

COURSE OUTLINE

CONTEMPORARY APPROACHES IN RANGELAND MANAGEMENT - AGROFORESTRY

(1) GENERAL

SCHOOL	TECHNOLOGY		
DEPARTMENT	FORESTRY, WOOD SCIENCES & DESIGN		
LEVEL	POSTGRADUATE		
COURSE CODE	MB122	SEMESTER	2 nd
COURSE TITLE	CONTEMPORARY APPROACHES IN RANGELAND MANAGEMENT – AGROFORESTRY		
ACTIVITIES		WEEKLY HOURS	ECTS
	Lectures	2	6
	TOTAL	2	6
TYPE OF COURSE	OBLIGATORY		
PREREQUISITES	NO		
LANGUAGE OF TEACHING AND EXAMINATION	GREEK		
THE COURSE IS OFFERED TO ERASMUS STUDENTS	NO		
WEBPAGE COURSE (URL)	https://eclass.uth.gr/courses/FWSD_P_113/		

(2) LEARNING OUTCOMES

Learning Outcomes
<p>The sustainable management of natural grassland ecosystems and agricultural lands is the basis for the conservation of these particularly extensive agricultural resources, but also a prerequisite for supporting primary production with the aim, among others, of developing livestock and other high-quality products. The purpose of the course is to highlight modern methods of managing grasslands and agricultural lands, which utilize and implement the results of long-term research projects and successful practical tests in the fields of Grassland and Agroforestry.</p> <p>Upon successful completion of the course, the student will be able to:</p> <ul style="list-style-type: none"> • Has the necessary knowledge background regarding the normal use, sustainable management, health and carrying capacity of grasslands, the methodology of drawing up grassland management studies, grassland improvement methods and the spatial and temporal organization of the livestock capital within the framework of sustainable management of natural ecosystems. • Participates in the preparation of the necessary field work and the drafting of grassland management studies and their application guides. • Knows basic concepts of Agroforestry science and, in particular, those related to the structure, classification and interactions of agroforestry and agroforestry systems, the productivity of agroforestry systems, and the environmental and cultural values of agroforestry systems. • Recognize traditional agroforestry systems and be able to evaluate them. • Proposes methods for improving the management of traditional agroforestry systems and the establishment of modern agroforestry systems, including the main tree species for modern agroforestry systems. • Combines the above as proposals to improve the management of pastures and agricultural land with the aim of better organization and more efficient operation of extensive and semi-extensive livestock farms (e.g. goat and sheep farms on which the production of the PDO slice is based, and beef cattle farms or dairy direction, products in which our country extremely deficient).

- Identifies opportunities for crop production or agro-livestock holdings that have agricultural land, so that by installing agroforestry systems, they can expand their produced products and support their income with additional quality products.
- Contributes to the development and dissemination of pro-environmental practices in the fields of agriculture and animal husbandry, including organic production methods, which are also basic conditions for the continuation of the Common Agricultural Policy of the European Union and the support of agricultural income through community aid.

General Skills

(3) COURSE CONTENT

In the theoretical part of the course the student is taught and learns about:

- Grassland Ecology. Basic definitions (grassland, grassland types, pasture, rangeland, Agroforestry). Forests - Meadows - Agricultural crops. Ecological characteristics of grassland types. Coefficient of energy and growth efficiency.
- Introduction to grassland management and agroforestry. Rangeland and agroforestry management goals and objectives. How are the two sciences connected? Intensive / extensive animal husbandry – Grazing systems.
- Economic and environmental importance of grasslands. The meadows as a particularly extensive soil resource. Economic importance of grasslands. Environmental dimension of meadows – Meadow habitat types (Directive 92/43/EEC – Natura 2000 network). Normal grazing vs overgrazing and undergrazing.
- Principles of sustainable grassland management. Meadow plants. Pasture capacity, pasture loading, pasture carrying capacity, normal pasture use, pasture capacity / pasture loading balance. Grazing coefficients of grassland plants. Correct location of livestock service infrastructure. Rangeland condition indicators of rangeland health.
- Examples of grassland management from other regions of the world. Demonstration of cases (case studies): African savannah, pampas of Argentina, wetlands with significant animal husbandry activity, etc.
- Grassland management in practice. Structure of rangeland management studies. Provisions of recent national legislation on grazing management plans. Identification of the area to be studied. Inventory of abiotic and biotic factors affecting rangeland management: rangeland types and rangeland vegetation, users, rangeland threats and pressures, climatic conditions, local grazing practices, livestock infrastructure, animal breeds.
- Grassland management in practice. Recording of socio-economic data (age composition of breeders, income from breeding, succession in the breeding profession, etc.). Necessary field work (sampling, mapping, etc.). Collection of opinions of livestock farmers and local bodies on grassland management issues. Synthesis of the above data and evaluation.
- Grassland management in practice. Formulation of pasture management proposals (by space and time, organization of livestock capital, infrastructure, improvement of pastures (methods and cost calculations of fertilizing, plowing, sowing, limiting unwanted pasture species), connection with plant production (meadows) etc.). Funding management. Scientific monitoring of meadows with special emphasis on protected areas. CAP and grassland policy.
- Importance of Agroforestry. Agroforestry systems vs annual or perennial crops (only) in the same field (why combine trees and other crops / livestock). Environmental benefits in cultivation from the presence of trees. More general environmental benefits of agroforestry systems (ecosystem services).
- Inventory of agroforestry systems. Structure and production characteristics of agroforestry systems. Methodology of inventory, classification and evaluation of agroforestry systems.

