





# MSC CIVIL ENGINEERING PROGRAMME BUILDING ENGINEERING - MANAGEMENT AND INTEGRATION OF ENERGY EFFICIENCY AND RENEWABLE ENERGIES "GI3ER"

## IDENTITY CARD

- > Domain : Sciences, Technologies and Health
- > Full time course
- > [Continuing Education](#)
- > [Master of Engineering](#)

- > [120 ECTS credits](#)
- > 4 semesters
- > La Rochelle

 - 1 month to access the 1st job

 94 % of graduates are employed according to a study conducted 18 months after graduation

## REGISTRATION

<https://www.univ-larochelle.fr/formation/admission-inscription-et-scolarite/candidatures-et-inscriptions/candidater-universite-la-rochelle/>

## CONTACT

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## OBJECTIVES

### > Presentation



Are you interested in becoming an executive in the construction and civil engineering sector ?

Thanks to the Master's degree in Civil Engineering and its two building engineering courses, you will be able to design, organise and supervise all the stages of a building project : from construction and rehabilitation (TNCR course) to the management and integration of energy efficiency and renewable energy techniques (GI3ER course).

You will also be trained in management, communication and relational skills as you will be required to maintain close contact with customers and partners in the exercise of your future profession.



Ameer El Amine Hamami

## ✓ ADMISSION

### > Your profile

You have a Bac+3, Bac+4 or equivalent (minimum 180 ECTS) : you must have knowledge of civil engineering.

### > How to apply ?

In the 1st year of the Master's degree, the selection of candidates is made on the basis of their application documents.

How to apply to the [1st year of the Master's](#)

How to apply to the [2nd year of the Master's](#)

## 📄 PROGRAMME

● Mandatory ■ Course option

### > Parcours général

#### > Semester 1

#### > Energétique du bâtiment ●

##### ● Climatisation

Language used for teaching  
French

Teaching time  
31h (9h lectures - 18h tutorials - 4h practical work)

2 ECTS credits

Course code  
250-1-12

##### ● Echangeurs et émetteurs de chaleur

Language used for teaching  
French

Teaching time  
28h (9h lectures - 15h tutorials - 4h practical work)

2 ECTS credits

Course code  
250-1-13

##### ● Thermique du bâtiment

Language used for teaching  
French

Teaching time  
24h (9h lectures - 15h tutorials)

2 ECTS credits

Course code  
250-1-11

#### > Mineure GI3ER : équipements spécifiques ■

##### ● Acoustique des équipements

Language used for teaching  
French

Teaching time  
12h (6h lectures - 6h tutorials)

2 ECTS credits

Course code  
250-1-72

- Conception avancée et modélisation des enveloppes

Language used for teaching	French
Teaching time	25h 30min (9h lectures - 13h 30min tutorials - 3h practical work)
2 ECTS credits	
Course code	250-1-73

- Electrotechnique des équipements techniques du bâtiment

Language used for teaching	French
Teaching time	12h (6h lectures - 6h tutorials)
2 ECTS credits	
Course code	250-1-71

## > Mineure recherche : méthodes avancées pour les structures cotières et maritimes ■

- Effet des écoulements sur les ouvrages

Language used for teaching	French
Teaching time	24h (12h lectures - 12h tutorials)
3 ECTS credits	
Course code	250-1-91

- Voiles et structures minces pour le génie civil

Language used for teaching	French
Teaching time	24h (12h lectures - 12h tutorials)
3 ECTS credits	
Course code	250-1-92

## > Réseaux hydrauliques et ventilation mécanique ●

- Réseaux hydrauliques

Language used for teaching	French
Teaching time	24h (9h lectures - 15h tutorials)
3 ECTS credits	
Course code	250-1-32

- Ventilation des locaux

Language used for teaching	French
Teaching time	24h (9h lectures - 15h tutorials)
3 ECTS credits	
Course code	250-1-31

## > Systèmes de production d'énergies ●

- Chaleur bio-combustibles

Language used for teaching
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French
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Teaching time
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35h 30min (15h lectures - 16h 30min tutorials - 4h practical work)
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3 ECTS credits
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Course code
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250-1-22
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- Systèmes thermodynamiques et biénergie

Language used for teaching
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French
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Teaching time
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17h 30min (7h 30min lectures - 6h tutorials - 4h practical work)
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3 ECTS credits
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Course code
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250-1-21
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## > Unités transversales GI3ER/TNCR ●

- LV1 Anglais pour GI3ER

Language used for teaching
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French
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Teaching time
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24h (24h tutorials)
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2 ECTS credits
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Course code
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250-1-01
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- LV1 Anglais pour TNCR

Language used for teaching
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French
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Teaching time
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24h (24h tutorials)
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2 ECTS credits
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Course code
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250-1-02
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- Multiphysique du bâtiment 1

