COURSE OUTLINE "MOLECULAR BIOLOGY II"

1. GENERAL

SCHOOL	HEALTH SCIENCES		
DEPARTMENT	MOLECULAR BIOLOGY AND GENETICS		
LEVEL OF STUDIES	ISCED LEVEL 6		
COURSE CODE	**MBG320**	**SEMESTER**	2nd
COURSE TITLE	MOLECULAR BIOLOGY II		
TEACHING ACTIVITIES *If the ECTS Credits are distributed in distinct parts of the coursee.g. lectures, labs etc. If the ECTS Credits are awarded to the whole course, then please indicate the teaching hours per week and the corresponding ECTS Credits.*		**HOURS/WEEK**	**ECTS CREDITS**
		3	4
COURSE TYPE *Background, General Knowledge, Scientific Area, Skill Development*	BACKGROUND		
PREREQUISITES:	NO		
TEACHING & EXAMINATION LANGUAGE:	GREEK ENGLISH FOR ERASMUS STUDENTS		
COURSE OFFERED TO ERASMUS STUDENTS:	YES		
COURSE URL:	https://eclass.duth.gr/courses/ALEX01232/		

2. LEARNING OUTCOMES

Learning Outcomes

Please describe the learning outcomes of the course: Knowledge, skills and abilities acquired after the successful completion of the course.

The aim of the course is an in-depth understanding of:
a) the structure and function of various ribonucleic acids (RNA) with emphasis on the RNAs involved in translation (*i.e.* mRNA, tRNA, rRNA).
b) the molecular events taking place during the prokaryotic and eukaryotic translation.
c) the molecular events taking place during the eukaryotic and prokaryotic replication.

Upon successful completion of the course, students will have acquired knowledge and understanding of:

- The structure, the life cycle and the sub-cellular localization of prokaryotic and eukaryotic mRNA.
- The maturation process and structure of tRNA and its role in translation.
- The structure of prokaryotic and eukaryotic ribosomes and their role in translation.
- The molecular events taking place during the various stages of prokaryotic and eukaryotic translation and the various factors involved in these stages.
- The structure, function and proofreading mechanisms of aminoacyl-tRNA synthetases.
- The characteristic features of the genetic code, the deviations from the standard genetic code and the various recoding phenomena.
- The molecular events taking place during prokaryotic and eukaryotic DNA replication and the various factors involved in these processes.
- The mechanisms of DNA replication, including the mechanism of replication of mitochondrial DNA.

General Skills

Name the desirable general skills upon successful completion of the module

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

Search, analysis and synthesis of data and information, ICT Use, autonomous work, production of new research ideas, critical thinking, promoting free, creative and inductive reasoning.

3. COURSE CONTENT

1. The messenger RNA (mRNA)
2. The transfer RNA (tRNA)
3. The aminoacyl-tRNA synthetases and the aminoacylation of tRNA
4. The ribosomal RNA (rRNA) and ribososmes
5. Translation in prokaryotes and eukaryotes: initiation
6. Translation in prokaryotes and eukaryotes: elongation
7. Translation in prokaryotes and eukaryotes: termination
8. Genetic code: characteristic features, deviations, recoding (A)
9. Genetic code: characteristic features, deviations, recoding (B)
10. DNA polymerases: structure, function, proofreading
11. DNA replication in prokaryotes and eukaryotes (A)
12. DNA replication in prokaryotes and eukaryotes (B)
13. DNA replication in prokaryotes and eukaryotes (C)

4. LEARNING & TEACHING METHODS - EVALUATION

TEACHING METHOD
Face to face, Distance learning, etc.

Face to face

USE OF INFORMATION & COMMUNICATIONS TECHNOLOGY (ICT)
Use of ICT in Teaching, in Laboratory Education, in Communication with students

Use of ICT in teaching
Use of ICT in communication with the students

TEACHING ORGANIZATION
The ways and methods of teaching are described in detail.
Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliographic research & analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive learning, Study visits, Study / creation, project, creation, project. Etc.

The supervised and unsupervised workload per activity is indicated here, so that total workload per semester complies to ECTS standards.

Activity	*Workload/semester*
Lectures	33
Interactive teaching	6
Study at home	81
Course Total	**120**

STUDENT EVALUATION
Description of the evaluation process

Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Essay / Report, Oral Exam, Presentation in audience, Laboratory Report, Clinical examination of a patient, Artistic interpretation, Other/Others

Student evaluation languages
Greek, English

Method (Formative or Concluding)
Summative

Student evaluation methods
Written exam with multiple choice test (30%)
Written Exam with Short Answer Questions (40%)
Other (30%)

Please indicate all relevant information about the course assessment and how students are informed	

5. SUGGESTED BIBLIOGRAPHY

1. Genes VIII, B. Lewin, Academic Publications J. Basdra & Co., Alexandroupolis, 2004, ISBN: 978-960-99895-9-6, Evdoxos code: 33133226

2. Basic Principles of Molecular Biology, B.E. Tropp, Academic Publications J. Basdra & Co., Alexandroupolis, 2014, ISBN: 978-618-5135-01-0, Evdoxos code: 41959952

3. Powerpoint presentations on eclass updated on an annual basis.