Inventory of agroforestry systems in Northern Greece.

- Traditional and modern agroforestry systems. Environmental and cultural values of agroforestry systems. Traditional agroforestry systems and their adaptation to modern scientific approaches and market demands. Objectives of modern agroforestry systems.
- CAP and Agroforestry / design of modern agroforestry systems. CAP predictions for modern Agroforestry. Main tree species for modern agroforestry systems. Agricultural land utilization study with the aim of establishing agroforestry systems.
- Presentations of final course assignments.

Every four weeks assignments are given (individual or in groups of 2-3 people) for students to practice on topics related to the subject of the course, while the final assignment (3rd) will be individual and the student will have to present it publicly and orally at the end of the semester of the MSc. The final paper is delivered in printed and electronic format, and its presentation lasts 15' and is followed by questions for 5-10' from the students present. The teacher, if necessary, intervenes for commentary, observations and corrections.

Students are graded for the overall performance of their final paper (a) by 70% on the content and editorial specifications and (b) by 30% on the preparation of the electronic presentation and its oral support. These grades count for a total of 40% of the overall grade that the students will receive after the final written examination of the theory.

(4) TEACHING AND LEARNING METHODS - EVALUATION

COURSE DELIVERY METHOD	In class and remotely	
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES	<ul style="list-style-type: none"> • Use of PCs, ppt slides, video projector, Videos. • Support the learning process through the E-Class online platform. • Interactive Whiteboard. • Eight (8) PCs in the Laboratory for exercise of graduate students. 	
MANAGEMENT OF TEACHING	Activity	Semester Workload
	Lectures	26
	Three (3) assignments related to the subject of the course	54
	Independent Study	70
	Course Total (25 workload hours per credit unit)	150
STUDENT EVALUATION	<p>I. The written final exam (60%) includes:</p> <ul style="list-style-type: none"> • Short answer questions from all the material taught (lectures, other material and book). • Multiple choice questions (with a negative marking factor). • True-False questions (with a negative scoring factor). • Short answer questions on a text that (possibly) will be given for study and editing during the examination. <p>II. Successful delivery of three (3) assignments and presentation of the individual final (3rd) assignment (40%).</p>	

(5) RECOMMENDED-BIBLIOGRAPHY

- Suggested Bibliography:

- Nάσσης Α.Σ. και Κ.Ν. Τσιουβάρας. 1991. Διαχείριση και Βελτίωση Λιβαδιών. Υπηρεσία Δημοσιευμάτων, Α.Π.Θ., σελ. 142.
- Παπαναστάσης Β.Π. 2009. Λιβαδοκτηνοτροφική Ανάπτυξη. Εκδόσεις Γιαχούδη, Θεσσαλονίκη, σελ. 157.
- Παπαναστάσης Β.Π. 2015. Αγροδασσοπονία. Εκδόσεις Ζήτη, Θεσσαλονίκη, σελ. 191.
- Etienne M. 1996. *Western European Silvopastoral Systems*. INRA Editions. 276 p.
- Heady H.F. and R.D. Child. 1994. *Rangeland Ecology and Management*. Westview Press, 519 p.
- Rigueiro-Rodríguez A., J. McAdam and M.R. Mosquera-Losada (eds). 2009. *Agroforestry in Europe Current Status and Future Prospects*, Springer, Berlin.
- Wallis de Vries M.F., J.P. Bakker and S.E. van Wieren. 1998. *Grazing and Conservation Management*. Kluwer Academic Publishers, pp. 374.

- Related Scientific Journals:

- Rangelands
- Journal of Rangeland Science
- The Rangeland Journal
- Agroforestry Systems
- International Journal of Agroforestry and Silviculture
- Journal of Horticulture and Forestry