Language used for teaching
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French
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Teaching time
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36h (18h lectures - 18h tutorials)
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2 ECTS credits
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Course code
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250-1-03
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- Utilisation de bibliothèques de programmation scientifique & python

Language used for teaching
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French
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Teaching time
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33h 30min (3h practical work - 30h 30min work in accompaniment)
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2 ECTS credits
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Course code
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250-1-04
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## > Semester 2

### > Mineure GI3ER : Gestion et conception des enveloppes ●

- Introduction à la gestion de projet autour du BIM (G|3ER)

Language used for teaching	French
Teaching time	21h (6h tutorials - 15h practical work)
3 ECTS credits	
Course code	250-2-72

- Optimisation des systèmes

Language used for teaching	French
Teaching time	27h (3h lectures - 6h tutorials - 9h practical work - 9h work in accompaniment)
3 ECTS credits	
Course code	250-2-71

## ➤ Mineure recherche : méthodes avancées pour les structures cotières et maritimes ●

- Modélisation avancée pour les phénomènes couplés en GC

Language used for teaching	French
Teaching time	48h (12h lectures - 18h tutorials - 18h practical work)
6 ECTS credits	
Course code	250-2-91

## ➤ Procédés de construction et conduite de travaux (Projet Technique 2) ●

- Procédés de construction et conduite de travaux

Language used for teaching	French
Teaching time	50h (1h 30min tutorials - 48h 30min work in accompaniment)
4 ECTS credits	
Course code	250-2-31

## ➤ Professionnalisation et mise en situation (Projet Technique 1) ●

- Dimensionnement des ouvrages et des équipements

Language used for teaching	French
Teaching time	50h (1h 30min tutorials - 48h 30min work in accompaniment)
4 ECTS credits	
Course code	250-2-21

## ➤ Recherche et développement (Projet recherche) ●

- Recherche et procédés de développement durable dans la construction

Language used for teaching	French
Teaching time	55h 30min (3h tutorials - 52h 30min work in accompaniment)
4 ECTS credits	
Course code	250-2-11

## > Unités transversales G13ER / TNCR •

### • Gestion et droit d'entreprise

Language used for teaching	French
Teaching time	15h (6h lectures - 9h tutorials)
2 ECTS credits	
Course code	250-2-03

### ■ LV1 Anglais pour G13ER

Language used for teaching	French
Teaching time	24h (24h tutorials)
2 ECTS credits	
Course code	250-2-01

### ■ LV1 Anglais pour TNCR

Language used for teaching	French
Teaching time	24h (24h tutorials)
2 ECTS credits	
Course code	250-2-02

### • Sécurité incendie

Language used for teaching	French
Teaching time	15h (6h lectures - 9h tutorials)
2 ECTS credits	
Course code	250-2-04

### ■ Stage (8 semaines) G13ER

Language used for teaching	French
6 ECTS credits	
Course code	250-2-05-STAG

### ■ Stage (8 semaines) TNCR

Language used for teaching	French
6 ECTS credits	
Course code	250-2-06-STAG

## > Semester 3

### > Conception intégrée des bâtiments •

#### • Building Energy Simulation

Language used for teaching	French
Teaching time	45h (10h 30min lectures - 4h 30min tutorials - 30h practical work)
2 ECTS credits	
Course code	250-3-32

- Modélisation thermoaéraulique intérieure et extérieure

Language used for teaching	French
Teaching time	32h (12h lectures - 9h tutorials - 8h practical work - 3h work in accompaniment)
3 ECTS credits	
Course code	250-3-31

## > Conception performante des enveloppes et des systèmes ●

- Conception des systèmes à haute efficacité

Language used for teaching	French
Teaching time	24h (3h lectures - 18h practical work - 3h work in accompaniment)
1 ECTS credit	
Course code	250-3-13

- Evaluation énergétique et économique des bâtiments

Language used for teaching	French
Teaching time	27h 30min (16h 30min lectures - 3h tutorials - 8h practical work)
2 ECTS credits	
Course code	250-3-12

- Qualités des environnements intérieurs

Language used for teaching	French
Teaching time	25h (13h 30min lectures - 7h 30min tutorials - 4h practical work)
2 ECTS credits	
Course code	250-3-14

- Transferts hygrothermiques dans les enveloppes du bâtiment

Language used for teaching	French
Teaching time	24h (7h 30min lectures - 10h 30min tutorials - 6h practical work)
2 ECTS credits	
Course code	250-3-11

## > Gestion intelligente des bâtiments ●

- Analyse et utilisation de la GTB

Language used for teaching	French
Teaching time	24h (3h lectures - 21h practical work)
1 ECTS credit	
Course code	250-3-24

