

COURSE OUTLINE

1. GENERAL

SCHOOL	Animal Biosciences + Applied Biology and Biotechnology		
ACADEMIC UNIT	Animal Science + BIOTECHNOLOGY		
LEVEL OF STUDIES	BACHELOR OF SCIENCE		
COURSE CODE	0380	SEMESTER	1
COURSE TITLE	GENETICS		
INDEPENDENT TEACHING ACTIVITIES <i>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</i>		WEEKLY TEACHING HOURS	CREDITS
Lectures and Practicals		5	5
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (4).</i>			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	General background		
PREREQUISITE COURSES:	No		
LANGUAGE OF INSTRUCTION and EXAMINATIONS :	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes		
COURSE WEBSITE (URL)	https://mediasrv.aua.gr/eclass/courses/BIOTECH118/ https://mediasrv.aua.gr/eclass/courses/BIOTECH122/ https://mediasrv.aua.gr/eclass/courses/BIOTECH129/ http://geneticslab.gr/elearn.html		

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

After successfully completing this course, students will:

- a) have acquired knowledge on the structure and function of Genetics
- b) have acquired competencies in the techniques of Genetic analysis
- c) have developed their ability to access Genetics problems

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	Production of new research ideas
Adapting to new situations	Project planning and management
Decision-making	Respect for differences and multiculturalism
Working independently	Respect for the natural environment
Team work	Showing social, professional and ethical responsibility and sensitivity to gender issues
Working in an international environment	Criticism and self-criticism
Working in an interdisciplinary environment	Production of free, creative and inductive thinking

- Search for, analysis and synthesis of data and information, with the use of the

- necessary technology
- Working independently
- Team work
- Working in an international environment
- Working in an interdisciplinary environment
- Production of new research ideas

3. SYLLABUS

- I. Introduction to Genetics.
- II. Mendelian analysis. Mendel's experiments.
- III. Extension of Mendelian analysis. Variations on dominance. Multiple alleles. Incompatibility alleles in plants. Lethal alleles.
- IV. Gene interactions. Penetrance. Expressivity.
- V. Genotype and Environment. The norm of reaction. Developmental noise.
- VI. Linkage and chromosome mapping. Recombination. Interchromosomal and intrachromosomal recombination. Linkage maps. Three-point test-cross. Interference.
- VII. Changes in chromosome number. Euploidy. Monoploids. Triploids. Autotetraploids. Allopolyploids. Aneuploidy. Monosomics. Trisomics.
- VIII. Changes in chromosome structure. Deletions. Duplications. Inversions. Translocations.
- IX. Sex chromosomes and sex determination. X-linked recessive and dominant inheritance. Y-linked inheritance. Chromosomal basis of inheritance.
- X. Extranuclear inheritance. Mitochondrial DNA. Mitochondrial diseases. Chloroplast DNA. Origin of mitochondria and chloroplasts.
- XI. Molecular basis of mutations. Types of mutations. Mutagenesis agents.
- XII. Cell cycle. Mitosis. Meiosis. Spermatogenesis. Oogenesis

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Face to face, in class	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	Power point presentations and self-assessment test on the Blackboard.	
TEACHING METHODS <i>The manner and methods of teaching are described in detail.</i> <i>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.</i> <i>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</i>	Activity	Semester workload
	Lectures	39
	Laboratory work (tutorials) focused on Genetics problem-solving in smaller groups	26
	Independent study	60
	Course total (Total contact hours and training)	125
STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure</i>	Written Examination (100%) which includes:	

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.

- Multiple choice questions
- Short-answer questions
- Problem solving

5. ATTACHED BIBLIOGRAPHY

-Suggested bibliography :

-Relevant scientific journals:

Concepts of Genetics (11th Edition) ISBN 0321948912, Klug, Cumminngs, Spencer, Palladino 2015 Pearson Education Inc.