

MODULE DESCRIPTION

General

School	Geotechnical Sciences
Department	Forest and Natural Environment Sciences

Module Information

Title	Spatial Analysis Applications in forest ecosystem management
Course Code	OPT. 34
Level of Studies	Undergraduate
Teaching Period	Winter
Attendance Type	Elective
Prerequisites	Geographic Information Systems, Environmental Remote Sensing

Orientation	Weekly Hours		Year	Semester	ECTS
	Lectures	Laboratory work			
Natural Resource Management, Protection & Climate Change	2	1	5 ^o	9 ^o	3

Faculty Instructor

Assistant Professor Dimitrios Raptis

Type of Module

- General Foundation
- Specific Foundation / Core
- Knowledge Deepening / Consolidation

Mode of Delivery

- Face to face
- Distance learning

Digital Module availability

- E-Study Guide
- Departments Website
- E-Learning

Language

	Teaching	Examination
Greek	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
English	<input type="checkbox"/>	<input type="checkbox"/>

Erasmus

- The course is offered to exchange programme students

Learning Outcomes

The aim of the course is to provide students with the necessary knowledge for the application of spatial analysis tools, methodology and technology in the management of forest ecosystems in the context of sustainability.

Specifically students after the successful completion of the course are expected to

- (i) be acquainted with the spatial analysis techniques that form the basis for evaluation in forest ecosystems management ;
- (ii) understand the relationships of the different types of spatial data necessary for the management of forest ecosystems;
- (iii) be able to retrieve, process and create all spatial layers necessary to determine woody biomass on the basis of the sustainability principles;
- (iv) be able to use effective spatial analysis software to create thematic layers
- (v) be able to properly integrate and manage the spatial information necessary for drawing up forest management plans;
- (vi) become familiar with spatial statistical analysis models for the compilation of multiple use forest management plans.

List of General Competences

- Apply knowledge in practice
- Work autonomously
- Work in teams
- Work in an international context
- Work in an interdisciplinary team
- Respect natural environment
- Advance free, creative and causative thinking

Module Content (Syllabus)

Design of a digital background for spatial distribution of necessary data retrieved by a combination of analog information (contour, geological, road network, infrastructure, land use and hydrographic network maps). Identification and mapping of functional spatial entities at appropriate spatial scales for the management of forest ecosystems. Spatial determination of vegetation types and forms through photo interpretation, by using basic criteria of canopy cover. Modern applications and tools for unbiased distribution of sampling plots and their establishment in field conditions. Spatial identification of forest species and mixture, using remote sensing extensions and ground checking. Site quality mapping. Overlaying spatial entities and area measurements in vertical projection. Identification and spatial verification of forest land use by incorporating forest maps. Spatial statistical analysis models for multiple use forest management.

Keywords

Spatial Analysis, forest management plan, spatial scale, forest management plan specification, photo-interpretation

Educational Material Types

- Book
- Notes
- Slide presentations
- Video lectures
- Multimedia
- Interactive exercises
- Other:

Use of Information and Communication Technologies

- Use of ICT in Course Teaching
- Use of ICT in Laboratory Teaching
- Use of ICT in Communication with Students
- Use of ICT in Student Assessment

Module Organization

Please fill in the workload of each course activity

Course Activity	Workload (hours)
Lectures	26
Laboratory work	13
Field Trip/Short Individual Assignments	20
Independent Study	16
Total	75

* 1 ECTS unit corresponds to 25 hours of workload

Student Assessment Methods

- Written Exam with Multiple Choice Questions
- Written Exam with Short Answer Questions
- Written Exam with Extended Answer Questions
- Written Assignment
- Report



Oral Exams



Laboratory Assignment

Suggested Bibliography (Eudoxus and additional bibliography)

1. Κουτσόπουλος, Κ. 2006. Γεωγραφικά συστήματα πληροφοριών. Εκδόσεις Παπασωτηρίου.
2. Perera, A.H., Euler, D.L. and Thompson, I.D. (eds) (2011). Ecology of a managed Terrestrial Landscape: Patterns & Processes of Forest Landscapes in Ontario. UBC Press, 346p.
3. Jansen, M., Judas, M. and Saborowski, J. (eds). Spatial modeling in Forest Ecology and Management: A case study. Springer Science and Business Media, 225p.
4. Bettinger, P., Boston, K., Siry, J.P., Grabner, D.L. (2017). Forest Management and Planning. Academic Press.