- Commandes des systèmes en génie climatique

Language used for teaching	French
Teaching time	21h (15h lectures - 3h tutorials - 3h practical work)
2 ECTS credits	
Course code	250-3-22

- Conception de systèmes de GTC

Language used for teaching	French
Teaching time	18h (9h lectures - 9h practical work)
1 ECTS credit	
Course code	250-3-23

- Régulation des installations de chauffage et climatisation

Language used for teaching	French
Teaching time	23h 30min (7h 30min lectures - 12h tutorials - 4h practical work)
2 ECTS credits	
Course code	250-3-21

## > Mineure GI3ER : les énergies renouvelables ■

- Biomasse et géothermie

Language used for teaching	French
Teaching time	11h (6h lectures - 3h tutorials - 2h practical work)
2 ECTS credits	
Course code	250-3-71

- Production électricité photovoltaïque/photovoltaic Energy

Language used for teaching	French
Teaching time	16h (6h lectures - 6h tutorials - 4h practical work)
2 ECTS credits	
Course code	250-3-73

- Systèmes solaires thermiques

Language used for teaching	French
Teaching time	23h (9h lectures - 6h tutorials - 8h practical work)
2 ECTS credits	
Course code	250-3-72

## > Mineure recherche : méthodes avancées pour les structures cotières et maritimes ■



- Approches probabilistes pour le dimensionnement

Language used for teaching	French
Teaching time	19h 30min (10h 30min lectures - 9h tutorials)
2 ECTS credits	
Course code	250-3-92

- Calcul et dimensionnement de structures sous chargement cyclique

Language used for teaching	French
Teaching time	10h (6h lectures - 4h practical work)
2 ECTS credits	
Course code	250-3-93

- Changement d'échelles dans les milieux hétérogènes en GC

Language used for teaching	French
Teaching time	7h 30min (7h 30min lectures)
2 ECTS credits	
Course code	250-3-91

## ➤ Unités transversales GI3ER / TNCR ●

- Economie de projet et d'exploitation en BIM

Language used for teaching	French
Teaching time	10h 30min (1h 30min lectures - 9h practical work)
2 ECTS credits	
Course code	250-3-04

- LV1 Anglais pour GI3ER

Language used for teaching	French
Teaching time	24h (24h tutorials)
2 ECTS credits	
Course code	250-3-02

- LV1 Anglais pour TNCR

Language used for teaching	French
Teaching time	24h (24h tutorials)
2 ECTS credits	
Course code	250-3-01

- Multiphysique du bâtiment 2

Language used for teaching	French
Teaching time	10h 30min (10h 30min lectures)
2 ECTS credits	
Course code	250-3-03

## > Semester 4

### > Unités transversales GI3ER •

- Stage (22 semaines) (GI3ER)

Language used for teaching	French
30 ECTS credits	
Course code	250-4-11-STAG

## > Parcours double diplomation

### > Semester 1

#### > Energétique du bâtiment •

- Climatisation

Language used for teaching	French
Teaching time	31h (9h lectures - 18h tutorials - 4h practical work)
2 ECTS credits	
Course code	250-1-12

- Echangeurs et émetteurs de chaleur

Language used for teaching	French
Teaching time	28h (9h lectures - 15h tutorials - 4h practical work)
2 ECTS credits	
Course code	250-1-13

- Thermique du bâtiment

Language used for teaching	French
Teaching time	24h (9h lectures - 15h tutorials)
2 ECTS credits	
Course code	250-1-11

#### > Mineure GI3ER : équipements spécifiques ■

- Acoustique des équipements

Language used for teaching	French
Teaching time	12h (6h lectures - 6h tutorials)
2 ECTS credits	
Course code	250-1-72

- Conception avancée et modélisation des enveloppes

Language used for teaching	French
Teaching time	25h 30min (9h lectures - 13h 30min tutorials - 3h practical work)
2 ECTS credits	
Course code	250-1-73

- Electrotechnique des équipements techniques du bâtiment

Language used for teaching	French
Teaching time	12h (6h lectures - 6h tutorials)
2 ECTS credits	
Course code	250-1-71

## > Réseaux hydrauliques et ventilation mécanique ●

- Réseaux hydrauliques

Language used for teaching	French
Teaching time	24h (9h lectures - 15h tutorials)
3 ECTS credits	
Course code	250-1-32

- Ventilation des locaux

Language used for teaching	French
Teaching time	24h (9h lectures - 15h tutorials)
3 ECTS credits	
Course code	250-1-31

## > Systèmes de production d'énergies ●

- Chaleur bio-combustibles

Language used for teaching	French
Teaching time	35h 30min (15h lectures - 16h 30min tutorials - 4h practical work)
3 ECTS credits	
Course code	250-1-22

