

MSc European Forestry



MSc Spatial and Ecological modelling in European Forestry **SEE-Forestry**

Double Degree Erasmus mundus

The School of Agrifood and Forestry Science
and Engineering

University of Lleida





Airport Lleida Alguaire



Universitat de Lleida



Train Station Lleida- Pyrenees



Fontaine Square La Pau



La Llotja Congress Hall



La Mitjana Park

About Lleida...



- ✓ Located south of the Pyrenees (100 km)
- ✓ Near to Barcelona (150 km)
- ✓ Mediterranean climate
- ✓ Population is 140.000



JAZZ TARDOR
XXV FESTIVAL de JAZZ de LLEIDA



Location

Environmental gradient: From arid steppe lands to alpine high mountains



Our location is suitable for study and research in the fields of agriculture, stockbreeding, food technology and environmental and forest sciences.



The topographic gradient allows for a great diversity in forest and wildland environments: coastal, grasslands, riparian, shrublands, woodlands, tall forest:

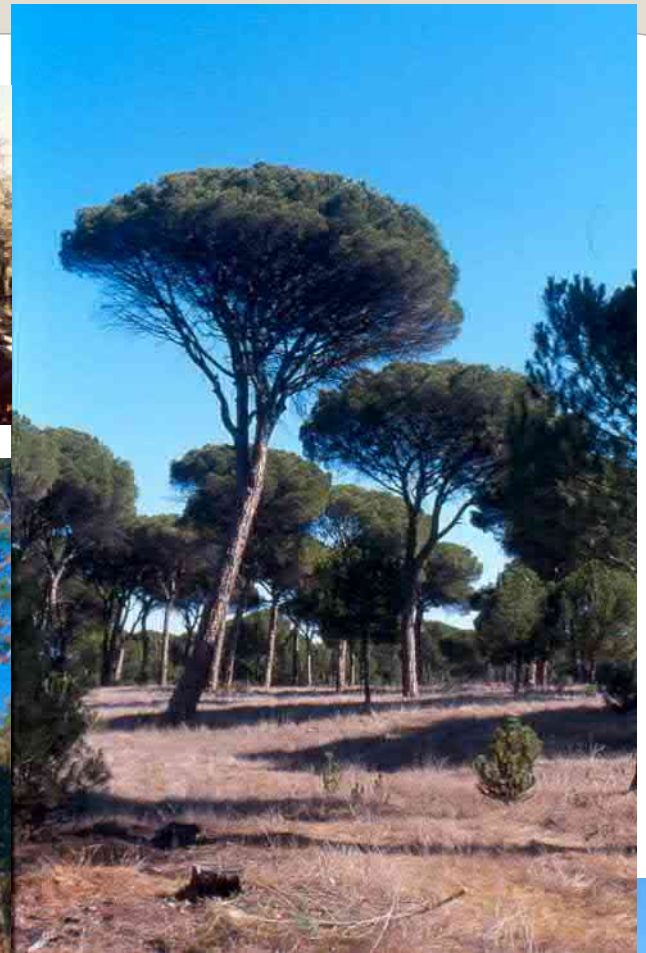
EFFC 2018



Forest dominated by deciduous or semideciduous thermophilous species, mainly *Quercus pubescens*



Broadleaved evergreen oak forest (holm and cork oak)



Xerophytic forests dominated by coniferous species (pines, firs, junipers, cypress)



**History has left an imprint in the Mediterranean forest:
seminatural forests at best, cultural landscapes, high biodiversity**



**Recently developed young
forests challenging for
silviculture**

University of Lleida



- ✓ Founded in 1297
- ✓ 7 Faculties and 2 affiliated centers
- ✓ 4 Centers of technological innovation
- ✓ 30 Scientific-Technological Services
- ✓ 99 Research groups and 878 researchers

- ✓ 11.000 Students
- ✓ 10 Students/Teacher



Agrifood and Forestry Science & Engineering School

It's is one of 7 Faculties at the University of Lleida (UdL)



✓ The University of Lleida is ranked 65th world's best and Spain's 2nd best in scientific publications according to ISI.

✓ Ranking 6th in Spain, 101-150a in 500 within "Agricultural Sciences"

<http://www.shanghairanking.com/Shanghairanking-Subject-Rankings/agricultural-sciences.html>

Departments



- ✓ Agriculture & Forest Engineering
- ✓ Animal Science
- ✓ Chemistry, Mathematics
- ✓ Crop and Forest Sciences
- ✓ Environment and Soil Sciences
- ✓ Food Technology
- ✓ Natural Resources Administration and Management
- ✓ Horticulture, Botany and Gardening

