UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze Agrarie, Alimentari e Forestali
ACADEMIC YEAR	2017/2018
BACHELOR'S DEGREE (BSC)	AGRICULTURAL ENGINEERING
SUBJECT	AGRICULTURAL CHEMISTRY
TYPE OF EDUCATIONAL ACTIVITY	B
AMBIT	50125-Discipline della produzione vegetale
CODE	18801
SCIENTIFIC SECTOR(S)	AGR/13
HEAD PROFESSOR(S)	LAUDICINA VITO ARMANDO Professore Ordinario Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	8
INDIVIDUAL STUDY (Hrs)	136
COURSE ACTIVITY (Hrs)	64
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	2
TERM (SEMESTER)	1° 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	Knowledge of general and organic chemistry is required for the students that will attend the course of “Agricultural Chemistry” is need basic
LEARNING OUTCOMES	Knowledge and understanding skill: the student will acquire the skill to understand the nutrient dynamics into the soil. Skill in applying knowledge and understanding: the student will be able to utilize soil data to evaluate the soil fertility and to plan its sustainable use. Autonomy of judgement: the student will be able to interpret soil data and to foresee the soil suitability for a specific use. Furthermore, the student will be able to foresee the flux of soil nutrients. Communication skill: the student will be able to describe the soil properties and the results of a certificate soil analysis. Learning skill: the student will be able to go into the biogeochemical processes of soil nutrients by using textbooks and research articles published in the category of soil science.
ASSESSMENT METHODS	The student will be evaluated by an oral exam at the end of the course during which the subjects explained through frontal lessons and laboratory exercises will be asked. The student has to show good knowledge of the soil resource and of the adopted soil methodologies to determine its main physical and chemical properties. Furthermore, the student has to be able to discuss in a critical way the results of soil analyses. The duration of the oral exam is of about 30 minutes; The minimum mark of the oral exam is 18; the maximum mark of the oral exam is thirty/30 cum laude; The oral exam is passed with the minimum mark (18) when the student has a basic knowledge of explained subjects. The oral exam is passed with the maximum mark (30) when the student has a very good knowledge of the explained subjects and a good critical ability to discuss the results of a soil analysis.
EDUCATIONAL OBJECTIVES	The student will be provided with the tools to understand the soil resource and the methods of physical and chemical soil analyses. In particular, during the course, soil properties will be explained and discussed in order to understand the soil attitude to tillage, irrigation, crop choice and fertilisation. At the end of the course, the student will have acquired the required knowledges for the determination of the main physical and chemical soil properties and for the interpretation of soil data.
TEACHING METHODS	The course is organized in frontal lessons and laboratory exercises.
SUGGESTED BIBLIOGRAPHY	1.Sequi P., Ciavatta C., Miano T., 2017. Fondamenti di chimica del suolo. Patron Editore. Bologna. 2.Weil R.R., Brady N.C., 2016. The Nature and Properties of Soils, 15th edition. Pearson Education, Inc., Boston, USA.

SYLLABUS

Hrs	Frontal teaching
1	The concept of soil. Ecosystem services provided by soil.
8	Soil mineral and organic constituents.
4	Formation of soils from parent materials.
4	Soil colloids. Sources of charges on soil colloids.
8	Soil physical properties. Soil water: characteristics and behaviour. Soil aeration and temperature.
9	Organisms and ecology of the soil. Soil organic matter.
8	Soil nutrients and their cycles. Soil fertilizers.
6	Soil acidity, alkalinity, salinity and sodicity.

Hrs	Practice
4	Soil sampling and soil preparation. Soil sieving.
4	Determination of soil reaction, electrical conductivity and total carbonates.
2	Determination of soil texture.
2	Determination of cation exchange capacity.
2	Determination of soil organic matter.
2	Determination of total nitrogen.