

COURSE OUTLINE “CELL COMMUNICATION AND SIGNALING”

1. GENERAL

SCHOOL	HEALTH SCIENCES		
DEPARTMENT	MOLECULAR BIOLOGY AND GENETICS		
LEVEL OF STUDIES	ISCED LEVEL 6		
COURSE CODE	MBG225	SEMESTER	4 th
COURSE TITLE	CELL COMMUNICATION AND SIGNALING		
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 FIELD		
PREREQUISITES:	NO		
TEACHING & EXAMINATION LANGUAGE:	GREEK		
COURSE OFFERED TO ERASMUS STUDENTS:	NO		
COURSE URL:	https://eclass.duth.gr/courses/418344/		

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>Upon successful completion of the course, the students will:</p> <ul style="list-style-type: none"> • Learn the basic principles of signal transduction and understand the concepts of signal amplification and specificity. • Develop critical thinking and understand the signaling pathways in different systems. • Learn the molecular mechanisms of cell cycle regulation. • Learn the extrinsic and the intrinsic apoptotic pathways. • Learn the damage-DNA response and repair pathways. 																
<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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<ul style="list-style-type: none"> • Research, analysis and synthesize of data and information • Production of new research ideas • Promotion of free, creative and inductive thinking 																

3. COURSE CONTENT

<ol style="list-style-type: none"> 1. Introduction 2. Basic principles of signal transduction - Amplification and specificity 3. Signaling dynamics and signaling networks

4. Receptor tyrosine kinases and the MAP kinases signaling pathways
5. G proteins and the c-AMP signaling pathway
6. The JAK-STAT and the SMAD pathways
7. The PI3K/Akt pathway
8. Mechanisms of cell cycle regulation (I)
9. Mechanisms of cell cycle regulation (II)
10. Intrinsic and extrinsic apoptotic pathways (I)
11. Intrinsic and extrinsic apoptotic pathways (II)
12. DNA damage and repair pathways (I)
13. DNA damage and repair pathways (II)

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 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
	Study and analysis of bibliography	80
	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 Method (Formative or Concluding) Summative Student evaluation methods Written Exam with Short Answer Questions (80%) Midterm exam (20%)	

5. SUGGESTED BIBLIOGRAPHY

- Genes VIII. Lewin
- The Cell: A molecular approach. Geoffrey M. Cooper & Robert E.
- Recombinant DNA. James D. Watson, Jan A. Witkowski, Richard M. Myers, Amy A. Caudy