

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
<b>M1 GC</b>			<b>M1 Applied Mechanics (International common with mechanical mention)</b>	<b>M1 HCE</b>
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)
<b>M2 GC</b>			<b>M2 GCER</b>	<b>M2 HCE</b>
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)

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## 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

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## Fees

Tuition fees 2019-2020 : 243 €

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## And after

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### 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

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### 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

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## Useful info

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### Contacts

#### Program director

Olivier GAGLIARDINI

✉ [olivier.gagliardini@univ-grenoble-alpes.fr](mailto:olivier.gagliardini@univ-grenoble-alpes.fr)

#### Program administration

Registrar's Office for the Master in Civil Engineering

✉ [phitem.master.gc@univ-grenoble-alpes.fr](mailto:phitem.master.gc@univ-grenoble-alpes.fr)

#### Program administration

Application

✉ [phitem.candidature.etudiant@univ-grenoble-alpes.fr](mailto:phitem.candidature.etudiant@univ-grenoble-alpes.fr)

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### Course location(s) - City

📍 Grenoble

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### 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

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

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

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

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)