



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze Agrarie, Alimentari e Forestali		
ACADEMIC YEAR	2023/2024		
MASTER'S DEGREE (MSC)	AGROENGINEERING AND FORESTRY SCIENCES AND TECHNOLOGIES		
SUBJECT	APPLIED AGRO-METEOROLOGY		
TYPE OF EDUCATIONAL ACTIVITY	D		
AMBIT	20758-A scelta dello studente		
CODE	18752		
SCIENTIFIC SECTOR(S)	AGR/02		
HEAD PROFESSOR(S)	LETO CLAUDIO	Professore Ordinario	Univ. di PALERMO
OTHER PROFESSOR(S)			
CREDITS	3		
INDIVIDUAL STUDY (Hrs)	43		
COURSE ACTIVITY (Hrs)	32		
PROPAEDEUTICAL SUBJECTS			
MUTUALIZATION			
YEAR	1		
TERM (SEMESTER)	1° semester		
ATTENDANCE	Not mandatory		
EVALUATION	Out of 30		
TEACHER OFFICE HOURS	LETO CLAUDIO Monday 09:00 11:00 Dipartimento di Scienze Agrarie, Alimentari e Forestali, Viale delle Scienze 13, Edificio 4, Ingresso L, Piano 2, Studio n. 24.		

PREREQUISITES	The attendance of the course "Applied Agrometeorology" requires the knowledge of Agronomy science, for the understanding of the main content and objectives of the course. The course provides no mandatory prerequisites, but the knowledge of some subjects is needed to understand the main technical and practical problems of the course and to provide rational solutions.
LEARNING OUTCOMES	<p>a) Knowledge and understanding The course permits students to gain knowledge about the agro-meteorological variables and their effects on agricultural crops. The course also allows to schedule the main agricultural practices through the application of agro-meteorological knowledge. The understanding of the main contents of the course requires a specific technical language of this course.</p> <p>b) Applying knowledge skill and understanding The main aim of the course is to encourage the students to develop skills to plan specific farming practices considering the effects of agro-meteorological variables on agricultural crops and to use the main agro-meteorological instruments according to the reference farming context .</p> <p>c) Making judgments The course requires students to be able to independently assess the effects of agro-meteorological variables on plant growth and yield in order to implement the farming activities exploiting the scientific research.</p> <p>d) Communications skills The course requires that students have communication skills in order to transfer clearly information and technical solutions to professionals, entrepreneurs, administrators and commentators. It requires that the dissemination activity is also carried out towards to a non-expert public.</p> <p>e) Learning skills The course requires that students are able to study issues of the course by consulting scientific literature, scientific publications and popular magazines. It requires, also, the ability to transfer the technical knowledge gained following the course or specific meetings, in business and professional sector.</p>
ASSESSMENT METHODS	The course includes a final exam for the assessment of learning by an oral test. The oral test consists of an interview in order to check the skills and disciplinary knowledge provided by the course. Evaluation will be provided as a mark out of 30. The interview will include openended and semi-structured questions in order to verify the gained knowledge, the computing and presentation skills of the student. With regard to the evaluation of knowledge, students have to be able to make connections between the course contents. The evaluation of computing skills will be determined by the student's ability to provide independent judgments about the course contents, to understand the possible practical application of the course and to place the subject content within the target professional context. With regards to the evaluation of the computing capacities, a high quality of language will be required for the reference professional context. The highest score (30/30 with honours) will be awarded to the student who will prove to have a high capacity for judgment, a strong ability to put into practice the knowledge of the course through examples and/or models, a strong ability to provide solutions to the main problematic and to have a high quality the technical language. The lowest score (18/30) will be awarded to the student who will prove to have a low capacity for judgment, a poor ability to put into practice the knowledge of the course through examples and/or models, a poor ability to provide solutions to the main problematic and to have a low quality the technical language. In particular, the assessment method will be deemed insufficient in the event that the student demonstrates that he / she possesses an extremely lacking knowledge of the teaching topics and a poor ownership of the sectoral language. The evaluation score will increase proportionally and will reach intermediate levels between 18 and 30 with honours as the degree of knowledge demonstrated by the student on general and specific topics increases.
EDUCATIONAL OBJECTIVES	The aim of the course " Applied Agrometeorology" is to provide knowledge and specialist skills related to the study of quantitative relationships between agricultural practices and agro-meteorological variables in order to optimize the farming activities. The understanding of the topics requires the knowledge of Agronomy science. The training will consist of frontal teaching and practices.
TEACHING METHODS	The course consists of frontal teaching and practices.
SUGGESTED BIBLIOGRAPHY	<p>Testi di riferimento:</p> <p>a) Giardini L. Agronomia generale, aziendale e ambientale. Patron, Padova. ISBN: 8855526383.</p> <p>b) Tupper G.J., Mavi H.S., 2004 - Agrometeorology: Principles and Applications of Climate Studies in Agriculture. Food Products Press, U.S. ISBN: 9781560229728.</p> <p>Altre letture:</p> <p>a) Pubblicazioni scientifiche inerenti gli argomenti di agrometeorologia.</p> <p>b) Bonari E., Masoni A., Ercoli L. Agrometeorologia. SEU, Pisa. Monografia priva di ISBN.</p> <p>c) Ceccon P., Borin M. Elementi di agrometeorologia e agroclimatologia.</p>

SYLLABUS

Hrs	Frontal teaching
2	Presentation of the course. Definition of agrometeorology and its implications on the crop yields. The main agrometeorological parameters. Definition of climate, microclimate and macroclimate.
2	Solar radiation. The main physical concepts of solar radiation. Energy balance. Total and relative eliophany. Photoperiodism. Effects of solar radiation on plant growth and yield.
2	Temperature and heat. Air and soil temperatures. Growing degree days. Effects of air temperature on plant growth and yield. High and low temperatures defense systems.
1	Absolute and relative humidity. Definitions and general aspects. Dew point temperature. Effects of relative humidity on plant growth and yield.
2	Rainfall. Measurement of rainfall. Amount, distribution, frequency, intensity and duration of rainfall. Useful rainfall. Snow, hail and relative defense systems. Frost and dew. Effects of rainfall, snow and hail on plant growth and yield.
2	Wind. Intensity and direction. Measurement of the wind speed. Wind defense systems. Effects of wind on crop yield
2	Evapotranspiration. Reference and potential evapotranspiration. Methods of measurement and estimate of evapotranspiration. The crop coefficients. The weighing lysimeters. Effects of evapotranspiration on crop yields
2	Weather stations. Fixed and portable weather stations. Description of the main climate sensors. Location, placement and management in the field of agrometeorological instruments.
7	Use of agrometeorology for planning of the main cultivation practices (sowing, fertilization, irrigation, weed control, harvesting).
Hrs	Practice
6	Reading and interpretation of meteorological data in short and long-term period. Use of the main meteorological instruments. The use of regional agrometeorological information services for crop forecasts, The use of CropSyst, as crop model. The use of CropWat as crop model.
Hrs	Others
4	Technical-educational event to visit a farm.