



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze Agrarie, Alimentari e Forestali		
ACADEMIC YEAR	2021/2022		
BACHELOR'S DEGREE (BSC)	FORESTRY AND ENVIRONMENTAL SCIENCES		
SUBJECT	PLANT BIOLOGY		
TYPE OF EDUCATIONAL ACTIVITY	A		
AMBIT	50122-Discipline biologiche		
CODE	01646		
SCIENTIFIC SECTOR(S)	BIO/03		
HEAD PROFESSOR(S)	FICI SILVIO	Professore Associato	Univ. di PALERMO
OTHER PROFESSOR(S)			
CREDITS	8		
INDIVIDUAL STUDY (Hrs)	132		
COURSE ACTIVITY (Hrs)	68		
PROPAEDEUTICAL SUBJECTS			
MUTUALIZATION			
YEAR	1		
TERM (SEMESTER)	1° semester		
ATTENDANCE	Not mandatory		
EVALUATION	Out of 30		
TEACHER OFFICE HOURS	FICI SILVIO Tuesday 10:00 14:00 Via Archirafi 38, 1°piano Wednesday 10:00 14:00 Via Archirafi 38, 1°piano		

DOCENTE: Prof. SILVIO FICI

PREREQUISITES	Basic knowledge of Plant Biology (citology, metabolism, phylogeny) and General Chemistry.
LEARNING OUTCOMES	<p>Knowledge and understanding</p> <p>Acquisition of basic knowledge about Plant Morphology, Physiology and Systematic Botany. Ability to use the specific language of the basic subject, but also of the more specialized ones. Ability to approach the disciplines of the course that will take Plant Biology as a cognitive base.</p> <p>Applying knowledge and understanding</p> <p>Ability to recognize and make observations on Plant Cytology, Histology, Anatomy and Physiology. Ability to identify the different plant species, with special reference to the ones widespread in maquis and forest formations.</p> <p>Making judgments</p> <p>Being able to evaluate the anomalies to normal physiological processes of the plant and the implications of cultivation on the plant. Being able to judge the applicability of the results of studies and publications in Morpho-Anatomy, as well as in Plant Physiology and Systematic Botany.</p> <p>Communication skills</p> <p>Ability to present the results of this subject, the principles of systematic and physiology also to an audience non-expert or expert in the field or with practical experience but with limited scientific basis.</p> <p>Learning ability</p> <p>Ability to understand related disciplines, as well as in-depth courses and specialized seminars of Plant Biology. Ability to understand the disciplines of the curriculum that use Plant Biology as basic knowledge.</p>
ASSESSMENT METHODS	Oral exam aimed at evaluating the acquired knowledge of Plant Biology, the ability to make connections between topics and clarity in presentation. During the exam the students can present an educational herbarium and pictures of the sections observed during the lab work. Positive valuation ranges from 18 to 30 and praise. The final valuation will be formulated on the basis of the following criteria: a) Basic knowledge of the main topics, limited capacity to apply the gained knowledge, sufficient capacity of analysis of the studied phenomena and exposure of the procedures followed (rating 18-21); b) Good knowledge of the studied topics, ability to link these and to apply their content in situations similar to those studied, discrete capacity of analysis of the presented phenomena and exposure of the procedures followed (rating 22-25); c) In-depth knowledge of the studied topics and ability to apply these to the proposed biological phenomena, but not always promptly and following a linear approach, ability of identification of higher plants of the main families studied (with special reference to groups of forestal interest), good capacity of synthesis, of analysis of presented phenomena and exposition of the followed procedures (rating 26-28); d) Deep knowledge of Plant Biology and ability to apply its concepts promptly and correctly, ability of identification of higher plants of the main families studied (with special reference to groups of forestal interest), excellent capacity of synthesis, of analysis of the presented phenomena and excellent capacity of communication (rating 29-30 and praise).
EDUCATIONAL OBJECTIVES	The course is aimed at providing basic knowledge on Plant Morphology and Physiology and Systematic Botany. Will be studied in detail various aspects of Cytology (the plant cell, the nucleus, cytoplasm, plastids, cell wall, vacuole), Histology (meristematic tissues, medullary, mechanical, tegumental, conductors) Organography (root, stem, leaf, flower and fruit) and Plant Physiology (the transport of water and other substances in the plant; hormones; energy and life processes; the role of plants in the biosphere, photosynthesis, cell respiration). Will be provided basic knowledge about systematics and taxonomy of plants, metagenetic cycles, and the basic characteristics of the major taxonomic groups. The main families of higher plants occurring in the Mediterranean will be in-depth details studied, with special reference to taxa widespread in maquis and forest formations.
TEACHING METHODS	Lectures, educational labs, practical classes in the field and botanical garden
SUGGESTED BIBLIOGRAPHY	CLAUDIO LONGO: BIOLOGIA VEGETALE, FORME E FUNZIONI. UTET. ISBN 88-02-05116-X. (Varie edizioni) FILIPPO M. GEROLA : BIOLOGIA VEGETALE. SISTEMATICA FILOGENETICA. UTET. ISBN 88-02-05109-7 (Varie edizioni)

SYLLABUS

Hrs	Frontal teaching
2	Comparison among plants and animals. Autotrophs and Heterotrophs. Prokaryotes and eukaryotes. Thallophytes and Cormophytes.
3	Metabolism. Water, chemical constituents of the plant cell
2	The plant cell.
3	The absorption and transport of water and other substances. Diffusion, osmosis. Active transport. Water uphill, transpiration and guttation.

SYLLABUS

Hrs	Frontal teaching
3	Relationship between transpiration and photosynthesis. Photosynthesis.
3	Growth and differentiation of the cell. Meristematic and permanent tissues.
1	Hormones. Auxin. Gibberellins. Cytokinins. Ethylene. Abscissic acid.
1	Seeds and germination.
4	Plant Morphology and Anatomy. Underground stems. Dicotyledon, monocotyledon. Stem. Root. Leaf.
4	The plant systematics and related history. The stages of phylogeny. Reproduction, metagenetic cycles and speciation.
1	Prokaryotes: Generalities and Systematics.
2	Thallophytes: Algae. Bryophytes. Lichens (Generalities. Ecology. Systematics).
18	<p>Cormophytes</p> <p>Pteridophytes: Generalities Ecology and Systematics.</p> <p>Spermatophytes: Generalities. The ovule. The seed. Systematics.</p> <p>Gymnosperms: Vegetative and reproductive apparatus. Metagenetic cycles. Systematics and phylogeny.</p> <p>Coniferophyta (Coniferopsida) with special reference to families of forest interest.</p> <p>Angiosperms: Generalities. Metagenetic cycles. Evolutionary lines in the vegetative organs and flower.</p> <p>Pollination. Fertilization. Classification of inflorescences and fruits. Systematics. Use of analytical keys. Main families of forest and agricultural interest.</p>
1	Concept of flora and vegetation and their typologies. Areal. Relationship between climate and flora: biological forms
Hrs	Workshops
10	Laboratory observations of plant tissues. The structures of the leaf and stem.
Hrs	Others
10	Practical classes in the botanical garden and in the field, with identification of species belonging to the main families of gymnosperms and angiosperms.