

Grenoble  
ENSIMAG



# Mastering Information Technology







Cybersecurity  
Statistics Data Science  
Robotics Graphics Images  
Internet of Things  
Quantitative Finance  
Software engineering  
Embedded Systems  
Wireless and Data Networks  
Virtual Computing  
Operations Research  
Cloud Computing  
Safety and Security

*Information technology is changing your everyday life.*

*The Ensimag engineer is at  
the heart of these transformations.*



# The “Grandes Écoles” Quality Engineering Education

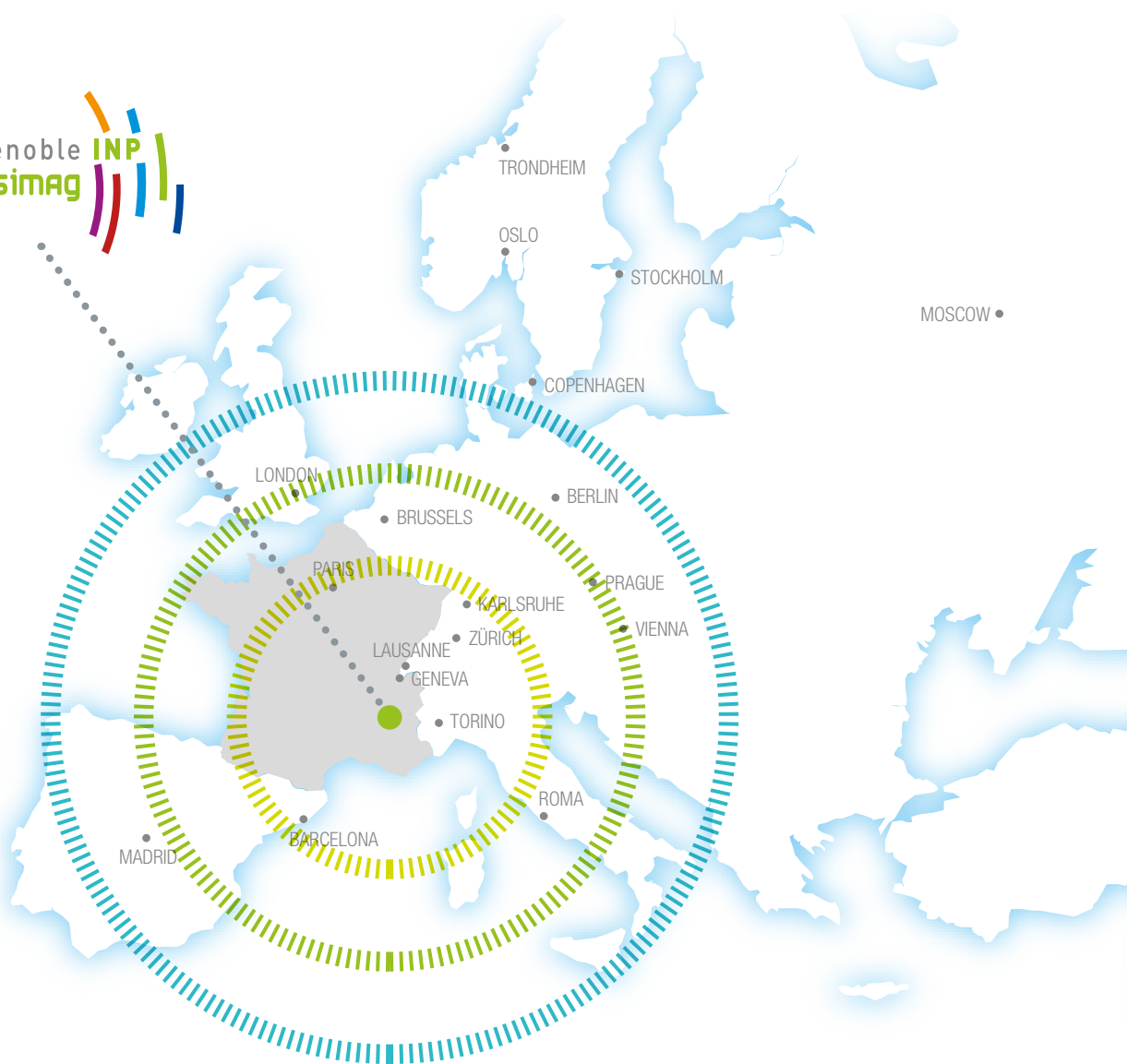
The French “Grandes Écoles” constitute a network of highly selective public engineering institutions authorized to deliver the prestigious “diplôme national d’ingénieur”. Ensimag ranks among the very best French “Grandes Écoles”, and trains highly-skilled students in the fields of Applied Mathematics and Informatics at undergraduate and graduate levels.

