

PLANT ANATOMY AND PHYSIOLOGY

COURSE OUTLINE

GENERAL

SCHOOL	AGRICULTURE SCIENCE		
DEPARTMENT	FOOD SCIENCE AND NUTRITION		
STUDY LEVEL	5 years		
COURSE CODE	CP216	SEMESTER OF STUDY	5th
COURSE TITLE	PLANT ANATOMY AND PHYSIOLOGY		
INDEPENDENT TEACHING ACTIVITIES		WEEKLY COURSES	CREDITS
<i>In case ECTS are awarded for distinct parts of the course e.g. Theory Lectures, Laboratory Practicals etc. If ECTS are awarded uniformly for the entire course, give the weekly teaching hours and total ECTS.</i>			
Theory Lectures		3	
Exercises		2	
TOTAL			5
COURSE TYPE <i>Background, Basic knowledge, Field of Science, Skill development</i>	<i>General background and knowledge regarding Plant anatomy and physiology such as Categories of Plant tissues and Basic function of plants and plant organs.</i>		
PREREQUISITES:	No		
LANGUAGE:	Greek		
IS THE COURSE OFFERED for ERASMUS STUDENTS?	Yes		
COURSE WEB PAGE (URL)	https://food.uth.gr/plant Anatomy and Physiology		

LEARNING OUTCOMES

Learning Outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate (certain) level, which students will acquire upon successful completion of the course, are described in detail. It is necessary to consult Appendix A

- *Description of the level of learning outcomes for each level of study, in accordance with the European Higher Education Qualifications' Framework*

- *Descriptive indicators for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning And Appendix B*

- *Guidelines for writing Learning Outcomes*

The course aims to introduce the basic knowledge of Plant Anatomy and Physiology to the students of the institution. The study of Anatomy and Physiology of higher plants is fundamental knowledge and a prerequisite for the study of organisms in other scientific fields, such as Genetics, Cytology, Biotechnology, etc. Specifically, the course is divided into three sections. The first section describes the plant cell and its basic functions, the second the plant tissues and the third emphasizes the vegetative organs of the higher plants. At the same time, during the course, students have the opportunity to understand and recognize morphological and anatomical characteristics of higher plants with the use of optical microscopes.

Upon successful completion of the course students will be able to:

- 1. Know the structure and function of higher plants.*
- 2. Recognize macroscopically and microscopically the morphological characters of higher plants*
- 3. microscopically recognize the morphological, functional and physical characteristics of plant tissues*
- 4. Utilize the knowledge of Anatomy and Physiology in other fields of Agriculture.*

General Competences

Taking into consideration the general competences that students/graduates must acquire (as those are described in the Diploma Supplement and are mentioned below), at which of the following does the course attendance aim?

- 1. Theoretical thinking and the ability to translate theory into practice*
- 2. Search, analyze and synthesize data and information, using the necessary technologies*
- 3. Decision-making*

4.	<i>Autonomous work</i>
5.	<i>Teamwork</i>
6.	<i>Promoting free, creative and inductive thinking</i>
7.	<i>Development of lateral and divergent thinking</i>

COURSE CONTENT

Week 1 : Introduction to Plant Anatomy and Physiology
Week 2 : Structure and subcellular units of plant cell
Week 3 :Plant cell categories
Week 4 : Basic functions plant: Photosynthesis
Week 5 : Leaf Physiology and Development
Week 6 : Inorganic nutrition, nutrient uptake
Week 7 : Categories of Plant tissues.
Week 8 : Herbal cuticle-components
Week 9 : Meristematic and Permanent tissues.
Week 10: Primary and secondary structure and development of Shoot
Week 11 : Functions of leaves
Week 12 : Functions of flowers, seeds and fruits
Week 13 : Reproduction of plants. Fruits & Seeds

TEACHING METHODS--ASSESSMENT

METHOD OF DELIVERY <i>Face to face, Distance learning, etc.</i>	<i>Face to face</i>	
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY <i>Use of ICT in teaching, Laboratory Education, Communication with students</i>	Lectures: In a classroom. a. Digital media will be used for the teaching of the course (presentations using projector, PowerPoint, Excel, videos and photos), while communication with students will also be possible via the internet (questions, exercises). b. There will be a demonstration-learning of finding modern scientific literature from the internet (renowned international scientific journals). c. The learning of the electronic recording of the reproductive / productive characteristics of field/farm a will be done with specially designed by the instructor, spreadsheets Excel, using a computer. d. There will be educational visits to authorized laboratories	
TEACHING ORGANIZATION <i>The method and methods of teaching are described in detail. Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliography Study & Analysis, Tutorial, Internship (Placement), Clinical Practicing, Art Workshop, Interactive Teaching, Educational visits, Project Writing, Writing a project / assignment, Artistic creation, etc.</i>	Activity	Semester Workload
	Lectures in Auditorium	39
	Laboratory Exercises	39
	Independent study	23
	Study visits to laboratories	24

<p>The student's study hours for each learning activity are listed as well as the hours of unguided study so that the total workload at semester level corresponds to ECTS standards</p>	<p>Total Course (25 hours of workload per credit)</p>	<p>125</p>
<p>STUDENT EVALUATION <i>Description of the evaluation process</i></p> <p><i>Assessment Language, Assessment Methods, Formative or Summative, Multiple-Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Essay/Report, Oral Examination, Public Presentation, Laboratory Work, Clinical Examination of a Patient, Artistic Interpretation, Other/Others</i></p> <p><i>Explicitly defined evaluation criteria and whether and where they are accessible to students are mentioned.</i></p>	<p>Written examination (80%) of graded difficulty comprising:</p> <ul style="list-style-type: none"> - Multiple-choice questions - short development questions - Judgment and development questions <p>Laboratory/Tutoring exercises (20%): - Questions based on laboratory/tutorial exercises</p> <p>Therefore: the total score is obtained as the sum of the above two sub-assessments.</p>	
<p>RECOMMENDED-BIBLIOGRAPHY</p> <p>Suggested Bibliography:</p> <p>Tsekos I., Elias H., 2007. Morphology and Anatomy of Plants. Kyriakides Brothers Publishing House S.A.</p> <p>Karabetsos, I. (2005). Botany, Morphology and Plant Anatomy. Embryo Publications. Athens.</p> <p>Taiz Lincoln, Zeiger Eduardo, Ian Max Møller, Angus Murphy, 2017. Plant Physiology and Development. Utopia Publications</p> <p>Aivalakis G., Karampourniotis G., Liakopoulos G., Fasseas K., 2014. Functional Anatomy of Plants, Embryo Publications, Athens</p>		