

COURSE OUTLINE

1. GENERAL

SCHOOL	APPLIED BIOLOGY & BIOTECHNOLOGY		
ACADEMIC UNIT	BIOTECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	3400	ΕΞΑΜΗΝΟ ΣΠΟΥΔΩΝ	3rd
COURSE TITLE	Biochemistry of the Metabolism		
INDEPENDENT TEACHING ACTIVITIES <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>		WEEKLY TEACHING HOURS	CREDITS
Lectures		3 (x13 wks)	1,56
Practical Lab Courses		2 (x13 wks)	1,04
Group class presentation (selected topics/ scientific articles)		2,3 (x13 wks)	1,20
Autonomous study (personal assignment)		2,3 (x13 wks)	1,20
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		SUM: 9,6 (x13 wks)	5,0
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	Filed of Science		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek (Teaching & Exams)		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	English (Teaching & Exams)		
COURSE WEBSITE (URL)	Under construction		

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

▮ Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area

▮ Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B

▮ Guidelines for writing Learning Outcomes

Upon successful completion of this course the students will acquire new knowledge and specific skills on the following subjects:

- Gain global knowledge and understanding of the basic principles of cell metabolism.
- Has a comprehensive understanding of the basic biomolecules and metabolic processes of anabolism and catabolism in living organisms
- Understands the basic principles of cellular energy metabolism.
- Understands the basic principles of cell metabolism regulation.
- Will be able to promote social knowledge regarding modern technological applications of metabolic processes.
- Gain a basic background for a better understanding of the most specialized biological and biotechnology courses.

<ul style="list-style-type: none"> • Be able to distinguish the basic and special roles of the various metabolic processes at the level of their application, in order to develop specific biotechnological products or services. • Can work with fellow students to study specialized metabolic processes, while at the same time being trained in online access to libraries and scientific journals. 	
General Competences <i>Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?</i>	
<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i> <i>Adapting to new situations</i> <i>Decision-making</i> <i>Working independently</i> <i>Team work</i> <i>Working in an international environment</i> <i>Working in an interdisciplinary environment</i> <i>Production of new research ideas</i>	<i>Project planning and management</i> <i>Respect for difference and multiculturalism</i> <i>Respect for the natural environment</i> <i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i> <i>Criticism and self-criticism</i> <i>Production of free, creative and inductive thinking</i> <i>.....</i> <i>Others...</i> <i>.....</i>
<ol style="list-style-type: none"> 1) Retrieve, analyze and synthesize data and information relying on use of necessary technologies. 2) Adjust to new situations. 3) Decision making. 4) Work autonomously. 5) Work in groups. 6) Create novel scientific projects. 7) Design and develop research projects/experiments. 8) Be critical and self-critical. 9) Apply knowledge to practice. 	

3. SYLLABUS

<ol style="list-style-type: none"> 1. Introduction to energy metabolism 2. Basic concepts and the organization of metabolism 3. Glycolysis and Gluconeogenesis 4. The cycle of Citric Acid 5. Oxidative phosphorylation 6. The Pentose Phosphate Pathway 7. Carbohydrate metabolism. Biosynthesis and catabolism 8. The metabolism of essential amino acids. Biosynthesis and catabolism 9. The metabolism of fatty acids and lipids. Biosynthesis and catabolism 10. The biosynthesis of nucleotides

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Direct (face to face).	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	Power point presentations, student contact electronically.	
TEACHING METHODS <i>The manner and methods of teaching are described in detail.</i> <i>Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.</i> <i>The student's study hours for each learning activity are given as well as the hours of non-</i>	Δραστηριότητα	Φόρτος Εργασίας Εξαμήνου
	Lectures	39 h = 1.56 ECTS (13 wks x 3 h)
	Practical Lab Courses	26 h = 1.04 ECTS (13 wks x 2 h)
	Group class presentations	30 h = 1.2 ECTS (13 wks x 2,3 h)
	Autonomous study	30 h = 1.2 ECTS

directed study according to the principles of the ECTS		(13 wks x 2,3 h)
	Total	125 h (5 ECTS)
<p align="center">STUDENT PERFORMANCE EVALUATION</p> <p><i>Description of the evaluation procedure</i></p> <p><i>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving,</i></p>	<p>I) Written final examination (50%) with ranking difficulty on the basis of the issues and subjects presented during theoretical courses. The exams will include:</p> <ul style="list-style-type: none"> - Questions of multiple choice. - Questions of theoretical knowledge. - Theoretical problems to be resolved. <p>II) Laboratory exercises/ practical courses (30%). Students individually or in groups will provide a written report before the beginning of the next exercise. The grade of lab courses will be based on the writing reports, attendance and class participation.</p> <p>III) Group and small autonomous assignments (20%).</p>	

5. Recommended Literature

1. BIOCHEMISTRY (9th ed. 2019) BERG M.J., TYMOCZKO L.J., GATTO G.J., STRYER L., MACMILLAN Press. ISBN: 978-131-911-465-7
 2. Fundamentals of Biochemistry: Life at the Molecular Level, (5th ed. 2018), VOET D., VOET J., PRATT C. Wiley ISBN: 978-960-418-628-0
- Relevant Scientific Journals:**
 Biochemistry, Journal of Biological Chemistry, FEBS Journal, Plant Physiology, Plant Cell, Plant Journal, Trends in Plant Science, New Phytologist, Molecular Plant, Journal of Plant Physiology, Plant Physiology & Biochemistry, Journal of Experimental Botany.