



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze Agrarie, Alimentari e Forestali
ACADEMIC YEAR	2023/2024
BACHELOR'S DEGREE (BSC)	VITICULTURE AND OENOLOGY
SUBJECT	IRRIGATION SYSTEMS DESIGN
TYPE OF EDUCATIONAL ACTIVITY	D
AMBIT	10517-A scelta dello studente
CODE	22443
SCIENTIFIC SECTOR(S)	AGR/08
HEAD PROFESSOR(S)	PAMPALONE VINCENZO Professore Associato Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	3
INDIVIDUAL STUDY (Hrs)	50
COURSE ACTIVITY (Hrs)	25
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	3
TERM (SEMESTER)	2° semester
ATTENDANCE	Not mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	<p>PAMPALONE VINCENZO</p> <p>Tuesday 09:00 11:00 Studio docente, identificativo 13, Edificio 4, ingresso E- Dipartimento SAAF e Piattaforma Teams</p> <p>Wednesday 09:00 11:00 Studio docente, identificativo 13, Edificio 4, ingresso E- Dipartimento SAAF e Piattaforma Teams</p> <p>Friday 11:00 13:00 Sede del corso di Studi in Viticoltura ed Enologia e Piattaforma Teams.</p>

DOCENTE: Prof. VINCENZO PAMPALONE

PREREQUISITES	Having basic knowledge of hydraulics related to pipe flow and drip irrigation systems. Basic knowledge of excel software.
LEARNING OUTCOMES	<p>Knowledge and understanding Acquisition of tools for design and management of drip irrigation systems. Ability to understand and use the specialized language of this branch of learning.</p> <p>Applying knowledge and understanding The gained knowledge will enable students to evaluate and estimate the main design parameters and perform the processing necessary for the preliminary design of a drip irrigation system in a vineyard.</p> <p>Making judgments Ability to evaluate the respect of optimal design criteria of a drip irrigation system. Ability to make planning decisions with awareness.</p> <p>Communicative skills Ability to expose the contents of a drip irrigation project even to an unskilled audience, being able to support the value of the made design choices.</p> <p>Lifelong learning skills Update ability through consultation of scientific publications related to drip irrigation systems. Ability to use the knowledge acquired during the course for attending advanced courses and specialized seminars in the field of drip irrigation.</p>
ASSESSMENT METHODS	Oral examination: discussion on the drip irrigation system designed by the student during the course. The final check aims to establish if the candidate has knowledge and comprehension of the treated topics and if the candidate can develop the preliminary project of a drip irrigation system for a vineyard. Grades range from 18 to 30. The minimum mark (18) is reached when the student shows a general knowledge and understanding of course subjects and can deal with very simple practical cases. Below this threshold, the exam is not passed. The more the student will show knowledge and understanding of the subjects and autonomy in applying them to practical cases related to the professional context, the higher the mark will be.
EDUCATIONAL OBJECTIVES	The course aims to provide students with knowledge and skills on the optimal design of drip irrigation systems. The design criteria and the efficiency evaluation criteria adopted in the professional practice are addressed. During the course students are supported in the drafting of a drip irrigation system.
TEACHING METHODS	Lectures. Development of the preliminary project of a drip irrigation system. Eventual field technical visit.
SUGGESTED BIBLIOGRAPHY	Fondamenti di idraulica – tratti da Appunti sinottici delle lezioni di “Irrigazione e drenaggio” prof. D. Pumo “Progettazione e gestione degli impianti di irrigazione”, A. Capra, B. Scicolone - EDAGRICOLE “Impianti di irrigazione a goccia per le colture agrarie”, P. Santelli - Dario Flaccovio editore Materiale didattico digitale fornito dal docente

SYLLABUS

Hrs	Frontal teaching
3	Instruments for measuring discharge and pressure. Volumetric counters. Valves.
5	Drip irrigation systems. Network design criteria: laterals, manifold, secondary and main pipe. Pressure distribution across the network, influence of the slope steepness on the pressures.
Hrs	Practice
3	Applications regarding instruments for measuring discharge and pressure.
3	Design of a pumping system and choice of the pump.
12	Preliminary design of a drip irrigation system for a vineyard: determination of the number of emitters per plant, sectors, choice of the emitter, design of laterals, manifold, main pipe, pumping system, design emission uniformity.
4	Field measurements of emitters' discharges. Hydraulic characterization of drip emitters: determination of the flow rate-pressure head relationship. Field evaluation of emission uniformity.