FACT SHEET: STUDENT EXCHANGE SEMESTERS

PRESENTATION

Created by companies, for companies

Since 1958, CESI has been meeting companies' needs thanks to its engineering training programmes, which have always been at the forefront of pedagogy. Its extensive network on French territory has enabled it to be a pioneer in apprenticeship training in higher education. Nowadays, the school is pursuing its development abroad (by working with companies and through academic partnerships).

OUR STRENGTHS

- **Active learning methods at the core of our study programmes** (A2P2, PBL)

In the firm belief that practice is the key to learning and employability, CESI has set up student-centric study programmes that allow students to be quickly operational and autonomous in the corporate world. CESI applies the PBL methodology recommended by the CDIO network.

- **Players of digital and ecological transitions**

Our subjects, which are fully oriented towards current societal issues, will allow you to understand global challenges, and to be a driving force for change.

- **25 campuses in France**

Drawing on its national coverage, CESI has offered synchronised study programmes that guarantee a consistent, high-quality content for all its students.

STUDENT EXCHANGE PROGRAMMES AT CESI

These student exchange programmes are coordinated and held in partnership with your home institution, giving you the opportunity to take a course over one or two semesters (1 year).

You'll be able to fully take part in our school's community life for several months, study together with our students, improve your foreign language skills, discover how the locals of a foreign country lead their daily lives and become familiar with their culture.

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YOUR OPTIONS

At CESI, we offer you several possibilities to carry out your academic exchange:

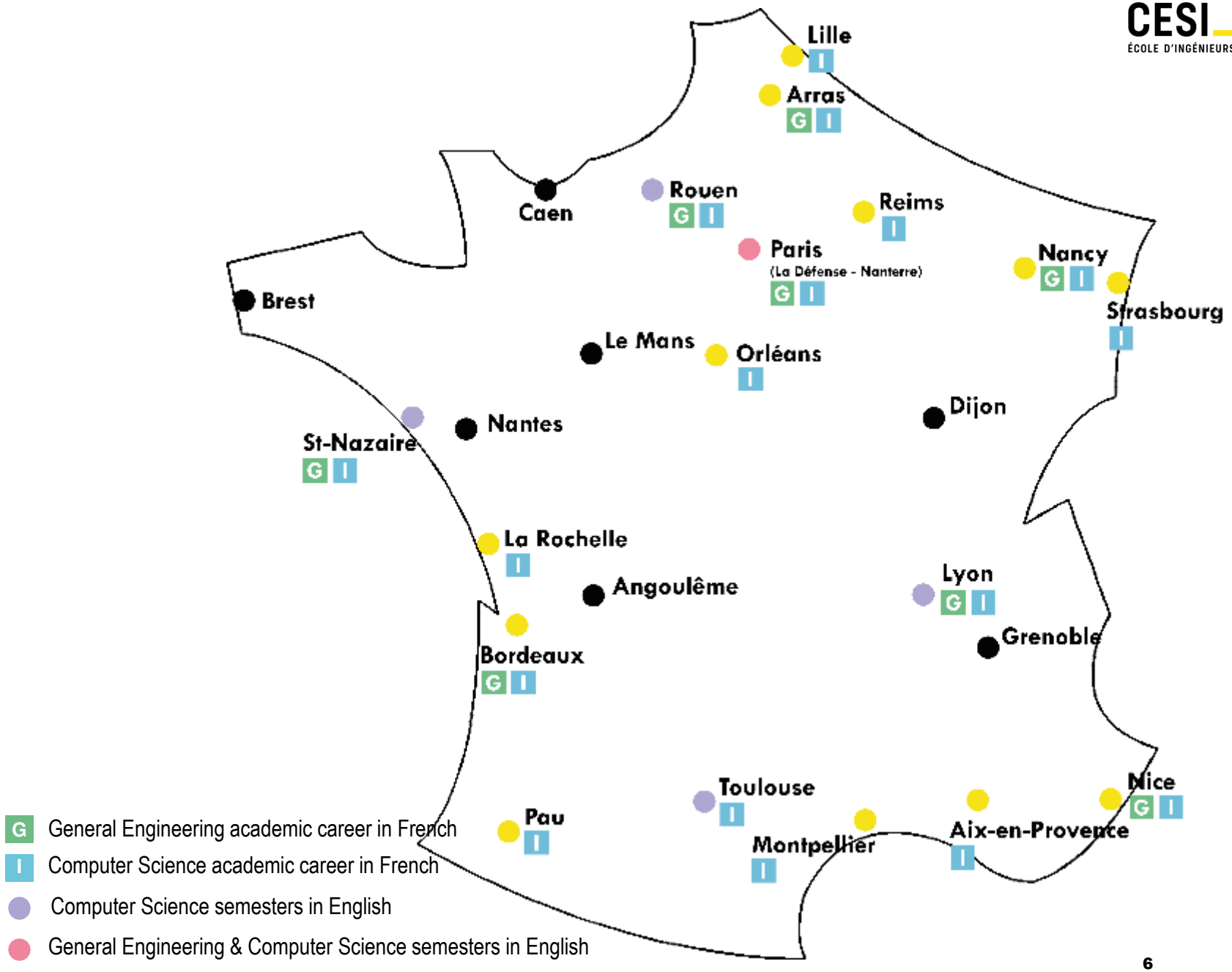
- The **Undergraduate** or **Graduate** level;
- The **General Engineering** (Master's in Engineering) or **Computer Science** (Master's in Computer Science) academic career
- An **Autumn** semester or **Spring** semester (or both).

