_U02
Social competences	O10: engage in lifelong learning, continuously update knowledge and skills, and support or inspire the learning of others; demonstrate creativity and initiative; act in an entrepreneurial and innovative manner. O11: assume ethical and social responsibility for the outcomes of activities in animal nutrition, with particular focus on the welfare of domestic animals. O12: take ethical and social responsibility to produce safe, high-quality feed, and actively pursue creative and entrepreneurial approaches in this area.	AP2A_K01

Methods for verifying learning outcomes	Symbols of course learning outcomes
Practical classes – test, oral assignment. Phased project. Written exam.	O1-O12

TEACHING CONTENTS

Lectures: The lectures will cover the basic knowledge of animal physiology and the use of animals in experiments. Law and ethical aspects of these experiments.

Labs: Labs will include practical experiments that will consolidate and verify acquired knowledge. During the classes, students become acquainted with the latest methods of physiological research and the equipment used in this field. Moreover, practice will include classes with laboratory animals, animal phantoms, and tutorial movies. Students are introduced and work with Lt LabStation a lab-based learning platform.

Forms and criteria for completing the course	Percentage of a final grade
Attendance and participation.	20%
Achieving a minimum passing grade (labs, phased project, and exam).	80%

Literature list

Core literature:

"Anatomy and Physiology of Farm Animals" - Rowen D. Frandson, W. Lee Wilke, Anna Dee Fails
https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://salehsalmanblog.files.wordpress.com/2016/01/01-anatomy-and-physiology-of-farm-animals-7th-edition1.pdf

“Cunningham's Textbook of Veterinary Physiology” - Bradley G. Klein
https://share.google/nodf5CXY9BP1FRcde

Guide For the care and use of Laboratory Animals Committee for the Update of the Guide for the Care and Use of Laboratory Animals
https://share.google/D6rqOz4SQPoyeeJv8

“Pathology of Laboratory Animals” - Floris M. Garner, Thomas Carlyle Jones, Kurt Benirschke

Additional sources

Scientific database:, Scopus, NCBI (eg. PubMed), Web of Science, Tutorial movies
Website: https://www.rspca.org.uk, https://www.criver.com, https://www.jax.org/