## The Engineering Degree in France

The “diplôme national d’ingénieur” is awarded after 5 years of studies once students have obtained a secondary school diploma (the Baccalauréat). The first 2 years are spent at preparatory classes and followed by a competitive national examination. The Engineering Degree is therefore comparable in educational level to a Master’s of Science, although it is frequently broader in scope.

## The engineering “Grandes Écoles” have common, specific features

- >> Small size: at most, 300 to 500 graduates per year
- >> A highly selective admission process
- >> The “Grandes Écoles” attract the highest ranking students
- >> An approach based on fundamentals, with a strong emphasis on mathematics





## Grenoble Institute of Technology

For more than 100 years, Grenoble Institute of Technology has trained engineers and PhD students in key technologies.

Grenoble Institute of Technology combines high-quality academic programs with advanced research (36 laboratories - among which 10 are international), business partnerships to help meet major challenges in industries such as micro and nanotechnologies, energy, the digital world, the environment, and industry: globalization and innovation.

### PAGORA

Paper, Print Media and  
Biomaterials Sciences

### ENSIMAG

Informatics, Information Technology  
and Applied Mathematics

### ESISAR

Advanced Systems and  
Networks

### ENSE<sup>3</sup>

Energy, Water and  
Environmental Sciences

### PHELMA

Physics, Applied Physics,  
Electronics and Materials Sciences

### GÉNIE INDUSTRIEL

Industrial Engineering





## Grenoble INP - Ensimag

### The highest ranking French engineering school offering degrees in Informatics & Applied Mathematics

In 1960, the eminent French mathematician Jean Kuntzman founded Ensimag.

Since that time, in the field of Informatics and Applied Mathematics, Ensimag ranks first in France, as measured by the position of our students in the national admission examinations and the school reputation among companies.

The strong connexion between Mathematics and Informatics leads to the education of first class engineers and scientists at the graduate and post-graduate levels.

#### Why study at Ensimag?

- / Become a top-notch expert and receive a degree from a renowned school.
- / Live in the French Silicon Valley in a high-density area of universities, research laboratories and high-tech companies, such as STMicroelectronics, Cap Gemini, Naver labs, Criteo, etc.
- / Discover the French culture and learn French in a spectacular natural environment surrounded by three high-mountain ranges.

#### THE 5 PRINCIPLES OF ENSIMAG TRAINING

1. Learning how to learn
2. Being autonomous and choose your pathing
3. Understanding Technology
4. Experiencing the international environment
5. Acquiring a good knowledge of the business world

#### KEY FACTS & FIGURES

- 400 diplomas awarded each year
- 250 faculty members
- 8 800 alumni worldwide
- 27% foreign students
- 44 nationalities



# Grenoble, a rich scientific, industrial and technological environment

Grenoble is a modern city in an exceptional natural site in the heart of the French Alps. Industry, research and teaching go hand in hand in Grenoble, France's first high-tech site after Paris.

The presence of many internationally recognized research laboratories in Grenoble is a key feature of the economic fabric of the local Isère region. The majority of the research facilities are located in and around the city, an urban area on a human scale with a total population of 460 000.

The particularly technical, multi-cultural character of the job market in Grenoble makes the city a leading centre for strategic jobs in industry, research or business services (40,000 jobs in information and communication technology, more than 14,000 industrial jobs in computer science).

The active population of Grenoble is younger and better trained than the national average. The relatively high level of qualification is due to the large number of leading international firms operating here, the presence of one of France's top universities and the overall attractiveness of the location.

