



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze Agrarie, Alimentari e Forestali		
ACADEMIC YEAR	2023/2024		
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	3		
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 , 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 final exam is oral. The candidate will have to answer at least three questions orally asked by the commission, on all parts of the program, with reference to the recommended texts. The final test aims to assess whether the student has knowledge and understanding the topics, has acquired interpretative competence and autonomy of judgment of case studies. The sufficiency threshold is reached if the student shows knowledge and understanding the topics at least in general lines and has minimal application skills in order to solve case studies. The student must have expository and argumentative skills such as to allow the transmission of his knowledge to the examiner. Below this threshold, the examination will be insufficient. More the student will be able to interact with the commission and more his knowledge and application skills go into the detail of the discipline being tested, more the evaluation will be positive. The evaluation is expressed in thirty.
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: - Vannacci G. Patologia vegetale. EdiSES. edizione 2021. ISBN: 9788836230419 - Reverberi M., Ruocco M., Covarelli L. e Sella L. Patologia vegetale molecolare. Edizioni Piccin. SBN 9788829931415 - Matta A. Fondamenti di Patologia vegetale. Patron Editore. Edizione 2017. ISBN: 8855533827 - Belli G. Elementi di Patologia vegetale. Piccin Editore. ISBN:9788829921294 -Battilani P. Difesa sostenibile delle colture. Principi, sistemi e tecnologie applicate alle produzioni agricole. Edagricole Bologna. Edizione 2016. ISBN: 9788850655045 - Davino S. Avversità del pomodoro: Virus e funghi terricoli. Edizioni Informatore Agrario. Edizione 2018. ISBN: 9788872203873 - Lorenzini G., Principi di Fitoiatria. Edagricole Bologna. Edizione 2012. ISBN: 8850653883 - Materiale distribuito nel corso delle lezioni.

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

SYLLABUS

Hrs	Frontal teaching
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: Citrus 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, Citrus tristeza virus, Citrus psorosis virus
1	Phytoplasma diseases: Tomato stolbor
4	Bacterial diseases: Huanglongbing, Citrus canker, bacterial wilt and canker of tomato, bacterial leaf spot, Tomato pith necrosis, olive knot disease, bacterial crown gall
4	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
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