COURSE OUTLINE

(1) GENERAL

SCHOOL	School of Environment		
ACADEMIC UNIT	Department of Environment		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	108KEY	SEMESTER	5
COURSE TITLE	Population Genetics		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	3	
TOTAL	3	5
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Specialisation of general knowledge
PREREQUISITE COURSES:	Biology, Introduction to Ecology
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (tutorials)
COURSE WEBSITE (URL)	https://www.env.aegean.gr/all_courses/population-genetics/

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

On satisfying the requirements of this course, students will have the knowledge and skills to:

- Understand and describe terms such as allele and genotype frequency, population genetic variance and structure.
- Identify and describe the influence of evolutionary forces on the genetic structure of populations.
- Interpret the interaction of genes and the environment in shaping phenotypic traits.
- Analyse the influence of genetic processes on population adaptation and viability.
- Perform analysis on genetic data and interpret the results.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology
Adapting to new situations
Decision-making
Working independently
Team work
Working in an international environment
Working in an interdisciplinary environment
Production of new research ideas
Project planning and management
Respect for difference and multiculturalism
Respect for the natural environment
Showing social, professional and ethical responsibility and sensitivity to gender issues
Criticism and self-criticism
Production of free, creative and inductive thinking
……
Others…
…….

Search for, analysis and synthesis of data and information, with the use of the necessary technology
Working independently
Production of free, creative and inductive thinking

(3) SYLLABUS

- Population Genetics: history, scope, applications. Introductory notions of Evolution and Genetics.
- Genetic variance: definition and assessement.
- Allele and genotype frequencies. Hardy-Weinberg law. Extensions of the Hardy-Weinberg law: multiple and X-linked alleles.
- Deviations from Hardy-Weinberg proportions: inbreeding and subdivision.
- Evolutionary forces I: mutation.
- Evolutionary forces II: natural and sexual selection.
- Evolution and adaptation.
- Quantitative genetics: heritability. Contribution of genes vs environment to shaping quantitative characters.
- Evolutionary forces III: genetic drift. Effective population size.
- Genetic processes in small and endangered populations.
- Evolutionary forces IV: genetic flow. Assessment and consequences of population genetic differentiation.
- Molecular evolution: molecular clock and evolutionary trees.
- Behavioural Ecology and Population Genetics.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Yes

TEACHING METHODS

The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

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	*Semester workload*
Lectures	39
Problem solving	30
Study	65
Course total	***133***

STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, 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

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.

Language of evolution: Greek
Methods of evaluation:
Problem solving: 30%
Final written exams: 70%

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

- Peter J. Russell (2009), «iGenetics, Μια Μεντελική προσέγγιση», Ακαδημαϊκές Εκδόσεις.
- Hedrick, P. W., (1985), «Genetics of Populations», Jones and Bartlett Publishers, Inc., Boston.
- Crow J. F. and M. Kimura, (1970), «An Introduction to Population Genetics Theory», Harper & Row, New York.
- Frankham, R., J. D. Ballou and D. A. Briscoe, (2002), «Introduction to Conservation Genetics», Cambridge University Press, Cambridge.
- Meffe, G. K. and Carroll C. R, (1997), «Principles of Conservation Biology», Sinauer Associates, Inc. Sunderland, Massachusetts.