



Universitat de Lleida

DEGREE CURRICULUM  
**ST IN MAPPING AND  
MONITORING FOREST  
NATURAL RESOURCES**

Coordination: SHESTAKOVA , TATIANA

Academic year 2023-24

## Subject's general information

<b>Subject name</b>	ST IN MAPPING AND MONITORING FOREST NATURAL RESOURCES			
<b>Code</b>	111001			
<b>Semester</b>	ANUAL CONTINUED EVALUATION			
<b>Typology</b>	<b>Degree</b>	<b>Course</b>	<b>Character</b>	<b>Modality</b>
	Master's Degree Erasmus Mundus in Spatial and Ecological Modelling in European Forestry	2	OPTIONAL	Attendance-based
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<b>Course number of credits (ECTS)</b>	3			
<b>Type of activity, credits, and groups</b>	<b>Activity type</b>	PRACAMP	PRALAB	TEORIA
	<b>Number of credits</b>	0.6	1.2	1.2
	<b>Number of groups</b>	1	1	1
<b>Coordination</b>	SHESTAKOVA , TATIANA			
<b>Department</b>	AGRICULTURAL AND FOREST SCIENCES AND ENGINEERING			
<b>Teaching load distribution between lectures and independent student work</b>	12 ects is 10h work in the class/lab, and 15h student work			
<b>Important information on data processing</b>	Consult <a href="#">this link</a> for more information.			
<b>Language</b>	English only			
<b>Distribution of credits</b>	40% Theory, 60% Practice			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
SHESTAKOVA , TATIANA	tatiana.shestakova@udl.cat	3	

## Subject's extra information

GIS and remote sensing tools, and in general geo-technologies, present a great potential for the acquisition and processing of crucial information on forest composition, structure and condition. Recent developments are reviewed, and new applications identified.

A minimum background or previous course on GIS and remote sensing is necessary to complete the analyses in the computer labs.

## Learning objectives

To identify opportunities in new Earth observation programmes and geo-technologies for forest resources inventory and analysis under multiple ecosystem services demands.

## Competences

Students will be able to apply the theory and practice behind remote sensing image acquisitions and make informed decisions about the possible applications in Forestry of well-established (i.e. Landsat) and new Earth observation programmes (i.e.Sentinel-2 data), or their fusion.

Students will be able to manage, combine and relate georeferenced data from different sources (field, ancillary or remotely sensed) to generate new information on the status of forests: stand composition, structure and condition. High-quality cartographic outputs are expected.

## Subject contents

1. Managing, understanding, visualizing and storing remote sensing data after query and download.
2. Sources of data and remote sensing programs for observation of forest composition, structure and condition.
3. Disturbances and forest dynamics at different scales. Scale issues when analysing RS data.
4. Change detection techniques. Temporal analysis of RS data.
5. Applications to individual study cases.

## Methodology

The classes are organized by the students according to flipped learning strategies with materials provided by the instructors. Study cases are analyzed, individually and jointly, for formative evaluation. Lab exercises are conducted, and field trips allow acquiring field data for validation of models. ArcGIS, QGIS and MS Excel (or R) are used to explore RS data for inferring forest stand traits (composition and structure), spatial modelling of forest inventory metrics, and general condition of forests across scales and temporal spans.

## Development plan

Scheduling is by agreement with the students at the beginning of the course.

The course will be coordinated with other courses in the same programme.

## Evaluation

Grading is based on the resolution of individual study cases and collaborative work, presentations and other activities (seminars, labs, etc.).

## Bibliography

You can access general materials through the Catalog in our digital library system: <http://www.bib.udl.es/> and particularly the Sakai site of the course, where all required materials are provided.