



# UNIVERSITÀ DEGLI STUDI DI PALERMO

<b>DEPARTMENT</b>	Scienze Agrarie, Alimentari e Forestali		
<b>ACADEMIC YEAR</b>	2024/2025		
<b>MASTER'S DEGREE (MSC)</b>	AGROENGINEERING AND FORESTRY SCIENCES AND TECHNOLOGIES		
<b>INTEGRATED COURSE</b>	SOIL EVALUATION AND RECOMPOSITION		
<b>CODE</b>	21790		
<b>MODULES</b>	Yes		
<b>NUMBER OF MODULES</b>	2		
<b>SCIENTIFIC SECTOR(S)</b>	AGR/14, AGR/13		
<b>HEAD PROFESSOR(S)</b>	CONTE PELLEGRINO	Professore Ordinario	Univ. di PALERMO
<b>OTHER PROFESSOR(S)</b>	CONTE PELLEGRINO LO PAPA GIUSEPPE	Professore Ordinario Professore Associato	Univ. di PALERMO Univ. di PALERMO
<b>CREDITS</b>	6		
<b>PROPAEDEUTICAL SUBJECTS</b>			
<b>MUTUALIZATION</b>			
<b>YEAR</b>	1		
<b>TERM (SEMESTER)</b>	1° semester		
<b>ATTENDANCE</b>	Not mandatory		
<b>EVALUATION</b>	Out of 30		
<b>TEACHER OFFICE HOURS</b>	<p><b>CONTE PELLEGRINO</b> Wednesday 10:00 12:00 Dipartimento di Scienze Agrarie, Alimentari e Forestali, v.le delle Scienze ed. 4 - primo piano stanza n. 140. Durante il semestre in cui il Prof. Conte e' impegnato con l'attivita' didattica, il ricevimento va concordato via e-mail</p> <p><b>LO PAPA GIUSEPPE</b> Tuesday 10:00 13:00 Ufficio Docente: Dipartimento di Scienze Agrarie, Alimentari e Forestali (SAAF), Viale delle Scienze Ed. 4, ingresso L, piano 2°, Stanza 218. Wednesday 10:00 13:00 Ufficio Docente: Dipartimento di Scienze Agrarie, Alimentari e Forestali (SAAF), Viale delle Scienze Ed. 4, ingresso L, piano 2°, Stanza 218.</p>		

**DOCENTE:** Prof. PELLEGRINO CONTE

<b>PREREQUISITES</b>	Basic knowledge of general chemistry, organic chemistry, soil chemistry, mathematics, and physics
<b>LEARNING OUTCOMES</b>	<p>Knowledge: students must develop knowledge and critical thinking in the understanding of the problems concerning contaminated systems.</p> <p>Comprehension: Students must show that they understood the basics of the chemistry underlying the contaminated systems</p> <p>Ability to apply knowledge and understanding: Ability to recognize and autonomously organize the surveys and elaborations necessary for the correct evaluation of the soils aimed at the recovery of the degraded areas. Ability to recognize if and when a pedo-environmental problem is solvable by using the knowledge acquired on soil science.</p> <p>Making judgments: students must be able to evaluate autonomously the problems that may not have been covered during the course, but that are connected to the topics covered by the lessons.</p> <p>Communication skills: students must be able to understand texts written in Italian and English and must be able to communicate effectively clearly by following the rules of the scientific method. Also, they must know clearly and unambiguously how to communicate their conclusions, as well as knowledge and the ratio underlying them to specialist and non-specialist interlocutors.</p> <p>Learning Skills: Students need to develop skills allowing them to continue learning by themselves.</p>
<b>ASSESSMENT METHODS</b>	<p>The learning assessment will be based on an oral exam aimed at the evaluation of the degree of the critical understanding of the main topics of the discipline. The mark is in the range of 18-30/30 (cum laude). The minimum score is 18, the maximum score is 30 cum laude. The ways with which the final evaluation is formulated will depend on the knowledge of the topics and on the student's ability to deduce and process information, on his/her ability to apply the knowledge acquired to contexts different from those of the discipline, and by the student's ability to present the different topics during the interview. The mark will be between a) 18-21 when the aforementioned knowledge and skills are sufficient; b) 22-25 when the aforementioned knowledge and skills will be moderate; c) 26-29 the above knowledge and skills will be good to excellent; d) 30-30 cum laude when the aforementioned knowledge and skills are excellent.</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>TEACHING METHODS</b>	Lessons and exercises

