

ECOLOGY OF TERRESTRIAL ECOSYSTEMS

LEVEL	<i>Undergraduate</i>		
CODE	KM121	STUDENT SEMESTER	1st
COURSE TITLE	Ecology of Terrestrial Ecosystems		
ACTIVITIES		WEEKLY HRS	ECTS
Lectures		2	
Exercises		1	
TOTAL		3	5
TYPE OF COURSE	Compulsory course / Generic knowledge		
PREREQUISITES:	None		
LANGUAGE TEACHING AND EXAMINATION:	Greek		
THE COURSE IS OFFERED TO ERASMUS STUDENTS	Yes		
WEBPAGES COURSE (URL)	https://eclass.uth.gr/courses/FWSD_U_102/		

1. LEARNING OUTCOMES

Learning Outcomes

Upon successful completion of the course students are expected to be able to:

Knowledge:

- Understand the structure, function and importance of terrestrial ecosystems to the ecological balance and sustainable development of the natural environment.
- Identify the various distinct types and categories of natural terrestrial ecosystems.
- Consolidate the implementation of the principles of sustainable management on natural terrestrial ecosystems.
- Delve into the individual natural processes and functions that regulate the function of the ecosystems.
- Become familiar with concepts related to the development, function and management of the terrestrial natural ecosystems.

Skills:

- Design comprehensive management models of terrestrial natural ecosystems.
- Design and implement experimental projects, measurements and records in the context of the sustainable management of terrestrial ecosystems in order to export results.
- Implement the principles of sustainable and multifunctional management of terrestrial natural ecosystems.
- Develop models for the enhancement of the grazing ability, of the quality of rangelands, of the forest vegetation, of the quality of the products and services of ecosystems etc.
- Monitor the biotic and abiotic factors that influence the function of terrestrial natural ecosystems.
- Construct ecological maps.
- Identify the most important rangeland and forest plant communities, the structure of natural terrestrial ecosystems, their most characteristic species and the most important ones.

Competences:

- Combine knowledge and techniques related to the comprehensive, sustainable and multifunctional management of natural terrestrial ecosystems.

- Participate in research/experimental groups and successfully put into practice project ideas both in the laboratory and on site.
- Deploy the targeted knowledge on the issues of management of natural terrestrial ecosystems and propose comprehensive management approaches.

General Skills

- Researching, analyzing and synthesizing data and information using the appropriate technology.
- Production of new research ideas.
- Respect for the natural environment.

2. COURSE CONTENT

During the theoretical part of the course, the student learns about the following:

- Basic concepts of the forest as a bio-community and ecology as a science and technique. Forest areas in the world (classification and identification). Aims of Forest Ecology. The most important plant communities in Greece. Environmental factors that influence the forest (solar radiation, water, atmospheric air, soil, physiography, pollution, fire, biotic factors), as well as the impact of forest on them. Increase process, multiplication, ageing and life span of forest trees. Aims of Rangeland Ecology. Biological cycle, physiology, growth and morphogenesis of rangeland plants. Structure, function and productivity of rangeland ecosystems. Ecology of wet meadows. The impact of grazing on plants and ecosystems. The impact of abiotic environments on rangeland ecosystems. Hydrological function of rangelands. Diachronic changes in rangeland plantation and succession. Climate change, disturbances, degradation and desertification of rangeland ecosystems. Ecology of agricultural, urban, industrial ecosystems.

An hourly workshop takes place every week and at least 50% attendance is mandatory for students. The importance of attending the theoretical classes as well as the workshops is stressed from day one and students are motivated in various ways to maintain participation. The workshop is, in fact, an essential component of the theoretical part, during which ecology exercises that can be put into practice in the field, are solved. These exercises aim to help the students enhance the knowledge acquired during the theoretical part sessions by means of practical activities, constructive discussions, and addressing questions, and ultimately encourage them to make a conscious use of the basic principles of this course in practice.

Compulsory field trips to various types of terrestrial natural ecosystems are included in the course. Relevant guidelines and content-rich course material are available on the e-class platform.

3. TEACHING AND LEARNING METHODS - EVALUATION

DELIVERY METHOD	<p>The Herbartian approach in teaching is employed, which includes the following stages:</p> <ol style="list-style-type: none"> 1. Preparing the students to receive new knowledge, mainly by utilizing their previous knowledge on the subject. 2. The new lesson unit is presented. 3. New knowledge is compared/associated with previous knowledge. 4. Generalization and conclusions. 5. Application of new knowledge in practice. <p>The lesson consists of two parts: Theoretical part,</p>
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	<p>Practical work / Workshops</p> <p>The theoretical part requires the active participation of the students in the learning process that takes place in the classroom and involves the use of interactive tools. Students are encouraged to participate in research activities.</p> <p>Workshops entail the compulsory participation of the students in activities they select from the activity list of each unit of the coursebook. Furthermore, important research findings in specific sectors of this scientific field are stated and discussed. Lastly, educational field trips take place during the semester, in which student participation is compulsory.</p>												
<p>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES</p>	<ul style="list-style-type: none"> - interactive tools - e-class - use of an e-book <p>(https://repository.kallipos.gr/handle/11419/1191)</p> <ul style="list-style-type: none"> - contact with the students via (a) the e-class platform and (b) e-mail 												
<p>MANAGEMENT OF TEACHING</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;"><i>Activity</i></th> <th style="text-align: center;"><i>Semester Workload</i></th> </tr> </thead> <tbody> <tr> <td>Lectures</td> <td style="text-align: center;">35</td> </tr> <tr> <td>Workshops</td> <td style="text-align: center;">30</td> </tr> <tr> <td>Individual and work study for term assignment</td> <td style="text-align: center;">60</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td>Course Total</td> <td style="text-align: center;">125</td> </tr> </tbody> </table>	<i>Activity</i>	<i>Semester Workload</i>	Lectures	35	Workshops	30	Individual and work study for term assignment	60			Course Total	125
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<p>STUDENT EVALUATION</p>	<p>(a) Student assessment for the theoretical part of the course takes place at the end of the semester by means of written examination which follows the format of all courses offered at the Department. By prior agreement, students can also be assessed for the theoretical part by means of progress tests that take place on a mutually agreed date during the semester, according to the Department schedule. Students who are entitled to participate in the assessment processes are those who have participated in all the field trips that took place during the semester. The theoretical part accounts for the 65% of the final grade.</p> <p>(b) Student assessment for the Workshops takes place at the end of the semester by means of written examination, which follow the format of all courses offered at the Department. Students who are entitled to participate in the assessment process are those who (a) have attended a minimum of 50% of the classes, and (b) have participated in all the field trips that took place during the semester. The assessment of the Workshops accounts for the 35% of the final grade.</p>												

4. RECOMMENDED BIBLIOGRAPHY

Books offered to students through the *Eudoxus* platform:

- Vrahnakis M. 2015. Rangeland Science. Kallipos, Open Academic Editions. <https://repository.kallipos.gr/handle/11419/1191> (Eudoxus code: 320084, in Greek)
- Dafis S. 1986. Forest Ecology. Thessaloniki: Giahoudi. (Eudoxus code: 8636, in Greek)
- Begon M., R.W. Howarth and C.R. Townsend. 2015. Ecology (Populations, Biocommunities and Applications). Athens: Utopia Pbs (Eudoxus code: 50657759, in Greek)

Books offered besides the *Eudoxus* platform:

- Bonham C.D. 1989. Measurements for Terrestrial Vegetation. John Wiley & Son, 338 p.
- Southwood T.R.E. and P.A. Henderson. 2000. Ecological Methods. Blackwell Science, 575 p.