

## COURSE OUTLINE

### (1) GENERAL

<b>SCHOOL</b>	School of Agricultural Sciences		
<b>ACADEMIC UNIT</b>	Biosystems & Agricultural Engineering		
<b>LEVEL OF STUDIES</b>	UNDERGRADUATE		
<b>COURSE CODE</b>	<b>BAE_150</b>	<b>SEMESTER</b>	<b>1<sup>ST</sup></b>
<b>COURSE TITLE</b>	<b>GENERAL BIOLOGY</b>		
<b>INDEPENDENT TEACHING ACTIVITIES</b> <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>	<b>WEEKLY TEACHING HOURS</b>	<b>CREDITS</b>	
Lectures	3		
Tutorials	0		
Laboratory	2		
<b>TOTAL</b>	<b>5</b>	<b>5</b>	
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
<b>COURSE TYPE</b> <i>general background, special background, specialised general knowledge, skills development</i>	Background General Knowledge Skills development		
<b>PREREQUISITE COURSES:</b>	There are no prerequisite courses.		
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	Greek .-For Erasmus students in English		
<b>IS THE COURSE OFFERED TO ERASMUS STUDENTS</b>	Yes		
<b>COURSE WEBSITE (URL)</b>			

### (2) LEARNING OUTCOMES

<p><b>Learning outcomes</b></p> <p><i>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.</i></p> <p><i>Consult Appendix A</i></p> <ul style="list-style-type: none"> <li>• <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i></li> <li>• <i>Descriptors for Levels 6, 7 &amp; 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i></li> <li>• <i>Guidelines for writing Learning Outcomes</i></li> </ul>
<p>Upon completion of this course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand and analyze basic concepts and principles of Biology</li> <li>2. Know and understand the rules that govern the phenomenon of life (nature, origin, organization and chemistry of Life)</li> <li>3. Know and analyze the structure and basic processes that characterize the eukaryotic and prokaryotic cell</li> <li>4. Know and understand basic concepts related to metabolism, cellular respiration and photosynthesis</li> <li>5. They know the basic characteristics that govern and concern the nature, the role and the structure of the genetic material</li> <li>6. Know and understand the processes of the cell cycle, mitosis and reduction</li> <li>7. Understand the processes of copying, transcribing and translating genetic material</li> <li>8. Know and understand the basic principles of Mendelian theory and the chromosomal basis of heredity</li> <li>9. Know basic knowledge about viruses</li> </ol>

10. They know basic knowledge about Biotechnology  
 11. Investigate and locate accurate information and relevant educational material in the international and Greek literature

**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?*

- |   |   |
|---|---|
| <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>Criticism and self-criticism</i>   |
| <i>Working in an international environment</i>  | <i>Production of free, creative and inductive thinking</i>                                      |
| <i>Working in an interdisciplinary environment</i>  | <i>.....</i>  |
| <i>Production of new research ideas</i>   | <i>Others...</i>  |
|   | <i>.....</i>  |

- Search, analysis and synthesis of data and information, using the necessary technologies
- Decision making
- Autonomous work
- Teamwork
- Respect for the natural environment
- Exercise criticism and self-criticism
- Promoting free, creative and inductive thinking

**(3) SYLLABUS**

1. Biology, Physics and Chemistry in the study of Life. Introduction.
2. Chemistry of living beings (chemical elements, chemical bonds in life, water)
3. Chemistry of living beings (macromolecules, origin of life),
4. Cell, (prokaryotic and eukaryotic cells and cellular organelles).
5. Cellular metabolism (energy flow, biological reactions (catalyst enzymes),
6. cellular respiration, factors that affect it, energy production).
7. Cell cycle and division (mitosis, reduction).
8. Basic doctrine of Biology and organization and sequences of cell genomes: non-DNA coding, organization of DNA into chromatin and chromosomes, nucleosomes, histones
9. Genetics (Mendel Laws, Extensions of Mendelian Inheritance).
10. Evolution (Darwinian theory, Neo-Darwinism, ontogeny and phylogeny, adaptation, evolution of species).
11. Architectural model of animals. Development (main development stages and mechanisms).
12. Principles Ecology
13. Classification and phylogeny.

**Laboratory Part Description:**

1. Laboratory safety rules, use of instruments.
2. Introduction to microscopy
3. Observation of microorganisms (preparations) under the microscope.
4. Observation of live natural sample microorganisms under the microscope.
5. Observation of mitosis and reduction preparations.

**(4) TEACHING and LEARNING METHODS - EVALUATION**

<b>DELIVERY</b> <i>Face-to-face, Distance learning, etc.</i>	Face to face teaching, Experiential activities, Laboratory training
<b>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</b> <i>Use of ICT in teaching, laboratory education, communication with students</i>	<ul style="list-style-type: none"> <li>• Use of ICT (power point) in Teaching</li> <li>• Use of ICT (power point) in Laboratory Training</li> <li>• Use of ICT in Communication with students (Learning process support through the electronic platform e-class).</li> </ul>

TEACHING METHODS	Activity	Semester workload
<p>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.</p> <p>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</p>	Lectures	39
	Laboratory	16
	Writing short reports of laboratory exercises	25
	Study hours. Literature survey, preparation for the laboratory exercises and the final examination	45
	Course total	<b>125</b>
<p><b>STUDENT PERFORMANCE EVALUATION</b></p> <p>Description of the evaluation procedure</p> <p>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</p> <p>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</p>	<ol style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>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.</li> <li>4. The above are done in the Greek language. For foreign language students (eg Erasmus students) conducted in English</li> </ol>	

## (5) ATTACHED BIBLIOGRAPHY

<ul style="list-style-type: none"> <li>• Campbell N.A., Reece J.B. (2015) Βιολογία (ΤΟΜΟΣ Ι), ISBN: 978-960-524-306-7, Πανεπιστημιακές Εκδόσεις Κρήτης</li> <li>• Alberts B., Bray D., Hopkin K., Johnson A., Lewis J., Raff M., Roberts K., Walter P. (2015) Βασικές αρχές Κυτταρικής Βιολογίας, ISBN:9789963258277, Ιατρικές Εκδόσεις Π.Χ. Πασχαλίδης</li> <li>• Cooper G.M., Hausman R.E. (2011) Το Κύτταρο, Μια μοριακή προσέγγιση (ΤΟΜΟΙ Α+Β), ISBN: 978-960-99895-2-7, Ακαδημαϊκές εκδόσεις Ι. Μπάσδρα &amp; ΣΙΑ Ο.Ε.</li> <li>• Μαργαρίτης Λ.Χ., Γαλανόπουλος Β.Κ., Κεραμάρης Κ.Ε., Μαρίνος Ε.Σ., Παπασιδέρη Σ., Στραβοπόδης Δ.Ι., Τρουγκάκος Ι.Π. (2004) Βιολογία Κυττάρου, ISBN: 960-372-077-1, Ιατρικές Εκδόσεις Λίτσα</li> <li>• Johnson P., Mason G., Losos K., Singer J., Raven S. (2013) Biology (10th Edition), ISBN-13:978-0073383071, ISBN-10:0073383074, , Publisher:McGraw-Hill Higher Education</li> <li>• Solomon E., Martin C., Martin D.W., Berg L.R. (2014) Biology (10th Edition), ISBN-10: 1285423585, ISBN-13: 978-1285423586, Publisher: Brooks Cole</li> </ul>
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