Zachodniopomorski Uniwersytet Technologiczny w Szczecinie

Faculty of Food Sciences and Fisheries

Field of study	Aquaculture and Fisheries
Mode of study	stationary
Graduate's qualification	inżynier
Fields of science	agricultural sciences
Disciplines of science	animal science and fisheries (100%)
Educational profile	general academic
Module	
Course unit	**Basics of genetics**
Code	WNOZIR/AQF/S1/
Field of specialisation	
Administering faculty	Department of Aquatic Bioengineering and Aquaculture

Mode of study	stationary	*Level*	first cycle

ECTS	6.0	*ECTS (forms)*	6.0
Form of course credit	examination	*Language*	english
Electives		*Elective group*	

Form of instruction	Cod	Semester	Hours	ECTS	Weight	Credit
laboratory course	L	3	30	3.0	0.50	credits
lecture	W	3	30	3.0	0.50	examination

Leading teacher	Kiełpińska Jolanta (Jolanta.Kielpinska@zut.edu.pl)
Other teachers	

Prerequisites	
W-1	The student should have basic knowledge in the field of cell biology and biochemistry

Module/course unit objectives	
C-1	Preparing the student to understand basic genetic terminology and basic mechanisms related to gene flow

Course content divided into various forms of instruction		Number of hours
T-L-1	To acquaint the student with the terminology used in genetics, presentation of the laboratory and the equipment and software available in it	2
T-L-2	Rules for collection, specification, transport and maintenance of biological material for laboratory analyzes	2
T-L-3	Fish section and collection of biological material for laboratory analyzes	2
T-L-4	Methods for isolation and purification of DNA and RNA	4
T-L-5	Polymerase chain reaction as a technique for amplifying a specific DNA sequence in vitro	4
T-L-6	Digestion with restriction enzymes	4
T-L-7	Electrophoresis	4
T-L-8	Sequencing	2
T-L-9	Analyses of the obtained results	2
T-L-10	Laboratory techniques in practice	2
T-L-11	Scientific text analysis using genetic terminology	2
T-W-1	Familiarizing students with the terminology used in genetics; revision of the material from Biology taught in secondary school	2
T-W-2	Basic information about the structure and form of DNA and RNA, the construction of nitrogenous bases, nucleic acids as carriers of genetic information, historical outline	4
T-W-3	Basics of classical, population and molecular genetics	4
T-W-4	Genetic code and translation, ribosome structure	2
T-W-5	Replication, transcription of nucleic acids	2
T-W-6	Nuclear and mitochondrial DNA, gene expression, genome structure	2
T-W-7	Chromosomes as gene carriers, their functions, structure, division	4
T-W-8	Chromosome, numerical and structural aberrations	2
T-W-9	Gene mutations and environmental factors with mutagenic effect	2
T-W-10	Hereditary and non-hereditary variability	2
T-W-11	Basic principles of genetics in practice, analytical techniques in gene research, detection of diseases, evidence based on DNA, genetic fingerprint	4

Student workload - forms of activity		Number of hours
A-L-1	Participation in classes	30
A-L-2	Preparation for the exam	35
A-L-3	Consultation with a lecturer	25
A-W-1	Participation in classes	30
A-W-2	Preparation for the exam	40
A-W-3	Consultations with the lecturer	20

Teaching methods / tools	
M-1	Lecture, multimedia presentation, film

Evaluation methods (F - progressive, P - final)		
S-1	F	Open test at the end of the semester

Designed learning outcomes	Reference to the learning outcomes designed for the fields of study	Reference to Learning Outcomes for qualifications at PQF 6, 7 or 8	Reference to learning outcomes for qualifications at level 6 or 7 that enable acquiring engineering competences	Course objectives	Course content	Teaching methods	Evaluation methods
Knowledge							
AQF_1A_C08_W01 The student understands the basic genetic concepts and mechanisms. Can describe and give examples of the use of basic genetic techniques.	AQF_1A_W02 AQF_1A_W06	P6S_WG	P6S_WG	C-1	T-W-1 T-W-4 T-W-10	M-1	S-1
Skills							
AQF_1A_C08_U01 The student is able to choose the right genetic method to carry out scientific research.	AQF_1A_U05 AQF_1A_U14	P6S_UO P6S_UU P6S_UW		C-1	T-L-3 T-L-9 T-W-8	M-1	S-1
Social competences							
AQF_1A_C08_K01 The student is aware of his knowledge and skills. Can use his qualifications in practice.	AQF_1A_K01 AQF_1A_K04	P6S_KK P6S_KR		C-1	T-L-10 T-L-11	M-1	S-1

Outcomes	Grade	Evaluation criterion
Knowledge		
AQF_1A_C08_W01	2,0	
	3,0	The student has basic knowledge of genetic techniques. He is able to define populations and knows the basic genetic mechanisms.
	3,5	
	4,0	
	4,5	
	5,0	
Skills		
AQF_1A_C08_U01	2,0	
	3,0	The student is able to choose and apply appropriate genetic methods to carry out research work
	3,5	
	4,0	
	4,5	
	5,0	
Other social competences		
AQF_1A_C08_K01	2,0	
	3,0	The student is able to choose and apply appropriate methods for the implementation of scientific research.
	3,5	
	4,0	
	4,5	
	5,0	

Required reading
1. Tumpenny P., Ellard S. E., Elements of medical genetics, Student Consult., 15th Edition, 2011
2. Buckingham L., MOLECULAR DIAGNOSTICS. FUNDAMENTALS, METHODS AND CLINICAL APPLICATIONS., 2011