

# FRANCE'S TOP GRADUATE SCHOOL FOR DATA SCIENCE

THE NATIONAL SCHOOL  
FOR STATISTICS AND DATA ANALYSIS  
IN FRANCE







Over

9 months of internships

4000 Alumni

6 Majors in the Engineer Statistician Program & 2 Specialized Master's degrees

380 teachers and experts from the private and public sector



“ I came to ENSAI through the double-degree agreement between ENSAI and my home university, Tongji University in Shanghai. It has been quite an adventure for me. Despite some initial culture shock and differences in daily life and ways of thinking, I have really enjoyed my time at ENSAI. It is a dynamic school that provides quality education. My exchanges with students and teachers have been very enriching. I have fond memories thanks to the Office of International Relations, my classmates, and all of the personnel at ENSAI who were always willing to help me.”

” — **Yunjiao Lu**, Engineer Statistician, Class of 2017

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Coming to ENSAI has been one of the best decisions I've made. The staff here are so friendly and supportive in your learning. From checking that I was following lectures to always having their door open for questions, their main concern is simply to help you learn. The students are equally lovely and I've made friends that I'm sure I'll stay friends with for many years to come! There is also a lively Erasmus community in Rennes. From organized day trips around Brittany to reductions on theatre tickets, they offer a great way to discover the region!.

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— **Georgina Lambert**, Erasmus+ Student, University of Sheffield, 2016-2017

20

*nationalities represented*

37%

*female student body*

40

*Master's program graduates annually*

1

*PbD program*





# A WORD FROM THE DEAN

I am delighted that you are interested in ENSAI, where Data Science, through Statistics, Economics, and Computer Science, is approached in an innovative and unique way. As a student at ENSAI, you will build solid theoretical foundations and learn to apply them to real-world projects and internships, led in and out of the classroom by top research professors and industry experts from our many private and public-sector partners. At ENSAI, we endeavor to prepare our students to meet the challenges of today as well as those of the future. Our reputation for excellence is based on the *savoir-faire* of our professors and the expertise of our graduates. In France and beyond, ENSAI will give you the opportunity to grow and flourish so you can meet the challenges of tomorrow. Join us!

**Ronan Le Saout,**

Dean

# 90

*Engineer Statistician  
graduates per year*



# FRANCE'S TOP GRADUATE SCHOOL FOR DATA SCIENCE

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ENSAI is one of **France's prestigious *Grandes écoles d'ingénieurs***, with high-level expertise in Data Science. With close ties to the French National Institute of Statistics and Economic Studies (INSEE), various research teams (CREST, CREM, INRIA, IRISA, IRMAR) and private sector partners, ENSAI trains its students to become specialized Data Scientists capable of complex information processing and analysis thanks to their threefold expertise in Statistics, Quantitative Economics and Econometrics, and Computer Science.



