UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze Agrarie, Alimentari e Forestali
ACADEMIC YEAR	2023/2024
MASTER'S DEGREE (MSC)	PRECISION AGRICULTURE
SUBJECT	PRECISION MANAGEMENT OF FRUIT TREES
TYPE OF EDUCATIONAL ACTIVITY	B
AMBIT	50544-Discipline della produzione
CODE	22804
SCIENTIFIC SECTOR(S)	AGR/03
HEAD PROFESSOR(S)	LO BIANCO RICCARDO Professore Ordinario Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	6
INDIVIDUAL STUDY (Hrs)	90
COURSE ACTIVITY (Hrs)	60
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	1
TERM (SEMESTER)	2° semester
ATTENDANCE	Not mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	**LO BIANCO RICCARDO** Monday 11:00 13:00 Dipartimento SAAF, edificio 4, ingresso H, studio 32. Ricevimento a distanza o in presenza su appuntamento via email. Wednesday 11:00 13:00 Dipartimento SAAF, edificio 4, ingresso H, studio 32. Ricevimento a distanza o in presenza su appuntamento via email.

DOCENTE: Prof. RICCARDO LO BIANCO

PREREQUISITES	Knowledge of basic concepts of agronomy and tree crop morphology, physiology and cultivation
LEARNING OUTCOMES	Knowledge and understanding: acquisition of the scientific bases and fundamental techniques of the main tree crops, with particular reference to fruit crops. Ability to use technical terms. Identification of the objectives of the management of a tree crop planting, with particular regard to the ability of choosing the appropriate species and precision management techniques, also in relation to the cultivation environment. Ability to apply knowledge and understanding: ability to evaluate the soil and climate requirements as well as the water and nutritional needs of the main tree crops. Ability to evaluate the different relationships that bind the individual components of a tree crop system and the possibilities of applying precision management systems and sustainable solutions. Autonomy of judgment: ability to evaluate the implications and results of the proposed management operations. Being able to evaluate their mistakes in the crop management choices and in the responses of the tree crop planting with respect to the expected results, and eventually reformulate the correct management choices. Communication skills: being able to claim the importance and highlight the economic and environmental impact of the selected management operations also to a non-expert public; direct the growers toward the most suitable technical choices for the configuration and precision management of tree plantings. Learning skills: ability of staying up to date with the consultation of technical and scientific publications specific to tree crop cultivation. Ability to follow both specialized and scientific seminars in the sector.
ASSESSMENT METHODS	The student will do literature review and an oral presentation on a topic of his/her choice among a proposed selection. Alternatively, the student will take an oral comprehensive exam in which he/she must answer at least two/three questions on all topics covered in class, with reference to the recommended text books. Such final assessments aim to evaluate whether the student has knowledge and understanding of the topics, has acquired interpretative skills and independence of judgment in real cases. Evaluation is presented in scores out of 30 with a minimum score of 18 for passing, according to the following table: - sufficient/basic knowledge and ability to connect, apply and analyze covered topics (score 18-21) - fair/intermediate knowledge and ability to connect, apply and analyze covered topics (score 22-25) - good/high knowledge and ability to connect, apply and analyze covered topics (score 26-28) - excellent/advanced knowledge and ability to connect, apply and analyze covered topics (score 29-30L)
EDUCATIONAL OBJECTIVES	The aim of the course is to train students on the morpho-functional and technical-scientific principles underlying the cultivation of tree species with practical references to the precision management of fruit tree crops, highlighting in particular the relationships between genotype and environment, modern technologies at the service of management systems and the sustainability of the production cycle.
TEACHING METHODS	Class lectures and exercises in form of oral presentation and literature review.
SUGGESTED BIBLIOGRAPHY	Gentile et al. 2022. Arboricoltura Speciale. Edagricole, Bologna. ISBN: 978-88-8372-418-3 Casa R. 2017. Agricoltura di precisione. Metodi e tecnologie per migliorare l'efficienza e la sostenibilità dei sistemi colturali. Edagricole-New Business Media. ISBN: 885065510X Diapositive e articoli forniti dal docente.

SYLLABUS

Hrs	Frontal teaching
10	Pome fruits: the apple. Examnples of precision crop load management: chemical, mechanic and manual fruit thinning; canopy management according to thinning strategy. Deficit irrigation management and Partial Rootzone Drying trials.
10	Stone fruits: the peach. Examples of precision canopy management: training systems according to soil and climate and to mechanization level. Deficit irrigation management.
10	The olive: olive oil and table olives. Examples of planting and training systems according to the mechanization of harvesting; irrigation management: proximal and remote sensors for estimating crop water status; regulated deficit irrigation and water use efficiency.
8	The grapevine: table grapes. Examples of precision soil-less management: cultural practices and technology for a sustainable growing system.
10	Citrus fruits: general overview. Examples of precision irrigation (proximal and remote sensing of crop water status) and fruit quality management.

Hrs	Practice
12	Literature review and oral presentation on one precision management technique of a fruit tree species of your choice.