**COURSE OUTLINE "MOLECULAR ECOLOGY"**

## 1. GENERAL

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|---|---|---|---|
| **SCHOOL** | HEALTH SCIENCES | | |
| **DEPARTMENT** | MOLECULAR BIOLOGY AND GENETICS | | |
| **STUDY LEVEL** | ISCED LEVEL 6 | | |
| **COURSE CODE** | **MBG501** | **SEMESTER** | 6th and 8th |
| **COURSE TITLE** | MOLECULAR ECOLOGY | | |
| **TEACHING ACTIVITIES** *In case credits are awarded to individual components of the course eg. Lectures, laboratory practicals, etc. If credit units are awarded for the whole course, indicate the weekly teaching hours and total credits* | | **HOURS/WEEK** | **ECTS CREDITS** |
| | | 2 | 3 |
| **COURSE TYPE** *General, Background, Scientific field course, Expertise Course, Skills Development etc* | SCIENTIFIC FIELD | | |
| **PREREQUISITE COURSES:** | NO | | |
| **LANGUAGE OF TEACHING AND EXAMINATIONS:** | GREEK | | |
| **THE COURSE IS OFFERED TO ERASMUS STUDENTS** | NO | | |
| **COURSE WEBSITE (URL)** | https://eclass.duth.gr/courses/ALEX01124/ | | |

## 2. LEARNING OUTCOMES

**Learning outcomes**

*Describe the learning outcomes of the course, the specific knowledge, skills and competencies that students will acquire after successfully completing the course. Refer to Appendix A.*

*• Description of learning outcomes for the course according to the level of study - refer to the European Higher Education Area Qualifications Framework*

*• Descriptive Indicators of Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Annex B Curriculum Vitae Summary Guide*

**A. Learning outcomes**:

- Understand the principles in ecology, biogeography and evolution as well as in molecular ecology,
- Understand the importance of developing and the ways to use new markers for molecular ecology,
- Ecology in the -omics era.

**B. Synthesis, interpretation and analysis:**

- Analyse the relationship between ecology, evolution and molecular ecology,
- Create ideas and critical thinking about choosing the right molecular markers judging upon specific scientific questions,
- Synthetically combine information to formulate possible research concepts and ideas in the framework of molecular ecology.

**General Competencies**

*Which of the general competencies that the student will have acquired on the completion of the studies (see also the Diploma Supplement and below) are relevant to this course?*

*Research, analysis and synthesize of data and information, using the necessary technologies*
*Adaptation to new situations*
*Decision making*
*Autonomous work*
*Team work*
*Work in an international environment*
*Work in an interdisciplinary environment*
*Production of new research ideas*
*Project design and management*
*Respect for diversity and multiculturalism*
*Respect for the natural environment*
*Development of social, professional and moral responsibility and gender sensitivity*
*Promotion of free, creative and inductive thinking*

- Searching, data and information analysis and composition with the use of necessary technologies
- Autonomous and team work
- Production of new research ideas
- Awareness for the natural environment
- Promoting free, creative and inductive thinking

## 3. COURSE CONTENT

Principles of ecology in relation to other biological fields - Ecological definition of evolution.
Molecular ecology
Molecular markers in ecology - NGS
Molecular systematics and phylogenetics
Population genetics
Biogeography - Phylogeography
Island Biogeography
The molecular basis of behavior
Conservation ecology and genetics
Systems biology in molecular ecology
Molecular Microbial Ecology
Transcriptomics – proteomics in molecular ecology
Special topics – oral presentations

## 4. TEACHING and LEARNING METHODS - EVALUATION

| | |
|---|---|
| **TYPE OF TRAINING**<br>*Face-to-face, Distance learning, etc..* | Face to face |
| **USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY**<br>*Use of ICT in teaching, laboratory education, and in communication with the students* | Use of ICT technology for teaching<br>Use of ICT in communication with the students<br>Use of ICT in scientific literature searching |
| **MODES OF DELIVERY**<br>*Describe the teaching methods in detail. Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, practicum, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.*<br>*The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS* | |

| ***Activity*** | ***Workload/semester*** |
|---|---|
| Lectures | 26 |
| Interactive teaching | 20 |
| Discussions & Interaction in Class | 4 |
| Study and analysis of bibliography | 40 |
| **Course Total** | **90** |

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|---|---|
| **STUDENT PERFORMANCE EVALUATION**<br>*Describe of the methods of evaluation language, methods of evaluation, types of exams, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other*<br>*Are evaluation criteria known to the students?* | **Student evaluation languages**<br>Greek<br><br>**Method (Formative or Concluding)**<br>Formative<br><br>**Student evaluation methods**<br>Written exam with multiple choice test (30%)<br>Written Exam with Short Answer Questions (30%)<br>Presentation in audience (20%)<br>Midterm exam (20%) |

## 5. SUGGESTED BIBLIOGRAPHY

Εισαγωγή στη Μοριακή Οικολογία, Rowe G., Sweet M. and Beebee T.J.C – 1st translation in Greek 2022. Εκδόσεις Broken Hill Publishers Ltd Κύπρος, 2022 (κωδικός ΕΥΔΟΞΟΥ: 112690870, ISBN: 9789925350018)