COURSE OUTLINE

(1) GENERAL

SCHOOL	School of Agricultural Sciences			
ACADEMIC UNIT	Biosystems & Agricultural Engineering			
LEVEL OF STUDIES	UNDERGRADUATE			
COURSE CODE	BAE_350	SEMESTER 3 RD		
COURSE TITLE	BIOCHEMISTRY			
INDEPENDENT TEACHING ACTIVITIES 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			WEEKLY TEACHING HOURS	CREDITS
Lectures			3	
Tutorials			0	
Laboratory			2	
TOTAL			5	5
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).				
COURSE TYPE general background, special background, specialised general knowledge, skills development PREREQUISITE COURSES:	Background General Knowledge Skills development There are no prerequisite courses.			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GreekFor Erasmus students in English			
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes			
COURSE WEBSITE (URL)				

(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

The aim of the course is to first introduce students to the basic characteristics of the structure and the biological role of the most important categories of biomolecules found in prokaryotic and eukaryotic organisms. In addition, data on the properties and mechanisms of action of enzymes, as well as the role of coenzymes and additive groups in enzyme catalysis are included, while the chapter on enzyme catalysis closes with the presentation of data on the kinetics of simple enzyme reactions. Finally, students are introduced to the principles and basic biochemical processes of intermediate metabolism. In more detail, important biochemical processes are presented that refer to the metabolism of the most important categories of biomolecules, which include carbohydrates, lipids, amino acids and nucleotides.

General Competences

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?

Search for, analysis and synthesis of data and Project planning and management information, with the use of the necessary technology Respect for difference and multiculturalism

Adapting to new situations

Decision-making

Working independently

Team work

Working in an international environment

Working in an interdisciplinary environment

Production of new research ideas

Respect for the natural environment

Showing social, professional and ethical responsibility and

sensitivity to gender issues Criticism and self-criticism

Production of free, creative and inductive thinking

..... Others

Others...

 $Search, analysis \ and \ synthesis \ of \ data \ and \ information, \ using \ the \ necessary \ technologies$

Production of new research ideas

Respect for the natural environment

Promoting free, creative and inductive thinking

(3) SYLLABUS

Lesson 1. Macromolecules of living organisms and their building blocks.

Lesson 2 Carbohydrates - Nucleotides and Nucleic Acids.

Lesson 3 Amino Acids and Proteins & Lipids.

Lesson 4 Biological Membranes.

Lesson 5 Enzymes, properties, role of enzymes.

Lesson 6 Mechanisms of Enzyme catalysis.

Lesson 7 Coenzymes and Additive groups.

Lesson 8 Elements of kinetics of enzymatic reactions.

Lesson 9 Intermediate metabolism. Lesson 13 Introduction to metabolism.

Lesson 10 Bioenergy.

Lesson 11 Carbohydrate metabolism.

Lesson 12 Lipid metabolism.

Lesson 13 Amino acid metabolism & Nucleotide metabolism.

Laboratory exercises:

- 1. Preparation of solutions.
- 2. Chromatographic separations of proteins.
- 3. Photometry.
- 4. Determination of total Bradford protein concentration.
- 5. Centrifugation.
 - 6. Electrophoresis.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY	Face to face teaching, Experiential activities, Laboratory			
Face-to-face, Distance learning, etc.	training			
USE OF INFORMATION AND	Use of ICT (power point) in Teaching			
COMMUNICATIONS TECHNOLOGY	Use of ICT (power point) in Laboratory Training			
Use of ICT in teaching, laboratory education,	Use of ICT in Communication with students (Learning			
communication with students	process support through the electronic platform e-class).			
TEACHING METHODS	Activity	Semester workload		
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	Lectures	39		
	Laboratory	12		
	UNGUIDED STUDY	32		
	Study hours. Literature	42		
workshop, interactive teaching, educational	survey			
visits, project, essay writing, artistic creativity,	Course total	125		
etc.				
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				
ECIS	<u> </u>			

STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, openended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.

- 1. The laboratories participate by 30% in the final grade. In order to be examined in theory, the student must have completed all the laboratories and have been successfully examined in them.
- 2. The main assessment criteria focus on understanding and correlating the knowledge that students gain from the course with other knowledge. Particular emphasis is placed on whether they have developed the ability to apply this knowledge to crop selection and to assess the impact of these changes on the environment. Emphasis is also placed on demonstrating critical ability and justifying the choices they make in each problem.
- 3. Evaluation is dynamic. It mainly involves problem solving. is done orally or in writing or with a combination of the two, with or without pre-examination on the basic principles of the course, with or without exculpatory advances and with other test or inventive methods, depending on the composition of the dynamics and the needs of the audience. 4. The above are done in the Greek language. For foreign language students (eg Erasmus students) conducted in English

(5) ATTACHED BIBLIOGRAPHY

- Οργανική Χημεία, L.G. Wade, JR., Εκδόσεις Τζιόλα, 7η Έκδοση.
- Οργανική Χημεία, John Mc Murry, Πανεπιστημιακές Εκδόσεις Κρήτης.
- Ετεροκυκλική Χημεία με μια Ματιά (1η έκδοση), JOHN A. JOULE, KEITH MILLS. Επιμέλεια: Β. Σαρλή, Εκδότης: Παρισιάνου Α.Ε. 2011.
- Βιοοργανική Χημεία, Λιακοπούλου-Κυριακίδου, Εκδόσεις: Ζήτη, Θεσσαλονίκη, 2004.

Other sources:

- Journal of Organic Chemistry
- European Journal of Medicinal Chemistry
- Bioorganic & Medicinal Chemistry
- Carbohydrate Research