

MEDITERRANEAN UNIVERSITY OF REGGIO CALABRIA
DEPARTMENT OF AGRICULTURE
Second Cycle Degree ("Laurea Magistrale") in Agricultural Science and Technology
(CdLM-STA)

DEPARTMENT	AGRARIA
ACADEMIC YEAR	2013-16
DEGREE COURSE	Agricultural Science and Technology LM-69
TEACHING	Plant Virology
ECTS	6
TYPE OF EDUCATIONAL ACTIVITY	Characterizing
DISCIPLINARY AREA	Disciplines of Plant protection
COURSE CODE	16122
SUBDIVISION INTO MODULES	No
COURSE YEAR	Second
PERIOD OF LESSONS	First semester
NUMBER OF MODULES	1
SCIENTIFIC-DISCIPLINARY SECTOR	AGR/12
PROFESSOR	Giuliana Renata Albanese Associated Professor <i>Mediterranean University of Reggio Calabria</i>
NUMBER OF HOURS DESTINED FOR PERSONAL STUDY	90
NUMBER OF HOURS RESERVED FOR TUTORED ACTIVITIES	60
PREPARATORY ASPECTS	
THE LECTURE HALLS	Department of AGRARIA
ORGANIZATION OF TEACHING METHOD	Frontal lessons Practices in classroom and laboratory
METHOD OF FREQUENCY	Optional
EVALUATION METHOD	Oral test
EVALUATION TYPE	Rating in thirtieths
CALENDAR OF EDUCATIONAL ACTIVITIES	http://www.agraria.unirc.it/calendario_accademico.php
OPENING RECEPTION FOR THE STUDENTS	http://www.unirc.it/scheda_persona.php?id=607

<p>LEARNING OUTCOMES EXPECTED OUTPUTS</p> <p>Knowledge and ability to understanding Deeper knowledge of biotic diseases transmitted through propagation material and via vectors and understanding of legislations that regulate the sanitary certification of plants.</p> <p>Applying knowledge and understanding Ability to apply autonomously the learned knowledge on the prevention and control of virus and virus-like diseases.</p> <p>Autonomy of judgment To be able in identifying different technical solutions to control viral diseases and to steer the choice of the best intervention strategies including consideration of economic and environmental factors.</p> <p>Communication skills</p>

Ability to relate with technicians specialized in the various agricultural fields. Learning ability Ability to independently obtain information in order to adequately resolve arising problems.

COURSE STRUCTURE

TRAINING OBJECTIVES Objective of this course is deepen the knowledge on virus, viroid, phytoplasma, spiroplasma, virus-like characteristics and their epidemiological aspects. The diagnosis starting from the description of the symptoms observed in the field up to the laboratory analyses is treated. To complete the general part the preventive and curative principles against viral diseases are discussed by providing actions to apply in the field, legislative measures of control, sanitary certification and sanitation techniques for virus infected materials. The specialistic part includes the description of the major diseases caused by viruses and virus-like agents of the most important mediterranean crops.

PLANT VIROLOGY	HOURS
Introduction to the course. Objectives and contents of the course.	1
Taxonomy and general characteristics of the major plant pathogens. Viruses, viroids, phytoplasmas, spiroplasmas, virus-like agents.	6
Diagnosis of viruses, viroids, phytoplasmas, spiroplasma, virus-like agents. Biological assay, serological and molecular diagnosis.	6
Prevention and therapy. Use of healthy propagation material. Phytosanitary certification. Cross protection. Virus-resistant transgenic plants. Agronomic strategies. Vector's control. Thermotherapy. Culture of meristems. Micrografting. Legislations of mandatory control. Quarantine.	6
Grapevine diseases. Fanleaf. Leafroll. Rugose wood. Flavescence dorée and grapevine yellows.	4
Citrus diseases. Tristeza. Infectious variegation. Leaf rugose. Psorosis. Ring spot. Exocortis. Cachexia. Other viroid alterations. Concave gum. Cristacortis. Impietratura.	6
Diseases of the olive. Olive yellows. Bumpy fruits. Phytoplasma alterations. Virus-like diseases.	3
Virus and virus-like of fruit trees. Plum pox virus (PPV). Prunus necrotic ringspot virus (PNRSV). Prune dwarf virus (PDV). Apple chlorotic leaf spot virus (ACLSV). Apple mosaic virus (APMV). Peach latent mosaic viroid (PLMVd). European stone fruit yellows phytoplasma.	4
Virus and virus-like of ortive. Cucumber mosaic virus (CMV). Bean common mosaic virus (BCMV). Zucchini yellow mosaic virus (ZYMV). Alfalfa mosaic virus (AMV). Watermelon mosaic virus (WMV). Tomato yellow leaf curl virus (TYLCV). Tobacco mosaic virus (TMV). Tomato mosaic virus (ToMV). Pepino mosaic virus (PepMV). Tomato spotted wilt virus (TSWV). Tomato infectious chlorosis virus (TICV). Tomato chlorosis virus (ToCV). Potato spindle tuber viroid (PSTVd). Stolbur phytoplasma of tomato.	6
Laboratory experiences. Serological ELISA analysis, polymerase chain reaction to diagnose viruses, viroids and phytoplasmas (nested and multiplex), RFLP analysis for phytoplasma molecular characterization.	18
TOTAL	60

RESOURCES AND MAIN REFERENCES

- G. Belli e altri AA. Elementi di patologia vegetale. Piccin
- L. Giunchedi, D. Gallitelli, M. Conti, G.P. Martelli. Elementi di virologia vegetale. Piccin
- G. Belli. Virus e virosi delle piante. Edagricole
- G. Scaramuzzi, A. Catara, G. Cartia, S. Grasso. Le malattie degli agrumi. Edagricole
- L. Giunchedi. Malattie da virus, viroidi e fitoplasmi degli alberi da frutto. Edagricole
- M. Conti, D. Gallitelli, V. Lisa, O. Lovisolo, G.P. Martelli, A. Ragozzino, G.L. Rana, C. Vovlas. I principali virus delle piante ortive. Edagricole

Monographs on specific topics are recommended during the course.