You can attend our study programmes in French, and entirely in English on some campuses (see map).

Successfully completing one semester will allow you to get 30 ECTS credits for your degree and have them recognised by your home institution.

WHERE:

Our network comprising 25 campuses in France.



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UNDERGRADUATE OFFER

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A

General Engineering academic career

PRESENTATION

There are two **undergraduate** academic semester options in the **general engineering** academic career, each articulated around multidisciplinary projects inspired by real-life business situations. This way students can study **the essential subjects of the engineering academic career** while carrying out very specific and vocational projects:

- **In the Autumn semester: managing an industrial accident and its consequences**, (problem analysis and solving, process management and corporate social responsibility);
  - **retrofitting a production plant** (industrial performance, investment, moving towards Industry 4.0);
  - a case study on the **optimisation of the Formula 1 acceleration and braking system** (numerical modelling of a complex mechanical system).

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PRESENTATION

There are two **undergraduate** academic semester options in the **general engineering** academic career, each articulated around multidisciplinary projects inspired by real-life business situations.

- **In the Spring semester**

  — **designing an automatic brake for bicycles** (mechanics and electromagnetism);

  — **optimising delivery vehicle routes** (ecological transition and operations research);

  — response to a call for tenders to **improve the thermal performance of a modular building** (energy performance).

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ACADEMIC SEMESTER PROGRAMME: INDUSTRIAL ENGINEERING

Undergraduate

For the detailed syllabus of these subjects, with the corresponding number of ECTS credits, please refer to the attached Excel files.

Available in English in Nanterre

AUTUMN SEMESTER

- **Educational integration seminar**
  - Team building
  - Discovering the school's teaching methods
- **Mathematics for engineering**
  - Basic Mathematics
  - Differential equations
  - Functions of several variables
  - Continuous and discrete probability distributions
  - Univariate and bivariate statistics
- **Process management**
  - Problem-solving
  - Quality approach
  - Corporate Social Responsibility, carbon footprint
- **Numerical modelling**
  - Mechanics
  - Electromagnetism
  - Finite element methods
  - Shape optimisation
- **Industry of the future**
  - Occupational Health and Safety
  - Production management, Lean
  - Financial management
- **Languages**
  - English / French as a Foreign Language

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ACADEMIC SEMESTER PROGRAMME: INDUSTRIAL ENGINEERING

Undergraduate

For the detailed syllabus of these subjects, with the corresponding number of ECTS credits, please refer to the attached Excel files.

