Module code	M_WE_SEM5 PW 1D/2D MOD GEN
Field of study	Veterinary medicine
Module name, also the name in English	Genetic modification and gene therapy
	Modyfikacje genetyczne i terapia genowa
Language of instruction	English
Module type	optional
Level of studies	Long-cycle master's degree studies
Form of study	Full-time
Year of study in the field of study	III
Semester of study in the field of study	5
ECTS credits, divided into contact/non-contact hours	1 (0,72/0,28)
Academic title/degree, name of the person responsible for the module	Prof. dr hab. Brygida Ślaska
Unit teaching the module	Institute of Biological Basis of Animal Production
Module objective	Introduce students to law regulations concerning genetic modifications, selected techniques and manipulations carried out on DNA, as well as the directions of research and the use of developments in genetic engineering, with particular emphasis on gene therapy in Poland and abroad.
The learning outcomes for the module include a description of the knowledge, skills and social competences that the student will gain after completing the module.	Knowledge:
	K1. The student has knowledge of selected tools and techniques used in genetic engineering.
	K2. The student has knowledge of the potential use of genetic modification and gene therapy.
	Skills:
	S1. The student demonstrates the ability to critically analyse and select information regarding genetic modification, especially from electronic sources.
	S2. The student is able to evaluate the developments in genetic engineering, its positive and/or negative sides.
	Social competences:
	Sc1. The student s willing to continually update his/her knowledge of genetic modification and gene therapy.
Prerequisites and additional requirements	N/A
Module program content	Lectures: Use of genetic engineering in basic and applied research. Current issues, practical use, and important progress in transgenesis, somatic cloning, and gene therapy. Therapeutic possibilities of stem cells. Current status of gene therapy research. The examples of genetically modified organisms. The use of transgenic organisms in medicine. Transgenic animals as bioreactors. Law regulations of genetic modification in Poland and European Union. Perspectives on genetic manipulation.

List of core and supplementary literature	1. Brown T. A. Genomes. Wydawnictwo Naukowe PWN. 2019. 2. Brown T. A. Gene Cloning and DNA Analysis: An Introduction. Wiley-Blackwell. 2013. 3. Mauro G. Gene Therapy. Springer. 2010. 4. http://www.mos.gov.pl/ 5. http://www.ncbi.nlm.nih.gov/pubmed/
Planned forms/activities/teaching methods	Lecture, group work, preparing a paper.
Verification methods and ways of documenting the achieved learning outcomes.	K1 and K2 - written assessment (single choice test). S1, S2 - evaluation of statements and participation in discussions by the instructor, grading papers. Sc - participation in discussion, written assessment.
ECTS credits	Types of classes: lecture, practical class, consultation, preparation for classes, project preparation, study literature Forms of classes: contact: lecture (15 hours / 0.6 ECTS), consultations (2 hours / 0.08 ECTS), assessment (1 hour / 0.04 ECTS). Non-contact - preparing a paper (2 hours /0.08 ECTS), studying literature (5 hours /0.2 ECTS).
The workload of activities that requires direct participation of an academic teacher	participation in lectures - 15 hours; in consultations - 2 hours; in assessment - 1 hour.
Relation of module learning outcomes to course learning outcomes.	K1, W2 – WE_W09 + S1, U2 – WE_U9 + Sc - K1 – WE_K 6 +
Elements and values affecting the final grade	The final grade includes the grade from the paper (40%) and the grade from the assessment (60%).