



# UNIVERSITÀ DEGLI STUDI DI PALERMO

<b>DEPARTMENT</b>	
<b>ACADEMIC YEAR</b>	
<b>ANNO ACCADEMICO EROGAZIONE</b>	
<b>SUBJECT</b>	
<b>CODE</b>	
<b>SCIENTIFIC SECTOR(S)</b>	
<b>HEAD PROFESSOR(S)</b>	LAUDICINA VITO                      Professore Ordinario                      Univ. di PALERMO ARMANDO
<b>OTHER PROFESSOR(S)</b>	
<b>CREDITS</b>	
<b>PROPAEDEUTICAL SUBJECTS</b>	
<b>MUTUALIZATION</b>	
<b>YEAR</b>	
<b>TERM (SEMESTER)</b>	
<b>ATTENDANCE</b>	
<b>EVALUATION</b>	
<b>TEACHER OFFICE HOURS</b>	LAUDICINA VITO ARMANDO Wednesday 11:00 14:00 Dip. SAAF, 1° piano, studio 142

DOCENTE: Prof. VITO ARMANDO LAUDICINA

<b>PREREQUISITES</b>	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.
<b>LEARNING OUTCOMES</b>	<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>
<b>ASSESSMENT METHODS</b>	<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> <p>Compensatory tools and dispensatory measures will be guaranteed by the Disability and Neurodiversity Center - University of Palermo (Ce.N.Dis.) to students with disabilities and neurodiversity, based on specific needs and in implementation of current legislation.</p>
<b>EDUCATIONAL OBJECTIVES</b>	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.
<b>TEACHING METHODS</b>	The course includes lectures and laboratory exercises.
<b>SUGGESTED BIBLIOGRAPHY</b>	Sequi, P., 2006. Fondamenti di chimica del suolo. Patron editore. ISBN-10: 8855528416; ISBN-13: 978-8855528412 Appunti del Docente

## SYLLABUS

Hrs	Frontal teaching
12	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.
4	Legislative references for fertilizers. Classification of fertilizers. Simple, binary and ternary fertilizers.
12	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.
8	Cultivation substrates. Corrective. Fertilization plans for herbaceous crops. Fertilization plans for tree crops
Hrs	Workshops
24	Determination of mineral and total nitrogen. Determination of assimilable phosphorus. Determination of the cation exchange capacity and of the exchange bases. Plant tissue analysis.