SPRING SEMESTER

- **Mechanical design**
  - —Computer-Aided Design
  - —Solid mechanics
  - —Electromagnetism
  - —Study of mechanisms
- **Mathematics for engineering**
  - —Basic Mathematics
  - —Differential and Laplace equations
  - —Inferential and descriptive statistics
- **Operations Research**
  - —Flow optimisation
  - —Programming in python
- **Energy performance**
  - —Renewable energies: energy transition
  - —Electricity
  - —Thermal-Thermodynamics
- **Communication**
  - —Writing skills
  - —Speaking skills
- **Languages**
  - —English / French as a Foreign Language

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FOR WHOM?

Students (who have not graduated yet):

- taking a Bachelor's Degree (or equivalent) in a technical or scientific field (Basic Sciences, Applied Sciences), or a similar field;
- with a genuine interest in the industry;
- with scientific culture, multidisciplinary skills, production methods, project management.

Level of English & French: B1 minimum in the instruction language of the course, B2 recommended.

KEY DATES

Autumn semester

Start date: September

End date: January

Duration: 18 weeks

Spring semester

Start date: February

End date: June

Duration: 19 weeks

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B

Computer Science academic career

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There are two **undergraduate** academic semester options in the **Computer Science** engineering academic career, each articulated around multidisciplinary problem-solving inspired by real-life business situations:

PRESENTATION

- **In the Autumn semester:**
  - **merging and optimising the information systems** of two companies (IS administration);
  - **developing a backup software** (system programming through distributed architectures).

- **In the Spring semester:**
  - developing web and mobile applications;
  - addressing a Big Data storage and processing problem in a hospital;
  - addressing a problem based on optimising delivery vehicle routes (advanced algorithms).

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ACADEMIC SEMESTER PROGRAMME: IT - COMPUTER SCIENCE

Undergraduate:

For the detailed syllabus of these subjects, with the corresponding number of ECTS credits, please refer to the attached Excel files.

Available in English in Lyon, Nanterre, Rouen, Saint-Nazaire, Toulouse

AUTUMN SEMESTER

- **Educational integration seminar**
  - Team Building
  - Discovering the school's teaching methods
- **Mathematics for engineering**
  - Basic Mathematics
  - Differential equations
  - Functions of several variables
  - Continuous and discrete probability distributions
  - Univariate and bivariate statistics
- **Sciences for Computer Engineering**
  - Algorithmic engineering
  - System interactions
  - Synchronisation mechanisms
- **Software architecture and IS**
  - Information system architecture
  - Software modelling
- **IS security and management**
  - Cryptography
  - Introduction to network security
  - IS management strategies
- **Software Engineering**
  - Programming in .Net environment
- **Languages**
  - English / French as a Foreign Language

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ACADEMIC SEMESTER PROGRAMME: IT - COMPUTER SCIENCE

Undergraduate:

For the detailed syllabus of these subjects, with the corresponding number of ECTS credits, please refer to the attached Excel files.

SPRING SEMESTER

- **Mathematics for engineering**
  - Basic Mathematics
  - Differential and Laplace equations
  - Inferential and descriptive statistics
- **Sciences for Computer Engineering**
  - Algorithms and complexity
  - Operations Research
  - Cloud, Big Data and storage architecture
- **Web and mobile development**
  - Front-end development
  - Back-end development
  - Mobile development
- **Distributed architectures**
  - Web architecture
  - HTTP
  - Web application security
- **Engineering methods and tools**
  - Planning
  - Data modelling
  - Problem modelling
- **Data storage and processing**
  - Physical data model and optimisation
  - Data handling and protection
  - Metaheuristic implementation
- **Languages**
  - English / French as a Foreign Language

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FOR WHOM?

Students (who have not graduated yet):

- taking a Bachelor's Degree (or equivalent) in Computer Science

Level of English & French: B1 minimum in the instruction language of the course, B2 recommended.