## KEY FACTS & FIGURES

- 460 000 inhabitants
- 25 000 researchers
- 52 000 students
- 22% students are from abroad
- 5th most inventive city in the world (Forbes, 2014)
- Top finalist - European Capital of Innovation Award (2014)
- 2nd largest scientific center in France
- 2nd in France after Paris in QS Ranking 2018 «Engineering and Technology»

Most of our associated laboratories are located in the IMAG building.





### Grenoble, Excellence in Research

- >> 25 000 jobs with 15 000 in public research
- >> 129 research laboratories

### 8 National Research Organizations, including

- >> **CEA**, Atomic Energy Commission
- >> **CNRS**, National Centre for Scientific Research
- >> **INRIA**, National Institute for research in Computer Science and Control

### European Research Centres

- >> **ESRF**, European Synchrotron Radiation Facility
- >> **ILL**, Institut Laüe-Langevin
- >> **IRAM**, Millimetric Radio-Astronomy Institute
- >> **EMBL**, European Molecular Biology Laboratory
- >> **GHMFL**, Grenoble High Magnetic Field Laboratory

### GRAIN, Innovation Nursery

Aiding the emergence of corporate start-ups

### Numerous industrial research centres

Air liquide, Atos, Biomérieux, Constellium, Lafarge, Oracle, Orange L@bs, Petzl, Schneider Electric, STMicroelectronics, Vicat, Naver Labs.

### Research Centres for Excellence in Grenoble

- >> **MINALOGIC** : world-class research cluster for Micro Electronics, Nanotechnologies and Embedded Software
- >> **MINATEC** : European Nano technopole
- >> **TENERDIS** : Research cluster for new energy technologies
- >> **CARNOT RESEARCH INSTITUTES** for “Software and intelligent systems”, “Energies of the future” and “PolyNat” for eco-production of functional bio-sourced materials

### INTERNATIONAL RESEARCH LABORATORIES

Research labs of the Digital Society pole work in close partnership with the CNRS, INRIA and University Grenoble Alpes.

<b>Gipsa-lab</b>	Images, Signal, Speech, and Automatic Control
<b>ICA</b>	Informatics and Artistic Creation
<b>LIG</b>	Grenoble Informatics Laboratory
<b>LJK</b>	Jean Kuntzmann Laboratory (Applied Mathematics and Informatics)
<b>TIMA</b>	Techniques of Informatics and Microelectronics for Computer Architecture
<b>TIMC</b>	Techniques for Biomedical Engineering and Complexity Management
<b>VERIMAG</b>	Embedded Systems
<b>G-SCOP</b>	Sciences for Design, Optimization and Production
<b>IMEP</b>	Institute of Microelectronics Electromagnetism and Photonics
<b>LAFMIA</b>	Franco-Mexican Lab in Computer Science and Applied Automatic
<b>MICA</b>	Multimedia, Information, Communication and Applications (Hanoi, Vietnam)
<b>LICIA</b>	Franco-brazilian laboratory between LIG & UFRGS supercomputing, ambient informatics & middleware

### Our lecturers & researchers are honoured



**Julien Mairal**, teacher at Ensimag has been awarded the Starting Grant of the European Research Council (ERC) which will finance for 5 years his research on the massive data processing algorithms that are easier to use and more efficient.

Julien Mairal is a researcher at INRIA Grenoble Rhône-Alpes Research Center.



**Céline Coutrix**, Ensimag 2012, researcher of the LIG IIHM team received the 2017 CNRS bronze medal. This distinction rewards her human-machine interaction researches.

«The Bronze Medal rewards the first work of a researcher, who makes him a talented specialist in his field. This award represents CNRS’s encouragement to pursue well-researched and already fruitful research.»



# Ensimag Master of Science in Engineering

Students are admitted to Ensimag after two years of undergraduate studies. Studies at Ensimag last three years and lead to the French degree “Diplôme national d’Ingénieur Grenoble INP - Ensimag” (equivalent to a Master’s degree).

## The scientific curriculum at Ensimag is based upon the following concepts

- >> A student may specialize either in Applied Mathematics or in Informatics, but all students receive an advanced education in both Informatics and Applied Mathematics.
- >> A good balance between practical training and theoretical concepts is achieved through the diversity of the teaching staff.
- >> Ensimag trains engineers who master the concepts and analytical techniques necessary to address problems, and the practical skills necessary to implement and evaluate solutions.

