Subject name	**Introduction to Genetic Engineering**	
Subject code	**H.KFZa.INTR.SM.HZOXY**	
Department	**Animal Physiology and Endocrinology**	
Faculty	**Animal Sciences**	
Subject supervisor/Lecturer	**Professor Andrzej Sechman**	
General information	**semester**	**winter**
	ECTS credits	**2**
	Lectures total	**15 hrs**
	Laboratories	**0**
Objective and general description	The aim of teaching: familiarization of master course students with the basic concepts of genetic engineering and modern molecular methods and laboratory techniques, i.e. a technique for gene cloning in vectors, Southern blot, Northern blot, PCR, RT-PCR, real-time PCR, and techniques used in animal transgensis. The effect of education: understanding and knowledge of the basic concepts as well as genetic engineering techniques applicable in laboratory conditions for genetic recombination, introduction of DNA fragments into cells of another organism, gene and whole organism cloning. Knowledge of modern methods applied in gene expression. Guide to basic concepts of genetic engineering. Structure of nucleic acids, and their physical and chemical properties. DNA and RNA modifying enzymes: DNA and RNA polymerases, nucleases, enzymes modifying the ends of DNA fragments, DNA ligase. Restriction enzymes, nomenclature, distribution and application in genetic engineering. Vectors - application in molecular cloning and transgensis. Methods of nucleic acid analysis: Southern blot, Northern blot and slot-blot PCR method - varieties and the application in laboratory work. RT-PCR, Real-time PCR, siRNA – application in determination of gene expression.	
Assessment method	Lectures: Time limited written exam. Labs: Demonstration of practical skills.	
References	1. T.A. Brown, „Genmes”, PWN, Warszawa, 2009. 2. “Molecular cloning: a laboratory manual (Sec. Ed.), J. Sambrook, E.F. Fritch i T. Maniatis, J. Cold Spring Harbor Laboratory Press, Cold Spring Harbor, 1989. 3. “Recombinant DNA”, James Watson i inn., Scientific American Books, New York, 1992. 4. „Genes V”, Benjamin Lewin, Oxford University Press, Oxford New York Tokyo, 1994.	