

COURSE OUTLINE “BIOCHEMISTRY II”

1. GENERAL

SCHOOL	HEALTH SCIENCES		
DEPARTMENT	MOLECULAR BIOLOGY AND GENETICS		
LEVEL OF STUDIES	ISCED LEVEL 6		
COURSE CODE	MBG201	SEMESTER	3 rd
COURSE TITLE	BIOCHEMISTRY II		
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
		4	5
COURSE TYPE <i>Background, General Knowledge, Scientific Area, Skill Development</i>	SCIENTIFIC AREA		
PREREQUISITES:	NO		
TEACHING & EXAMINATION LANGUAGE:	GREEK		
COURSE OFFERED TO ERASMUS STUDENTS:	NO		
COURSE URL:	https://eclass.duth.gr/courses/ALEX01121/		

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.

Course objectives: to familiarise students with the metabolic pathways, the conjugated enzyme-catalyzed reactions of the human body that lead to the necessary for its survival energy production and reductive potential. In addition, it focuses on the regulation of the main metabolic pathways, the specialization of the metabolic profiles of main body tissues, and the correlation of basic metabolic processes with the required energy balance and human health status.

After the successful completion of the course, the students will be able:

To define the metabolic processes as anabolic and catabolic.

To understand basic concepts, such as oxidation-reduction, thermodynamically favored reaction and energy charge and their connection with biological functions.

Identify the main metabolic pathways (see course contents) and name the main metabolites and key enzymes

To understand the interdependence of metabolic pathways and to give examples of metabolic regulation and control and finally develop critical and scientific way of thinking.

General Skills

Name the desirable general skills upon successful completion of the module

*Search, analysis and synthesis of data and information,
ICT Use*

Adaptation to new situations

Decision making

Autonomous work

Teamwork

Working in an international environment

Working in an interdisciplinary environment

Production of new research ideas

Project design and management

Equity and Inclusion

Respect for the natural environment

Sustainability

Demonstration of social, professional and moral responsibility and sensitivity to gender issues

Critical thinking

Promoting free, creative and inductive reasoning

Search, analysis and synthesis of data and information, ICT Use

Autonomous work

Teamwork

Promoting free, creative and inductive reasoning

3. COURSE CONTENT

1. Metabolism - Basic Concepts
2. Carbohydrate Metabolism I: Glycolysis, Gluconeogenesis
3. Carbohydrate Metabolism II: Glycogen metabolism (synthesis and degradation)
4. Carbohydrate Metabolism III: pentose phosphate pathway and calvin cycle
5. Krebs cycle I
6. Krebs cycle II
7. Oxidative Phosphorylation
8. Oxidative Phosphorylation - Light photosynthesis reactions
9. Metabolism of lipids I: beta-oxidation
10. Metabolism of lipids II: biosynthesis of fatty acids, triacylglycerols, and cholesterol.
11. Amino acid catabolism (Urea cycle)
12. Biosynthesis of nucleic acids.
13. Integration of metabolism.

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. 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.</i>	Activity	Workload/semester
	Lectures	52
	Bibliographic research & analysis	98
	Course Total	150
STUDENT EVALUATION <i>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 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 multiple choice test (95%) Presentation in audience (5%)	

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