

General Information	
Academic subject	Eco-compatible Management of Soils
Degree course	AGRO-ENVIRONMENTAL AND TERRITORIAL SCIENCES (LM-73, LM-69)
Curriculum	/
ECTS credits	6 ECTS (4 ECTS Lectures + 2 ECTS Laboratory)
Compulsory attendance	No
Language	Italian

Subject teacher	Name Surname	Mail address	SSD
	Elisabetta Loffredo	elisabetta.loffredo@uniba.it	AGR/13

ECTS credits details	Area	SSD	ECTS credits
Basic teaching activities	Fertility and conservation of soils	AGR/13	6

Class schedule	
Period	1st Semester
Year	1st Year
Type of class	Lecture- workshops-laboratory-didactic visits

Time management	
Hours	150
In-class study hours	60
Out-of-class study hours	90

Academic calendar	
Class begins	
Class ends	

Syllabus	
Prerequisites/requirements	
Expected learning outcomes (according to Dublin Descriptors) (it is recommended that they are congruent with the learning outcomes contained in A4a, A4b, A4c tables of the SUA-CdS)	<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> - Knowledge and understanding of the main physical, chemical and biological properties of soils, and the traditional and innovative techniques to improve the quality and fertility of soils <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> - Knowledge and understanding to select and use appropriate traditional and innovative techniques of fertilization to solve specific problems in agricultural and forestry systems - Knowledge and understanding to perform correctly traditional and innovative fertilization treatments aiming to conserve and valorise soil as an agricultural, forestry and environmental resource <p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> - Ability to select appropriate procedures to conserve and improve the quality of agricultural and forestry soils - Ability to improve and implement soil fertility with a view

	<p>to environmental safeguard</p> <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> - Ability to communicate and discuss with appropriate disciplinary lexicon about the main soil properties and their optimization for soil agricultural and forestry management with a view to environmental sustainability <p><i>Capacities to continue learning</i></p> <ul style="list-style-type: none"> - Ability to deepen and update the knowledge of traditional and innovative methodology for the eco-compatible management of soils <p>The expected learning outcomes, in terms of knowledge and skills, are listed in Annex A of the Master Degree Course Regulation (expressed through the European Descriptors of Degree qualification)</p>
<p>Contents</p>	<p>Introduction to the course: objectives and program. Remind to pedogenetic factors and processes, and soil mineral and organic constituents.</p> <p>The main factors of soil chemical, physical and biological fertility and their interrelation.</p> <p>Influence of environmental and pedological factors on properties and transformations of soil organic matter. The role of soil organic matter in the overall soil fertility. Direct effects of soil organic matter on plant growth and plant and microbial allelopathic processes.</p> <p>Practices able to preserve soil natural organic and biological fertility. Use and recycle of biomass of various origin and nature in agricultural soils. Organic fertilization of soil: use of fertilizers and amendments and their influence on the main soil properties. Changes of soil native organic matter properties as a consequence of soil organic amendment, and evaluation of these changes by conventional and advanced methodologies and indices.</p> <p>The use of organic amendments for the eco-sustainable control of soil-borne phytopathogenic microorganisms.</p> <p>Soil mineral nutrients and their role in plant nutrition. Eco-compatible mineral fertilization of soils. Main mineral fertilizers containing nitrogen, phosphorus and potassium.</p> <p>Soil pollution. Organic and inorganic contaminants of soils: heavy metals, agrochemicals and other xenobiotic organic compounds. General fate of contaminants and main processes involving contaminants in the soil. Eco-compatible use of agrochemicals.</p> <p>Soil remediation practices: biodecontamination and phyto-decontamination.</p> <p>Methods used to evaluate and correct soil anomalies (pH and salinity) for a better eco-compatible soil management.</p> <p>The protection of agricultural and forestry soil. Degradation and contamination processes of soils.</p>
<p>Course program</p>	
<p>Bibliography</p>	<ul style="list-style-type: none"> • AA.VV. (2017). Fondamenti di Chimica del Suolo, Sequi P., Ciavatta C., Miano T., (Coord.), Pàtron Editore, Bologna. • Lecture notes • Slides of the lectures are available on EDMODO Platform. • Kim H. Tan. Principles of Soil chemistry. 4th Edition CRC Press, 2011.

Notes	<p>Sitography http://www.fao.org/3/i6874it/16874IT.pdf https://www.edagricole.it/wp-content/uploads/2020/03/5417-Chimica-e-fertilit%C3%A0-del-suolo-SFOGLIA.pdf https://scienzadelsuolo.org/</p>
Teaching methods	<p>Lectures will be presented through PC assisted tools (Powerpoint, Adobe Acrobat, etc.). Photos and movies will be also showed during the course with the aim of presenting relevant case studies</p>
Assessment methods (indicate at least the type written, oral, other)	<p>For students of the year when the lectures have been taught (n course), there will be an ongoing examination (esonero). This examination will take place through an oral examination and will be expressed in thirtieths. The result of this test (esonero) will contribute to the evaluation of the final examination and is valid for one academic year. The exam consists of an oral dissertation on the topics developed during the theoretical and theoretical-practical lectures in the classroom and in the laboratory/production farms, as reported in the Academic Regulations for the Master Course of Agro-Environmental and Territorial Sciences and in the study plan (Annex A). The evaluation of the preparation of the student will respect established criteria, as detailed in Annex A of the Academic Regulations for the Master Course of Agro-Environmental and Territorial Sciences Sustainable. For students who have done the ongoing test (esonero), the evaluation of the final exam will be expressed in thirtieths.</p>
Evaluation criteria (Explain for each expected learning outcome what a student has to know, or is able to do, and how many levels of achievement there are.	<ul style="list-style-type: none"> • <i>Knowledge and comprehension ability</i> <ul style="list-style-type: none"> - Ability to describe the main physical, chemical and biological properties of soils, and the traditional and innovative techniques, taught at lectures, to improve them for a good soil quality • <i>Knowledge and applied comprehension ability</i> <ul style="list-style-type: none"> - Ability to select and use appropriate traditional and innovative fertilization techniques to solve specific problems in agricultural and forestry systems - Ability to select and perform correctly traditional and innovative fertilization treatments aiming to conserve and valorise soil as an agricultural, forestry and environmental resource • <i>Autonomy of judgement</i> <ul style="list-style-type: none"> - Ability to elaborate and select appropriate procedures to preserve and improve agricultural and forestry soils - Ability to elaborate and select appropriate procedures of soil fertilization with a view to environmental safeguard • <i>Communication skills</i> <ul style="list-style-type: none"> - Ability to describe and discuss with appropriate lexicon the most important soil properties and the methods for optimum agricultural and forestry management with view to environmental sustainability, presented as a case study • <i>Learning ability</i> <ul style="list-style-type: none"> - Ability to develop new approaches for choosing and applying appropriate traditional and innovative methods for

	the eco-compatible management of soils.
Visiting hours	From Monday to Friday, 9.00-12.30 by appointment.