

COURSE OUTLINE

(1) GENERAL

SCHOOL	ANIMAL BIOSCIENCES		
ACADEMIC UNIT	DEPARTMENT OF ANIMAL SCIENCE		
LEVEL OF STUDIES	Undergraduate [Required]		
COURSE CODE	3685	SEMESTER	2 nd
COURSE TITLE	BOTANY		
INDEPENDENT TEACHING ACTIVITIES <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>		WEEKLY TEACHING HOURS	CREDITS (ECTS)
Lectures		3	3
Laboratory exercises		2	2
Total		5	5
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	Background knowledge, Skills Development		
PREREQUISITE COURSES:	Chemistry, Physics		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS:	No		
COURSE WEBSITE (URL):	Openeclass AUA - Botany (aua.gr)		

(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
Objective of the lesson To provide to students of Animal Science the basic units of plant biology that will constitute the required biological background for understanding the functional agronomic parameters of plant production systems and products of animal technical interest, which are developed in the courses of Improvement and Management of Pastures and Orchards, Cultivation Fodder Plants, Farm Animal Nutrition. It will focus on model plants of interest in Animal Production (grasses, legumes) and starting from the requirements of application and practice, the functional anatomy and physiology modules of forage plants will be presented. Learning outcomes (level 6) Students will identify plants of interest in Animal Production, understand the basic morphological and anatomical features of model plants of animal technical interest and their basic physiological and developmental functions. With an emphasis on field and pasture, they will recognize the basic functional characteristics of the soil utilized by the root system, the differences of root systems, know the efficiency of uptake and use of resources (water and nutrients) and the basics of harvestable and forage biomass and yields. They will understand the importance of the effects of stressed environments, the uptake of toxic metals and substances by animals through the plants they will feed on, the close relationship between plant nutrition and farm animal

nutrition, and the effects of climate change on the quality of livestock plant products of interest. They will be motivated to learn in detail the agronomic and zootechnical aspects of crop and feed production systems management so that they can effectively collaborate with their respective Plant Production Scientists in vertical technologically self-sufficient and economically viable production units, improvement projects and Development Programs.

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>

- Building a background in basic plant biology
- Understanding the biological functions of plants and the agronomic processes associated with them
- Autonomous & group work in a Botany Laboratory
- Identification of plants with an emphasis on plants of forage interest
- Understanding the use of environmental resources by plants
- Understanding the importance of the basic biological functions of plants for the survival and completion of the biological cycle of plants in the field and in the countryside and their importance for sustainable agriculture - animal husbandry

(3) SYLLABUS

Teaching Modules

1. Morphology & Functional Anatomy of Plants (Plant organs: leaves, stems, roots, flowers, fruits, seeds, special organs. Cells and tissues: types of plant cells and tissues). Application to model plants of zootechnical interest.
2. Systematic classification of plants, Taxonomic systems, Levels of taxonomic classification, Identification of Plants with an emphasis on forage cultivated species and species of native vegetation of pastures & meadows.
3. Summary of the basic physiological and developmental functions of plants: Photosynthesis, Respiration, Metabolism, Role of water, osmosis, movement of water from soil to plant and within the plant, transpiration, biological cycle and developmental stages, Root systems, Above-ground parts and their recommendation with an emphasis on their suitability for grazing, regenerative capacity. Differences between model plants of zoo-technical interest.
4. Plant nutrition: inorganic elements, the role of the soil and its microflora. Physiology of forage crop yields. Nutrient efficiency and quality of plant biomass for animal feed. Environmental factors leading to food shortages and toxicities, problematic soils, impact on cultivation and grazing.
5. The position of plants in the food chain. The synergy of plant nutrition with the nutrition of farm animals. Feed safety. Toxic metals, toxic substances (products of secondary metabolism) migration to the grazing area, food hazards.

(4) TEACHING and LEARNING METHODS - EVALUATION

TEACHING METHOD <i>Face-to-face, Distance learning, etc.</i>	In-class lecturing	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	Use of slide presentation and blackboard. Communication with students. Learning process support by access to e-class asynchronous distance learning platform.	
TEACHING METHODS <i>The manner and methods of teaching are described in detail.</i>	Activity	Semester workload
	Lectures	33

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	Laboratory practice	22
	Skill development	8
	Individual laboratory project (data processing and commenting)	26
	Independent study	36
	Course total (25 h of workload per ECTS)	125
STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure</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 Specifically-defined evaluation criteria are given, and if and where they are accessible to students.	Oral final exam (100%) including: Open-ended judgment & documentation questions (the ability of the students to apply the principles and mechanisms and the way the subject is approached and documented by them)	

(5) ATTACHED BIBLIOGRAPHY

Raven, Plant Biology, 8th American-1st Greek Edition 2014, Utopia Publishing.