

General Information	BACELOR DEGREE IN BIOTECHONOLOGIES
Title of the subject	Structure and Function of Plant Tissues
Degree Course (class)	Biotechnologie applied to Industry and Agrifood (L-2)
ECTS credits	4
Compulsory attendance	YES
Language	Italian
Academic year	2020/2021

Subject Teacher		
Name and Surname	Donato Gallitelli	
email address	donato.gallitelli@uniba.it	
Place and time of reception	Teacher's study. Campus E. quagliariello, Building former Faculty of Agricultural Sciences, 2nd floor Monday and Thursday, 10:30-12:30 a.m. by appointment via email	
ECTS credits details	Discipline sector (SSD)	Area
	AGR/12	affine

Study plan schedule	Year of study plan		Semester	
	II		I	
Time management	Lessons	Laboratory	Exercises	Total
CFU	3		1	4
Total hours	75		25	100
In-class study hours	24		12	36
Out-of-class study hours	51		13	64

Syllabus	
Prerequisites / Requirements	
Cytology and Cell biology Microscopy techniques General and organic chemistry	
Expected learning outcomes (according to Dublin descriptors)	
Knowledge and understanding	The student will acquire the basic knowledge: <ul style="list-style-type: none"> - on the evolution of organisms and microorganisms of the plant kingdom - on the taxonomy and nomenclature of plant species - on the organization of the plant cell and the structure and function of membranes and cell organelles - on the structure and function of the reproductive system and plant tissues - the transport of water and solutes through plant vascular system
Applying knowledge	The student will manage: <ul style="list-style-type: none"> - the reasoned identification of plant tissues in preparations for

	<p>optical microscopy</p> <ul style="list-style-type: none"> - the description of organogenesis and organography of the various components of plant tissues
Making informed judgments and choices	The student will acquire the basic knowledge to critically interpret the data on the structural organization of plant tissues based on their function.
Communicating knowledge	The student will acquire adequate knowledge and skills for the oral communication and discussion on the morphological and biological characteristics of plants with particular reference to the organization, structure and function of the tissues of higher plants
Capacities to continue learning	<p>The student will have developed learning skills :</p> <ul style="list-style-type: none"> - for the correct reading and interpretation of scientific literature - in plant anatomy by consulting bibliographic material in paper and electronic formats

Study Program

Content	<p>Part I. 1 CFU lectures</p> <p>Elements of phylogeny Organization of prokaryotic and eukaryotic cells. Differences between animal and plant cell. Characteristic composition and function of : middle lamella, cell wall, plasmalemma, nucleus, plastids, mitochondria, ribosomes, endoplasmic reticulum, cytoskeleton, Golgi apparatus, vacuole. General characteristics, organization and reproduction of algae, with particular reference to green algae. General characteristics, organization and reproduction of Bryophytes, with particular reference to mosses. General characteristics, organization and reproduction of Spermatophytes. Gametogenesis and embryogenesis of Gymnosperms and Angiosperms. Flower organography in Monocotyledons and Dicotyledons.</p> <p>Part II: 2 CFU lectures, 1 CFU laboratory</p> <p>Organogenesis and organography of the root. Morphology of the root system in Monocotyledons, Dicotyledons and Gymnosperms. Anatomy of the embryo zone, of the differentiation zone, of the primary structure zone. Anatomy of the secondary structure zone.</p> <p>Organogenesis and organography of the stem. Morphology of the stem in Monocotyledons, Dicotyledons and Gymnosperms.</p> <p>Anatomy of the embryo zone, of the determination zone, of the differentiation zone, of the primary structure zone. Thickness growth of the stem and anatomy of the secondary structure area.</p> <p>Organogenesis and organography of the leaf.</p>
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	<p>Morphology and symmetry of the leaves of Monocotyledons, Dicotyledons and Gymnosperms. Anatomy of the dorsal ventral, isolateral leaf and of the pine needle.</p> <p>Transport of water and solutes Basics of water and solute transport in the vascular system of higher plants The from source to sink model The flow pressure model</p>
Bibliography and textbooks	<p>Notes and slides from lessons Plant Biology: P. Pupillo, F. Cervone, M. Cresti, N. Rascio, Zanichelli Editore</p>
Notes to textbooks	
Teaching methods	slides, optical microscopy
Assessment methods (oral, written, ongoing assessment)	Oral by intermediate tests and final exam
Evaluation criteria (describe criteria for each of the above expected outcomes)	The assesment of the learning outcomes concerning single indicators will take place during the lessons, laboratories, ongoing tests and during the oral interview for the final exam. In particular it is expected the student will correctly understand the question asked and provide in a concise manner but with adequate arguments, the details necessary to formulate the correct answer, also through corss refrences with similar topics covered in the teaching program
Further information	