

COURSE LAYOUT

1. GENERAL

SCHOOL	APPLIED BIOLOGY AND BIOTECHNOLOGY		
DEPARTMENT	BIOTECHNOLOGY		
STUDY LEVEL	<i>Undergraduate</i>		
COURSE CODE		SEMESTER	2nd
COURSE TITLE	BIOCHEMISTRY of Biomolecules		
INDEPENDENT TEACHING ACTIVITIES	WEEKLY TEACHING HOURS	ECTS	
Lectures	3	1,56	
Practical (lab work)	2	1,04	
Group and/or individual works	1	2,40	
	5	5,0	
COURSE TYPE	Scientific background		
PREREQUISITES	No		
LANGUAGE	Greek with English support in terminology		
IS THE COURSE OFFERED for ERASMUS STUDENTS?	YES (in Greek)		
COURSE WEB PAGE	https://mediasrv.aua.gr/eclass/courses/BIOTECH144/ http://eclass.geneticslab.gr		

2. LEARNING OUTCOMES

Learning Outcomes														
<p>On completion of the course the student will:</p> <ul style="list-style-type: none"> ▪ Has a comprehensive knowledge of the basic biomolecules that structure living organisms ▪ Can promote social knowledge regarding modern technological applications of biomolecules. ▪ Know the biological roles and relationship structure and function of biomolecules. ▪ Will gain a basic background for a better understanding of the most specialized biological and biotechnology courses. ▪ Can distinguish the basic and special roles of the different categories of biomolecules in terms of their application, in order to produce specific biotechnological products or services. ▪ Can work with his fellow students to study specialized categories of biomolecules, while at the same time he will be trained in online access to libraries and scientific journals. ▪ To be able to collaborate with this fellow students to create written work and oral presentation on the applications of biomolecular biochemistry, as well as the ability for online access and retrieval of information from electronic libraries and scientific journals. 														
General Competences														
<p>General Competences</p> <p><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></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"> <i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i> </td> <td style="width: 50%; border: none;"> <i>Project planning and management</i> </td> </tr> <tr> <td style="border: none;"> <i>Adapting to new situations</i> </td> <td style="border: none;"> <i>Respect for difference and multiculturalism</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>Working independently</i> </td> <td style="border: none;"> <i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i> </td> </tr> <tr> <td style="border: none;"> <i>Team work</i> </td> <td></td> </tr> <tr> <td style="border: none;"> <i>Working in an international environment</i> </td> <td></td> </tr> <tr> <td style="border: none;"> <i>Working</i> </td> <td></td> </tr> </table>	<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>	<i>Project planning and management</i>	<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>	<i>Decision-making</i>	<i>Respect for the natural environment</i>	<i>Working independently</i>	<i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i>	<i>Team work</i>		<i>Working in an international environment</i>		<i>Working</i>	
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in an interdisciplinary environment Production of new research ideas

Criticism and self-criticism
Production of free, creative and inductive thinking
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Others...

3. COURSE CONTENT

1. Modern Biochemistry in the age of functional genomics
2. Data on Biochemical evolution. The evolutionary course of simple molecules in complex biomolecules
3. The biomolecules of living organisms and their structural units
4. Amino acids and proteins
5. Structure and function of proteins
6. Enzymes: Basic and kinetics principles
7. Coenzymes and prosthetic groups
8. Mechanisms and regulation of enzymatic catalysis
9. Nucleotides and nucleic acids: Structure and function
10. Carbohydrates: Structure and biological roles
11. Lipids and cell membranes

LABORATORY: Solution Preparation, Chromatographic Protein Separation, Photometry, Bradford Total Protein Concentration Determination, Centrifugation, Electrophoresis.

4. TEACHING and LEARNING METHODS - Evaluation

TEACHING METHOD	In suitably equipped teaching rooms. Distant Learning	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY Use of ICT in teaching, laboratory education, communication with students	The course is completely computerised in the form of Powerpoint, Web linking, etc. Computer programmes and applications are taught and distributed to students, for the analysis of financial information. The support of learning process and the necessary materials are facilitated by the electronic, web based e-class platform (http://geneticslab.gr).	
TEACHING ORGANISATION <i>The manner and methods of teaching are described in detail. 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-directed study according to the principles of the ECTS</i>	<i>Activity</i>	<i>Work Load</i>
	Lectures (direct)	39 h (1.56 ECTS)
	Laboratory work	12 h (0,48 ECTS)
	Group and/or individual works	13 h (0.52 ECTS)
	Autonomous study	61 h (2,44 ECTS)
	<i>Total contact hours and training</i>	125 h (5 ECTS)
STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure</i> <i>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other</i>	I) Written final examination (50%) of different difficulty, based on the lectures offered, containing: <ul style="list-style-type: none"> - Questions of multiple choice. - Questions of theoretical knowledge. - Problems based on lecture material. II. Laboratory exercises/practicals (30%). III. Group and small autonomous works (20%). IV. Internet questions (10%)	

<i>Specifically-defined evaluation criteria are given and if and where are accessible to students</i>	
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5. BIBLIOGRAPHY

<i>- Recommended Books :</i>

Βιοχημεία Βασικές Αρχές (Stryer) Ελληνική Μετάφραση (2015) Broken Hill Publishers.
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<i>-Συναφή επιστημονικά περιοδικά:</i>
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Science

Nature

Journal of Molecular Modelling

BMC Biology