KEY DATES

Autumn semester

Start date: September

End date: January

Duration: 18 weeks

Spring semester

Start date: January

End date: June

Duration: 21 weeks

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2

GRADUATE OFFER

Master's Degree

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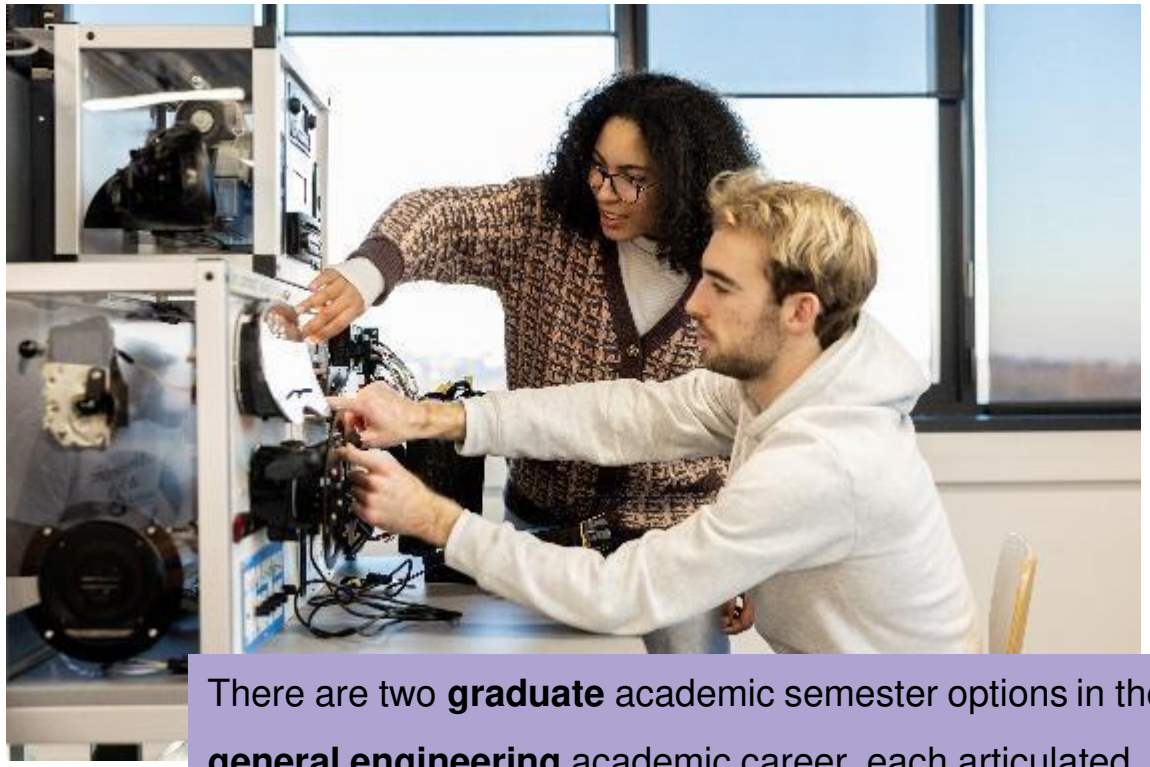
A

General Engineering

PRESENTATION



There are two **graduate** academic semester options in the **general engineering** academic career, each articulated around multidisciplinary projects inspired by real-life business situations:

- **In the Autumn semester**
  - seminar to discuss and share practices on **team management** (including management, consideration of diversity);
  - **setting up a plant abroad** (project management, business strategy, communication);
  - **sustainable engineering** (environmental and health impacts of human activities);
  - And two subjects to choose from among these fields: Industry 4.0, robotics, prototyping, entrepreneurship, innovation.

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- **In the Spring semester - Graduate**

— **integrating an automated system in a production line** (FMECA, functional analysis, experimental design, ergonomics);

— **eco-friendly design** (project management, ethics, environment);

— **ethical innovation** in connection with initiation to research;

— **retrofitting a company** (industrial performance, Industry 4.0).

PRESENTATION

There are two **graduate** academic semester options in the **general engineering** academic career **(to be defined)**, each articulated around multidisciplinary projects inspired by real-life business situations

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ACADEMIC SEMESTER PROGRAMME

Graduate:

For the detailed syllabus of these subjects, with the corresponding number of ECTS credits, please refer to the attached Excel files.

