esiea
GRADUATE SCHOOL
OF ENGINEERING

« Engineers for the digital world »

Presentation for International Partners

Our Graduate Engineering School

ESIEA is a top-ranked, French "Grande École" (engineering school) specializing in digital sciences and technologies, with 3 campuses :

- Paris : historic campus located in the heart of the French capital for more than 60 years
- Ivry sur Seine : the largest campus, just a few metro stops away from the Left Bank
- Laval : the branch campus located 1h10 by bullet train from Paris

LAVAL

Cti Commission des Titres d'Ingénieur

EST. 1958 NINETEEN FIFTY EIGHT

EESPIG

IVRY S/SEINE

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A "Grande École" of stature

- Accredited by the official governing board « Commission des Titres d'Ingénieurs » (**CTI**)
- **Recognized by the French State** for its campuses in Paris and Laval, holder of the label **EESPIG** (Etablissement d'Enseignement Supérieur Privé **d'Intérêt Général =** Institution of Higher Education serving Public Interest)
- Member of the « Grandes Écoles » Conference (**CGE**)
- Engineering and Master's Programmes in cybersecurity approved by the ANSSI agency (**SecNum*Edu* Labels**)
- Member of French Tech
- Member of Campus France and n+i Networks
- Holder of the **EUR-ACE label** (international mobility)

ESIEA – Key facts and figures

- **1,270** students – of whom **18%** in apprenticeship and **21%** on social grants
- Over **7,200** alumni
- **4** research labs
- Over **50** academic partners around the world
- **60 years** of experience (founded 1958)

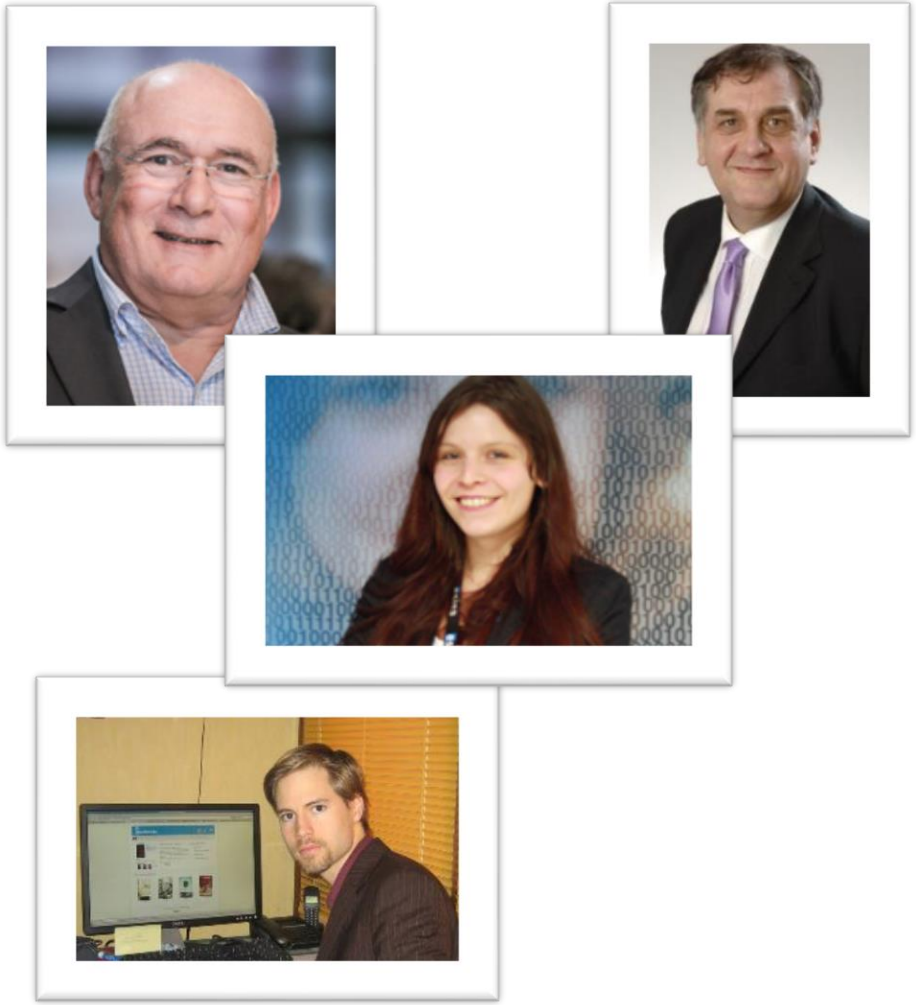
- **4** laboratories - **26** researchers and **11** PhD students
- **55** partner schools or universities in more than **20** countries
- **13** months of internship in France and worldwide
- A **private, not-for-profit, association** with statutory governance by its **alumni**.

