

COURSE OUTLINE "BIOCHEMISTRY I"

1. GENERAL

SCHOOL	HEALTH SCIENCES		
DEPARTMENT	MOLECULAR BIOLOGY AND GENETICS		
LEVEL OF STUDIES	ISCED LEVEL 6		
COURSE CODE	MBG115	SEMESTER	2 nd
COURSE TITLE	BIOCHEMISTRY I		
TEACHING ACTIVITIES		HOURS/WEEK	ECTS CREDITS
<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>			
		3	4
COURSE TYPE	SCIENTIFIC AREA		
<i>Background, General Knowledge, Scientific Area, Skill Development</i>			
PREREQUISITES:	NONE		
TEACHING & EXAMINATION LANGUAGE:	GREEK		
COURSE OFFERED TO ERASMUS STUDENTS:	NO		
COURSE URL:	https://eclass.duth.gr/courses/ALEX01119/		

2. LEARNING OUTCOMES

<p>Learning Outcomes</p> <p><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> <p>a) to familiarize students with the basic biochemical concepts, b) to introduce students to the structure-function and chemical properties of biomolecules (proteins, sugars, lipids, nucleic acids) with emphasis on proteins and amino acids, c) to introduce students to enzymes and enzyme kinetics.</p> <p>After the successful completion of the course, the students will be able to:</p> <p>To understand the basic concepts of chemistry of biomolecules that explain their properties, to recognize and classify biomolecules with their particular structural characteristics and their name, to know their basic functions and the relationship between their structure and function with an emphasis on proteins, to understand enzyme kinetics experiments and finally use this knowledge critically and in a combinatorial way, in order to interpret biological phenomena.</p>																
<p>General Skills</p> <p><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> <p>Search, analysis and synthesis of data and information, ICT Use</p>	<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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Autonomous work
Teamwork
Promoting free, creative and inductive reasoning

3. COURSE CONTENT

1. INTRODUCTION to Biochemistry: the history of biochemical science. 2. THE H₂O MOLECULE AND AQUEOUS SOLUTIONS 3. AMINO ACIDS: structure and properties 4. PROTEIN I: structure and properties 5. PROTEINS II: protein classes; relationship of structure and function 6. PROTEIN III: denaturing and folding of proteins. 7. ENZYME I: function – classification & nomenclature 8. ENZYME II: enzyme kinetics-1 9. ENZYME II: enzyme kinetics-2 10. LIPIDS -MEMBRANES - MEMBRANES - MEMBRANES, CHANNELS AND PUMPS. 11. SUGARS: stereoisomeremia – types of sugars (monosaccharides, polysaccharides)-glycosylation of proteins 12. NUCLEIC ACIDS: structures and properties of nucleic acids 13. Biochemistry REVIEW – specialized topics.

4. LEARNING & TEACHING METHODS - EVALUATION

<p>TEACHING METHOD <i>Face to face, Distance learning, etc.</i></p>	Face to face	
<p>USE OF INFORMATION & COMMUNICATIONS TECHNOLOGY (ICT) <i>Use of ICT in Teaching, in Laboratory Education, in Communication with students</i></p>	Use of ICT in Teaching Use of ICT in Communication with students	
<p>TEACHING ORGANIZATION <i>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.</i></p> <p><i>The supervised and unsupervised workload per activity is indicated here, so that total workload per semester complies to ECTS standards.</i></p>	Activity	Workload/semester
	Lectures	39
	Bibliographic research & analysis	81
	Course Total	120
<p>STUDENT EVALUATION <i>Description of the evaluation process</i></p> <p><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></p> <p><i>Please indicate all relevant information about the course assessment and how students are informed</i></p>	<p>Student evaluation languages Greek</p> <p>Method (Formative or Concluding) Summative</p> <p>Student evaluation methods Written exam with multiple choice test (80%) Written Exam with Short Answer Questions (10%) Written Exam with Problem Solving (10%)</p>	

5. SUGGESTED BIBLIOGRAPHY

Lehninger's Βασικές Αρχές Βιοχημείας 2η έκδοση

Κωδικός Βιβλίου στον Εύδοξο: 77107011

Έκδοση: 2/2018

Συγγραφείς: Nelson David L., Cox Michael M.

ISBN: 9789925563203

Τύπος: Σύγγραμμα

Διαθέτης (Εκδότης): BROKEN HILL PUBLISHERS LTD

Βιοχημεία

Κωδικός Βιβλίου στον Εύδοξο: 77113116

Έκδοση: 6η αμερικανική - 1η ελληνική έκδοση/2019

Συγγραφείς: Reginald H. Garrett, Charles M. Grisham

ISBN: 978-618-5173-40-1

Τύπος: Σύγγραμμα

Διαθέτης (Εκδότης): ΥΤΟΡΙΑ ΕΚΔΟΣΕΙΣ Μ. ΕΠΕ.

Βιοχημεία-Βασικές Αρχές

Κωδικός Βιβλίου στον Εύδοξο: 77107032

Έκδοση: 1/2018

Συγγραφείς: Tymoczko John, Berg Jeremy, Stryer Lubert

ISBN: 9789925563333

Τύπος: Σύγγραμμα

Διαθέτης (Εκδότης): BROKEN HILL PUBLISHERS LTD

Βασική Βιοχημεία

Κωδικός Βιβλίου στον Εύδοξο: 94642784

Έκδοση: 3/2020

Συγγραφείς: Κωνσταντίνος Α. Δημόπουλος, Σμαραγδή Αντωνοπούλου

ISBN: 978-618-84893-2-5

Τύπος: Σύγγραμμα

Διαθέτης (Εκδότης): ΚΩΣΤΑΚΗΣ ΔΗΜ. ΑΘΑΝΑΣΙΟΣΒΙΟΧΗΜΕΙΑ

Βιοχημεία

Κωδικός Βιβλίου στον Εύδοξο: 102074412,

Έκδοση: 9^η διεθνούς έκδοσης (2019)

Συγγραφείς: Jeremy M. Berg, John L. Tymoczko, Gregory J. Gatto Jr., Lubert Stryer

ISBN: 978-960-524-495-8

Τύπος: Σύγγραμμα

Διαθέτης (Εκδότης): ΙΔΡΥΜΑ ΤΕΧΝΟΛΟΓΙΑΣ & ΕΡΕΥΝΑΣ-ΠΑΝΕΠΙΣΤΗΜΙΑΚΕΣ ΕΚΔΟΣΕΙΣ ΚΡΗΤΗΣ