

COURSE OUTLINE

1. GENERAL

SCHOOL	School of Technology		
DEPARTMENT	Department of Forestry, Wood Sciences and Design (Karditsa)		
LEVEL	<i>Undergraduate</i>		
CODE	KM361	STUDENT SEMESTER	3rd
COURSE TITLE	Forest Soil Science		
ACTIVITIES		WEEKLY HRS	ECTS
	Lectures	2	
	Exercises/Laboratory	1	
	TOTAL	3	5
TYPE OF COURSE	Generic knowledge and Skills Development		
PREREQUISITES:	None		
LANGUAGE TEACHING AND EXAMINATION:	Greek		
THE COURSE IS OFFERED TO ERASMUS STUDENTS	No		
WEBPAGES COURSE (URL)			

2. LEARNING OUTCOMES

Learning Outcomes
<p>The aim of the course is to present the evolution of forest soils and the relationship of forest vegetation with the soil, to report the main characteristics of forest soils, to highlight methods and procedures for the protection and improvement of soil characteristics that contribute to increased productivity. At the end of the course students will:</p> <ul style="list-style-type: none"> • Have understood the principles and concepts of the science of Soil Science. • Have understood the physico-chemical-biological properties of forest soils. • Be able to manage forest lands as a valuable natural asset. • Describe the relationship between soil and forest trees and primary productivity.
General Skills
<p>Upon successful completion of the course, the students will be able to develop and cultivate basic professional and social skills:</p> <ul style="list-style-type: none"> • Search, analysis and synthesis of data and information, using the necessary technologies • Production of new research ideas • Respect for the natural environment • Promoting free, creative and inductive thinking

3. COURSE CONTENT

<p>Description of the theoretical part of the course: Mineral composition of the soil. Minerals and categories of minerals, rocks and categories of rocks. Relationships between rocks - soil and forest. Soil formation, climate, soil organisms, topographic relief, time. Physical properties of soils, structure, soil aeration, soil temperature, soil depth. Chemical properties of soils, soil alternative capacity, soil acidity and alkalinity. Biological properties of forest trees, organic matter, effects of organic matter on soil properties. Soil moisture, moisture in forest soils. Nutrient recycling in the forest-soil ecosystem, geochemical cycle, biological cycle. Forest soils and hydrological cycle. Soil fertility, soil nutrients, fertilizers. Soil classification, soil classification systems, classification of forest sites or stations.</p>

The exercises of the course take place one (1) hour per week. Attendance by students is mandatory by at least 50% of the total number of courses (13). From the 1st lesson, the teacher points out the importance of attending the exercise course, as well as the theoretical part, while incentives are given for the continuous participation of the students to the courses. In practice, the exercises of the course are a continuation of the theory and include the study of soil sections (soil layers), sampling of soil and plant samples, as well as laboratory analysis of these samples (measurement of pH, organic matter, analysis of soil texture, CaCO₃, soil porosity, soil elements such as N, P, K, Ca). The aim of the exercises is to maximize the knowledge of students, acquired from the theoretical part, through application of basic principles in practice. The course also includes mandatory excursions to different types of terrestrial natural ecosystems. Relevant directions and rich material and instructions are posted in the e-class.

4. TEACHING AND LEARNING METHODS - EVALUATION

DELIVERY METHOD	Combined educational methods and techniques are applied aiming at enhancing the active participation of students and at increasing the effectiveness of "face to face" teaching: Enriched presentations, questions - answers, discussion, exercises, working groups, demonstration, educational visit.	
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES	Flexible use of teaching tools utilizing IT/ PC (multimedia PC), video projector, video presentation stand, internet, e-class and the platform of asynchronous distance learning if needed (MS Teams).	
MANAGEMENT OF TEACHING	Activity	Semester Workload
	Lectures	26
	Exercise/Laboratory	13
	Personal essay	26
	Individual study	60
	Course Total	125
STUDENT EVALUATION	Student assessment takes place at the end of the semester by means of: (a) written examination for the theoretical part of the course (65% of the final grade) provided that the student has participated to the educational excursions of the course, and (b) written examination and face to face test (e.g. for the classification of soil texture using the special diagram) for the laboratory part of the course (35% of the final grade) provided that the student has participated to the educational excursions and to – at least – 50% of the lab courses.	

5. RECOMMENDED-BIBLIOGRAPHY

Books offered to students through the *Eudoxus* platform:

- Tantos, V. and A. Papaioannou. 2006. Forest Soil Science. Papatotiriou Editions, Thessaloniki (Eudoxus code: 9711, *in Greek*).
- Brady N. C. and R. R. Weil. 2011. Soil Science. EMVRYO EMPORIKI Editions, Athens (Eudoxus code: 86200460, *in Greek*).

Books offered besides the *Eudoxus* platform:

- Alifraggis, D. 2008. The Soil: Genesis – Properties – Classification. Aivazis Editions, Thessaloniki (*in Greek*).
- Papamichos, N. 1996. Forest Soils. Thessaloniki (*in Greek*).
- Tantos, V. 2005. Notes on the laboratory course of Forest Soils. Karditsa (*in Greek, available in the e-class*).
- Tsitsias, V. 1997. Soil Science. Larissa (*in Greek*).