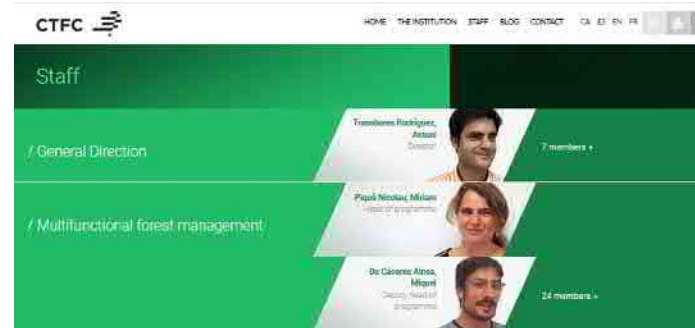


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Researchers & Affiliated Institutions



Associació de Propietaris de l'Alt Empordà
 Associació de Propietaris Forestals Berguedà Verd
 Diputació de Barcelona
 Associació d'Iniciatives Rurals de Catalunya (ARCA)
 Associació per la Gestió Forestal de la Baronia de Rialb
 Ajuntament de la Baronia de Rialb
 Serveis Territorials del DARP
 Associació de Propietaris Forestals Serra Miralles-Orpinell
 Ajuntament de Vallcebre



Head of group



Casals Tortras, Pere



Coll Mir, Lluís
Forest Functoning & Dynamics



De Cáceres Ainsa, Miquel
Vegetation Modeling



Piqué Nicolau, Miriam
Sustainable forest management



Rovira Castella, Pere A.
Soils and fertilizers



Améztegui González, Àlvar
Forest Functoning & Dynamics



Beltrán Barba, Mario
Sustainable forest management



Coello Gómez, Jaime
Sustainable forest management



Domènech Jardí, Rut
Sustainable forest management



García Passas, Jordi



Taüll Taüll, Marc



Universitat de Lleida

Our programmes

BSc Degrees

- ✓ Biotechnology
- ✓ Animal Health and Science & Veterinary Sciences
- ✓ Food Science and Technology
- ✓ Agricultural and Food Engineering
- ✓ Forest Engineering

PhD Programmes

- ✓ Agriculture and Food Science and Technology
- ✓ Forests and Environmental Management

<http://www.udl.cat/ca/estudis/doctorat/en/programes-de-doctorat/gestio-forestal-i-del-medi-natural/>

Master Programmes Agr. & Food Science:

- ✓ Agri-Food Systems Research
- ✓ Agronomic Engineering
- ✓ Integrated Pest Management
- ✓ Management and Innovation in the Food Industry
- ✓ Plant Breeding
- ✓ Soil and Water Management
- ✓ Swine Health and Production

Master Programmes Forest Science:

MSc European Forestry-SEE Forestry Erasmus mundus

- ✓ MSc in Mediterranean Forestry and Natural Resources Management (MEDFOR)
- ✓ Integrated Planning for Rural Development and Environmental Management
- ✓ Wildland Fire: Science and Management
- ✓ MSc Forest Engineering



European Forestry in Lleida

Modular programme

Year 1

Module 1 – Professional Knowledge Improvement, 12 ECTS

- Trends in European Forestry, 5 ECTS
- Academic Skills in Forest Sciences, 1.5 ECTS
- Research Methodology in Forest Sciences, 3.5 ECTS
- Global Virtual Seminar, 2 ECTS

Module 2 – Practical perspective and industrial visits, 18 ECTS

- European Forestry Field Course, 8 ECTS
- Applied Period in Forest Institutions, 10 ECTS

Elective Courses, 30 ECTS

Year 2

Module 3 – Specialization within Study Tracks, 30 ECTS, MSc Thesis and Online Thesis Seminar, 30 ECTS

- Track 1: Decision support systems for resource management
- Track 2: Resource management for ecosystem services
- Track 3: Spatial and ecological modelling
- Track 4: Resource economics and policy
- Track 5: Forest silviculture and engineering
- Track +: Global perspective

European Forestry Forum, Graduation Ceremony

University of Lleida (Spain):

Forest dynamics in a global change context: drivers, processes and modelling approaches, 5 ECTS

Introduction to Spatial Statistics: Spatial analysis with R, 5 ECTS

Stand to Continental Forest Health Management, 5 ECTS



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List of Tracks:

- Track 1: Decision support systems for resource management (Coordinator AgroParisTech), including Forest Informatics and Precision forestry.
- Track 2: Resource management for ecosystem services (Coordinator: BOKU), including Carbon resource management, Resource efficient bio-resource analysis, Precision forestry.
- Track 3: **Spatial and Ecological modelling (Coordinator: University of Lleida), including Production ecology, and Spatial modelling technology, Natural hazards and risks.**
- Track 4: Resource economics and policy (Coordinator: University of Freiburg), including Applied forest bio-economy, Environmental policy/governance, New bio-materials and Economics of multipurpose forestry.
- Track 5: Silviculture and Engineering in Eastern Europe (Coordinator: TU Brasov developed during the first 2 years).
- Track +: Global perspective (a standard track 1, 2, 3 or 4 in Europe + additional studies with global Associate Partners in Canada, China, or Brazil).