**MODULE  
SOIL EVALUATION**

*Prof. GIUSEPPE LO PAPA*

**SUGGESTED BIBLIOGRAPHY**

- Appunti forniti dal docente.
- Soil Survey and Land Evaluation (di Dent, D. & Young, A)
- Soil Survey as a Basis for Land Evaluation (di Deckers J., Spaargaren O., Dondeyne S.) in Land Use, Land Cover and Soil Sciences – Vol. II. ©Encyclopedia of Life Support Systems (EOLSS)
- Edoardo A.C. Costantini & Carmelo Dazzi (2013)
- The Soils of Italy. ISBN: 978-94-007-5641-0

<b>AMBIT</b>	21013-Attività formative affini o integrative
<b>INDIVIDUAL STUDY (Hrs)</b>	43
<b>COURSE ACTIVITY (Hrs)</b>	32

**EDUCATIONAL OBJECTIVES OF THE MODULE**

Starting from the knowledge acquired in the course of Pedology and, developing the ability to interpret the data base and taxonomic systems, the course of "Land evaluation" allows students to acquire the "know-how" for the elaboration of soil and thematic maps and for the application of the techniques of land evaluation for the correct use and management of the soils. The teacher will provide to students material and data for exercises in GIS, in order to evaluate soils for the sustainable management in forests and natural environments.

**SYLLABUS**

<b>Hrs</b>	<b>Frontal teaching</b>
2	INTRODUCTION: Potential of soil surveys - Soil surveys for general and special purposes.
3	FIELD SURVEYS: Survey – searching – mapping – interpretation – judging.
3	SOIL MAPS: Soil units – Digital/Predictive Mapping.
2	Soil database and soil information systems
2	SOIL EVALUATION SYSTEMS: Land evaluation – Parametric methods – Soil Potentiality System.
8	SOIL EVALUATION SYSTEMS: Categorical methods - Land Capability Classification - Land Suitability Classification – Land Classification System - Fertility Capability Classification – Computer-based evaluation systems.
<b>Hrs</b>	<b>Workshops</b>
12	Soil map elaborations in GIS environment and development of land evaluation systems.

**MODULE  
RECOVERY OF DEGRADED AREAS**

*Prof. PELLEGRINO CONTE*

**SUGGESTED BIBLIOGRAPHY**

Appunti dalle lezioni;  
AA.VV. La bonifica biologica di siti contaminati da idrocarburi, Hoepli  
Campanella, Conti, L'ambiente conoscerlo e proteggerlo, Carrocci Faber  
Adani et al., I metalli nell'ambiente, FrancoAngeli  
Baird, Chimica ambientale, Zanichelli

Altre letture consigliate:

E. Bucci, Geni, Memi e Bit. Evoluzione biologica, termodinamica e teoria dell'informazione, Mondadori Università' (2024)  
ISBN: 9791220600231

<b>AMBIT</b>	21013-Attività formative affini o integrative
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**EDUCATIONAL OBJECTIVES OF THE MODULE**

The course aims at the achievement of expertise on 1. characterization of contaminated sites in order to define the best remediation practice; 2. use and re-use of biomasses from wastes. Sustainable techniques are described among which fitoremediation and its possible uses is accounted for.

**SYLLABUS**

<b>Hrs</b>	<b>Frontal teaching</b>
5	Relevance of soil in environmental equilibria. Contamination and pollution phenomena
5	Different types of contaminants. Contaminants from agricultural and other anthropic activities. Natural contamination
5	How to do environmental remediation. Block diagram to design environmental remediation. Sampling methods. Sample preparation and storing.
5	Soil remediation. How a remediation must be designed. Sampling methods. In situ and ex situ remediation. Biomimetic catalysts
<b>Hrs</b>	<b>Practice</b>
12	Analytical techniques for environmental monitoring. Atomic absorption spectroscopy; liquid and gas chromatography; detection techniques for the environmental contaminants