

SCIENCES, TECHNOLOGIES AND HEALTH

Master in Civil engineering

Génie civil



Target level
Baccalaureate
+5



ECTS
120 credits



Duration
2 years



Component
Grenoble
INP, Institut
d'ingénierie et
de management
- UGA, UFR
PhITEM
(physique,
ingénierie, terre,
environnement,
mécanique)



Language(s) of
instruction
French, English

Subprograms

- > Urban engineering (IU)
- > Sustainable construction and environment (CDE)
- > Construction, risks and mountains (CRM)
- > Geomechanics, civil engineering and risks (GCER)
- > Hydraulic and civil engineering (HCE)

The master in Civil engineering offers five programmes from master 1st year to master 2nd year :

- Urban engineering (IU)
- Sustainable construction and environment (CDE)
- Construction, risks and mountains (CRM)
- Geomechanics, civil engineering and risks (GCER)
- Hydraulic and civil engineering (HCE)

| IU Programme Urban Engineering | CDE Programme Sustainable Construction and Environment | CRM Programme Construction, Risks and Mountains | GCER Programme Geomechanics, Civil Engineering and Risks | HCE Programme Hydraulic and Civil Engineering |
|---|--|---|---|--|
| M1 GC | | | M1 Applied Mechanics (International common with mechanical mention) | M1 HCE |
| Common part (51 ECTS) Specialized courses (9 ECTS) by programme | | | Common part (45 ECTS) Specialized courses (15 ECTS) | Common part (50 ECTS) Training stage (10 ECTS) |
| M2 GC | | | M2 GCER | M2 HCE |
| Common part (9 ECTS) Specialized courses (21 ECTS) by programme 5 months training stage (30 ECTS) | | | Common part (12 ECTS) Specialized courses (18 ECTS) 5 months training stage (30 ECTS) | Common part (24 ECTS) Specialized courses (6 ECTS) 5 months training stage (30 ECTS) |

Presentation



The three programs IU, CDE and CRM consist of a foundation program (over 2 years excluding internships) of 60 ECTS and specialised classes for each programme (30 ECTS). The classes are given in French.

The 1st year Applied mechanics is entirely common to the two specialisations Civil engineering and Mechanics and leads to three international programs, including GCER.

The GCER and HCE programs welcome international students. Teaching on the GCER programme is given entirely in English. For the HCE programme, 70% of classes are given in English.

The objectives common to all the programs are : scientific, technical, and professional skills in the field of civil engineering, especially in calculation and sizing of structures under static and dynamic loads, mechanics of geomaterials (soil, rock, concrete) and management of multidisciplinary projects.

The specific objectives of the programs are :

- **IU program :** This is a vocational course whose main objective is to train civil engineering managers in both the private and public sectors. It pays particular attention to issues related to urban planning and environmental management of construction. The IU program particularly targets 'horizontal' construction and development (roads and utilities, transport, urban planning, etc.). There are many targeted employment opportunities at management level in all the phases of a construction operation
- **CDE program :** This is a vocational course whose main objective is to train civil engineering managers in both the private and public sectors. It pays particular attention to issues related to the sustainability and renovation of structures, and the environmental aspects. There are many targeted employment opportunities at management level in all the phases of a construction operation
- **CRM program :** This is a vocational course in the GC specialisation whose main objective is to train civil engineering managers in both the private and public sectors. It pays particular attention to issues related to construction in mountain environments from the perspective of the structures, and specific stresses that are not covered by normal norms. The CRM program is especially aimed at companies specialising in construction in mountain areas and development of mountain environments in cross-border areas
- **GCER program :** This is an international course primarily intended for students wishing to focus on research (PhD thesis) in the field of geomechanics and civil engineering in France or abroad, with a view to pursuing a career as teacher-researcher in a University, researcher in a large

public organisation (CNRS, etc.) or R&D engineer within a company

- **HCE program :** The HCE program is an international vocational course whose main objective is to train engineers/managers in the field of water and environmental engineering, in both the private or public sector. In the HCE program, special attention is paid to issues relating to the design of unique constructions and structures for which water flows are decisive factors. The employment opportunities at management level concern: studies, design, consulting and services in hydraulics, structures, geotechnology, offshore, natural risks; design of structures; maintenance, management and operation of hydraulic structures and networks

International education : Internationally-oriented programmes

Admission

Access conditions

The first year of master's degree is accessible on file (and / or interview) to candidates with a national diploma conferring the degree of license in a field compatible with that of the master or via a validation of studies or acquired according to the conditions determined by the university or training. The second year is accessible on file (and / or interview) to candidates who have validated the 1st year of a compatible course or through a validation of studies or acquired under the conditions determined by the university or training.