“My name is Laura and I’m a Brazilian software engineering student following a double degree program here in Grenoble. There were two main reasons behind my choice to come study here.

The first one was about the specialization: Ubiquitous and Interactive Systems. It caught my attention due to the way it captures and focuses in the human side of software engineer, but always backed by a robust and up to date theoretical basis. I had never had much experience with academic research, and I thought the approach of the Master course was, at the same time, really enriching and enlightening, and easy to follow. Now I even consider doing a PhD thesis!

The second was the city, Grenoble. My expectations of a student city were all confirmed and experienced. In Grenoble there are people from all over the world, what helps a lot in the adaptation phase. I really liked studying here, and it is really easy to take a pleasant life, full of both learning and leisure.

Laura, Master Mosig  
Universidade de São Paulo”



“Now, when looking back, that was one of the best decisions I have ever made: I actually hold two diplomas in computer science, and I have had the difficult task of having to choose between job offers from companies both in France and in my home country!

The quality of the courses at the Ensimag is really good; the school constantly figures among the top ranked French universities in computer science, and the close links between the school and a number of research labs in the Grenoble area is a clear advantage. And I have not yet mentioned the excellent university sports offered, nor the marvellous countryside with some of the most famous ski resorts in Europe at stone’s throw.

Joerg, double-degree program,  
Karlsruhe Institute of Technology”





# Ensimag Engineering specializations

Ensimag's curriculum offers a variety of compulsory and elective advanced courses, making up specific profiles. Most of the common core courses are given during the first year, and during the first semester of the second year, allowing students to acquire the basics in Applied Mathematics and Informatics. Students then choose a graduate specialization.

## Mathematical Modeling, Vision, Graphics and Simulation

*Computer graphics - images*  
*Scientific computing*  
*Visual computing*  
*Data Science*  
*Operations research*  
*Bio-informatics*

## Embedded Systems and Connected Devices

*Embedded Systems*  
*Hardware Design*  
*Wireless and Data Networks*  
*Internet of Things*  
*Safety and Security*

## Information Systems Engineering

*Software engineering and programming*  
*Large scale systems and cloud computing*  
*Big Data*  
*Web applications*  
*Cybersecurity*

## Financial Engineering

### Double degree in quantitative finance \*

*Information systems for finance*  
*Financial mathematics*  
*Numerical programming for finance*  
*Financial markets*  
*Asset pricing*

\*In partnership with  
Grenoble Graduate School of Management IAE

## KEY FACTS & FIGURES

- 4 specializations
- Main teaching language: French
- English is compulsory and a variety of foreign languages taught
- Management skills
- Each year: 60 ECTS (European standard)
- 2 semesters:  
Early September – end of January  
Early February – end of June

# Ensimag International master's programmes

Masters are joint degree programmes with Université Grenoble Alpes.  
Highly competitive, taught in English graduate programmes.

## Master of Science in Informatics at Grenoble - MOSIG

2-year programme, possible to enter directly in our 2nd year

M1 Year: common core curriculum and optional specializations

M2 Year: One semester of scientific courses and 5-6 months Master thesis

7 tracks:

Advanced Information Systems and Software

Artificial Intelligence and the Web

Data Science (joint programme with MSIAM)

Graphics, Vision and Robotics

High-confidence, Embedded and Cyberphysical systems

Parallel, Distributed Embedded Systems

Ubiquitous and Interactive Systems

<http://mosig.imag.fr>

[mosig@ensimag.fr](mailto:mosig@ensimag.fr)

## Master of Science in Industrial and Applied Mathematics - MSIAM

2-year programme, possible to enter directly in our 2nd year

M1 Year: common core curriculum and optional specializations

M2 Year: One semester of scientific courses and 5-6 months Master thesis

2 tracks

Modelling, Scientific Computing and Image Analysis

Data Science (joint programme with MoSIG)

Large-scale Data Science

Fundamentals of Data Science

<http://msiam.imag.fr>

[msiam@imag.fr](mailto:msiam@imag.fr)

## Master in Operations Research, Combinatorics and Optimization - ORCO

1-year programme, accessible after M1 MoSIG or M1 MSIAM, or equivalent.