A unique governance to ensure that professionals remain in close contact with students and staff…

- **Statutory governance by our alumni** : created in 1958, ESIEA was donated by its founder, Maurice Lafargue, to the Alumni Association in **1975**.

- **Private**, not-for-profit, **association** : profits are fully reinvested in the group's education and research programs.

- **The 25 members of the board,** made up of alumni and representatives from industry, **are all volunteers**, and receive no compensation or benefits.
- **450 alumni** also contribute every year on a voluntary basis to student projects, internships, juries and program committees.



Research, Innovation & Pedagogy

Research and Pedagogy

With more than 30 researchers and PhD students, our 4 research laboratories are working on some of the most important challenges facing mankind today.

- **Digital Confidence and Security**
- **Digital Interactions for Health and Disability** (Virtual and Augmented Reality)
- **Learning, Data, Robotics** (LDR / Big Data, artificial intelligence and mobile robotics)
- **Digital Art and Research** (ARNUM)

Digital Confidence and Security – research topics

Internationally recognized for its expertise in the areas of cryptology and virology, the objective of the laboratory is to work towards solutions for global information security – ranging from the "silicium/embedded code" aspects of electronic devices to the "systems/networks" aspects of large infrastructures.

1. Cryptology
2. Analysis and design of steganographic systems
3. Computer virology
4. Analysis and technical study of the computer war concept
5. Security of embedded environments (RFID, microchips, electronic circuits)
6. Algorithmics for complex structures (large graphs, massive data, combinatorial sets…) and their applications to securtiy
7. Security of critical infrastructures. Pro-active analysis of terrorist scenarios

Director : Éric FILIOL (eric.filiol@esiea.fr)

STUDY PATH IN SECURITY

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68% of learning is hands-on

English for the World of Work (1 semester)

70% of the lecturers come from government or industry

SecNumedu
ANSSI

Y2

Mathemathics and Cryptography

Y3

Introduction to Security

Y4

Data Mining / Big Data
Neural Networks
Parallel Computing

and their applications to security

4-month internship

Y5

Major
- Information theory
- Mathematical models of security and parallel programming
- Network security - Architecture
- Network security - Local security
- Secure programming
- Theory of Error-correcting codes

Technical Minor
- Cryptology and steganography
- Network security audit & control
- Technical and legal aspects of digital forensics
- Stormshield Certification (Airbus Cyberdefense)

Management Minor
- Law and Ethics of Security
- Open source INTelligence (OSINT)
- Security Methodology
- Physical Security

6-monts senior internship

Digital Interactions for Health and Disability – research topics

The work of the laboratory is based upon the merging of diverse technologies: virtual and/or augmented reality, robotics, connected objects, information systems and embedded systems, but also on recognized expertise in the use of technologies for health and on a multidisciplinary network of project partners.

1. Digital tools to regain capacity and autonomy

    - Context: cognitive, behavioral, sensorial, and learning disorders
    - Simulated activities
    - Methods for the observation and follow-up of patient activity
    - Development of tools integrating methods designed with input by therapists and caregivers
    - Evaluation of treatment effectiveness

2. Digital technologies in the service of health and disability

    - Virtual Reality / Augmented Reality
    - Embedded Systems
    - Development of interfaces for immersion and interaction
    - Validation by tests in situ

Director : Evelyne KLINGER (evelyne.klinger@esiea.fr)

Learning, Data & Robotics laboratory - research topics

The work of the LDR team covers data processing in its entirety, from acquisition to decision-making. The team develops acquisition tools and methods for the analysis of heterogenous and massive data: images, vidéo segments, time and space-time series.

1. Exploratory robotics
   Design of aerial, land and underwater drones for the acquisition of data

2. Data analysis
   Extraction and selection of characteristics within the data, using methods coming from signal processing, image processing and statistics.

3. Data classification
   To classify data, the lab team develops original methods in the domains of estimation and machine learning (neural networks, kernel methods…).

4. Data merging
   This aspect is studied from various angles: ensemble methods, aggregation operators, semi-supervised learning.

Director : Lionel PREVOST (lionel.prevost@esiea.fr)

Art and digital research laboratory - research topics

The exploratory group ARNUM is a creative space of cross-fertilization where artists and engineers come together to confront their visions of the world.