Public continuing education : You are in charge of continuing education :

- if you resume your studies after 2 years of interruption of studies
- or if you followed a formation under the regime formation continues one of the 2 preceding years
- or if you are an employee, job seeker, self-employed

If you do not have the diploma required to integrate the training, [🔗](#) you can undertake a validation of personal and professional achievements (VAPP)

Candidature / Application

You want to apply and sign up for a master ? Please be aware that the procedure differs depending on the diploma you want to take, the diploma you have already obtained and, for foreign students, your place of residence

Let us be your guide – simply follow this [🔗](#) link

Fees

Tuition fees 2019-2020 : 243 €

And after

Professional integration statistics

The latest surveys (30 months after graduation) show:

- A 93% occupational integration rate
- A median duration of access to the first filling of 3 months
- A stable employment rate of 86%
- 98% are hired full time
- 99% on positions of middle management and intermediate professions

Additional information

Occupational integration : The latest surveys (30 months after graduation) show :

- 93% occupational integration rate
- Median duration of access to the first filling of 3 months
- Stable employment rate of 86%
- 98% are hired full time

- 99% on positions of middle management and intermediate professions

Useful info

Contacts

Program director

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Program administration

Registrar's Office for the Master in Civil Engineering

✉ phitem.master.gc@univ-grenoble-alpes.fr

Program administration

Application

✉ phitem.candidature.etudiant@univ-grenoble-alpes.fr

Course location(s) - City

📍 Grenoble

Campus

🏠 Grenoble - University campus

Program

Urban engineering (IU)

Sustainable construction and environment (CDE)

Construction, risks and mountains (CRM)

Geomechanics, civil engineering and risks (GCER)

Master in Applied mechanics 1st year

Semester 7

| | Nature | CM | TD | TP | Crédits |
|---|--------------------|-------|-----|-----|-----------|
| UE Solid mechanics | Teaching Unit (UE) | 11,5h | 13h | | 3 credits |
| UE Fluid mechanics | Teaching Unit (UE) | 18h | 6h | | 3 credits |
| UE Research project 1 | Teaching Unit (UE) | | | 30h | 6 credits |
| UE Experimental techniques and methods 1 | Teaching Unit (UE) | | | | 3 credits |
| UE Numerical methods in solid and fluid mechanics 1 | Teaching Unit (UE) | | | 12h | 3 credits |
| UE Image and signal processing | Teaching Unit (UE) | | | 12h | 3 credits |
| UE English | Teaching Unit (UE) | | | | 3 credits |
| UE French as a foreign language | Teaching Unit (UE) | | | | 3 credits |
| UE Mechanics of material | Teaching Unit (UE) | | | | 3 credits |

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|---|--------------------|-----|-----|----|-----------|
| UE Reinforced concrete | Teaching Unit (UE) | | | | 3 credits |
| UE Physics of granular media | Teaching Unit (UE) | | | | 3 credits |
| UE Multiphysical couplings (THCM) | Teaching Unit (UE) | | | | 3 credits |
| UE Convection in industrial and geophysical flows | Teaching Unit (UE) | 18h | 8h | | 3 credits |
| UE Instabilities and turbulence | Teaching Unit (UE) | 14h | 6h | 8h | 3 credits |
| UE Basic geomechanics | Teaching Unit (UE) | | | | 3 credits |
| UE Wave in fluids | Teaching Unit (UE) | 16h | 8h | | 3 credits |
| UE Environmental flows | Teaching Unit (UE) | 15h | 12h | 3h | 3 credits |
| UE Introduction of geophysical fluids dynamics | Teaching Unit (UE) | 15h | 15h | | 3 credits |

Semester 8

| | Nature | CM | TD | TP | Crédits |
|---|--------------------|----|----|-----|------------|
| UE Research project 2 | Teaching Unit (UE) | | | 60h | 12 credits |
| UE Experimental techniques and methods 2 | Teaching Unit (UE) | 4h | | 20h | 3 credits |
| UE Numerical methods in solid and fluid mechanics 2 | Teaching Unit (UE) | 4h | | 20h | 3 credits |
| UE English | Teaching Unit (UE) | | | | 3 credits |
| UE French as a foreign language | Teaching Unit (UE) | | | | 3 credits |
| UE Basic geomechanics | Teaching Unit (UE) | | | | 3 credits |
| UE Mechanics of material | Teaching Unit (UE) | | | | 3 credits |
| UE Reinforced concrete | Teaching Unit (UE) | | | | 3 credits |

