# COURSES PLAN

## 1st YEAR

### 1st SEMESTER

-Industrial plants or Building yards for infrastructures | **8**
-Groundwater Engineering | **8**
-Environmental hydraulics/Operative hydrology | **6+6**

*Free credits*

### 2nd SEMESTER

-Remote sensing/ Applied Geophysics | **6+6**
-EP-1 or GE-1 or LP-1 | **6**
-EP-2 **(8)** or GE-2 or LP-2 | **6**

*Free credits*

## 2nd YEAR

### 1st SEMESTER

-Design in the environmental and land sector | **6**
-EP-3 or GE-3 or LP-3 | **8**
-EP-4 **(6)** o GE-4 o LP-4 | **8**
-GE-5 | **6**

*Free credits*

### 2nd SEMESTER

-Principles of risk evaluation and management | **6**
-EP-5 or LP-5 | **6**

*Free credits*

**Thesis: 16 credits**

### *COURSES OF EACH SINGLE SPECIALIZATION*

**Environmental-Protection**

EP-1 : Energy and renewable resources
EP-2 : Applied Environmental Engineering
EP-3 : Pollutant dynamics
EP-4 : Reclamation of polluted sites
EP-5 : Company environmental management

**Geo-Engineering**

GE-1 : Applied Geomechanics
GE-2 : Landslides and Slope Engineering
GE-3 : Excavation Engineering
GE-4 : Underground Works
GE-5 : Resources Geology

**Natural risk and Civil protection**

LP-1 : Sismic risk or Ground reinforcing
LP-2 : Landslides and Slope Engineering
LP-3 : Applied Hydrogeology
LP-4 : Territorial Protection from hydraulic risk
LP-5 : Civil protection

**Duration** | Courses are distributed over 2 semesters per year. Each semester includes 14 weeks of lesson.

**Educational credits** | Next to each course educational credits are provided. One educational credit equals 10 hours of lessons. Every two credits a 1.5-hour module per week is scheduled (for example, for a course of 6 credits three modules of 1.5 hours per week are scheduled, for a course of 10 credits, five modules per week are scheduled). Total academic activities for the degree program: 120 educational credits.

**Free credits** | Free credits can be used in order to insert optional elective courses of Politecnico di Torino, also from other graduate programs, in order to deepen some aspects of interest. They can also be spent to insert in the courses plan a professionalising internship of 6 credits (150 hours). The total amount of free credits is equal to 18.


Classes of the M.Sc. in Environmental and Land Engineering are held at the **Politecnico di Torino** main campus, 24, Corso Duca degli Abruzzi | Torino

**www.polito.it**

**85%** of M.Sc. graduates at **Politecnico di Torino** are employed within 1 year after graduation (National average 69%)

Opportunities to study abroad thanks to **500+ mobility agreements**

**120** Countries represented

For further information on the M.Sc.:
https://didattica.polito.it/laurea_magistrale/ingegneria_ambiente_territorio/en/presentation

Information on application procedures:
https://apply.polito.it/info_en.html

For further information:
**diati.didattica@polito.it**

POLITECNICO DI TORINO

# Master of Science (M.Sc) in Environmental and Land Engineering

## A multidisciplinary and highly professionalising path

# PRESENTATION OF THE M.SC.

The aim of the master in Environmental and Land Engineering is to train an expert with a multidisciplinary knowledge on the main topics of the environmental and land engineering. The graduate will be able to create, plan, design, supervise and organize works, plants, systems and processes focusing on environment and land.
The educational path allows the graduate to be introduced in the field of Environmental and Land Engineering and to dialogue with technicians of the industrial and civil engineering fields, mastering technical language and knowledge of the basic concepts. Cultural competencies gained by the graduate guarantee him a quick entry into the **job market**. The basic preparation allows autonomous in-depth study of the issues that will arise during his/her working life or the following specialization in a specific field through self-learning or through attendance of courses or specialized seminars.