AUTUMN SEMESTER

- **Business management and organisation**
  - Project organisation and management
  - Team management
  - Business and sustainable development
- **Option 1** (see list on the right)
- **Option 2** (see list on the right)
- **Languages**
  - English / French as a Foreign Language

List of options:

- Industry 4.0/5.0
- Research and Development
- Robotics
- Quality, Health & Safety Environment
- Project portfolio management
- Business Unit Manager
- Innovation
- Research

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ACADEMIC SEMESTER PROGRAMME: INDUSTRIAL ENGINEERING

Graduate:

For the detailed syllabus of these subjects, with the corresponding number of ECTS credits, please refer to the attached Excel files.

Available in English in Nanterre

SPRING SEMESTER

- **Scientific Approach and Research**
  - Scientific Approach (ADS)
  - Introduction to research
- **Automated systems**
  - Experimental design
  - Automation
  - Failure Modes, Effects and Criticality Analysis (FMECA)
- **Environment and ethics**
  - Applied statistics
  - CSR
  - Chemistry
- **Innovation**
  - Innovation process
  - Business Model
- **Health, safety and ergonomics**
- **Industrial performance**
  - Production system
  - Flow management
  - Digitisation of production
  - Industrial project management

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FOR WHOM?

Students who graduated from a Bachelor's Degree (or equivalent) or in the final year of a 4-year Bachelor's Degree, as well as students taking a Master's Degree in scientific, technical, engineering and similar fields.

Level of English & French: B1 minimum in the instruction language of the course chosen, B2 recommended.

KEY DATES

Autumn semester

Start date: September

End date: January

Duration: 20 weeks

Spring semester

Start date: February

End date: June

Duration: 20 weeks

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B

COMPUTER SCIENCE
Engineering

PRESENTATION

There are two **graduate** academic semester options in the **Computer Science** engineering academic career, each articulated around problem-solving or multidisciplinary projects inspired by real-life business situations:

- **In the Autumn semester:**
  - seminar to discuss and share practices on **team management** (including management, consideration of diversity);
  - **setting up a plant abroad** (project management, business strategy, communication);
  - the **city of the future** (smart grid, information system urbanisation).
  - And two projects to choose from among these fields: cybersecurity, virtual/augmented reality, robotics, data science, research, innovation.

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PRESENTATION

There are two **graduate** academic semester options in the **Computer Science** engineering academic career, each articulated around problem-solving or multidisciplinary projects inspired by real-life business situations.

- **In the Spring semester**
  - developing **artificial intelligence** for a real estate agency;
  - integrating an **automated system in a production line** (functional analysis, experimental design, cobotics);
  - innovation in connection with **initiation to research**;
  - one technical specialisation of your choice: software development or networks and telecommunications.

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ACADEMIC SEMESTER PROGRAMME

Graduate:
For the detailed syllabus of these subjects, with the corresponding number of ECTS credits, please refer to the attached Excel files.

AUTUMN SEMESTER

- **Business management and organisation**
  - Project organisation and management
  - Team management
  - Business and sustainable development
- **Option 1** (see list on the right)
- **Option 2** (see list on the right)
- **Languages**
  - English / French as a Foreign Language

List of options:

- Cybersecurity
- Virtual Reality / Augmented Reality
- Robotics
- Data Science
- Project portfolio management
- Business Unit Manager
- Innovation
- Research

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ACADEMIC SEMESTER PROGRAMME

Graduate:
For the detailed syllabus of these subjects, with the corresponding number of ECTS credits, please refer to the attached Excel files.

