

COURSE OUTLINE

1. GENERAL

SCHOOL	ENVIRONMENT AND AGRICULTURAL ENGINEERING		
ACADEMIC UNIT	DEPARTMENT OF NATURAL RESOURCES DEVELOPMENT AND AGRICULTURAL ENGINEERING		
LEVEL OF STUDIES	Graduate		
COURSE CODE	157	SEMESTER	4 ^o
COURSE TITLE	Soil Science		
INDEPENDENT TEACHING ACTIVITIES <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>		WEEKLY TEACHING HOURS	CREDITS
Lectures		3	3
Lab Exercises		2	2
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	Scientific field		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (in English)		
COURSE WEBSITE (URL)	https://oeclass.aua.gr/eclass/courses/519/		

2. LEARNING OUTCOMES

<p>Learning outcomes <i>The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.</i></p> <p><i>Consult Appendix A</i></p> <ul style="list-style-type: none"> • <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i> • <i>Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i> • <i>Guidelines for writing Learning Outcomes</i>
<p>Soil is a valuable & irreplaceable natural resource that should be used maintaining its SUSTAINABILITY and FUNCTIONS. This is the aim of the general introductory course of Soil Science.</p> <p>Upon successful completion of the course the student(s) will be able to:</p> <ul style="list-style-type: none"> Understand the concept of soil. Understand the formation of soil. Understand the soil physical properties. Understand the soil chemical properties. Understand the soil mineralogical properties. Understand the factors affecting soil fertility. Understand that soil is an irreplaceable and valuable natural resource.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Decision-making

Working independently

Team work

Working in an international environment

Working in an interdisciplinary environment

Production of new research ideas

Project planning and management

Respect for difference and multiculturalism

Respect for the natural environment

Showing social, professional and ethical responsibility and sensitivity to gender issues

Criticism and self-criticism

Production of free, creative and inductive thinking

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Others...

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Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Working independently

Team work

Respect for the natural environment

3. SYLLABUS

- Soil as an open natural dynamic system.
- Factors of soil formation (basic concepts).
- Soil Texture. Soil particle size fractions and their physical role. Soil texture classes.
- Mineralogical composition of soils. Primary minerals: their structure and physico-chemical properties. Secondary minerals: structure and physicochemical properties. Clay minerals, iron, aluminum and manganese oxides. Amorphous minerals.
- Chemical properties of soils. Ion exchange and its importance in plant nutrition. Soil base saturation. Z potential, clay dispersion. Soil solution and electrolytes. Soil buffer capacity.
- Soil organic matter. Humic – fulvic acids. Clay – humic complexes. Importance of organic matter.
- Physical properties of soil. Soil structure, porosity. Improvement of structure. Soil air and its importance.
- Soil morphology. Soil profile and its description. Soil color. Soil horizons and epipedon. Soil classification. Classification of Greek soils. Mapping and description of soil units.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	<i>Face-to-face and Distance learning</i>	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	Supporting the learning process by combining text, images, audio, video, animation and other interactive activities. Digital platform (open eclass).	
TEACHING METHODS <i>The manner and methods of teaching are described in detail.</i> <i>Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.</i> <i>The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</i>	<i>Activity</i>	<i>Semester workload</i>
	Lectures	50
	Laboratory practice and field work study	50
	Essay writing	25
	Course total	125
STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure</i> <i>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other</i> <i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i>	<p>The evaluation will be conducted in Greek, except in the case of Erasmus postgraduate students, who will be assessed in English.</p> <p>I. Theory Multiple-choice test Written assignments Final written examination</p> <p>II. Laboratory part Written examination with problem-solving</p>	

5. ATTACHED BIBLIOGRAPHY

<p><i>- Suggested bibliography:</i> Brady, N. C., & Weil, R. R. (2008). <i>The nature and properties of soils</i>. Prentice Hall.</p> <p><i>- Related academic journals:</i> Geoderma, Catena, Journal of Plant Nutrition and Soil Science, Journal of Soil and Water Conservation, Journal of Soils and Sediments, European Journal of Soil Science, Land Degradation & Development, Journal of Soil Science and Plant Nutrition, Soil System, Geoderma Regional</p>