1. PRODUCTIONS
   Co-creations and collaborations leading to prototypes of digital works of art

2. EXPLORATIONS
   Innovative themes related to art

3. CREATIONS
   Creative projects developed by members of Arnum and the students who work there

4. DISSEMINATION
   Exhibits; performances; conferences; publications

Director : Claire LEROUX (leroux@esiea.fr)

Key points of the curriculum

A wide range of Programs

Engineering Master's Degree (5 years)

- Information Systems
- Embedded Systems

Postgraduate Degree

- Cybersecurity

BADGE
Bilan d'Aptitude Délivré par les Grandes Écoles

MSge
Mastère spécialisé®

Professional Certifications

- Pen Test
- Reverse Engineering

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Develop the engineer and the person

Personal development projects to define career goals and develop the transversal skills essential to engineers

Cross-disciplinary creative and innovative freedom
Fullfill your dreams and your talents

Hands-on learning : *Learn by doing, make connections between the disciplines, work on teams, acquire the work methods of the world of industry*

Adaptability and employability Internships - Career preparation

Strong partnerships with companies *to help students define their career goals and prepare entry into the world of work*

Encouraging international mobility
TOEIC minimum each year …

Work groups geared to your language level, international experiences to help prepare for a career in a global economy.

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Action Learning

Projects and challenges help students develop their entrepreneurial and innovative ideas

STIMULUS

Low-cost RV Platform

→ **World Finalists (Innovation)**

MICROSOFT Imagine Cup 2015

GANYMÈDE

IoT plants that monitor air quality

→ **1st – INTEL Hackathon Roadshow 2014**

→ **1st – CGI Challenge (Environment) 2015**

→ **2nd – SG Connected Hack 2014**

55 partner schools and universities. International destinations across 5 continents

3 months minimum abroad. Customized international learning paths : **Summer Schools**, **Internships in labs and/or companies**, **exchange semesters, international sections…**

English section in 1st , 2nd and 4th* year

- **75% of lessons** (scientific and others) given in **English**.
- The 75 scientific-section students chosen (via entrance exam Puissance Alpha) can leave on summer school at the end of first year (L1) and **will go on an academic exchange at the beginning of the second year** (L2) at **Heriot-Watt University**.
- **Multiculturalism** is at the heart of the teaching with projects in all subjects focused on a single continent each year.

HERIOT WATT UNIVERSITY

* English section in 4th year only in Information systems electives

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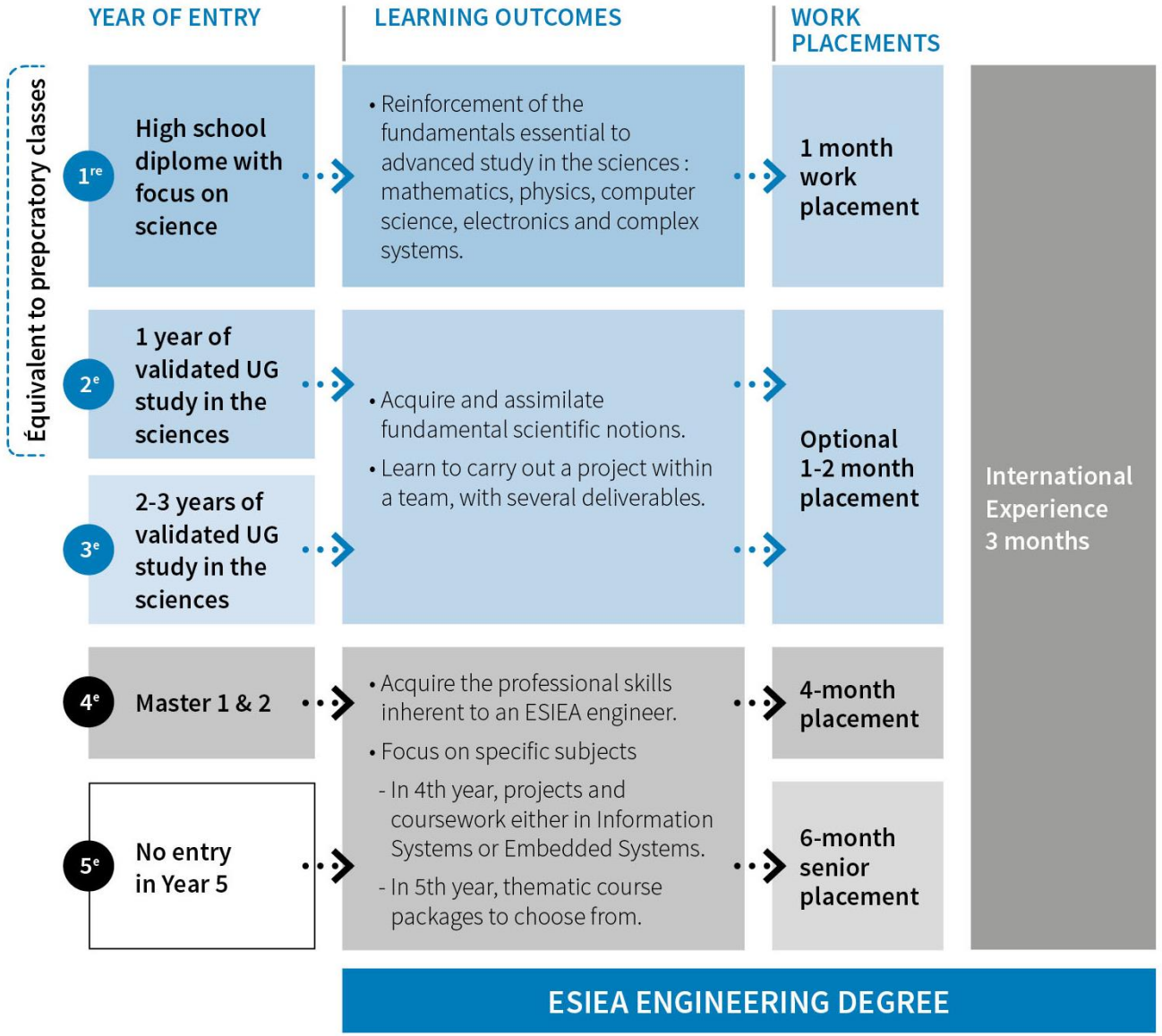
Organisation of the curriculum