Available in English in Nanterre

SPRING SEMESTER

- **Scientific Approach and Research**
  - Scientific Approach (ADS)
  - Introduction to research
- **Automated systems**
  - Experimental design
  - Automation
  - FMECA
- **Artificial Intelligence**
  - General info and applications
  - Machine learning algorithms
- **Innovation**
  - Innovation process
  - Business Model
- **Health, safety and ergonomics**

- **Optional *: Advanced development**
  - Technical specifications and architectures
  - Web application development
  - Application security
  - Internet of Things (IoT)
- **Optional *: Networks, Systems and Telecommunications**
  - Network routing and configuration
  - Wide Area Network
  - Communication Services and Quality of Service
  - IoT
- **Languages**
  - English / French as a Foreign Language

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FOR WHOM?

Students who graduated from a Bachelor's Degree (or equivalent) or in the final year of a 4-year Bachelor's Degree, or students taking a Master's Degree in Computer Science.

Level of English & French: B1 minimum in the instruction language of the course chosen, B2 recommended.

KEY DATES

Autumn semester

Start date: September

End date: January

Duration: 20 weeks

Spring semester

Start date: February

End date: June

Duration: 20 weeks

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3

STUDENT SUPPORT PROGRAMMES

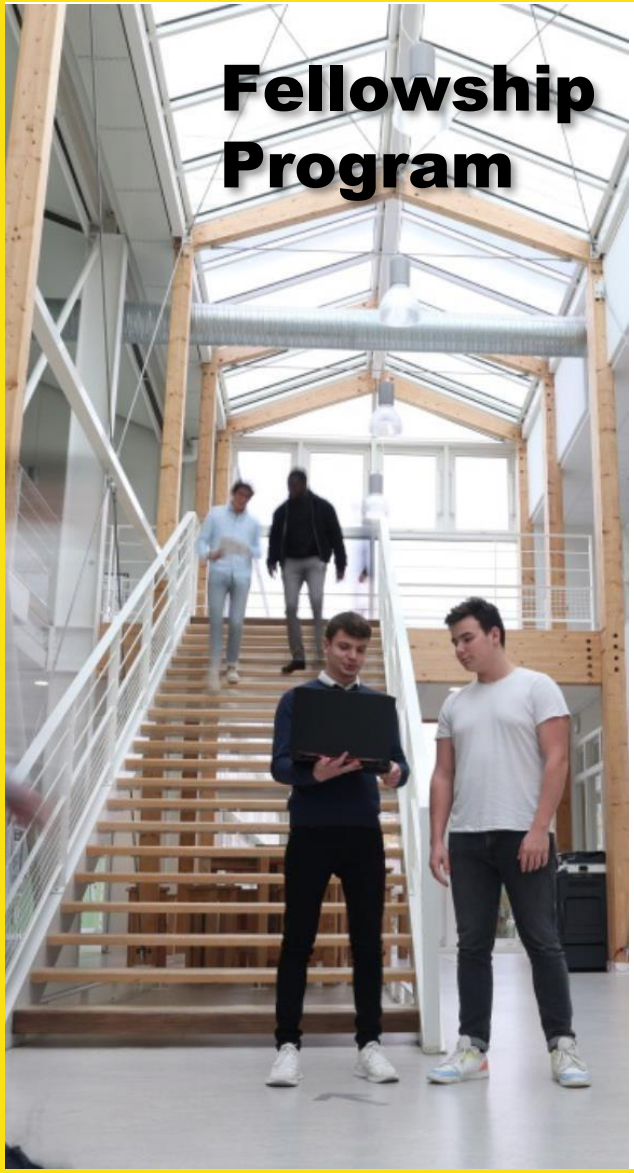
Ensuring students arrive and settle in successfully

Welcome and integration services

Each campus organises a welcome event for international students and supports them throughout their stay.

