SYLLABUS – A COURSE DESCRIPTION

I. General informaion

1. Course name: **Molecular Ecology**
2. Course code: **MOL-EC**
3. Course type (compulsory or optional): **optional**
4. Study programme name: **Environmental protection**
5. Cycle of studies (1st or 2nd cycle of studies or full master's programme): **2nd cycle of studies**
6. Educational profile (general academic profile or practical profile): **general academic profile**
7. Year of studies (if relevant): **I and II 2nd cycle of studies**
8. Type of classes and number of contact hours (e.g. lectures: 15 hours; practical classes: 30 hours):
   lectures: 6 hours
   practical classes: 16 hours
   conversatorium: 8 hours
9. Number of ECTS credits: **3**
10. Name, surname, academic degree/title of the course lecturer/other teaching staff:
    prof. dr hab. Witold Wachowiak, witwac@amu.edu.pl
11. Language of classes: **english**
12. Online learning – yes (partly – online / fully – online) / no: **Not applicable**

II. Detailed information

1. Course aim (aims)
   To familiarize students with
   - the use of molecular ecology and biomonitoring methods in environmental studies
   - the application of molecular ecology methods in conservation and management of genetic resources in populations
   - the use of molecular ecology in evolutionary studies of natural selection and adaptive variation
   - novel molecular biology approaches and theoretical assumptions and techniques of computer data analysis in molecular ecology and biomonitoring studies
   - top examples of the use of molecular methods in ecology based on published research articles
2. Pre-requisites in terms of knowledge, skills and social competences (if relevant)
   Some basics knowledge in molecular biology and genetics
3. Course learning outcomes (EU) in terms of knowledge, skills and social competences and their reference to study programme learning outcomes (EK)

Course learning outcome symbol (EU)	On successful completion of this course, a student will be able to:	Reference to study programme learning outcomes (EK)
EU_01	Explain the use of molecular ecology and biomonitoring in environmental protection	K_W01, K_W04, K_U01, K_U04, K_K02
EU_02	Explain the basic methodology used in molecular ecology and biomonitoring	K_W05, K_U03, K_K01

EU_03	Explain the importance of molecular ecology in environmental protection and management of genetic resources in populations	K_W01, K_W04, K_U03, K_U06, K_K02
EU_04	Explain the processes affecting distribution of genetic variation in populations	K_W06, K_U01
EU_05	Present the methods for analysis of adaptive variation and natural selection processes	K_W05, K_U01, K_U02, K_U03
EU_06	Conduct a critical analysis of published research results in the field of the subject	K_W01, K_W05, K_U01, K_K01

4. Learning content with reference to course learning outcomes (EU)

Course learning content	Course learning outcome symbol (EU)
Application of molecular ecology and biomonitoring approaches in research on environmental biodiversity and nature protection	EU_01, EU_03
Theoretical and practical implications of neutral and adaptive evolutionary studies in molecular ecology	EU_02, EU_04
The use of statistical methods and genetic markers in molecular ecology research at inta- and interspecific level	EU_03, EU_04, EU_05
Laboratory methods and analytical approaches in molecular ecology and biomonitoring	EU_02, EU_05
Practical applications of molecular ecology research	EU_01, EU_02, EU_06

5. Reading list

Wydawnictwa książkowe

1. Graham Rowe, Michael Sweet, Trevor Beebee. : An Introduction to Molecular Ecology (2nd Edition), Oxford University Press, Oxford, 2017

2. Matthew W. Hahn. : Molecular Population Genetics. Autor: Matthew W. Hahn. Wydawnictwo: Oxford University Press, Oxford University Press, Oxford, 2018

III. Additional information

1. Teaching and learning methods and activities to enable students to achieve the intended course learning outcomes (please indicate the appropriate methods and activities with a tick or/and suggest different methods)

Teaching and learning methods and activities	
Lecture with a multimedia presentation	X
Interactive lecture	X
Problem – based lecture	
Discussions	X

Text-based work	
Case study work	X
Problem-based learning	
Educational simulation/game	
Task – solving learning (eg. calculation, artistic, practical tasks)	X
Experiential work	X
Laboratory work	X
Scientific inquiry method	
Workshop method	
Project work	
Demonstration and observation	
Sound and/or video demonstration	
Creative methods (eg. brainstorming, SWOT analysis, decision tree method, snowball technique, concept maps)	
Group work	X

2. Assessment methods to test if learning outcomes have been achieved (please indicate with a tick the appropriate methods for each LO or/and suggest different methods)

Assessment methods	**Course learning outcome symbol**					
	EU_1	**EU_2**	**EU_3**	**EU_4**	**EU_5**	**EU_6**
Written exam						
Oral exam						
Open book exam						
Written test						
Oral test						
Multiple choice test	X	X	X	X	X	
Project						
Essay						
Report			X	X	X	
Individual presentation						X
Practical exam (performance observation)						
Portfolio						

3. Student workload and ECTS credits

Activity types	**Mean number of hours spent on each activity type**
Contact hours with the teacher as specified in the study programme	30
Preparation for classes	
Reading for classes	25
Essay / report / presentation / demonstration	5

preparation, etc.	
Project preparation	
Term paper preparation	
Exam preparation	30
Total hours	90
Total ECTS credits for the course	3

4. Assessment criteria according to AMU in Poznan grade system

Very good (bdb; 5,0):
Good plus (+db; 4,5):
Good (db; 4,0):
Satisfactory plus (+dst; 3,5):
Satisfactory (dst; 3,0):
Unsatisfactory (ndst; 2,0):