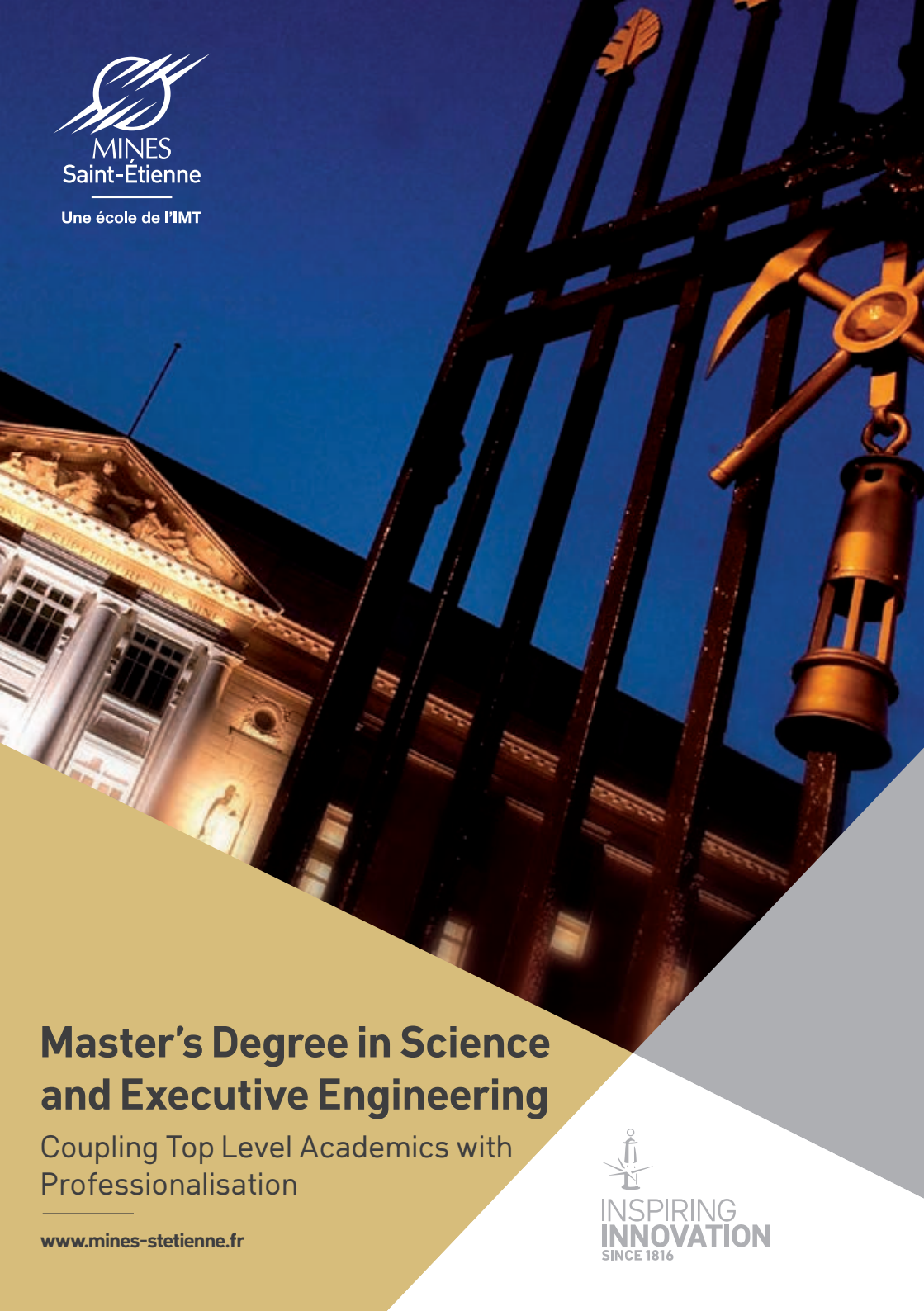




Une école de l'IMT



# Master's Degree in Science and Executive Engineering

Coupling Top Level Academics with Professionalisation

[www.mines-stetienne.fr](http://www.mines-stetienne.fr)



INSPIRING  
INNOVATION  
SINCE 1816

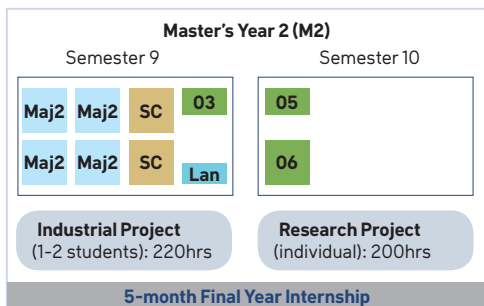
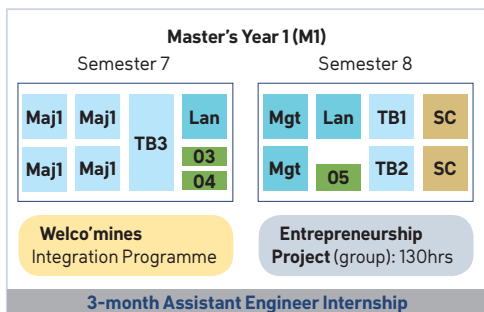
## 5 EXCELLENT REASONS TO JOIN US...

