



COURSE OUTLINE

(1) GENERAL

SCHOOL	School of Technology		
ACADEMIC UNIT	Department of Environmental Sciences		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	AY403	SEMESTER	4th
COURSE TITLE	SOIL HEALTH		
INDEPENDENT TEACHING ACTIVITIES	WEEKLY TEACHING HOURS	CREDITS	
Teaching Hours	4	5	
COURSE TYPE	General Background		
PREREQUISITE COURSES	None		
LANGUAGE OF INSTRUCTION and EXAMINATIONS	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes		
COURSE WEBSITE (URL)	https://eclass.uth.gr/courses/ENV_U_189		

(2) LEARNING OUTCOMES

Learning outcomes
<p>Soil serves as the 'heart' of terrestrial ecosystems, functioning as a vibrant and essential ecosystem that sustains plants, animals, and human life. Healthy soil contributes to clean air and water, abundant crops and forests, productive pastures, diverse wildlife habitats, and picturesque landscapes. However, modern societies often contribute to its degradation. Land processes can significantly impact ecosystems, contributing to issues such as ozone depletion, global warming, deforestation, and water pollution. The quality of soil determines the health of plant ecosystems and the land's ability to support both wildlife and human societies.</p> <p>The course delves into the structure, formation, and evolution of soils, as well as the components that influence their productivity. It covers their physical and physicochemical properties, the presence of nutrients, and pathogens. Additionally, soil degradation is explored, along with its implications for the Earth's atmosphere and terrestrial and aquatic ecosystems. The course also examines the effects of soil management practices on the natural environment.</p> <p>Upon successful completion of the course, students will have acquired specific knowledge, skills, and competences, and will be able to:</p> <ul style="list-style-type: none"> • Define the concept and properties of soil. • Identify the functions of soil and describe its role in addressing significant environmental issues. • Assess soil parameters that influence the development and functioning of ecosystems. • Compare soils of different land uses and propose management practices to mitigate soil degradation.
General Competences
<ul style="list-style-type: none"> • Search for, analysis and synthesis of data and information, with the use of the necessary technology • Decision-making • Working independently • Team work • Respect for the natural environment

(3) SYLLABUS

<ul style="list-style-type: none"> • Soil functions as part of the ecosystem. • Soil formation from parent materials - Soil classification. • Soil architecture and physical properties of soil. • Soil water and the hydrological cycle. • Soil organisms and ecology.
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- Soil organic matter.
- Soil nutrients and soil management practices.
- Soil erosion and its control.
- Soil pathogenicities: salinity, sodicity, acidity, alkalinity.
- Soils and chemical pollution.
- Effects of pollutants on populations and communities.
- Future prospects for global soil health as affected by anthropogenic activities.

(4) TEACHING and LEARNING METHODS – EVALUATION

DELIVERY	Face-to-face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	<ul style="list-style-type: none"> • Use of PowerPoint slides • View material in video • Communication with students via e-mail • Use of asynchronous distance learning (e-class) 	
TEACHING METHODS	Activity	Semester workload
	Lectures	52
	Study and analysis of bibliography	35
	Essay writing	38
	Course total (25 hours workload per credit)	125
STUDENT PERFORMANCE EVALUATION	<p>Students' performance is evaluated in the Greek language. The final grade is determined by:</p> <ul style="list-style-type: none"> • A written exam, at the end of the semester, which contributes 80% to the final grade, applying one or more of the following evaluation methods: Multiple-choice questions, short-answer questions, true/false, fill in the blanks, matching. • A mid-semester essay that contributes 20% to the final grade. The essay may be presented by the students in class. <p style="text-align: center;">Final Grade = 80% Exam Grade + 20% Assignment Grade</p>	

(5) ATTACHED BIBLIOGRAPHY

- Brady, Nyle C., & Weil, Ray R., (2025) *Soil science, the nature, and properties of soils*. (14th ed.) Athens: Embryo Publications. ISBN 978-960-8002-62-3. (in Greek)
- Papatheodorou, Euphemia & Stamou, G. P., (2015) *Soil processes and soil restoration*. Kallipos Repository – Open Academic Editions. ISBN: 978-960-603-314-8. (in Greek)
- Sinanis, K. (2019) *Soil, Management, Environment*. Psichalou Publications. ISBN 978-618-504968-3. (in Greek)