Formality

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List of Elective Courses SEE Forestry:



1. METHODS AND TOOLS IN SPATIAL ANALYSIS AND ECOLOGICAL MODELLING (20 ECTS)

- 1.1. ST in Mapping and Monitoring Forest Natural Resources (3 ECTS)
- 1.2. ST in Spatial Statistics (3 ECTS)
- 1.3. ST in Methods in Hazard Analysis and Risk Assessment (3 ECTS)
- 1.4. ST in Global Environmental Change (3 ECTS)
- 1.5. ST in Precision Forestry (3 ECTS)
- 1.6. ST in Multi-Scale Forest Dynamics Models (5 ECTS)

2. UNDERSTANDING SPATIO-TEMPORAL ECOLOGICAL PROCESSES (20 ECTS)

- 2.1. ST in GHG, Nitrogen and Carbon dynamics (5 ECTS)
- 2.2. ST in Landscape Ecology and Biological Connectivity (5 ECTS)
- 2.3. ST in Biodiversity and Ecology (5 ECTS)
- 2.4. ST in Disturbance Ecology and Forest Health (5 ECTS)

3. MULTI-SCALE MANAGEMENT OF NATURAL RESOURCES (20 ECTS)

- 3.1. ST in Resource Management and Planning for Ecosystem Services (5 ECTS).
- 3.2. ST in Decision Support Systems for Resource Management (3 ECTS)
- 3.3. ST in Forest Research & Development (3 ECTS)
- 3.4. ST in Bio-economy and Principles of Environmental Sustainability (3 ECTS)
- 3.5. ST in Markets and Payments for Ecosystem Services (3 ECTS)
- 3.6. ST in European Resource Economics and Policy (3 ECTS)

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List of Elective Courses SEE Forestry:



http://www.europeanforestry.udl.cat/export/sites/EuropeanForestry/.content/documents/pla_estudis/pla_estudis-2019.pdf

These courses are designated as Special Topics (ST). Contents may be adapted to the needs of the students according to their academic goals and the Master Thesis topic. Instructors and contents may vary within the scientific limits of a Special Topic fieldyearly.



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EF Thesis in Lleida



- ✓ Potential for agro-forestry alley-cropping with valuable broadleaves in Central Catalonia
- ✓ Road metrics and fuels to optimize forest fire control
- ✓ Adult sampling and larva rearing of the cork oak pest *Coraebus undatus* (Coleoptera: Buprestidae)
- ✓ An analysis of wildlife suppression resources in 1998-2008 in Spain
- ✓ Assessing post-fire regeneration in a Mediterranean mixed forest using LIDAR technology and Artificial Neural Networks
- ✓ On the relationship between wildfires and reforestation in 1998-2008 in Spain
- ✓ Soil erosion modeling in an agro-forested catchment of NE Spain affected by gullying using SWAT
- ✓ A mobile terrestrial laser scanning application for characterizing Mediterranean vegetation structure along forest roads.
- ✓ Modelling nutrient cycling and *Pinus radiata* (D. Dau) growth under various management systems
- ✓ Genetic variation in water extraction patterns among populations of Aleppo pine: contributing sources to water consumption under common garden conditions in Eastern Spain
- ✓ Soil organic carbon dynamics after grassland abandonment in Alpine and Mediterranean mountains in North- Eastern Spain
- ✓ Decay fungi related to "Roig" red stain of *Castanea sativa* in Catalonia - A qualitative assessment of the fungi associated with the notorious Roig.
- ✓ Analysis of hydrologic regime and land cover change in a "paired watershed" system
- ✓ Dead wood structures and tree microhabitats in *Pinus nigra* forests of varying management histories in Catalonia
- ✓ Comparison of sustainable forest management on the VPA and FSC standard in Cameroon

EF Thesis in Lleida

Last year

- ✓ Spatial prioritization of management zones within protected areas for integration of competing objectives
- ✓ Modeling the influence of eucalypt plantations on wildfire occurrence and propagation in western Brazil
- ✓ Endophytic community responses associated with Diplodia shoot blight on four Pinus spp. in NW Spain
- ✓ Estimation of carbon stock and carbon sequestration of community forest in Siwalik region of Nepal
- ✓ The relationship between price and forest stands characteristics: a case study in a Romanian private company

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Student Support (ORI & Assistant), Iris Monfort:

- ✓ Scholarships for self-paying (2000 €),
- ✓ Funding for conferences and thesis-related needs
- ✓ Residences & private flats (Approx. 200-350€ / month)
- ✓ Welcome week and cultural orientation, Sports, Bikes
- ✓ Semester: September 12th-January; Feb-June (Sep)
- ✓ Thesis deadline 30th October but we aim for JUNE
- ✓ Free Languages Courses at the Lang. Institute-UdL



More info:

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Jorge Alcázar, jalcazar@macs.udl.es



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Thanks!!!



@ETSEA_UdL



ETSEA

