

MASTER'S DEGREE IN MINING ENGINEERING AND GEOTECHNICAL ENGINEERING (Double degree)

Manresa School of Engineering
Barcelona School of Civil Engineering



UNIVERSITAT POLITÈCNICA
DE CATALUNYA
BARCELONATECH

International Campus of Excellence

MASTER'S DEGREE IN MINING ENGINEERING AND GEOTECHNICAL ENGINEERING (Double degree)

The double master's degree in Mining Engineering and Geotechnical Engineering provides specialised training in sustainable approaches to locating, extracting and processing minerals and energy resources, as well as in geotechnical engineering, water resource management, the assessment and prediction of seismic risk, the use of explosives and land management.

The combination of geotechnical engineering and mining engineering allows future professionals to acquire specialised knowledge in a wide range of technical disciplines in which there is and will be high demand. The master's degree is taught at the Manresa School of Engineering (EPSEM) and the Barcelona School of Civil Engineering (ETSECCPB).

+50%
international students

93%
of UPC graduates are in work

Source: 2020 graduate employment survey of Catalan universities by the Catalan University Quality Assurance Agency (AQU Catalunya)

1st
university in Spain in Civil and Structural Engineering

Source: 2021 QS World Universities Rankings by Subject

Aimed at

The double master's degree in Mining Engineering and Geotechnical Engineering has 15 places for holders of the following entrance qualifications:

- Bachelor's degree in Mining Engineering.
- Bachelor's degree in Energy and Mining Resource Engineering and university qualifications that qualify for practice as a mining engineer or technical mining engineer.
- Bachelor's degree in Civil Engineering, Civil Engineering Technologies, Construction Engineering, Geological Engineering, Environmental Engineering or equivalent.
- Bachelor's degree in Environmental Sciences, Geological Sciences or equivalent.
- Bachelor's degree in Forest Engineering, Agricultural Engineering, Food Engineering or equivalent.

Professional opportunities

Graduates may work in technical and managerial positions in private companies and public bodies in the sectors of mining, construction, civil works, the environment and spatial management, as well as in technological companies and consulting firms in these areas, thanks to the wide range of knowledge gained on the double master's degree. They may also join work teams as managers or specialists in areas and activities related to geotechnical engineering: management and planning of geotechnical works and water resources; assessment and reduction of seismic, geological and hydrogeological risk; planning and management of waste storage solutions; and consulting in civil, geotechnical, geological and earthquake engineering. You will also have access to several doctoral programmes, which will allow you to further your career in research.

Teaching

Two semesters are taught face-to-face at each school, with different pathways depending on where you start studying. Subjects in the common subject area of the master's Degree in Mining Engineering are taken at the EPSEM (Manresa Campus) and subjects in the common subject area of the master's degree in Geotechnical Engineering are taught at the ETSECCPB (North Campus, Barcelona). Classes are taught in Spanish, Catalan and English.

Internationalisation

The programme offers international mobility at universities renowned for mining and geotechnical engineering.

Work placement

The double master's degree offers work placements that complement your academic training.

Curriculum

This information may be subject to change.
Up-to-date information is available at upc.edu

150 ECTS credits

Pathway if you start the degree at the EPSEM

First year

First semester

Mining Economics	5
Mining Machinery	5
Geological Resource Modelling and Estimation	5
Mineral Process Modelling	5
Geological and Energy Resource Management	5
Land and Underground Space Management	5

Second year

First semester

Modelling of Flow and Transport in Porous Media	5
Soil Mechanics	5
Rock Mechanics	5
Seismology (compulsory specialisation subject)	5
3 compulsory specialisation subjects*	15

Second semester

Numerical Methods for Mining Engineering	5
Underground Excavation Modelling and Simulation	5
Mineral Engineering	5
Mining Design and Modelling	5
Blast Modelling	5
Environmental Engineering	5

Second semester

2 optional subjects**	10
Joint Master's Thesis	45

Common subject area in Mining Engineering

Common subject area in Geotechnical Engineering

Pathway if you start the degree at the ETSECCPB

First year

First semester

Modelling of Flow and Transport in Porous Media	5
Soil Mechanics	5
Rock Mechanics	5
Seismology (compulsory specialisation subject)	5
2 compulsory specialisation subjects*	10

Second semester

Numerical Methods for Mining Engineering	5
Underground Excavation Modelling and Simulation	5
Mineral Engineering	5
Mining Design and Modelling	5
Blast Modelling	5
Environmental Mining Engineering	5

Second year

First semester

Mining Economics	5
Mining Machinery	5
Geological Resource Modelling and Estimation	5
Mineral Process Modelling	5
Geological and Energy Resource Management	5
Land and Underground Space Management	5

Second semester

1 compulsory specialisation subject*	5
2 optional subjects**	10
Joint Master's Thesis	45

* Compulsory specialisation subjects of the master's degree in Geotechnical Engineering to choose from: Advanced Soil Mechanics / Foundations and Containment Structures / Underground Excavations / Geotechnical Design and Construction / Fracture Geomechanics / Aquifer Mechanics / Statistical Methods in Hydrology / Aquifer Recharge and Balance / Contaminated Soil and Aquifer Models / Hydrogeochemical Modelling / Earthquake Engineering / Geophysical Prospecting / Seismometry / Earthquake Hazard Assessment

** Optional subjects of the master's degree in Geotechnical Engineering: Mass Transfer in the Ground / Interaction between Groundwater, Civil Works and the Environment / Earthquake Risk Assessment / Seismic Design / Geological Characterisation / Coupled Processes in Soil and Rocks / Modelling in Geotechnical Engineering

MASTER'S DEGREE IN MINING ENGINEERING AND GEOTECHNICAL ENGINEERING (Double degree)

This double degree qualifies you to practise the regulated profession of mining engineer.

It provides access to doctoral studies related to the degrees taken.

The double master's degree in Mining Engineering and Geotechnical Engineering is a joint programme of the **Manresa School of Engineering (EPSEM)** and the **Barcelona School of Civil Engineering (ETSECCPB)**. Both schools are internationally recognised and their wide-ranging research activity has strong ties to the industrial fabric.

The **EPSEM** and the **ETSECCPB** belong to the **Universitat Politècnica de Catalunya · BarcelonaTech (UPC)**, a renowned public institution of research and higher education in the fields of engineering, architecture, sciences and technology. With 50 years of history and more than 30,000 students, the UPC has the greatest concentration of research and technological innovation in southern Europe. It is the best Spanish university in Civil and Structural Engineering, according to the 2021 QS World University Rankings by Subject.

Training the engineers of the future

Para más información:
camins.upc.edu
manresa.upc.edu



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