COURSE OUTLINE

"INTRODUCTION TO MOLECULAR BIOLOGY TECHNIQUES"

1. GENERAL

SCHOOL	HEALTH SCIENCES		
DEPARTMENT	MOLECULAR BIOLOGY AND GENETICS		
STUDY LEVEL	ISCED LEVEL 6		
COURSE CODE	**MBG204**	**SEMESTER**	3rd
COURSE TITLE	INTRODUCTION TO MOLECULAR BIOLOGY TECHNIQUES		
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/ALEX01141/		

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

The main objectives of the course are:

a) to learn the principles underlying the basic techniques of Molecular Biology

b) to understand the applications of the basic techniques of Molecular Biology in Basic and Applied Research

c) to understand the practical applications of the basic techniques of Molecular Biology in various fields such as Health, Agriculture, enviornment etc.

Learning outcomes

Upon successful completion of the course, the students will be able to:

• demonstrate an understanding of the principles underlying the basic molecular biology techniques and methodologies

• demonstrate an understanding of the applications of the main molecular biology techniques and methodologies and explain their impact

• to analyze, evaluate and interpret experimental data of the basic techniques and methodologies of molecular biology

• to design and propose experimental methodology to answer a simple question of molecular biology

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

- Research, analysis and synthesize of data and information
- Application of knowledge to solve practical problems

- Development of research skills
- Autonomous work
- Production of new research ideas
- Development of critical thinking
- Promotion of free, creative and inductive reasoning
- Development of asssessment skills for a high-quality experimental work
- Exposure to the workplace environment of the Molecular Biologist-Geneticist

3. COURSE CONTENT

1. A brief review of Molecular Biology history
2. Enzymes and their Use in Molecular Biology [Part A]
3. Enzymes and their Use in Molecular Biology [Part B]
4. Protein & Nucleic Acid Sequencing Methods [Part A]
5. Protein & Nucleic Acid Sequencing Methods [Part B]
6. Bacteria, phages and cloning vectors [Part A]
7. Bacteria, phages and cloning vectors [Part B]
8. Genomic & cDNA libraries
9. The PCR method
10. Methods of *in vitro* study of Nucleic Acid Study and Protein [Part A]
11. Methods of *in vitro* study of Nucleic Acids and Proteins [Part B]
12. Methods of *in vitro* study of Nucleic acids and Proteins [Part C]
13. Methods of *in vivo* study of gene function in the mouse

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 technology in teaching Use of ICT in communication with the 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*	In order to support and develop the student's scientific thinking, participatory teaching methods are used. Therefore, the student not only acquires knowledge, but also develops experimental design and interpretation skills, while at the same time he/she cooperates with both his/her colleagues and the instructor.

Activity	***Workload/semester***
Lectures	52
Bibliographic research & analysis	100
Interactive teaching	28
Course Total	**180**

STUDENT PERFORMANCE EVALUATION *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* *Are evaluation criteria known to the students?*	**Student evaluation languages** Greek, English **Method (Formative or Concluding)** Summative **Student evaluation methods** Written exam with multiple choice test (100%) The evaluation criteria are presented in the course guide available on the course's website.

5. SUGGESTED READING

1. Recombinant DNA, Watson D.A. (Greek translation) ISBN: 978-960-88412-5-3 Eudoxus Code: 2625.

2. Powerpoint presentations and handouts of the course (G. Skavdis, Alexandroupolis 2018)