



www.emse.fr/sisa



Secure your future...

> MS IN **S**ECURITY OF **I**NTEGRATED **S**YSTEMS & **A**PPPLICATIONS <

Objectives

- **Understand** key points in the broad area of security: Hardware, Software and Cryptography
- **Acquire** an expertise in hardware security
- **Master** the tools and processes of design and/or use of secure devices
- **Answer** emerging needs in terms of secure communication solutions of companies and users

Job opportunities

Functions

- R&D
- Component designer
- Application developer
- Team manager
- Security expert
- Security evaluator (lab)
- Consultant

Areas

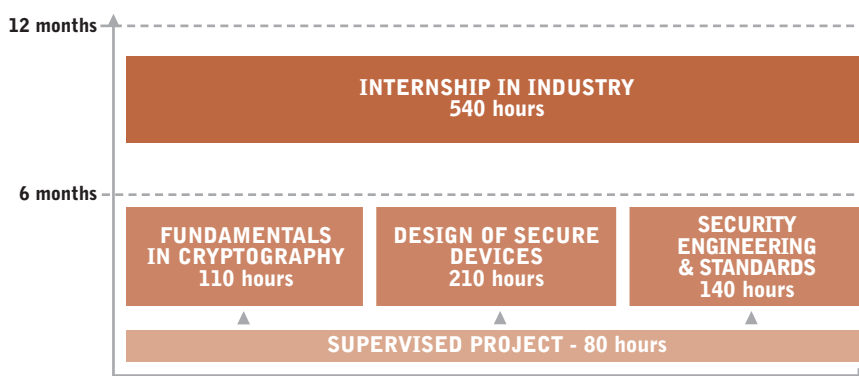
- Designers and manufacturers
- Assemblers of integrated systems
- Application integrators
- Service suppliers

Benefits

- Build your own international network
- Be in touch with major companies in the security field
- Find a job in leading security companies
- Be up to date in latest security technologies
- Learn from leading industrial experts and renowned researchers
- Graduate from one of the most prestigious French Engineering Schools.

Program structures

The aim of our post-graduate Masters in "Security of Integrated Systems & Applications" (MS-SISA) is to acquire greater skills in both design and security.



Fundamentals of cryptography

Security flaws, cryptography, information theory, algorithmic complexity, elements of number theory and statistics, cryptography algorithms, cryptanalysis tools.

Design of secure devices

Device architecture, processor architecture, software architecture, embedded systems (smart card, ...), physical cryptanalysis, fault attacks, side-channel attacks, invasive attacks, information leakage, counter-measures, secure hardware design, embedded software, VHDL.

Security engineering and standards

Industrial use cases (e.g., banking transactions, mobile phone, DRM, privacy, identity and access control, communication networks, ...), security standards, protocol analysis, specifications, emerging technologies, information security, legal aspects.



Target group

- Master level coming from the following fields:
 - Microelectronics
 - Computer science
 - Telecommunications
 - Electronics
 - Mathematics
- Professionals (3~4 years of study) with at least 3 years experience.

Criteria

This international program is open to candidates from all over the world.
Admission is based on application.
The form is available on demand or on our website.

Tuition fees

Students: 9,000 Euros
Companies: 15,000 Euros

Program partners

Our post-graduate Masters is strongly supported by 7 leading security companies: Atmel, CEA/Leti, Gemalto, Philips, STMicroelectronics, Texas Instruments and Trusted Logic. In addition to the ENSM.SE, it also benefits from 2 academic partners: ESIL and LIRMM/Polytech' Montpellier. The ratio of academic/industrial instructors is roughly 55% vs. 45%.

All our partners are located within the area of the "Georges Charpak Microelectronics Center of Provence" (Gardanne/Aix-en-Provence) where courses will be held.

Our program is in line with the Secured Communicating Solutions cluster ("Pôle de Compétitivité SCS").

Contact us

in Europe

Pascal GELLY
Email: gelly@emse.fr
Phone: +33 (0)4 42 61 66 19
Fax: +33 (0)4 42 61 65 90

Nouria CHAOUY
Specialized Masters Coordinator
Email: chaouy@emse.fr
Phone: +33 (0)4 42 61 66 29
Fax: +33 (0)4 42 61 65 90

in Asia

Email: hongmahe@vip.163.com
Phone: +86 1 38 17 81 93 86

Visit our website

and download an application form

www.emse.fr/sisa

Postal address

Ecole Nationale des Mines de Saint-Etienne
Site Georges Charpak
Specialized Masters Admission office
880 avenue de Mimet
13120 Gardanne
FRANCE

For more information on admissions:
ms.sisa@emse.fr

The Ecole des Mines de Saint-Etienne (ENSM.SE), created in 1816, offers its graduate and post-graduate students a wide choice of professional openings in research, management and engineering at masters and Ph-D level.

6 scientific fields covered by six scientific departments: process engineering, materials and mechanical engineering,

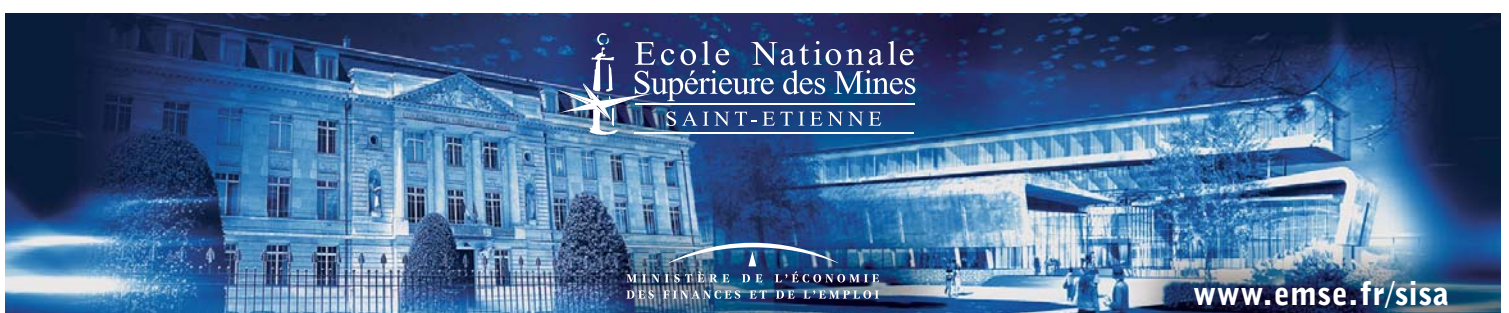
environmental engineering, industrial engineering and IT, microelectronics and health engineering.

Open onto the world, the ENSM.SE has established strong partnerships with more than fifty universities and research institutes on all continents and recruits international students of high caliber. With the creation of a health engineering

department and the opening of new education and research facilities dedicated to microelectronics in Provence, the ENSM.SE is currently going through unprecedented growth.

The two teaching and research units in France are:

- Saint-Etienne in Rhône-Alpes
- Gardanne in Provence



 **Ecole Nationale
Supérieure des Mines**
SAINT-ETIENNE

MINISTÈRE DE L'ÉCONOMIE
DES FINANCES ET DE L'EMPLOI

www.emse.fr/sisa