One semester of scientific courses and 5-6 months Master thesis

Common core

Operations research, Combinatorial optimization, Graph theory

Elective specializations

Logistics and transport, Scheduling, Discrete structures, Approximation algorithms,...

<http://orco.imag.fr>

[orco@ensimag.fr](mailto:orco@ensimag.fr)

## Master in CyberSecurity - CySec

1-year programme, accessible after M1 MoSIG or M1 MSIAM, or equivalent.

One semester of scientific courses and 5-6 months Master thesis

Common core

Cryptology: Mathematical Protocols, Security: Software/Hardware, Applications: Watermarking,

Multimedia, Smartcard,...

Elective specializations

Advanced Security or Advanced Cryptology

<http://cybersecurity.imag.fr>

[m2cybersec@ensimag.fr](mailto:m2cybersec@ensimag.fr)



# Internationalization, one of the top priorities of Ensimag

Our students evolve in a cross-cultural environment.  
Ensimag trains engineers who are open to the world, adaptable, and speak several foreign languages.

International mobility is compulsory for Ensimag students. They can spend part of their studies abroad, at one of Ensimag's partner universities. They can also carry out their internships or final year projects abroad, in a research laboratory or in a company.

Extensive possibilities are available; most of them go to Europe, and particularly to institutions belonging to the CLUSTER network (Consortium Linking Universities of Science and Technology for Education and Research), but they can also go to Northern, Latin or Central America, Asia, Africa, Oceania.

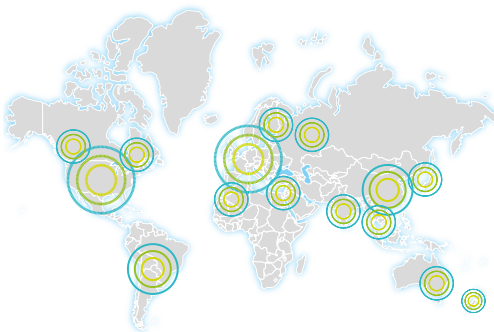
Ensimag covers the whole world with more than 150 agreements with partner universities. Conversely Ensimag is pleased to welcome foreign students, either in its research laboratories, or for studies at the undergraduate or graduate level.

## DOUBLE DEGREE AGREEMENTS

TU Darmstadt, Germany | Karlsruhe Institute of Technology, Germany  
Politecnico di Torino, Italy | Kungl Tekniska Högskolan KTH, Sweden  
| AGH University of Science and Technology, Poland | Université  
«Politehnica» Bucarest, Romania | NTNU Trondheim, Norway | CVUT  
Praha, Czech Republic | Universitat Politècnica de Catalunya, Spain |  
ENSIAS, Rabat, Morocco | INPT Rabat, Morocco | Université Yaoundé-I,  
Ecole Nationale Supérieure Polytechnique de Yaoundé, Cameroon  
| Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil |  
Universidade Estadual Paulista, Brazil | Universidade de São Paulo,  
Brazil | Universidade Federal de Uberlândia, Brazil | Universidade  
Estadual de Campinas, Brazil | Universidade Federal de Santa Catarina  
Florianópolis, Brazil | Universidad Nacional Colombia de Bogotá,  
Colombia | Universidad del Norte Baranquilla, Colombia | Universidad  
Industrial de Santander, Colombia | Ecole Polytechnique de Montréal,  
Canada | Moscow Institute of Physics and Technology, Russia | Institut  
Polytechnique de Hanoï, Vietnam

## KEY FACTS & FIGURES

- 100% of our students spend at least 2 months abroad
- 40% of the student population is from outside France
- 150 cooperation agreements
- 24 double-degree agreements
- 13% of Ensimag graduates begin their career abroad
- 4 international master's programs taught in English
- Participation in various networks
- French courses offered to foreign students



“Ensimag gave me the chance to do my final year abroad. Among the numerous exchange opportunities offered, I wanted to go to Asia to discover something different and I finally chose KAIST in Korea. This year in Korea was exactly like the two I spent in Grenoble: exceptional and full of rich experiences. When I came back to France, after a 6-months internship in a bank, a wonderful opportunity was given to me: to work in Singapore in a financial software company. No need to say that my year spent abroad was essential for them, much more than the specialization profile I had. Professionally and of course personally speaking, this extraordinary year abroad brought me a lot and it's mostly due to my school, Ensimag, which always encouraged me and helped me in this adventure.

