

## 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_160</b>	<b>SEMESTER</b>	<b>1<sup>ST</sup></b>
<b>COURSE TITLE</b>	<b>PLANT MORFOLOGY AND ANATOMY</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		
<b>PREREQUISITE COURSES:</b>	There are no prerequisite courses. Knowledge of High School Biology is desirable		
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	Greek .-For Erasmus students in English		
<b>IS THE COURSE OFFERED TO ERASMUS STUDENTS</b>	Yes. Project work		
<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>At the end of this course the student will be able to:</p> <ul style="list-style-type: none"> <li>• to know the structure of the plant organism,</li> <li>• understand how this structure serves all the functions performed within the plant organism,</li> <li>• to be able to use the basic knowledge of plant anatomy and to use this knowledge in other cognitive subjects of Agriculture.</li> </ul>		
<p><b>General Competences</b></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%; vertical-align: top;"> <i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>  <i>Adapting to new situations</i>  <i>Decision-making</i>  <i>Working independently</i>  <i>Team work</i>  <i>Working in an international environment</i>  <i>Working in an interdisciplinary environment</i>  <i>Production of new research ideas</i> </td> <td style="width: 50%; vertical-align: top;"> <i>Project planning and management</i>  <i>Respect for difference and multiculturalism</i>  <i>Respect for the natural environment</i>  <i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i>  <i>Criticism and self-criticism</i>  <i>Production of free, creative and inductive thinking</i>  <i>.....</i>  <i>Others...</i> </td> </tr> </table>	<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i> <i>Adapting to new situations</i> <i>Decision-making</i> <i>Working independently</i> <i>Team work</i> <i>Working in an international environment</i> <i>Working in an interdisciplinary environment</i> <i>Production of new research ideas</i>	<i>Project planning and management</i> <i>Respect for difference and multiculturalism</i> <i>Respect for the natural environment</i> <i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i> <i>Criticism and self-criticism</i> <i>Production of free, creative and inductive thinking</i> <i>.....</i> <i>Others...</i>
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At the end of this course the student will have further developed the following skills (general skills):

- Ability to demonstrate knowledge and understanding of essential data, concepts, theories and applications related to Plant Morphology and Anatomy.
- Ability to apply this knowledge and understanding to solving problems of a non-familiar nature.
- Ability to adopt and apply methodology in solving non-familiar problems.
- Study skills needed for continuing professional development.
- Ability to interact with others in problems of an interdisciplinary nature.
- Ability to work independently and in a team in an interdisciplinary environment.
- Ability to promote free, creative and inductive thinking.

An additional goal is to be able to:

1. Autonomous Work
2. Teamwork
3. Decision Making
4. Work in an interdisciplinary environment

### (3) SYLLABUS

The content of the course includes the following:

Plant cell:

- Basic elements of the plant cell structure.

Plant cell subcellular organelles

- Plant cell categories: Parenchymal. Collage. Sclerosis.

Plant tissues:

- Tissue categories of the plant body.
- Vegetable skin-accessories.
- Tissue ducts: wood and bark.
- Secretory cells and tissues.

Organization of the plant body:

The shoot: primary and secondary structure and growth.

- The root: primary and secondary structure and development.
- The structure of the leaf.
- The structure of the flower.
- Plant reproduction. Fruits & seeds.

#### LABORATORY EXERCISES

Plant organography: root, stem, leaves, flowers, fruits.

- The plant cell: nucleus, plastids, dead cell inclusions.
- Skin: nephroid and alteroid mouths.

Tissues: Periderm, Pancreatic, supportive, conduit tissue.

- Anatomy of stem, leaf, root.
- Flowers-inflorescences. Categories of fruits

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

<b>DELIVERY</b> <i>Face-to-face, Distance learning, etc.</i>	Teaching in the amphitheater: Lectures using electronic media which relate to the theory, exercises and applications in the area of Biosystems and Agricultural Engineering.	
<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>	
<b>TEACHING METHODS</b> <i>The manner and methods of teaching are described in detail.</i>	<b>Activity</b>	<b>Semester workload</b>
	Lectures	39
	Labs	26

<p>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>	Unguided study	57
	Final Exams	3
	Course total	<b>125</b>
<p align="center"><b>STUDENT PERFORMANCE EVALUATION</b></p> <p><i>Description of the evaluation procedure</i></p> <p><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></p> <p><i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i></p>	<p>Written or oral final exam with physical presence or online with or without contribution of project work during the semester</p> <p>The 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.</p> <p>4. The above are done in the Greek language. For foreign language students (eg Erasmus students) conducted in English</p>	

#### (5) ATTACHED BIBLIOGRAPHY (IN GREEK)

- Τσέκος Ι., Ηλίας Η. (2007) *Μορφολογία και Ανατομία Φυτών*. Εκδοτικός Οίκος Αδελφών Κυριακίδη Α.Ε.
- Καράταγλης Στ., Κωνσταντίνου Μ. (2005) *Βοτανική, Μορφολογία – Ανατομία*. Εκδόσεις Χάρης.
- Ψαράς Γ. (2002) *Άτλας Ανατομίας Φυτών*. Εκδόσεις Σταμούλη.
- Dickison W.C. (2000) *Integrative Plant Anatomy*. Academic Press.
- *Advances in Food and Nutrition Research*, Taylor S.L. 1998, Academic Press.

