COURSE OUTLINE "MOLECULAR BIOLOGY I"

1. GENERAL

SCHOOL	HEALTH SCIENCES		
DEPARTMENT	MOLECULAR BIOLOGY AND GENETICS		
STUDY LEVEL	ISCED LEVEL 6		
COURSE CODE	**MBG205**	**SEMESTER**	2nd
COURSE TITLE	MOLECULAR BIOLOGY I		
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**
		4	6
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/ALEX01211/		

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

Learning goals and objectives:

a) Understanding basic concepts of Molecular Biology related to the flow of the genetic information and the nature of the genetic material.

b) Understanding the principles of transcription and the mechanisms of gene expression regulation in prokaryotic cells and phages.

Learning outcomes:

By the end of this course, students should be able to:

- Understand the flow of genetic information
- Know the basic concepts on the nature of the genetic material
- Be familiar with the basic principles of transcription
- Know the mechanisms of gene expression regulation in prokaryotic cells and phages
- Apply critical thinking towards biological research
- Understand the importance of gene regulation

General competencies:

• Research, analysis and synthesis of data and information, using relevant technologies

• Autonomous work

General Skills

Name the desirable general skills upon successful completion of the module

Search, analysis and synthesis of data and information,
ICT Use
Adaptation to new situations
Decision making
Autonomous work
Teamwork
Working in an international environment
Working in an interdisciplinary environment
Production of new research ideas
Project design and management
Equity and Inclusion
Respect for the natural environment
Sustainability
Demonstration of social, professional and moral responsibility and sensitivity to gender issues
Critical thinking
Promoting free, creative and inductive reasoning

- Search, analysis and synthesis of data and information, ICT Use
- Decision making
- Autonomous work
- Production of new research ideas
- Critical thinking
- Promoting free, creative and inductive reasoning

3. COURSE CONTENT

1. Introduction: the flow of genetic information, the gene, the structure of the genetic material
2. Genetic code, effects of mutations
3. *cis*-regulatory elements, *trans*-acting factors
4. Basic principles of transcription
5. Exons and introns
6. Transcription in prokaryotic cells
7. The Sigma factors
8. Termination of transcription
9. The Operon
10. Regulatory circuits – An introduction
11. Regulatory circuits in prokaryotic cells
12. Phage strategies
13. Regulation of the lytic cycle and lysogeny

4. TEACHING and LEARNING METHODS - EVALUATION

TYPE OF TRAINING *Face-to-face, Distance learning, etc..*	Face to face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, and in communication with the students*	Use of ICT in Teaching Use of ICT in Laboratory Education Use of ICT in Communication with students
MODES OF DELIVERY *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.* *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*	
STUDENT PERFORMANCE EVALUATION *Describe of the methods of evaluation language, methods of evaluation, types of exams, , problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Are evaluation criteria known to the students?*	**Student evaluation languages** Greek **Method (Formative or Concluding)** Summative **Student evaluation methods** Written Exam with Short Answer Questions (20%) Written Exam with Essay Development Questions (80%)

Activity	***Workload/semester***
Lectures	52
Study & analysis of bibliography	118
Tutorials	10
Course Total	**180**

5. SUGGESTED BIBLIOGRAPHY

- Genes VIII. Lewin
- The Cell: A molecular approach. Geoffrey M. Cooper & Robert E.