Ugo, Ensimag graduate,  
exchange student at KAIST, Korea”



[ensimag.grenoble-inp.fr/welcome](https://ensimag.grenoble-inp.fr/welcome)

# Companies, major partners for Ensimag

Companies have always played a major role in the evolution of Ensimag's curriculum. Benefiting from close links with top high-tech companies, Ensimag has been able to keep up with the evolution of the job market and its new challenges.

## Companies...

### ... are involved in our curriculum

Join us as guest speaker, give a talk to our students, propose placements and projects in your company.

### ... meet our students

Present your company's activities, your technical expertise, your job sector, by giving a conference or participating in our yearly forum.

Organize company visits for our students, sponsor their associations.

### ... use the expertise of our research laboratories, and finance a PhD

Sign research contracts and agreements with our research laboratories, finance research scholarships.

### ... support our educational activities

The companies' involvement in the success of Ensimag is also achieved through donations or support in terms of software and hardware equipment. These resources are essential for the improvement and development of Ensimag.

### ...recruit our students and graduates

Companies hire our students and graduates around the world for an internship and/or a job.

To post your offer, use the following portals:

<http://www.grenoble-inp.fr/career-center-recruiter-en>

[https://www.ensimag-alumni.com/users/sign\\_up](https://www.ensimag-alumni.com/users/sign_up)





# Summer internships and End of Studies Projects

Practical training is achieved in parallel with the courses, and is an important part of the work required at Ensimag.

**Students** must perform a summer internship before the last year, and an end-of-studies project during their final semester. One of these must be in industry. It may be performed in France or in a foreign country.

This industrial experience is completed by a series of seminars, and on-site company visits throughout the three-year curriculum.

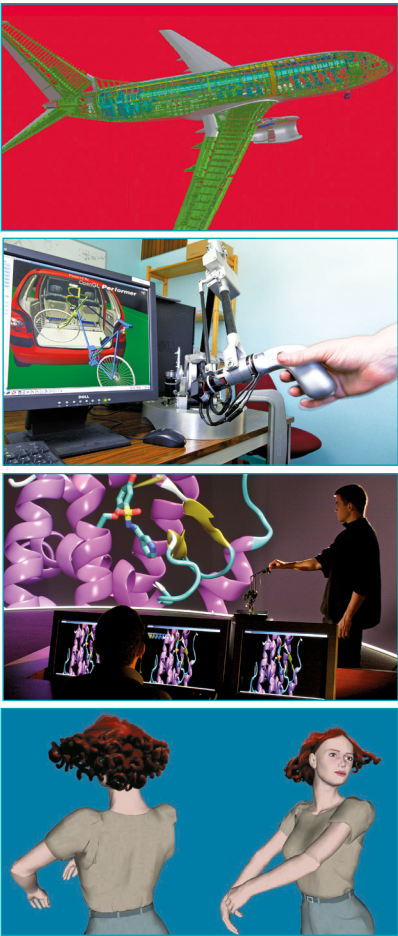
The **summer internship** lasts from two to three months, before the fifth and final year of studies. It acquaints the student with industry and with the realities of the engineering profession.

### The End of Studies project

The second semester of the final year of studies is dedicated to this project, which can be carried out either in a research laboratory or in a company.

Thanks to this final project, the student, as a full-time member of a working team, is given the opportunity to capitalize on the knowledge he acquired, and show his ability to put it into practice in a professional context. The student carries out a full-scale project.

The results are described in a project report that is defended in front of a committee made up of professionals and Ensimag Faculty.



## EXAMPLES OF END OF STUDIES PROJECTS:

### Thales Alenia-Space, Cannes

Satellite data analysis in a big data context

### SES Engineering, Luxembourg

Intelligent Transport Systems - Roadside Unit Prototype Development.

