

COURSE OUTLINE "GENE EXPRESSION"

1. GENERAL

SCHOOL	HEALTH SCIENCES		
DEPARTMENT	MOLECULAR BIOLOGY AND GENETICS		
LEVEL OF STUDIES	ISCED LEVEL 6		
COURSE CODE	MBG223	SEMESTER	3 rd
COURSE TITLE	GENE EXPRESSION		
TEACHING ACTIVITIES <i>If the ECTS Credits are distributed in distinct parts of the course e.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.</i>		HOURS/WEEK	ECTS CREDITS
		3	4
COURSE TYPE <i>Background, General Knowledge, Scientific Area, Skill Development</i>	SCIENTIFIC AREA		
PREREQUISITES:	NO		
TEACHING & EXAMINATION LANGUAGE:	GREEK ENGLISH FOR ERASMUS STUDENTS		
COURSE OFFERED TO ERASMUS STUDENTS:	YES		
COURSE URL:	https://eclass.duth.gr/courses/ALEX01214/		

2. LEARNING OUTCOMES

<p>Learning Outcomes <i>Please describe the learning outcomes of the course: Knowledge, skills and abilities acquired after the successful completion of the course.</i></p>																
<p>Course objectives:</p> <ul style="list-style-type: none"> • To understand the basic concepts of Molecular Biology related to eukaryotic gene expression and realise the multilevel and complex regulatory mechanisms. • To develop analytical and critical synthesis skills. • To understand the importance of the molecular mechanisms, by focusing on the understanding of the principles of regulatory phenomena, considering memorizing detailed information as of minor importance. • To learn the basic principles of eukaryotic gene expression regulation in the context of the dynamic organization of chromatin structure. <ul style="list-style-type: none"> • To learn the basic principles governing the molecular mechanisms of cellular signaling. 																
<p>General Skills <i>Name the desirable general skills upon successful completion of the module</i></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><i>Search, analysis and synthesis of data and information, ICT Use</i></td> <td style="width: 50%; border: none;"><i>Project design and management</i></td> </tr> <tr> <td style="border: none;"><i>Adaptation to new situations</i></td> <td style="border: none;"><i>Equity and Inclusion</i></td> </tr> <tr> <td style="border: none;"><i>Decision making</i></td> <td style="border: none;"><i>Respect for the natural environment</i></td> </tr> <tr> <td style="border: none;"><i>Autonomous work</i></td> <td style="border: none;"><i>Sustainability</i></td> </tr> <tr> <td style="border: none;"><i>Teamwork</i></td> <td style="border: none;"><i>Demonstration of social, professional and moral responsibility and sensitivity to gender issues</i></td> </tr> <tr> <td style="border: none;"><i>Working in an international environment</i></td> <td style="border: none;"><i>Critical thinking</i></td> </tr> <tr> <td style="border: none;"><i>Working in an interdisciplinary environment</i></td> <td style="border: none;"><i>Promoting free, creative and inductive reasoning</i></td> </tr> <tr> <td style="border: none;"><i>Production of new research ideas</i></td> <td></td> </tr> </table>	<i>Search, analysis and synthesis of data and information, ICT Use</i>	<i>Project design and management</i>	<i>Adaptation to new situations</i>	<i>Equity and Inclusion</i>	<i>Decision making</i>	<i>Respect for the natural environment</i>	<i>Autonomous work</i>	<i>Sustainability</i>	<i>Teamwork</i>	<i>Demonstration of social, professional and moral responsibility and sensitivity to gender issues</i>	<i>Working in an international environment</i>	<i>Critical thinking</i>	<i>Working in an interdisciplinary environment</i>	<i>Promoting free, creative and inductive reasoning</i>	<i>Production of new research ideas</i>	
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3. COURSE CONTENT

1. The structure of genetic material in eukaryotic organisms
2. The chromosome
3. Telomeres and structural stability of chromosomes
4. Structure and organization of genetic material in nucleosomes
5. Nucleosomes during DNA replication
6. Activation of transcription in eukaryotes
7. Families of transcription factors
8. Regulation of transcription factors
9. Regulation of chromatin structure
10. Chromatin structure and regulation of gene expression
11. Molecular basis of epigenetic phenomena
12. RNA splicing and processing
13. Alternative splicing

4. LEARNING & TEACHING METHODS - EVALUATION

TEACHING METHOD <i>Face to face, Distance learning, etc.</i>	Face to face	
USE OF INFORMATION & COMMUNICATIONS TECHNOLOGY (ICT) <i>Use of ICT in Teaching, in Laboratory Education, in Communication with students</i>	Use of ICT in Teaching Use of ICT in Laboratory Education Use of ICT in Communication with students	
TEACHING ORGANIZATION <i>The ways and methods of teaching are described in detail.</i> <i>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.</i> <i>The supervised and unsupervised workload per activity is indicated here, so that total workload per semester complies to ECTS standards.</i>	Activity	Workload/semester
	Lectures	40
	Bibliographic research & analysis	45
	Interactive learning	15
	Essay / project	20
	Course Total	120
STUDENT EVALUATION <i>Description of the evaluation process</i> <i>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</i> <i>Please indicate all relevant information about the course assessment and how students are informed</i>	Student evaluation languages Greek, English Method (Formative or Concluding) Summative Student evaluation methods Written Assignment (12%) Written Exam with Short Answer Questions (20%) Written Exam with Essay Development Questions (68%)	

5. SUGGESTED BIBLIOGRAPHY

1. GENES 8-Lewin, Ελληνική έκδοση, Ακαδημαϊκές Εκδόσεις. Κωδικός στον Εύδοξο: 112705359
2. Το κύτταρο: Μια μοριακή προσέγγιση, 7η έκδοση, Geoffrey M. Cooper & Robert E. Hausman- Ακαδημαϊκές Εκδόσεις. Κωδικός στον Εύδοξο: 102123643
3. Βασικές Αρχές Γενετικής. Klug, Cummings, Spencer, Palladino, Ακαδημαϊκές Εκδόσεις. Κωδικός στον Εύδοξο: 94644420