## **What do *Grande école* and *école d'ingénieurs* mean?**

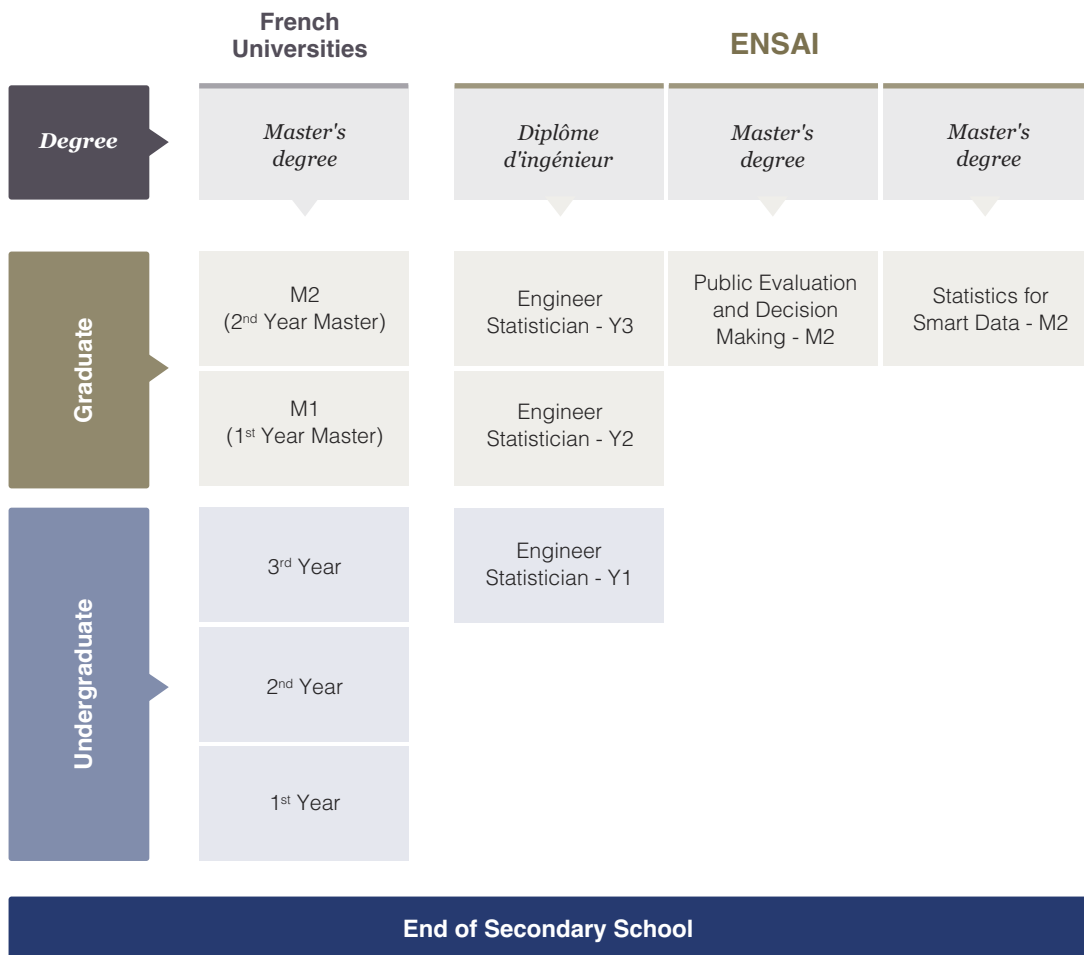
The French system of higher education is made up of traditional universities and *grandes écoles*. Universities are open to anyone with a high school diploma while admission to a *grande école* is selective. Typically students are admitted after two years in specialized post-secondary education, based on their results on national competitive exams.

These elite institutions generally have smaller student bodies, more class hours, and a smaller student-professor ratio than universities. They offer more specialized programs and are recognized for their contributions to research and their reputation for educating the nation's top executives, politicians, and civil servants.

An *école d'ingénieurs* is a type of *grande école*, focused on the hard sciences, that meets particularly strict accreditation standards which allow it to grant the *diplôme d'ingénieur*, a prestigious Master's-level degree which is internationally recognized for its quality. *Grandes écoles* can also grant other degrees, such as Master's degrees or PhDs.



# ACADEMIC PROGRAMS



# ENGINEER STATISTICIAN

ENSAI's flagship degree is a **three-year program** in the cutting-edge field of **Data Science**. Alongside the academic program, three professional internships as well as an international experience are required. Foreign languages, communication skills, and the Humanities are also an integral part of the program. Graduates are extremely qualified and well-rounded; they become highly sought-after, well-paid professionals.

ENSAI also trains the future executives of the French National Institute of Statistics and Economic Studies (INSEE). This program is open to all EU citizens.

## 1<sup>st</sup>

### FIRST-YEAR

(third year of higher education)

ENSAI's first-year students have all completed at least two years of higher education but often have different academic backgrounds. This variety is one of the attractive and atypical aspects of the student body. The first-year classes are differentiated according to the students' strengths and are designed to bring all the students to the same scientific level in Statistics, Economics and IT. A one-month internship concludes the year.