- Systèmes thermodynamiques et biénergie

Language used for teaching	French
Teaching time	17h 30min (7h 30min lectures - 6h tutorials - 4h practical work)
3 ECTS credits	
Course code	250-1-21

## > Unités transversales G13ER/TNCR ●

- LV1 Anglais pour G13ER

Language used for teaching	French
Teaching time	24h (24h tutorials)
2 ECTS credits	
Course code	250-1-01

### ■ LV1 Anglais pour TNCR

Language used for teaching  
French

Teaching time  
24h (24h tutorials)

2 ECTS credits

Course code  
250-1-02

### ● Multiphysique du bâtiment 1

Language used for teaching  
French

Teaching time  
36h (18h lectures - 18h tutorials)

2 ECTS credits

Course code  
250-1-03

### ● Utilisation de bibliothèques de programmation scientifique et python

Language used for teaching  
French

Teaching time  
33h 30min (3h practical work - 30h 30min work in accompaniment)

2 ECTS credits

Course code  
250-1-04

## > Semester 3

### > Conception intégrée des bâtiments ●

#### ● Building Energy Simulation

Language used for teaching  
French

Teaching time  
45h (10h 30min lectures - 4h 30min tutorials - 30h practical work)

2 ECTS credits

Course code  
250-3-32

#### ● Modélisation thermoaéroulque intérieure et extérieure

Language used for teaching  
French

Teaching time  
32h (12h lectures - 9h tutorials - 8h practical work - 3h work in accompaniment)

3 ECTS credits

Course code  
250-3-31

### > Conception performante des enveloppes et des systèmes ●

#### ● Conception des systèmes à haute efficacité

Language used for teaching  
French

Teaching time  
24h (3h lectures - 18h practical work - 3h work in accompaniment)

1 ECTS credit

Course code  
250-3-13

- Evaluation énergétique et économique des bâtiments

Language used for teaching	French
Teaching time	27h 30min (16h 30min lectures - 3h tutorials - 8h practical work)
ECTS credits	2 ECTS credits
Course code	250-3-12

- Qualités des environnements intérieurs

Language used for teaching	French
Teaching time	25h (13h 30min lectures - 7h 30min tutorials - 4h practical work)
ECTS credits	2 ECTS credits
Course code	250-3-14

- Transferts hygrothermiques dans les enveloppes du bâtiment

Language used for teaching	French
Teaching time	24h (7h 30min lectures - 10h 30min tutorials - 6h practical work)
ECTS credits	2 ECTS credits
Course code	250-3-11

## › Gestion intelligente des bâtiments ●

- Analyse et utilisation de la GTB

Language used for teaching	French
Teaching time	24h (3h lectures - 21h practical work)
ECTS credit	1 ECTS credit
Course code	250-3-24

- Commandes des systèmes en génie climatique

Language used for teaching	French
Teaching time	21h (15h lectures - 3h tutorials - 3h practical work)
ECTS credits	2 ECTS credits
Course code	250-3-22

- Conception de systèmes de GTC

Language used for teaching	French
Teaching time	18h (9h lectures - 9h practical work)
ECTS credit	1 ECTS credit
Course code	250-3-23

- Régulation des installations de chauffage et climatisation

Language used for teaching	French
Teaching time	23h 30min (7h 30min lectures - 12h tutorials - 4h practical work)
ECTS credits	2 ECTS credits
Course code	250-3-21

## > Mineure G13ER : les énergies renouvelables •

### • Biomasse et géothermie

Language used for teaching  
French

Teaching time  
11h (6h lectures - 3h tutorials - 2h practical work)

2 ECTS credits

Course code  
250-3-71

### • Production électricité photovoltaïque/photovoltaic Energy

Language used for teaching  
French

Teaching time  
16h (6h lectures - 6h tutorials - 4h practical work)

2 ECTS credits

Course code  
250-3-73

### • Systèmes solaires thermiques

Language used for teaching  
French

Teaching time  
23h (9h lectures - 6h tutorials - 8h practical work)

2 ECTS credits

Course code  
250-3-72

## > Unités transversales G13ER / TNCR •

### • Economie de projet et d'exploitation en BIM

Language used for teaching  
French

Teaching time  
10h 30min (1h 30min lectures - 9h practical work)

2 ECTS credits

Course code  
250-3-04

### ■ LV1 Anglais pour G13ER

Language used for teaching  
French

Teaching time  
24h (24h tutorials)

2 ECTS credits

Course code  
250-3-02

### ■ LV1 Anglais pour TNCR

Language used for teaching  
French

Teaching time  
24h (24h tutorials)

2 ECTS credits

Course code  
250-3-01

- Multiphysique du bâtiment 2

Language used for teaching

French

Teaching time

10h 30min (10h 30min lectures)

2 ECTS credits

Course code

250-3-03

## AFTERWARDS

Information subject to change

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