

SCIENCE, TECHNOLOGY, HEALTH

## MASTER CIVIL ENGINEERING

Engineering sciences

 Targeted level of education  
BAC+5 Duration  
année Component  
INSTITUT  
NATIONAL DES  
SCIENCES  
APPLIQUEES  
TOULOUSE

## Introducing

### Objectives

### Admissions

### Access conditions

### Target audience

### Necessary prerequisites

### Recommended prerequisites

## Practical info

### Location(s)

 Toulouse

# Program

Work experience placement

21 crédits

## SUSTAINABILITY ENGINEERING – RESEARCH AND INNOVATION IN MATERIALS AND STRUCTURES (ID- RIMS)

MASTER 2

SEMESTER 3

### Liste d'éléments pédagogiques

Binders and concretes : formulation and environmental impact	6 crédits	54h
Durability of construction materials	3 crédits	44h
Mechanics of materials and construction	6 crédits	58h
Thermohydric transfers for buildings	3 crédits	44h
Monitoring of civil engineering structures	3 crédits	53h
Maintanance of buildings	6 crédits	79h
ENGLISH	3 crédits	

SEMESTER 4

### Liste d'éléments pédagogiques

TER-ECOLOGICAL TRANSITION	9 crédits
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## Binders and concretes : formulation and environmental impact

 ECTS  
6 crédits

 Hourly volume  
54h

## Practical info

### Location(s)

 Toulouse

## Durability of construction materials



ECTS

3 crédits



Hourly volume

44h

## Practical info

### Location(s)

Toulouse

## Mechanics of materials and construction



ECTS

6 crédits



Hourly volume

58h

## Practical info

### Location(s)

Toulouse

# Thermohydric transfers for buildings



ECTS

3 crédits



Hourly volume

44h

## Introducing

### Objectives

For «Basics of heat transfer and further study»:

- the assimilation of the concept of coupling heat transfers in the building;
- the resolution of a simple problem (in 1D and in stationary mode) of thermal in the field of the building.

For «Thermal Simulation»:

- Assimilation of the fundamental difference between insulation and thermal inertia;
- Mastering the basic concepts of numerical simulation with the finite difference method in 1D.

For «Thermal renovation techniques»

- Understand the socio-economic and environmental issues in the field of thermal renovation
- Know the main thermal renovation techniques for buildings (walls and systems), implement them as part of a project, understand their impact on the thermal-hydrical behavior of the building

## Practical info

### Location(s)

Toulouse

# Monitoring of civil engineering structures



ECTS

3 crédits



Hourly volume

53h

## Introducing

### Objectives

Explain (main concepts) the principle and the use of the main non-destructive testing (NDT) and monitoring methods for Civil Engineering applications

Analyse and explain the operating of NDT and monitoring methods

Process NDT measurements

Realise usual measurements with NDT methods and process those measurements

### Necessary prerequisites

Master 1 in applied sciences

## Practical info

### Location(s)

Toulouse

## Maintenance of buildings



ECTS

6 crédits



Hourly volume

79h

## Practical info

## Location(s)



Toulouse

## ENGLISH



ECTS

3 crédits



Hourly volume

## Practical info

## Location(s)

 Toulouse

## TER-ECOLOGICAL TRANSITION



ECTS

9 crédits



Hourly volume

## Practical info

## Location(s)

 Toulouse

## Work experience placement



ECTS

21 crédits



Hourly volume

## Practical info

## Location(s)

Toulouse