

ACADEMIC YEAR: 2016-2017

COURSE: Agricultural Chemistry and Biochemistry

TYPE OF EDUCATIONAL ACTIVITY: Basic

TEACHER: Adriano Sofo

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[Google Scholar Citation Profile](#)

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Language: Italian

ECTS: (lessons / tutorials/practice): 6	n. of hours: 32 hours of lessons 16 hours of practice	Campus: Potenza School: SAFE Program: Bachelor of Agricultural Technologies	Semester: I
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EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

Students will learn the main topics of soil chemistry and biochemistry. The Course will include both the basic mechanisms of the effects of soil quality and fertility on crop plants. The study of the topics of soil chemistry and biochemistry will be supplemented by discussions, case studies and laboratory exercises. At the end of the course, the student will know the main chemico-physical soil properties, also in relation to pollution and global climate change; the student will be able to recognize the alterations of microbial communities and of the chemico-physical soil properties as a result of the release of xenobiotic substances and of the adoption of different agronomic practices, due to human activities; the student will learn the concept of "biogeochemical cycle", that determines the environmental fate of the chemical elements, especially in agro-ecosystems.

PREREQUIREMENTS

- Inorganic and organic chemistry
- Botany

SYLLABUS

Lessons

The Soils Around Us
 Formation of Soils from Parent Materials
 Soil Architecture and Physical Properties
 Soil Water: Characteristics and Behavior
 Soil and Hydrologic Cycle
 Soil Air and Temperature
 Soil Colloids: Chemical and Physical Activity
 Soil Acidity, Alkalinity and Salinity
 Organisms and Ecology of the Soil
 Soil Organic Matter
 Nutrient Cycles and Soil Fertility
 Soil Quality and Pollution

Practices

Case studies on forest and soil systems. Laboratory training regarding chemical and biochemical plant and soil measurements.

TEACHING METHODS

32 hours of lessons 16 hours of laboratory and field practices. During practices, students will be asked to analyze specific case studies and to work in the laboratory.

EVALUATION METHODS

Groupwork + written examination at the end of the course. If the score of the writing exam is not enough (< 18/30), an oral examination is mandatory.

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

Pietro Violante. Chimica del suolo e della Nutrizione delle Piante. Edagricole, Bologna.

Roberto Pinton, Maurizio Cocucci, Paolo Nannipieri, Marco Trevisan. Fondamenti di Biochimica agraria. Pàtron Editore.

[Optional] Nyle Brady and Ray Weil. The Nature and Properties of Soils. Pearson.

Reviews and articles provided during the course.

INTERACTIONS WITH STUDENTS

- in the office at planned days/hours (usually on Tuesday, Wednesday and Thursday)
 - email, skype (every time)
 - mobile (every time)
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EXAMINATION SESSIONS (Forecast)

Calendar online:

<https://unibas.esse3.cineca.it/Home.do>

Usually, the third Wednesday of every month (except August)

EVALUATION BOARD

Adriano Sofo

Antonio Scopa

Maria Nuzzaci

SEMINARS BY EXTERNAL EXPERTS: SI