### EOS Imaging, Paris

Automatic detection of prostheses in stereo radiography

### Ingéniance, London

Production of a Blockchain prototype to manage the subscription to market data and feed a pricer

## SOME OF OUR PARTNERS

ACCENTURE | AIRBUS EADS | AIRFRANCE KLM |  
AKKA TECHNOLOGIES | ALSTOM | ALTRAN | AMADEUS  
APPLE | ARM | ASTEK | ATOS | AUSY | BANK OF AMERICA  
BANQUE DE FRANCE | BARCLAYS CAPITAL | BLOOMBERG  
BNP PARIBAS | CANDRIAM | CAPGEMINI | CGI  
CREDIT AGRICOLE | CREDIT SUISSE | DASSAULT SYSTEMES  
DCNS | ELCA | ENGIE | EY | GEMALTO | GOLDMAN SACHS  
GOOGLE | HPE | HSBC | IBM | JP MORGAN | MATHWORKS  
MBDA | MICHELIN | MICROSOFT | MISYS | MORGAN STANLEY  
MUREX | NATIXIS | OBERTHUR TECHNOLOGIES | OPEN  
ORANGE | RENAULT | SAFRAN | SAP | SCHLUMBERGER  
SCHNEIDER ELECTRIC | SILICON STUDIO | SOCIETE GENERALE  
SOGETI | SOPRA STERIA | SORIN GROUP | ST MICROELECTRONICS  
TESSI | THALES | TOTAL | TRIKELL | UBISOFT | UBS

# Grenoble, an attractive location

## A university city,

Voted one of the 10 most beautiful campuses in Europe 2018 by the Times Higher Education.

With over 52 000 students, the majority of schools and universities are situated 15 minutes from downtown.

## On-campus accommodation,

with a choice of students’ halls of residence, and university restaurants.

## At the crossroads of Europe:

3 hours from Paris or Marseille by TGV high-speed train, 2 hours from Geneva or Turin.



## Artistic and Cultural vitality:

Cinemas, Theatres, Street Art Festival, Museums, archaeological sites and castles, and one of France's finest modern art collections at Musée de Grenoble.

## An exceptional natural setting,

in the heart of the French Alps. The city is surrounded by three mountain ranges, providing easy access to a wide range of mountain activities including skiing, hiking and hang-gliding. The area's many lakes make it possible to do water sports, popular both in spring and summer.



## Public green transportation

There are many public transports on Grenoble. The tram and buses provide access to the city center in 15 minutes. Bicycles for rent are also available throughout the city.





# Student's life

## Grenoble, first student city 2016 (l'Etudiant magazine)



### INTERNATIONAL STUDENT BOARD

We are an association of students from Grenoble INP, whose aim is to help you fit in easily when you come to study in Grenoble. From welcoming you to helping you with documents, and planning events for you, we'll make your stay in Grenoble as enjoyable as we can !

### STUDENT LIFE AT ENSIMAG

Life for students at Ensimag is rich and dynamic: parties, concerts, skiing...the year is marked by numerous school events, such as museum visits, opera, thematic dinners... culminating in the organization of the Ensimag Gala every spring.

Lots of activities are also offered at the university-level, or campus-level: 250 student associations, university orchestras with choirs and dance troupes, a student radio broadcasting group...



### CAMPUS SPORTS FACILITIES

Olympic swimming pool, 36 tennis courts, facilities for rowing and archery, 18 sports grounds and halls, climbing walls... France's top university sports club with training in 24 disciplines.



### HIGH-LEVEL ATHLETIC STUDENT

Grenoble INP has a specific program for high level athletes. Cléa Martinez, a high-level athletic student in Grenoble INP - Ensimag, has become the new world champion 2017 in speed skiing. Cléa is supported in her dual path of student-engineer and high-level athlete by the Grenoble INP Foundation. Her school schedule is thought to leave her time for training.







## A circular photograph of a modern, two-story building with a white facade. The building features a prominent central entrance with a wide staircase leading up to it. There are large windows on the upper floor, some with vertical bars. The building is situated on a grassy hillside, and a paved path leads up to the stairs. Several people are visible sitting on the stairs and walking on the path. The background shows more trees and a clear blue sky.