



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze Agrarie, Alimentari e Forestali
ACADEMIC YEAR	2019/2020
BACHELOR'S DEGREE (BSC)	VITICULTURE AND OENOLOGY
SUBJECT	HYDRAULIC PLANTS AND MEASUREMENTS LABORATORY
TYPE OF EDUCATIONAL ACTIVITY	F
AMBIT	10861-Altre conoscenze utili per l'inserimento nel mondo del lavoro
CODE	19155
SCIENTIFIC SECTOR(S)	
HEAD PROFESSOR(S)	PAMPALONE VINCENZO Professore Associato Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	3
INDIVIDUAL STUDY (Hrs)	45
COURSE ACTIVITY (Hrs)	30
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	3
TERM (SEMESTER)	2° semester
ATTENDANCE	Not mandatory
EVALUATION	Pass/Fail
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 general hydraulic related to pressure pipes. Having basic knowledge on excel software.
LEARNING OUTCOMES	Ability to design a small trickle irrigation systems for a vineyard, including the necessary measurement tools. Ability to use the specific language of the discipline.
ASSESSMENT METHODS	The exam consists of an oral test, with two or three questions on the topics and on the practical examples addressed in class or in laboratory, aimed to verify the disciplinary knowledge, as well as the ability to use the language of the discipline. To achieve the qualification, the student must be able to analyze the experimental data acquired during laboratory experiments and to identify and classify the sources of error on the basis of the instrumentation used. Finally, he will be able to correlate experimental results with those obtained on a theoretical basis.
EDUCATIONAL OBJECTIVES	After completing the course, the student should know the components of the most modern irrigation systems for a vineyard.
TEACHING METHODS	Lecturers and practical training in classroom, in laboratory, in field
SUGGESTED BIBLIOGRAPHY	Misure e Controlli Idraulici (2006), Longo S., Petti M., McGraw-Hill Italia, Collana di Istruzione Scientifica, serie di Ambiente e Territorio. Appunti e note degli argomenti trattati

SYLLABUS

Hrs	Frontal teaching
6	Frontal teaching (1) Introduction. Irrigation of vineyard as method to qualitative and quantitative control of the production. (2) Simple water distribution networks and trickle irrigation systems. Physical variables and units of measurements. Dimensional analysis. Instruments and tools to measure discharge and pressure. Volumetric counters. Pumping for enological plants. (3) Microirrigation systems and their components. Hydraulic features of emitters. Design criteria of a drip system.
Hrs	Practice
6	Design of a pumping system for a vineyard and choice of the pump.
Hrs	Workshops
18	(4) Hydrological measurements. Soil water retention curve. Field capacity and soil wilting point. Sensors for monitoring soil water content and matric potential. (4) Materials, tools, mechanism for automation of on-farm irrigation systems. Fertigation systems and their use. (4) Using instruments to measure flow rates and pressures. Volumetric counters. (6) Hydraulic characterization of drip emitters. Evaluation of flow rate-pressure head relationship and of the manufacturer's coefficient of variation. Field evaluation of distribution uniformity.