



**POLYTECH**<sup>®</sup>  
CLERMONT

GRADUATE SCHOOL OF ENGINEERING |  
CLERMONT INSTITUTE OF TECHNOLOGY | UNIVERSITÉ CLERMONT AUVERGNE



INTERNATIONAL PROGRAM

# MASTER LEVEL CIVIL ENGINEERING

AT POLYTECH CLERMONT

**DURATION**

1 semester  
(Fall)

or

1 year  
(September to July)

**Total ECTS Credits 60**

## OBJECTIVES

The aim of the Master program in civil engineering requires an important theoretical approach using basic sciences such as mathematics, statistics and probability, mechanics, physics, numerical calculation but also a more technological approach including applied disciplines such as reinforced concrete, steel and composite structures, geotechnics or the organization and management of construction sites, general construction processes or even architecture.

Different options are offered to international students:

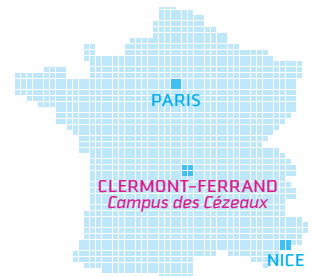
- **one semester (Fall or Spring, 30 ECTS)**
- **one full year (60 ECTS).**

Courses will be done by highly qualified researchers known for their scientific and pedagogical skills, coming from various French laboratories. The master program is composed of a two-step training program, including projects and internships. The objective of projects is to reinforce the acquisition of theoretical background tackled during the practical sessions.

International students spending one year will attend to a **final internship for research activity at the end of the year** in addition to research projects; whereas those spending one semester only will choose between working on the research project or doing the internship.



## WHERE?





# MASTER LEVEL COURSE CONTENT

## FALL SEMESTER (September to December) TOTAL: 22 ECTS

### FRENCH COURSES : 3 ECTS

French courses are available at the center of French learning FLEURA in Clermont-Ferrand.

### SCIENTIFIC COURSES: 19 ECTS

#### Synthesis technical project: 5 ECTS

Real project in progress of a technical study and interdisciplinary design presenting several materials and forms of structure from the programming phase to the details of execution. The project is supervised by architects and engineers and makes it possible to develop additional skills in the field of project management and design methodology.

#### Technical Option: 5 ECTS

Choose one course among the following :

- Wood construction : Wood construction technology and design of wooden structures.
- Composite construction : Technology of composite steel-concrete construction (+ other materials) and calculation of composite steel-concrete structures (beam, column, slab, connections).
- Soils and infrastructures : Concept and management of the different aspects of road and network project.
- Concrete Structure : Technology, analysis and design of prestressed concrete structures.

#### Educational units: 9 ECTS

3 educational units (UP) to be chosen among a proposed list that can change each year. Each UP involves lectures and classes, personal research and sometimes application work, the writing of a dissertation and a defense.

- Semi-rigid behavior of connections in steel and timber structures
- Design of Geotechnical works
- Design and verification of wooden structures
- Inspection, Maintenance and Repair of Works
- Inspection, Maintenance and Repair of Buildings
- Composite Construction - Eurocode 4
- Behavior of structures in fire
- Dynamics approaches and design of structures for earthquake resistance
- Advanced applications of Eurocodes 3
- Soil mechanics and hazard
- Auscultation and soils investigation
- Soil reinforcement (design and experimental testing)
- Risk management for civil engineering
- Pedagogical experimentation: another modeling tool
- Geosynthetics
- Service life of civil engineering works
- Introduction to unsaturated soils behavior
- Application of full field measurements for the characterization of civil engineerin structures
- Tree biomechanics: residual stress distribution resulting from the growth of a lignified stem
- Fracture Mechanics and thermo-hydrromechanical effects for Civil Engineering Structures.
- Finite element analysis for Civil Engineer structures
- Introduction to LEAN Construction

# MASTER LEVEL COURSE CONTENT



## FALL OR SPRING SEMESTER (September to June)

### FALL SEMESTER ONLY

**TRAINING COURSES: 15 ECTS**

Individual research projects : 15 ECTS

In relation with supervisors specialized in civil engineering, structures, infrastructures, biobased materials in different Laboratories on the Cézeaux campus, the objectives of the individual research projects will be to develop innovative techniques or knowledge on a topic given by specialized companies in civil engineering industry.

### SPRING SEMESTER ONLY

**TRAINING COURSES: 15 ECTS**

Internships in research Laboratories: 15 ECTS

An internship (2 MONTHS) is encouraged to be a unique international experience for doing research. International students will be host by Academic French Laboratories on the Cézeaux campus for a 2 month-internship in the fields of civil Engineering.



# ADMISSION REQUIREMENTS

Bachelor level - Resume with 240 European credits (ECTS), specialization in CIVIL ENGINEERING  
Recent transcripts - 2 letters of recommendation

## ENGLISH PROFICIENCY

The minimum required is the level B1 of the Common European Framework of Reference for Languages evaluated by English tests as follow: Paper-based TOEFL score = 475, Internet-based TOEFL score = 50, TOEIC score = 550, IELTS = 4.5, Cambridge = FCE, etc.

## FRENCH PROFICIENCY

No minimum level of French is expected when entering the program. However, to pass successfully the program, it would be required, at the end of the program, to pass a French test at which a minimum score must be attained.

## APPLICATION PROCESS AND DEADLINES

Applications will be made through the international office of the sending university for nomination (Clermont Auvergne INP) through the online application (moveon). Selection of the candidates will be made by Polytech.

## DEADLINES TO APPLY

Fall semester: 15 May  
Spring semester: 15 October

# FOCUS ON...

## POLYTECH NETWORK

Polytech is a group of 15 public faculties dedicated to higher education, research and innovation in engineering. These institutions, under the authority of the French Ministry of Higher Education and Research, form a network of 15 French universities, sharing a unique model for their 15 faculties of engineering. All 86 different curricula of Polytech correspond to the 86 Masters in engineering degrees (Diplômes d'Ingénieur) that are accredited by CTI (Commission des Titres d'Ingénieur).

All curricula are classified into 12 different scientific fields. Polytech group includes 90 000 alumni and more than 3 000 new Masters graduates every year. Geared towards industrialists and economic stakeholders, the graduates are acknowledged for their excellence at national and international level generating numerous job opportunities.

With a staff community of more than 1 300 faculty-members, Polytech group supports excellence in 125 research laboratories. More than 1 000 qualified lecturers from companies in all professional sectors also contribute to taking up the challenges in engineering education of the graduate students.

## POLYTECH CLERMONT

Founded in 1969, Polytech Clermont is one of the oldest engineering universities in France. Polytech Clermont is a founding member of the Polytech network, and has developed its development in this context, both locally and nationally and internationally.

With six different diplomas through initial and continuing training, Biological Engineering, Civil Engineering, Electrical Engineering, Mathematical Engineering and Modeling, Engineering Physics, Production System Engineering, Polytech Clermont has trained nearly 6000 engineers since its inception.

### Key figures

- 1200 student engineers and apprentice engineers
  - 8000 graduate engineers
  - 6 engineering degrees
  - 80 teacher-researchers faculties, 12 associated research laboratories
- Polytech Clermont is the Graduate School of Engineering of Clermont Auvergne University.

## CLERMONT AUVERGNE INP

- Created as new technology cluster in 2021 regrouping 3 engineering graduate schools
- 19 study programs in Engineering and Science – 1 doctoral school
- Public institution under the authority of the French Ministry of Higher Education, Research and Innovation
- 2100 students registered, 14% International students from over 40 countries

## CONTACT DETAILS

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## POLYTECH Clermont

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