Welcome to Nancy !

♦ An urban area of 260 000 inhabitants and 47 000 students (Université de Lorraine and 10 Engineering schools).

♦ Easy access from Paris by *TGV* (high speed train), and close to Germany, Belgium, and Luxembourg.

♦ Nancy has a great architectural history (part of the UNESCO World Heritage) including the *Art Nouveau* period, and is surrounded by forests and hills ideal for recreational activities.

♦ Many cultural and entertainment events all year round (e.g. NJP Jazz festival, le Livre sur la Place book fair).

More info at: **www.nancy-tourisme.fr**

European and International partnerships

♦ Université de Lorraine, AgroParisTech and INRAE are members of the **NFZ forest network** (Nancy–Freiburg–Zürich) for higher education and research www.nfz-forestnet.eu

♦ AgroParisTech belongs to the **consortium Erasmus Mundus MSc *European Forestry*** and offers the major *Forests and their Environment* as the educational support for the 2nd year http://www.uef.fi/europeanforestry/

♦ Université de Lorraine, INRAE and AgroParisTech are members of the **European Forest Institute (EFI)**

♦ AgroParisTech and the **University of Valladolid** (Palencia, Spain) have a double degree agreement.

Application and Admission

The Forests and their Environment major seeks to recruit up to 20 students on selective bases.

Depending on their education, applicants should justify a **1st-year MSc level (M1) or a master's degree or equivalent (M2)**, as acknowledged in the EHEA (European Higher Education Area), and educational background in the fields of **forestry, plant science, ecology, ecophysiology, or environmental science**.

A B2 level in English is required. See the self-assessment grid of Common European Framework of Reference (CEFR). Equivalent qualifications are: IELTS >5, TOIEC >700, TOEFL IBT > 90, or Cambridge FCE.

Applications should include 1) the ***Europass* documents** available at https://europass.cedefop.europa.eu/en/home, 2) **marks** obtained in the **previous educational year**, 3) a **letter of application**, and 4) **one letter of recommendation from a senior professor or scientist** of earlier educational courses or internships.

Contacts & Informations

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UNIVERSITÉ DE LORRAINE

AgroParisTech

Decipher the functioning and dynamics of temperate forest ecosystems and develop quantitative tools for their sustainable management in a context of global environmental changes.

Concept and objectives

This MSc major (M2) offers a broad perspective and in-depth training on the functioning and dynamics of European forests, providing a basis to address challenges arising from environmental constraints and forest management.

The objective is to prepare for 1) **professional careers in R&D or expert positions in the environmental diagnosis and management of forest ecosystems** in private/public national/ international institutions, 2) **scientific careers in research institutions conducting programs in forest ecology and management**.

An introductory session gives an overview of European forests and the major issues related to their management.

The core of the major provides **fundamental and applied knowledge on the functioning and dynamics of forest ecosystems** and communities, including tree physiology, biogeochemistry and ecology.

A "tools & methods" session provides knowledge and training on the **main quantitative tools used in ecosystem diagnosis and experiment analysis**, including GIS, statistics, and modelling.

Institutional framework and connection to research

The MSc program provides a research-driven approach to the understanding and management of forest ecosystems. The teaching staff includes more than 30 professors and senior scientists from 9 research labs at Université de Lorraine (UL), AgroParisTech and Institut National de Recherche Agronomique (INRAE)

In addition to the balance between fundamental and practical knowledge, **practitioners from organizations involved in forest management and R&D** will also provide a connection to forest management issues, and ensure both a professional and academic education.

Master curriculum

Teaching units in the first semester (S9) focus on acquiring skills in data management and analysis, as well as in diagnosing forest ecosystems and their resources.

The first semester (S9) includes **9 training units** for a total of **30 ECTS credits**.

Fundamental and applied knowledge

*- Forest economics and the economic evaluation of ecosystem services**

- Dynamics of forest plant and tree communities

- Understanding tree structure and functions

- Biogeochemical cycles in forest ecosystems

- Forests and forestry in a context of global change

- Temperate forest sylviculture and industry

Tools and methodology

*- Research or professional project on forest science : an interdisciplinary approach**

- Managing collective innovation projects

- Advanced statistics

- GIS for forest science and forest ecology

- Models for forest research and management

* compulsory training units

The second semester (S10) consists of **a 5-6 month internship** evaluated through a written dissertation and an oral defence for **30 ECTS credits**. The internship takes place either in a research laboratory or institutions, companies, NGO, local authority or associations of relevant fields of application. Internships can be proposed by students.

Support Research and Teaching Institutions and Departments

- **Silva** Laboratory (UMR1434) , UL--AgroParisTech-INRAE
- **BETA** (Bureau for Economic Theory and Applications), INRAE-CNRS-AgroParisTech-UL-UniStra
- **BEF** (Biogeochemical Cycles in Forest Ecosystems), INRAE
- **LIF** (Laboratory of Forest Inventory), **IGN** (National Institute of Geographic and Forest Information)

Examples of internships completed

- Analysis of IGN LIDAR data's potential in forest inventory (IGN, France)
- Assessing coupled process-based models' performance in predicting tree mortality under climate change (Silva Lab, France)
- Leaf-to-canopy accuracy investigation in leaf water ^{18}O enrichment variations predicted with eddy-covariance measurements (Kyoto University, Japan)
- Modelling tree species future distribution in a context of climate change to develop decision-making tool for restoration projects: the case study of Atlantic Forest in Brazil (ISEM Montpellier, France)
- Soil organic carbon and functionality 5 years after thinning and slash burning (CTFC, Catalonia, Spain).
- Growth comparison of crown-released and untreated beech trees (Fagus sylvatica L.) in management strategy (Blieskastel city's forest estate, Germany).
- Stepping into the European Union Deforestation Regulation (EUDR): alingment assesment of Costa rica's cofee production. (Preferred by Nature, Danemark).