COURSE OUTLINE

1. GENERAL

SCHOOL	AGRICULTURAL SCIENCES		
ACADEMIC UNIT	CROP SCIENCE		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**CRS_301**	**SEMESTER**	3rd
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	1	
TOTAL	4	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*	SPECIAL BACKGROUND
PREREQUISITE COURSES:	Typically, there are not prerequisite course.
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek, English
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
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*

By the end of this course, the student will know about:

- the structure and function of the biological molecules: proteins, nucleic acids, carbohydrates, lipids
- the structure and function of the enzymes
- the structure and function of the cell membranes
- basic pathways of the cell metabolism

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 information, with the use of the necessary technology
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
Project planning and management
Respect for difference and multiculturalism
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…

By the end of this course the student will, furthermore, have developed the following skills (general abilities):

1. Ability to understand basic aspects of biomolecules structure and function.
2. Ability to understand basic aspects of metabolism function.
3. Ability to use this knowledge to interpret experimental results.

4. Ability to use this knowledge in other subjects of agronomy
5. Skills to study and find information from scientific books and web sites and databases.

Generally, by the end of this course the student will, furthermore, have developed the following general abilities (from the list above):
Search for, analysis and synthesis of data and information, with the use of the necessary technology
Team work
Project planning and management
Promotion of free, creative and inductive thinking

3. SYLLABUS

1. Introduction to Biochemistry.
2. Structure and function of proteins.
3. Exploring proteins.
4. Nucleic acids and the flow of genetic information.
5. Exploring the genes.
6. Carbohydrates.
7. Lipids.
8. Cell membranes.
9. Enzymes: basic principles and kinetics.
10. Basic concepts of metabolism.
11. Glycolysis and gluconeogenesis.
12. The citric acid cycle.
13. Oxidative phosphorylation.

Laboratory exercises:

- General guidelines for experimental research.
- Quantitative biochemical analysis.
- Determination of the total protein concentration by Bradford method.
- Determination of catalase activity.
- Determination of lipid peroxidation.
- Determination of proteins' molecular weight by gel filtration chromatography.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face lectures and laboratory exercises.
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	• Use of Information and Communication Technologies (ICTs) (e.g. powerpoint) in teaching. • Use of ICTs in student communication (learning support through the e-class platform).
TEACHING METHODS *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.* *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*	

Activity	*Semester workload*
Lectures (3 conduct hours per week x 13 weeks)	39
Tutorials (1 conduct hour per week x 13 weeks)	13
Hours for private study of the student and preparation for mid-term or/and final examination – Participation in the examinations, e-class exercise	73
Course total	**125 hours**

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure*	1. Optionally, two mid-term examinations, the first in the middle and the second at the end of the semester. The evaluation procedure is conducted with short answer questions and/or

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 *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	open-ended questions and/or multiple choice questionnaires and/or oral examination, as well as questions based on laboratory exercises. The final examination grade is the mean mark. It is mandatory to obtain pass grade (≥5) in each examination. 2. Written examination after the end of the semester. The evaluation procedure is conducted with short answer questions and/or open-ended questions and/or multiple choice questionnaires and/or oral examination, as well as questions based on laboratory exercises (unless the student has successfully participated the mid-term examinations). Minimum passing grade: 5. 3. All the above are taking place in Greek.

5. ATTACHED BIBLIOGRAPHY

1. Berg et al., Βιοχημεία, Πανεπιστημιακές Εκδόσεις Κρήτης.
2. Nelson and Cox, Lehninger's Βασικές Αρχές Βιοχημείας, Εκδόσεις Broken Hill Publishers Ltd.