

Master's degree in Natural Resources Engineering

The main aim of the **master's degree in Natural Resources Engineering** is to provide advanced scientific training in the environmentally sound exploitation and management of natural resources. Based on theory and mostly practical training, this course takes a multidisciplinary approach and teaches students applied research techniques.

GENERAL DETAILS

Duration and start date

One academic year, 60 ECTS credits. Starting September and February

Timetable and delivery

Afternoons. Face-to-face and blended learning

Fees and grants

Approximate fees for the master's degree, excluding degree certificate fee, €3,267 (€4,900 for non-EU residents).

[More information about fees and payment options](#)

[More information about grants and loans](#)

Language of instruction

Spanish

Location

[Manresa School of Engineering \(EPSEM\)](#)

Official degree

[Recorded in the Ministry of Education's degree register](#)

ADMISSION

General requirements

[Academic requirements for admission to master's degrees](#)

Admission criteria

- Academic record
- Experience in the field of research
- Knowledge of languages

Places

25

Pre-enrolment

Pre-enrolment period open.

[How to pre-enrol](#)

Enrolment

[How to enrol](#)

Legalisation of foreign documents

All documents issued in non-EU countries must be [legalised and bear the corresponding apostille](#).

Professional opportunities

Students who complete the course successfully will be experts with advanced technical knowledge and the ability to form part of technical innovation and research teams in the field of natural resource engineering. Along with the logical opportunity to work in public and private research institutions, they can also find work in government agencies, construction waste handling companies, extractive industries in general, general waste handling companies, environmental engineering firms, and teaching.

Competencies

Generic competencies

Generic competencies are the skills that graduates acquire regardless of the specific course or field of study. The generic competencies established by the UPC are capacity for innovation and entrepreneurship, sustainability and social commitment, knowledge of a foreign language (preferably English), teamwork and proper use of information resources.

Specific skills

On completion of this master's degree, students will be able to:

- Analyse field and laboratory data and design experiments, using computerised methods.
- Know the analytical techniques applied to inorganic natural resources and their waste, how to use them and the interpretation of results.
- Use the scientific and technical information to respond effectively to any demand for the preparation of an analytical method for the characterisation of a natural or anthropogenic material.
- Know remote sensing techniques and satellite image interpretation applied to the characterisation and management of geological natural resources.
- Use geological materials in industrial processes of high added value.
- Identify processes of pollutant accumulation in the air, water and soil compartments of the environment.
- Design a process to minimise a pollutant, waste or, in general, any type of pollution.
- Identify the presence of metals mostly in mining, industrial and agricultural wastes.
- Minimise the pollution by dust, noise and vibrations that is common in mining, using the most advanced techniques.
- Restore areas degraded by the exploitation of natural resources, using the most up-to-date restoration techniques.
- Design natural biotechnological processes to remove pollutants from solid, liquid and gaseous media.

ORGANISATION

UPC school

[Manresa School of Engineering \(EPSEM\)](#)

Academic coordinator

[Toni Dorado](#)

Academic calendar

[General academic calendar for bachelor's, master's and doctoral degrees courses](#)

Academic regulations

[Academic regulations for master's degree courses at the UPC](#)

CURRICULUM

Subjects	ECTS credits	Type
FIRST SEMESTER		
Analytical Methods Applied to the Study of Natural Resources and the Environment	5	Compulsory
Energy Resources	5	Optional
Geographic Information Systems and Teledetection Applied to the Use of Natural Resources	5	Compulsory
Geologic and Mining Heritage as a Natural Resource	5	Optional
Industrial Raw Materials of Geological Origin	5	Optional
Methodological Tools for Research on Natural Resources	5	Compulsory
Techniques of Statistic Analysis of Data and Design and Planning of Experiments	5	Compulsory
SECOND SEMESTER		
Advanced Seminar of Natural Resources as a Raw Materials	5	Optional
Advanced Seminar on Natural Resources as Raw Material	5	Optional
Analysis and Control of Pollution by Dust, Noise and Vibrations	5	Optional
Bioresources Engineering Applied to the Waste Treatment	5	Optional
Restoration of Lanscapes Deteriorated by Mining and Public Works	5	Optional
Waste Management and Treatment	5	Compulsory
Water as a Resource	5	Compulsory
Master's Thesis	15	Project