Three phases of development over 5 years : undergraduate (L) and postgraduate (M)



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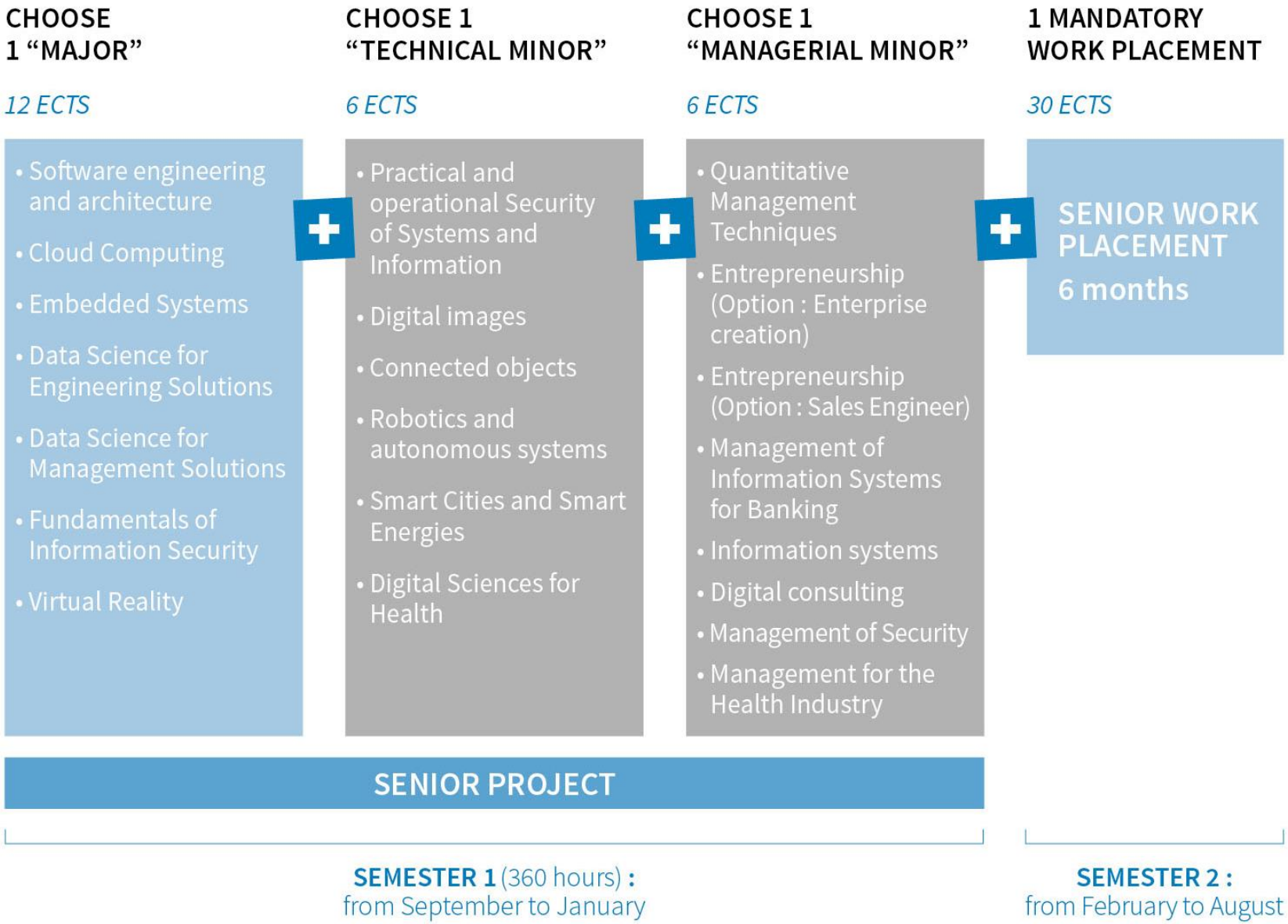
Final year : Thematic packages to choose from



