Module of classes:
BIOINFORMATICS IN ANIMAL HUSBANDRY

ECTS	**4**
Status	**complementary**
Form of final credit	**exam**
Prerequisites	**passing the subject Genetics and Molecular Biology**

Field of study:
ANIMAL BIOENGINEERING

Profile of study	**General-academic**
The code of the form of study and the level of study	**master of thesis**
Semester of study	**winter or summer**
Language of study	**English**

The leading faculty, department and the lecturer of the module:

Name of the competent unit for the coordinator	**Faculty of Animal Sciences, Department of Genetics, Animal Breeding and Ethology**
Courese coordinator	**dr inż. Łukasz Migdał**

Learning outcomes of the module/subject

The code of the description component (symbol of the effect)	Description	Relation to (code)	
		field effect	discipline#
KNOWLEDGE – the student knows and/or understands:			
BIER_W01	methodology of experimental work allowing to design, perform and analyse of the results of experiments in the field of bioengineering and related fields	BIOI2_W01	RZ
BIER_W02	knows the rules for prepation of scientific publication and has the ability to use specialized software in scientific work	BIOI2_W17	RZ
SKILLS – the student can:			
BIER_U01	plan and perform experiment, analyze and interpret the results obtained, using appropriate informatics tools and literature	BIOI2_U01	RZ, PB
BIER_U02	skillfully select and modify techniques and technologies in order solutions to specific problems in the field of animal bioengineering and environment; cooperate with other people as part of team's work and take a leading role in team	BIOI2_U07	RZ
BIER_U03	use English in the fields of science and disciplines relevant to the field of study being studied, in accordance with requirements specified for B2 + level of the European Description System Language Education, reads comprehension and is fluent in the use of scientific literature, as well as preparing and delivering presentations in the field of animal bioengineering in Polish and English	BIOI2_U11	RZ
SOCIAL COMPETENCE- the student is ready to:			
BIER_K01	understands the need for systematic work on long-term implementation projects and is aware of the responsibility for the team's work results	BIOI2_K02	RZ

Teaching content:

Lectures		**10**	**hours**
Subjects of lectures	1. Bioinformatics databases - Major types of bioinformatics data – 1h		
	2. Dynamic programming (pair -wise sequences alignment) - 2h		
	3. PAM and BLOSUM matrices, multisequence aligment (MSA), Markov models - 2h		

2. FASTA and BLAST searching - 1h	
3. Protein Structures - 2h	
4. Introduction to Phylogenetics -1h	
5. Exam - 1h	

Realized learning outcomes	*BIER_W01, BIER_U01, BIER_K01*
Verification methods and criteria of effects evaluation	*Short question, multiple choice questions (25 - 22 points - 5.0; 21-20 - 4.5; 19-17 - 4.0; 16-15 - 3.5; 14-12 -3.0)*

Classes (laboratories, field exercises, auditorium exercises etc. …)		**30**	**hours**
Subjects of the classes	1.NCBI and ENSEMBL databases - BLAST options (2 lectures - 1,5h each - 3h)		
	2.DNA - Genes, genes regulation, gene prediction and promoter prediction, polymorphisms analysis (6 lectures - 1,5h each - 9h)		
	3. RNA - RNA structure prediction (2 lectures - 1,5h each - 3h)		
	4. Proteins - structure, structure classification, prediction and visualization (7 lectures - 1,5h each - 10,5h)		
	5 Phylogenetics (2 lectures - 1,5h each - 3h)		
	6. Evaluation of laboratories - (1 lecture - 1,5h)		

Realized learning outcomes	*BIER_W01, BIER_W02, BIER_U01,BIER_U02, BIER_U03, BIER_K01*
Verification methods and criteria of effects evaluation	*two tests (70%) and student project evaluation(30%) - for every test there will be 5 works (5 points each) - (25 - 22 points - 5.0; 21-20 - 4.5; 19-17 - 4.0; 16-15 - 3.5; 14-12 -3.0)*

Seminars		**0**	**hours**
Subjects of the seminars			
Realized learning outcomes	*not applicable*		
Verification methods and criteria of effects evaluation	*not applicable*		

Literature:

Basic	*"Bioinformatics: Sequence and Genome Analysis, Mount, CSHLP 2004*
Supplementary	*Bioinformatics programmee instructions*

Structure of learning outcomes:

Dyscipline – animal husbandry and fishery (RZ)		*4*	ECTS[*]
Dyscipline –…		…	ECTS[*]

Structure of student's activities:

classes carried out with direct participation of the teacher		52	hours	2,1	ECTS[*]
including:	lectures	10	hours		
	classes and seminars	30	hours		
	consultations	8	hours		
	participation in research	0	hours		
	mandatory practices and internships	0	hours		
	participation in the exam and credits	4	hours		
classes carried out with the use of e-learning		0	hours	0	ECTS[*]
student's own work		48	hours	1,9	ECTS[*]

) * - Reported to the nearest to 0,1 ECTS, where 1 ECTS = 25-30 hours of classes
) # discipline code: RZ - zootechnics and fishery, PB - biological sciences