- Assistance with educational & cultural integration, CARE Program
- Assistance with accommodation search and administrative procedures (residence permits, health insurance, etc.)
- FLE lessons;
- Integration & participation in community life & life on campus (welcome & integration events, ...).
- Buddy Program
- Access to technology platforms and laboratories

CESI embraces the diversity of its students and offers an inclusive environment that doesn't accept any discrimination related to health, gender or cultural background. It regularly trains its staff and teachers on the challenges of diversity and interculturality



Fellowship Program

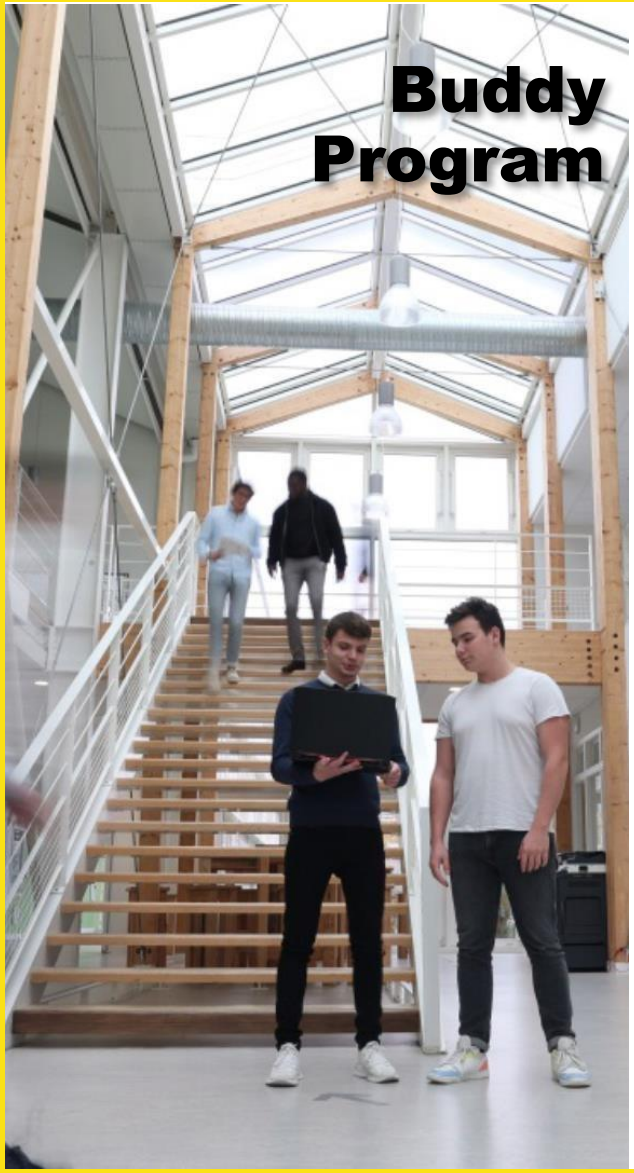
Students at CESI École d'Ingénieurs provide a (free) support programme for international students newly arrived in France.

They will make it easier for you to integrate and settle in France by:

- Welcoming you on arrival (train, airport, boat, ...);
- Making you discover the city and its cultural attractions;
- Helping you with administrative procedures;
- Talking to you in French
- …

But also by:

- Introducing you to the teaching and administrative staff;
- Sharing their personal experience, their working methods, and introducing you to the CESI universe.



Buddy Program

Students at CESI École d'Ingénieurs provide a free programme for international students who have just arrived in France.

They will help you integrate in France by:

- Welcoming you on arrival (train station/airport);
- Showing you the city and its cultural sites;
- Helping you with administrative procedures;
- Talking to you in French;

And also by: Introducing you to the teaching and administrative staff;

Sharing their personal experience and their working methods, and making you discover CESI's world.

Nomination and registration

Contact details for nominations and more:
RelationsInternationales@cesi.fr

1) Students apply internally by following the procedure of their home institution

2) The partner's international relations department sends us the list of selected students with the following information:

- Full name
- email address,
- field of study,
- level of study (bachelor's degree/master's degree),
- mobility programme semester,
- level of English and/or French.

Deadlines for sending nominations: Autumn semester: **May 15** Spring semester: **November 15**

3) Students register on our portal and upload the following documents: **CV, transcripts, cover letter, language skills, passport.**

Deadlines for submitting applications: Autumn semester: **June 1** Spring semester: **December 1**

4) Admissions Committee

5) Admission letter and Learning Agreement sent by us (mid June/mid December)

SEE YOU SOON IN FRANCE AND AT CESI

Contact details:
relationsinternationales@cesi.fr