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Designed for Exchange Students

Two distinct pathways

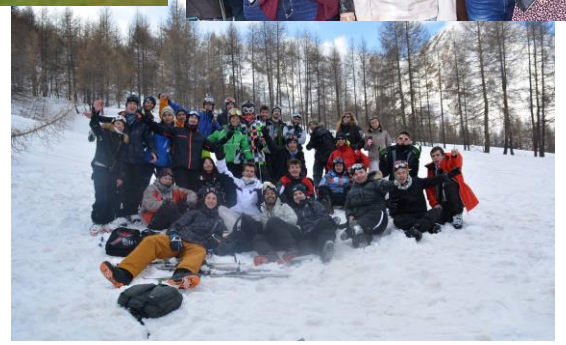
1. Computer Engineering studies in English

- Taught on the Paris campus (Ivry-sur-Seine)
- Content includes mathematics, computer science, enterprise management and language study (M1 level)
- Students may sign on for first semester only (last week of August through to the December holidays)
- All coursework provided in English
- 2 hours of survival French lessons each week
- 30 ECTS per semester
- Assistance with housing and visa procedures where necessary

2. Introduction to computer security

- A semester-long program taught by a team of recognized experts in network and information security
- Taught on the Laval campus
- All coursework provided in English
- Early September through end of January
- 2 hours of survival French lessons each week
- 30 ECTS
- Assistance with housing and visa procedures where necessary

A lively environment for learning and self-discovery



- Advantages and services of 2 Campuses
- Important moments spent together (seminars, integration weekend, (September), Ski-colloquium…)
- An active Student Union and many student clubs

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Profile & Career

A job straight away… a powerful network
Opportunities and employability in all sectors

39,000€*

STARTING SALARY
(gross annual for the class of 2016)

40,570€*

SALARY AFTER 1 YEAR
(gross annual for the class of 2015)

46,119€*

SALARY AFTER 2 YEARS
(gross annual for the class of 2014)

TIME SPENT TO FIND A FIRST POSITION

98.7%

of the young graduates of **ESIEA's class of 2016** found **permanent employment 2 months at the latest** after leaving school.

38.2%
Activities linked to computing and information services

21.6%
Engineering and design firms, consultancy agencies

12.5%
Finance, Banking and Insurance

7.1%
Industry (automative, aeronautic, naval, rail, pharmaceutical, agri-food, etc.)

8.9%
Others (Distribution, administration, audiovisual, research, etc.)

6%
Energy and Sustainable Development

5.7%
Telecommunications

** Average salaries*

Companies which support us, contribute to our teaching and employ our students

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The Admissions Process

Admissions process for exchange students

- **You'll need solid maths skills and a strong grasp of programming languages. For the thematic semester, you'll need a keen interest in Computer Security.**

- **Work with the international office at your home institution:**
  - Fill in the registration form
  - Choose your semester
  - Prepare your study transcripts
  - Look into visa requirements
  - Get comprehensive international insurance coverage

- **DEADLINE for all application materials: 1 June**
  - For European partners, you'll find application procedures and materials at Study at ESIEA with Erasmus
  - For international partners, you'll find application procedures and materials at Study at ESIEA Bilateral Exchange


Thanks!