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|---|--------------------|-----|-----|----|-----------|
| UE Physics of granular media | Teaching Unit (UE) | | | | 3 credits |
| UE Multiphysical couplings (THCM) | Teaching Unit (UE) | | | | 3 credits |
| UE Instabilities and turbulence | Teaching Unit (UE) | 14h | 6h | 8h | 3 credits |
| UE Wave in fluids | Teaching Unit (UE) | 16h | 8h | | 3 credits |
| UE Environmental flows | Teaching Unit (UE) | 15h | 12h | 3h | 3 credits |
| UE Introduction of geophysical fluids dynamics | Teaching Unit (UE) | 15h | 15h | | 3 credits |
| UE Convection in industrial and geophysical flows | Teaching Unit (UE) | 18h | 8h | | 3 credits |

Master 2nd year

Semester 9 - International program

| | Nature | CM | TD | TP | Crédits |
|--|--------------------|-----|----|----|-----------|
| UE Selected topic in continuum mechanics | Teaching Unit (UE) | 30h | | | 6 credits |
| UE Numerical methods for nonlinear mechanics | Teaching Unit (UE) | 30h | | | 6 credits |
| UE Basic geomechanics | Teaching Unit (UE) | | | | 3 credits |
| UE Basic engineering seismology | Teaching Unit (UE) | 20h | | | 3 credits |
| UE Mechanics of damage and rupture | Teaching Unit (UE) | | | | 3 credits |
| UE Behavior of geotechnical structures | Teaching Unit (UE) | | | | 3 credits |
| UE Durability and vulnerability of structures and associated risks | Teaching Unit (UE) | | | | 3 credits |
| UE Advanced soil mechanics | Teaching Unit (UE) | | | | 3 credits |
| UE Advanced rock mechanics | Teaching Unit (UE) | | | | 3 credits |

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|---|-----------------------|-----------|
| UE Advanced concrete mechanics | Teaching Unit (UE) | 3 credits |
| UE Strain localization in geomaterials | Teaching Unit (UE) | 3 credits |
| UE Mechanics of porous media | Teaching Unit (UE) | 3 credits |
| UE Advanced experimental geomechanics | Teaching Unit (UE) | 3 credits |
| UE Dynamics of structures | Teaching Unit (UE) | 3 credits |
| UE Geomechanics in reservoir and basin systems | Teaching Unit (UE) | 3 credits |
| UE Soil dynamics and nonlinear site response analysis | Teaching Unit (UE) | 3 credits |
| UE Foreign language | Teaching Unit (UE) | 3 credits |

Semester 9 - Erasmus Mundus program

| | Nature | CM | TD | TP | Crédits |
|--|-----------------------|-----|----|----|-----------|
| UE Engineering seismology | Teaching Unit (UE) | | | | 6 credits |
| UE Basic geomechanics | Teaching Unit (UE) | | | | 3 credits |
| UE Numerical methods for nonlinear mechanics | Teaching Unit (UE) | 30h | | | 6 credits |
| UE Selected topic in continuum mechanics | Teaching Unit (UE) | 30h | | | 6 credits |
| UE Dynamics of structures | Teaching Unit (UE) | | | | 3 credits |
| UE Advanced rock mechanics | Teaching Unit (UE) | | | | 3 credits |
| UE Advanced soil mechanics | Teaching Unit (UE) | | | | 3 credits |
| UE Behavior of geotechnical structures | Teaching Unit (UE) | | | | 3 credits |
| UE Durability and vulnerability of structures and associated risks | Teaching Unit (UE) | | | | 3 credits |

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|---|-----------------------|-----------|
| UE Advanced concrete mechanics | Teaching Unit (UE) | 3 credits |
| UE Soil dynamics and nonlinear site response analysis | Teaching Unit (UE) | 3 credits |
| UE Introduction to signal processing | Teaching Unit (UE) | 3 credits |

Semester 10 - International program

| | Nature | CM | TD | TP | Crédits |
|----------------|-----------------------|----|----|----|------------|
| UE Traineeship | Teaching Unit (UE) | | | | 30 credits |

Semester 10 - Erasmus Mundus program

| | Nature | CM | TD | TP | Crédits |
|----------------|-----------------------|----|----|----|------------|
| UE Traineeship | Teaching Unit (UE) | | | | 30 credits |

Hydraulic and civil engineering (HCE)