



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze Agrarie, Alimentari e Forestali		
ACADEMIC YEAR	2019/2020		
BACHELOR'S DEGREE (BSC)	AGRICULTURAL ENGINEERING		
SUBJECT	PLANT PATHOLOGY		
TYPE OF EDUCATIONAL ACTIVITY	C		
AMBIT	10689-Attività formative affini o integrative		
CODE	05589		
SCIENTIFIC SECTOR(S)	AGR/12		
HEAD PROFESSOR(S)	DAVINO SALVATORE	Professore Ordinario	Univ. di PALERMO
OTHER PROFESSOR(S)			
CREDITS	8		
INDIVIDUAL STUDY (Hrs)	132		
COURSE ACTIVITY (Hrs)	68		
PROPAEDEUTICAL SUBJECTS			
MUTUALIZATION			
YEAR	2		
TERM (SEMESTER)	1° semester		
ATTENDANCE	Not mandatory		
EVALUATION	Out of 30		
TEACHER OFFICE HOURS	DAVINO SALVATORE Tuesday 16:00 19:00 Edificio 5 Stanza P1-50		

DOCENTE: Prof. SALVATORE DAVINO

PREREQUISITES	Basic knowledge of Botany, Plant Biology and Mathematics
LEARNING OUTCOMES	Acquisition of specific knowledge on crops of economic interest. Ability to use technical language. Ability to organize and interpret the acquired data for the elaboration of an adequate integrated crop protection plan. To be able to independently evaluate and interpret the implications and results of phytopathological studies in order to best manage the farms. Ability to expose the results of phytopathology study to an unknowable public. Learning skills. Upgrade skills by consulting scientific publications and relevant texts in the agricultural sector. Ability to follow, using the knowledge acquired during the course, specific master's, keynotes and meetings. Ability to understand the contents of textbooks in order to transfer that knowledge to the professional worker involved in farm management.
ASSESSMENT METHODS	The exam will consist of an interview (final exam) where the student will have to answer 3-5 causal questions. The questions will be chosen by the teacher, both on the general part and on the special part of the study-program. The teacher will check the completeness of the knowledge throughout the study program. Voting will often be in thirtieth (from 18 - basic knowledge of the arguments - to 30 cum laude - excellent knowledge of the arguments and excellent communicative skills). The evaluation will be based on: 1) the correctness of the answers; 2) the language used; 3) the ability to make logical connections between the topics just discussed. The assessment of the preparation and the voting will take account of the student's acquisition of the expected results and the achievement of the training objectives described in the appropriate paragraphs.
EDUCATIONAL OBJECTIVES	Basic knowledge for the diagnosis of the major diseases of crops of economical interest and development of sustainable crop protection strategies. Ability to relate knowledge about the biology, physiology and ecology of the pathogen object of the study with the diagnosis and epidemiology of the disease in order to take out an adequate plan for sustainable plant protection. Evaluation of virulence and spread of a disease related to the acquired data according to traditional assay and laboratory tests and integrated pest management according to the safeguarding of the agro-ecosystem.
TEACHING METHODS	Teaching will be divided into lectures (48 hours) and laboratory (20 hours)
SUGGESTED BIBLIOGRAPHY	Testi di riferimento: - Matta A. Fondamenti di Patologia vegetale. Patron Editore - Belli G. Elementi di Patologia vegetale. Piccin Editore - Materiale distribuito nel corso delle lezioni. - Lorenzini G., Principi di Fitoiatria . Edagricole Bologna. 2001.

SYLLABUS

Hrs	Frontal teaching
2	Course presentation
2	Hystorical background
4	Disease concept, disease types, morphology, symptoms, pathological anatomy, physiological and functional changes, assessment of the severity of the disease and damage.
4	Koch's postulates, traditional diagnostic tests, diagnostic tests through the use of biochemical markers, serological tests, nucleic acids detection, PCR, RFLP, SSCP, cloning and sequencing, phylogenetic analysis.
2	Relationships between different organisms, ecological relationships, symbiotic relationships, mutualism, commensalism, pathosism, trophic relationships in parasitism, parasitic specialization.
2	Infection, mechanisms of penetration, colonization mechanisms, synergism between different mechanisms
1	Passive resistance mechanisms, active resistance mechanisms
2	Environment and infectious plant diseases, development of epidemics disease and prevention of diasease
4	Agrochemicals: Physical and chemical characteristics, classification, use, detention
2	Viroids: General characters, nomenclature, classification, replication, transmission, diagnosis and control
2	Viruses: General characters, nomenclature, classification, replication, transmission, diagnosis and control.
1	Phytoplasma: General characters, nomenclature, classification, replication, transmission, diagnosis and control
2	Bacteria: General characteristics, classification, habitats of plant pathogenic bacteria, bacterial infections, survival and spread of bacterial inoculum
2	Fungi: General characteristics of fungi, classification, reproduction and propagation
1	Viroid diseases: Citrsu exocortis viroid, Hop stunt viroid.
5	Virus diseases: Cucumber mosaic virus, Tomato yellow leaf curl disease, Tomato and Tobacco mosaic virus, Tomato spotted wilt virus, Pepino mosaic virus, Citrsu tristeza virus, Citrus psorosis virus
1	Phytoplasma diseases: Tomato stulbor
4	Bacterial diseases: Huanglongbing, Citrsu canker, bacterial wilt and canker of tomato, bacterial leaf spot, Tomato pith necrosis, olive knot disease, bacterial crown gall

SYLLABUS

Hrs	Frontal teaching
4	Fungi diseases: <i>Phytophthora infestans</i> of potato and tomato, <i>Phytophthora citrophthora</i> , <i>Plasmopara viticola</i> , <i>Oidium</i> spp., <i>Claviceps</i> spp., <i>Fusarium</i> spp., tracheomycosis, Nectria disease, <i>Botrytis cinerea</i> , <i>Spilocaea oleaginea</i> , <i>Deuterophoma tracheifila</i> , Esca disease
1	Abiotic diseases and disorders: deficit and excess of light, heat stress, water stress, wind damage, mineral deficiencies/excesses, pesticides, hormones, hail.
Hrs	Workshops
4	Laboratory: Inoculation of indicator plants.
8	Laboratory: extraction of nucleic acids; PCR; RFLP; DAS-ELISA
4	Laboratory: analysis of DNA gel; phylogenetic analysis
2	Density and potential of inoculum, spread, transport at distance of inoculum, inoculum survival, disease transmission
2	Laboratory: symptoms description on indicator plants