The master course in Environmental Engineering offers three branches of study, each providing a specific technical–scientific training:

## 1/ ENVIRONMENTAL PROTECTION

This specialization is focused on designing and implementing the most appropriate technological interventions, even complex, of environmental protection, in the usual human activities or in the presence of accidental events.
Furthermore, it transfers knowledge to enable graduates to design and implement measures for the recovery of contaminated sites and to allow the planning and management of production activities in an environment friendly manner.

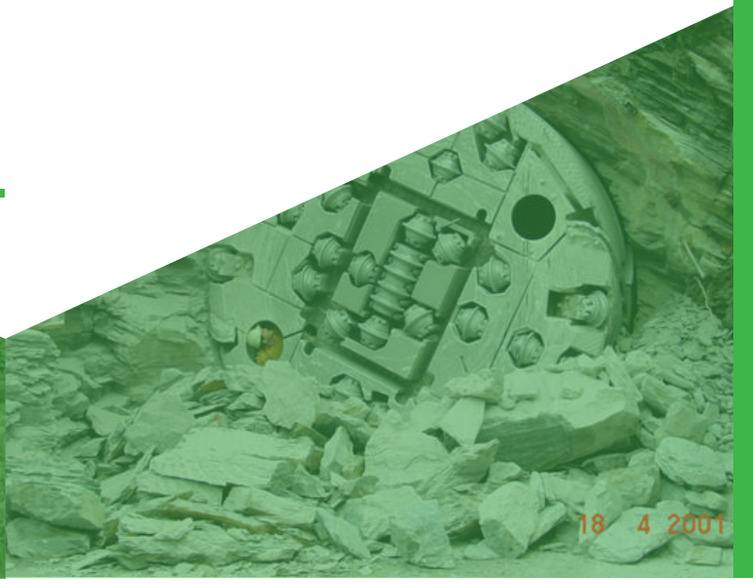
# AND SPECIALIZATIONS

## 2/ GEO-ENGINEERING

This specialization aims to plan and construct works of excavation engineering (on surface and underground) and big infrastructure works that interact with soil and rocks. It provides technical-scientific contents to solve engineering problems related to the stability of surface and underground excavations, to proper exploitation of mineral resources, to the management and organization of big construction works impacting the territory.

## 3/ NATURAL RISKS AND CIVIL PROTECTION

The specialization aims to assess, plan, implement, monitor and manage actions to prevent territorial instability due to natural and/or man-made causes and interventions to restore the pre-existing conditions after disruption. It prepares technicians able to identify the risks of floods, landslides, soil compaction, break of levees, and to plan and construct works to contain the superficial and underground water flow, to stabilize soil slopes and rocky walls, to consolidate soil and rocks in order to remove landslides and soil settlement risks.




# CAREER OPPORTUNITIES

Graduates in the Master Program of Environmental and Land Engineering have a **strong multidisciplinary background**, which provides them a wide, open-mind overview and comprehension of the current environmental challenges, as well as a peculiar flexibility in the labor market.

Within **Public Entities**, the MSc Environmental and Land Engineer can take part in the design and control of production activities, buildings and infrastructures with a relevant impact on the territory, as well as in the design and implementation of environmental restoration and clean-up activities, land protection, open-pit and underground excavations, environment protection and land restoration.

In **Private Companies**, the MSc Environmental and Land Engineer can act as manager and supervisor of excavation works, probe and consolidation of soils, construction of treatment plants for solid and liquid wastes, design of interventions for the mitigation of flooding risks.

As an **Independent Practitioner**, s/he can work on the field connected to environmental impacts and protection, e.g. civil and industrial wastewater treatment, recycling of secondary raw materials, open-pit and underground excavations for tunnels and other major civil and mining works, infrastructures for the control of surface water bodies and the management of water resources at the catchment scale, stabilization rock walls and consolidation of soils.

A Master of Science graduate can also conduct activities on prediction, prevention and protection concerning risks for Health, Environment and Land, using Geographic Information System (GIS), networks of monitoring, environmental impact study, environmental management system. Moreover, s/he can design, implement and manage technological operation for limitation of emission, disposal and recovery of garbage and reclamation of contaminated sites, works for soil conservation and for prevention of hydrogeological risks.