

512. Forest Roads Planning and Management

Instructor: Stergios Tampekis

1. GENERAL

FACULTY	PLANT SCIENCES		
DEPARTMENT	FORESTRY AND NATURAL ENVIRONMENT MANAGEMENT		
LEVEL OF STUDY	Undergraduate		
COURSE CODE	512	SEMESTER OF STUDY	5pd
COURSE TITLE	Forest Roads Planning and Management		
INDEPENDENT TEACHING ACTIVITIES		TEACHING WEEKS	CREDITS
Lectures		3	6
Laboratory exercises		2	
Total Course		5	
COURSE TYPE	Special Background or Core Course		
PREREQUISITE COURSES:	No		
LANGUAGE OF INSTRUCTION AND EXAMINATIONS:	Greek		
THE COURSE IS OFFERED TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)	https://oeclass.aua.gr/eclass/courses/492/		

2. LEARNING OUTCOMES

Learning Outcomes
<p>The subject of the course is:</p> <p>The subject of the course is to provide students with valuable information on the design, construction, maintenance and management of forest roads for the protection and management of forest ecosystems in the light of resilience and adaptation to climate change.</p> <p>Aim of the course</p> <p>Theory</p> <p>The theoretical courses provide the background for applying the knowledge in practice and solving the problems thus supporting the laboratory courses. In theoretical courses, students are also faced with solving exercises to practice and deepen the theory. Therefore, the aim of the course is to equip students with the engineering knowledge and skills to design and manage economic and social-ecological efficient forest roads which will assist in the integrated sustainable management and protection of forests.</p> <p>Labs</p> <p>Attendance is mandatory in laboratory courses.</p> <p>In the laboratory courses, familiarization with new technologies in geoinformatics is sought. During this workshop, students will examine a variety of case studies, using specialized software to draw (alignments, sections, and cross-sections or profiles), and manage</p>

construction and integrated spatial planning (database creation) information, covering the life cycle of the roads up to the deactivation of some of them. The advantages/disadvantages and limitations of road construction equipment will also be discussed.

As part of the course, it is expected that students be able to:

- understand the integrated spatial planning and management of forest roads (Forest Transportation Planning and Management)
- understand Harvesting Operations Planning and Management
- develop the capacity for the construction of forest roads and their maintenance
- develop the ability of Problem-Solving skills based on forest Engineering and Technology
- apply the technologies of Geographical Information Systems of forest engineering (GIS and Forest Engineering Applications).

General skills

- Search, analyze and synthesize data and information, using the necessary technologies.
- Problem solving skills
- Decision-making
- Autonomous work
- Teamwork
- Working in an interdisciplinary environment
- Respect for the natural environment
- Promoting free, creative and inductive thinking
- Utilization of new technologies in decision making.

3. SYLLABUS

The material per week of the course - in theory and corresponding laboratory exercises - reads as follows:

Theory:

N/A NOT CONTENT OF THE TEACHING UNIT (DE)

- Forest roads general concepts (definitions, road categories, forest roads density, road sections).
- Forest roads geometric study (technical characteristics concerning horizontal alignment, vertical alignment, cross sections).
- Corridor planning and design.
- Forest road polygon alignment planning.
- Forest road centerline alignment planning.
- Curves. Forest road alignment width.
- Cut and fill volumes.
- Forest road construction Financing.
- Forest roads planning.
- Forest road surveying and measurements.
- Life cycle analysis, Environmental impacts.
- Principles of maintenance of forest roads.
- GIS and forest roads application.

Workshop:**N/A NOT CONTENTS OF THE TEACHING UNIT (DE)**

- The institutional framework for environmental protection in Greece
- Stages of preparation of preliminary studies & environmental impact studies of road construction projects
- Basic modules of environmental impact of road construction projects
- Land uses – natural & anthropogenic ecosystems
- Forest roads spatial planning and impacts on natural environment
- Functional Hierarchy of Roads
- Design of Horizontal Alignment
- Corridor planning and design.
- Forest road polygon alignment planning.
- Forest road centerline alignment planning.
- Curves. Forest road alignment width.
- Cut and fill volumes.
- Design of vertical alignment, cross sections

4. TEACHING AND LEARNING METHODS – ASSESSMENT

DELIVERY METHOD	In the hall, in the Laboratory and adjacent to the facilities of the Department forests and woodlands.	
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES	Use PowerPoint slides, use physical maps, communicate with students via video conferences, Open eClass, email, and telephone. Meetings with students per person to answer questions and prepare laboratory exercises.	
TEACHING ORGANIZATION	Activity	Semester Workload
	Lectures	50
	Laboratory Exercises	34
	Work	15
	Study personal	51
	Total course	150
STUDENT EVALUATION	I. Written final exam in the theory of the course. II. Answering multiple-choice questions II. Written or oral examination in the laboratory part of the course. III. The exam includes the development of equally graded development questions, or the resolution of exercises announced to students at the beginning of the course. The examination criteria are explicitly mentioned, especially in the laboratory part. The relevant information can be found in the University's eClass	

5. RECOMMENDED-BIBLIOGRAPHY**Suggested Bibliography:**

1. Nikou Nikolaos, Applied Forest Road Construction, S. Yahoudis Publications & SIA O.E. (2004), ISBN: 960-7425-75-2

2. Apostoleris Anastasios. "Road Construction I - Engravings", 1st Edition. Apostoleris Publications, 2013, Athens
3. Kofitsas I., Elements of Road Construction, Ion Publications, Athens, 2001.
4. Mouratidis A., Road Construction, The Construction of Road Works, University Studio Press, Athens, 2000.

Related scientific journals:

- International Journal of Forest Engineering
- Croatian Journal of Forest Engineering