



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze Agrarie, Alimentari e Forestali		
ACADEMIC YEAR	2021/2022		
MASTER'S DEGREE (MSC)	AGRICULTURAL PRODUCTIONS AND TECHNOLOGIES		
SUBJECT	PLANT FERTILISATION AND NUTRITION		
TYPE OF EDUCATIONAL ACTIVITY	D		
AMBIT	20742-A scelta dello studente		
CODE	21860		
SCIENTIFIC SECTOR(S)	AGR/13		
HEAD PROFESSOR(S)	LAUDICINA VITO ARMANDO	Professore Ordinario	Univ. di PALERMO
OTHER PROFESSOR(S)			
CREDITS	3		
INDIVIDUAL STUDY (Hrs)	45		
COURSE ACTIVITY (Hrs)	30		
PROPAEDEUTICAL SUBJECTS			
MUTUALIZATION			
YEAR	1		
TERM (SEMESTER)	2° semester		
ATTENDANCE	Not mandatory		
EVALUATION	Out of 30		
TEACHER OFFICE HOURS	LAUDICINA VITO ARMANDO Wednesday 11:00 14:00 Dip. SAAF, 1° piano, studio 142		

DOCENTE: Prof. VITO ARMANDO LAUDICINA

PREREQUISITES	The student who follows the course of "Fertilization and nutrition of agricultural plants" must have knowledge of general and organic chemistry, agricultural biochemistry, soil chemistry.
LEARNING OUTCOMES	<p>Knowledge and understanding: the student will acquire the ability to perform the methods for determining the main nutrients of chemical fertility, knowledge of the main fertilizers for agricultural use, of the ways and times of their application.</p> <p>Ability to apply knowledge and understanding: The student will be able to use the analytical laboratory data to prepare a fertilization plan for plants of agricultural interest.</p> <p>Autonomy of judgment: the student will be able to interpret the analytical results to evaluate the fertility of the soil. In addition, you will be able to predict the flow of nutrients in the soil.</p> <p>Communication skills: the student will be able to describe the methods of soil analysis, the different fertilizers and to choose the most suitable one for each plant of agricultural interest.</p> <p>Learning skills: the student will be able to deepen the biogeochemical cycles of soil nutrients by consulting texts and scientific journals on soil science.</p>
ASSESSMENT METHODS	<p>Practical and oral exam at the end of the course;</p> <p>The objective of the practical test is to ascertain knowledge of the methods for determining the main nutrients that characterize chemical fertility, as well as the interpretation of the results obtained;</p> <p>The aim of the oral exam is to ascertain the knowledge acquired on fertilizers for agricultural use and on plant nutrition.</p> <p>The duration of the practical test is 15 minutes; the duration of the oral exam is 30 minutes.</p> <p>The minimum score is 18; the maximum score is thirty with honors;</p> <p>The exam is passed with the minimum score (18) if the student shows sufficient knowledge of the main fertilizers for agricultural use and their assimilation by plants, laboratory equipment and some manual skills for carrying out the test.</p> <p>The maximum score is obtained if the student shows considerable knowledge of the main fertilizers for agricultural use and their assimilation by plants, laboratory equipment, good manual skills for carrying out the test and understanding of the results obtained.</p>
EDUCATIONAL OBJECTIVES	Provide students with the theoretical and practical foundations for the execution of methods of analysis for the determination of the main nutritive elements of chemical fertility, for the knowledge of fertilizers for agricultural use and for their application. In particular, the methods for the determination of nitrogen, phosphorus and potassium available for plants will be addressed in order to better orient fertilization and the preparation of a fertilization plan. At the end of the course, the student will have acquired the necessary knowledge to determine the main elements of chemical fertility and to draw up a specific fertilization plan for each type of plant of agricultural interest.
TEACHING METHODS	The course includes lectures and laboratory exercises.
SUGGESTED BIBLIOGRAPHY	Sequi, P., 2006. Fondamenti di chimica del suolo. Patron editore. ISBN-10: 8855528416; ISBN-13: 978-8855528412 Appunti del Docente

SYLLABUS

Hrs	Frontal teaching
6	Review of the main chemical properties of the soil. Principles of plant nutrition and the soil-plant system. The laws of productivity: Liebig, Mitscherlich, interdependence of growth factors. Rhizospheric soil. Forms, acquisition and use of the main elements of chemical fertility.
2	Legislative references for fertilizers. Classification of fertilizers. Simple, binary and ternary fertilizers.
6	Reaction of fertilizers. Title of fertilizers. Release time of the fertilizer element. Nitrogen, phosphoric and potassium fertilizers. Simple mineral nitrogen fertilizers. Simple mineral phosphatic fertilizers. Simple mineral potassium fertilizers. Mineral fertilizers based on secondary elements. Mineral fertilizers based on microelements. Organic fertilizers. Organo-mineral fertilizers. Organic soil improvers. Manure, compost and new products. Balance of organic matter in the soil.
4	Cultivation substrates. Corrective. Fertilization plans for herbaceous crops. Fertilization plans for tree crops
Hrs	Workshops
12	Determination of mineral and total nitrogen. Determination of assimilable phosphorus. Determination of the cation exchange capacity and of the exchange bases. Plant tissue analysis.