



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze Agrarie, Alimentari e Forestali		
ACADEMIC YEAR	2016/2017		
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)	136		
COURSE ACTIVITY (Hrs)	64		
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	At the end of the course students will be able to develop integrated pest management programs for the most important crops present in the areas of southern Italy, including citrus, vegetable crops, grapevine, olive tree and cereals. The student will have acquired the general principles relating to plant protection include the use, the detention and the observation of the law on crop protection products. The student will be able to make diagnosis in a traditional way such as in laboratory.
ASSESSMENT METHODS	<p>The student will have to answer at least three questions posed orally, throughout the program, with reference to the recommended texts and the slides distributed during the course. Final assessment aims to evaluate whether the student has understood the discipline and to provide answers to specific pathological cases, independently. The exam will be sufficient if the student demonstrates its ability to develop good strategies related to case studies. The student must be able to and provided different approaches for diagnosis at least in general terms.</p> <p>The student must possess good skills ability in order to allow the transmission of his knowledge to the examination board. Below this threshold, the exam will be not sufficient.</p> <p>The evaluation will be fully successful when the student will be able to demonstrate to going into the detail of the discipline and the student will be able to correlate different sustainable methods for plant protection between them. The assessment is carried out of thirty.</p>
EDUCATIONAL OBJECTIVES	<p>Basic knowledge for the diagnosis of the major diseases of crops of economical interest and development of sustainable crop protection strategies.</p> <p>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.</p> <p>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.</p>
TEACHING METHODS	Teaching will be divided into lectures (47 hours) and laboratory (17 hours)
SUGGESTED BIBLIOGRAPHY	<p>Materiale distribuito nel corso delle lezioni.</p> <p>Testi di riferimento:</p> <p>Lorenzini G., Principi di Fitoiatria. Edagricole Bologna. 2001.</p> <p>Chet I., Innovative Approaches to Plant Disease Control. John Wiley & Sons Inc., 1987.</p> <p>Matta A. Fondamenti di Patologia vegetale. Patron Editore</p> <p>Belli G. Elementi di Patologia vegetale. Piccin Editore</p>

SYLLABUS

Hrs	Frontal teaching
1	Course presentation
1	Historical background
2	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 disease
4	Agrochemicals: Physical and chemical characteristics, classification, use, detention
1	Viroids: General characters, nomenclature, classification, replication, transmission, diagnosis and control
1	Viruses: General characters, nomenclature, classification, replication, transmission, diagnosis and control.
1	Phytoplasma: General characters, nomenclature, classification, replication, transmission, diagnosis and control
1	Bacteria: General characteristics, classification, habitats of plant pathogenic bacteria, bacterial infections, survival and spread of bacterial inoculum
1	Fungi: General characteristics of fungi, classification, reproduction and propagation
2	Viroid diseases: Citrus exocortis viroid, Hop stunt viroid.
7	Virus diseases: Cucumber mosaic virus, Tomato yellow leaf curl disease, Tomato and Tobacco mosaic virus, Tomato spotted wilt virus, Pepino mosaic virus, Citrus tristeza virus, Citrus psorosis virus
1	Phytoplasma diseases: Tomato stolbor
6	Bacterial diseases: Huanglongbing, Citrus canker, bacterial wilt and canker of tomato, bacterial leaf spot, Tomato pith necrosis, olive knot disease, bacterial crown gall

SYLLABUS

Hrs	Frontal teaching
6	Fungi diseases: Phytophthora infestans of potato and tomato, Phytophthora citrophthora, Plasmopara viticola, Oidium spp., Claviceps spp., Fusarium spp., tracheomycosis, Nectria disease, Botrytis cinerea, Spilocaea oleaginea, Deuterophoma tracheifila, 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
3	Laboratory: Inoculation of indicator plants.
7	Laboratory: extraction of nucleic acids; PCR; RFLP; DAS-ELISA
3	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