1. High Faculty/Student Ratio : 1 to 5, one-on-one personalised tutoring
2. Extensive Hands-on Experience
3. Unique Informal Learning, Networking, Alumni
4. Superb Residential Experience
5. World Class International Partnerships

All this on a multicultural campus: 30% International students

The aim of the 'Ingénieur Civil des Mines' Master's degree in Science and Executive Engineering is to train engineers for top-level management and technical positions in industrial and service companies in a globalised context.

## COURSE STRUCTURE



### Top Level Academics:

**Mgt**

Management, total: 80 hours

**Lan**

2/3 Foreign Languages, total: 100 hours  
*English + another language (Spanish, German, French...)*

**TB**

Choice of 3 from 33 Scientific Elective Toolboxes (TB3+TB1+TB2) total: 160 hours

**SC**

1 Societal Challenge, total: 160 hours

**Maj1**

2 Majors, total: 320 hours

**Maj2**

### Specialised Professionalisation:



2 Internships, total: 8 months



6 Professionalisation Modules, total: 150 hours













3 Multidisciplinary Projects, total: 550 hours

### Step 1: Choose 2 Majors...

<b>Major 1</b>	<b>160 hours</b> Semester 7	<b>Major 2</b>	<b>160 hours</b> Semester 9
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#### ...from 10 Fundamental Disciplines:

1. Materials Science  50%
2. Mechanics  50%
3. Energy Processes  50%
4. Electronics for Cyber-Physical Systems  25%
5. Computer Science  25%
6. Data Science  25%
7. Production and Logistics Management  30%
8. Biomedical Engineering  100%
9. Industrial and Territorial Environments  100%
10. Corporate Finance  100%

### Step 2: Choose 1 Societal Challenge...

<b>Societal Challenge</b>	<b>160 hours</b> Semester 8 and 9
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#### ... in which to apply your 2 Majors

1. Eco-design  75%
2. Energy Transition  100%
3. Nanotechnology  25%
4. Industrial Management 4.0  25%
5. Personalised Medicine and Healthcare  100%
6. Intelligent Transportation and Mobility Systems  50%
7. Big Data  25%
8. Design, Conception and Innovation  25%

## SCIENTIFIC ELECTIVES AS “TOOLBOXES”: 160 HOURS

- ▶ Choose 3 “toolboxes”: 2x40hrs and 1x80hrs
- ▶ Choose from at least 2 different colours to ensure interdisciplinarity

Physical methods for matter characterisation	40hrs	🇬🇧 50%
Computer-aided design	40hrs	🇫🇷
Mechanical engineering and materials science for the construction industry	40hrs	🇫🇷
Physical and mechanical modelling by finite elements	40hrs	🇬🇧 100%
Advanced fluid mechanics	40hrs	🇫🇷
Material & process selection	40hrs	🇬🇧 100%
Fundamentals of finite elements method	40hrs	🇫🇷
Management of Water Resources and Polluted Sites	40hrs	🇬🇧 50%
Process Design	80hrs	🇫🇷
Nanophysics	80hrs	🇫🇷

Experimental methods	40hrs	🇬🇧 50%
Industrial statistics	40hrs	🇫🇷
Introduction to image processing	40hrs	🇬🇧 100%
Tensor calculus	40hrs	🇬🇧 30%
Operations research and decision analysis	80hrs	🇫🇷
Image and Pattern Recognition	80hrs	🇬🇧 100%

Environmental assessment	40hrs	🇫🇷
Reliability and design	40hrs	🇫🇷
International management	40hrs	🇬🇧 100%
Economics	40hrs	🇬🇧 100%
International finance	40hrs	🇬🇧 100%
Industrial and natural risk assessment tools	40hrs	🇫🇷
Change management	40hrs	🇫🇷
Human resources management	40hrs	🇫🇷
Economic intelligence and innovation management	80hrs	🇫🇷

High performance computing	40hrs	🇫🇷
Networks	40hrs	🇫🇷
Paradigms for discrete problem solving	40hrs	🇫🇷
Integrated applications	40hrs	🇫🇷
Systems modelling	40hrs	🇬🇧 50%
Artificial Intelligence	80hrs	🇬🇧 50%
Engineering and Interoperability of Computer Systems	80hrs	🇫🇷
Enterprise software application	40hrs	🇫🇷

## PROFESSIONALISATION MODULES TO PREPARE INTERNSHIPS : 150 HOURS



Full syllabus: [www.emse.fr/DF/en/index.html](http://www.emse.fr/DF/en/index.html)





Service communication MINES Saint-Étienne, novembre 2017

## **MINES Saint-Étienne**





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[www.mines-stetienne.fr](http://www.mines-stetienne.fr)

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