COURSE OUTLINE

1. GENERAL

SCHOOL	AGRICULTURAL SCIENCES		
ACADEMIC UNIT	ANIMAL PRODUCTION, FISHERIES & AQUACULTURE		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	AS_200	**SEMESTER**	2nd
COURSE TITLE	ORGANIC AND BIOLOGICAL CHEMISTRY		

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**
(the credits are awarded for the whole course)	3 (Lectures) + 2 (Lab. work)	6
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*	General Background (Organic and Biological Chemistry) Skills Development (Lab exercise on Organic and Biological Chemistry experiments)
PREREQUISITE COURSES:	There are no prerequisite courses.
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek. Teaching may be performed in English in case of foreign students
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*

By the end of this course the student will be able to:

- understand the chemical formulas and nomenclature of organic compounds
- know the main classes of organic compounds and their basic reactions
- explain the structure, stability and activity of aromatic compounds using the theory of resonance
- know the chemical composition and structure of the basic biomolecules (carbohydrates, proteins, lipids, nucleic acids)
- apply the basic laboratory techniques of Organic Chemistry

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	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Production of new research ideas	*Others…*
	…….

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

- Ability to demonstrate knowledge and understanding of concepts and applications related to Organic Chemistry
- Ability to demonstrate knowledge and understanding of concepts and applications related to the structure of biomolecules
- Study skills needed for continuing professional development.
- Ability to interact with others on chemical or multidisciplinary issues.

Generally by the end of this course the student will have developed the following general abilities (from the above list)

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
Respect for the natural environment
Criticism and self-criticism

3. SYLLABUS

• Introduction to Organic Chemistry and Organic Compounds
• Classification and Nomenclature of Organic Compounds, Isomerization and Stereochemistry
• Hybridization in Organic Compounds
• Mechanisms of Organic Reactions
• Aliphatic hydrocarbons, Alkyl halides

• Alcohols, Carbonyl compounds (aldehydes, ketones) and derivatives
• Carboxylic Acids and Derivatives, Isoprenoid compounds
• Resonance, Aromatic compounds and derivatives
• Biomolecules: Amino Acids, Peptides and Proteins
• Biomolecules: Heterocyclic compounds of plant and animal origin
• Biomolecules: Carbohydrates, Sugars
• Biomolecules: Lipids
• Biomolecules: Nucleotides and Nucleic Acids

Laboratory Exercises

1. Introduction to the Laboratory - Safety and health rules
2. Main Laboratory Techniques
3. Recrystallization, Melting point
4. Thin layer chromatography (TLC)
5. Reactions of hydrocarbons
6. Reactions of alcohols
7. Detection of carbonyl group
8. Detection and properties of amino acid
9. Physicochemical properties of proteins
10. Spectrophotometry - Quantitative determination of proteins
11. Properties of mono- and disaccharides
12. Detection of carbohydrates
13. Determination of pI of the amino acid glycine

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face. Laboratory exercises in Organic and Biological Chemistry.
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	• Use of ICT (powerpoint) in teaching • Use of ICT (powerpoint) in laboratory exercises • Use of ICT in the Communication with Students (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*	

Activity	***Semester workload***
Lectures	39
Laboratory practice	26
Writing short lab reports	13
Final examination	3
Private study time of the students for the lab preparation and final examination	69
Course total (25 work load for each ECTS credit)	**150**

ECTS	
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *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.*	1. Laboratory work (Average score of individual reports of laboratory exercises) (A) 2. Written final examination (B) *Each case is graded on a scale of 0-10* Final grade (FG): FG = 0.3A + 0.7B *Minimum passing grade: 5 (Grade: 0-10)* Greek language is used. For foreign students (e.g. Erasmus students) it can be **done** in English In the case of failure the individual work assignment (A) is retained and only the final written examination is repeated

5. ATTACHED BIBLIOGRAPHY

Suggested bibliography :

1. J. McMurry, Organic Chemistry, 8th Edition, 2012.
2. Introduction to Organic and Biological Chemistry Stuart J. Baum and John W Hill, Macmilan: New York, NY. 1993.

- Related academic sources and journals::

The Journal of Organic Chemistry, (ACS Publications) https://pubs.acs.org/journal/joceah
Biochemistry, (ACS Publications) https://pubs.acs.org/journal/bichaw