## 2<sup>nd</sup>

### SECOND-YEAR

(fourth year of higher education, 1st year of an MSc)

Transfer students with appropriate prerequisites, often foreign, may be admitted directly into ENSAI's second year. Advanced Statistical Methods are taught and are reinforced in concrete applications. Project work is primordial and students begin to specialize in an area of their choice while gaining in autonomy. The academic year is followed by a two-month applied internship.







# 3<sup>rd</sup>

## THIRD YEAR

(fifth year of higher education, 2nd year of an MSc)

**Students choose between one of six specializations for their final year:**

### **Advanced Statistical Engineering**

This specialization provides students with advanced skills in Statistical Modeling through themes like Quality and Reliability, Image and Signal Processing, as well as Forecasting and its applications, especially for the environmental sector. Students from this track are easily capable of adapting to and meeting the needs of industrial, service, environmental, and banking sectors.

### **Advanced Tools for Data Science & Machine Learning**

This specialization allows students to strengthen their computer science and statistical learning skills in order to match that of their statistical abilities. Focused on the link between IT and Statistics, it provides an overview of Computer Science as well as in-depth presentation of Distributed System Technologies. Graduates are fully autonomous to collect and analyze data by developing tools for computing metrics, visualizing data, and/or making decisions. They are equipped to interact and communicate with different people, from clients or customers to IT engineers & statisticians.

### **Biostatistics**

After complementary statistical training, especially in Survival Analysis, Mixed Models, and Sequential Analysis, the courses provide students with the requisite tools necessary for the purposes of research, experiment design, and methodology assessment. Courses in Epidemiology, Clinical Trials, and Omics Data Analysis enable students to acquire a solid foundation for multiple applications in the public health, pharmaceutical, biotechnology, and bioinformatics sectors.

### **Data Modeling for Spatial Analysis and Health Economics**

This specialization provides a high-level background in Data Analysis and Econometric Engineering as they are applied to fields of Health Economics and Spatial Dynamics, which are studied in detail. The courses emphasize how economic evaluation of public policies and private programs in those fields are conducted. These tools are in high demand at local, national, and international levels.

### **Quantitative Marketing and Revenue Management**

Faced with massive amounts of data, businesses increasingly need expertise to transform this information and help inform their decision-making and improve return on investment. This specialization seeks to meet those needs and train data scientists capable of high-level analysis who understand the needs of the marketing and revenue management fields.

### **Risk Management and Financial Engineering**

A multidisciplinary approach combines intensive use of Statistics with Stochastic Modeling, Numerical Methods, and Financial Theories, thereby training engineers to be on the cutting edge of financial and technological innovation. The three broad areas of focus in this specialization are: managing and regulating banking risk, investment allocation and strategies, and innovation in financial engineering.

The Engineer Statistician program ends with a six-month professional internship, which typically leads to an employment offer for graduates.

# MASTER'S DEGREES

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ENSAI is accredited to deliver **two Master's Degrees:**

## **Master of Science in Statistics for Smart Data**

Taught entirely in English, this program is unique. Many Master's degrees have recently emerged in the field of Data Science, most of which are highly IT oriented. As the most specialized graduate school in Statistics in France, ENSAI has naturally chosen a different path. Students learn not only the latest in computer science technology, they also acquire the tools necessary to interpret the mass of available data and to master algorithms and statistical skills that are essential to identifying relevant and valuable information.

## **Master of Science in Public Evaluation and Decision Making**

In addition to private consulting firms that have access to local, national, or even international databases, the public sector is also in need of qualified Data Scientists. This Master's program imparts the statistical expertise necessary to enlighten public decision-making and evaluate public policy.



# PHD IN APPLIED MATHEMATICS

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ENSAI proposes a PhD in Applied Mathematics (Statistics and related fields). ENSAI PhD students will be enrolled in the MathSTIC Doctoral School, which is operated jointly by several regional institutions of higher education including the University of Rennes 1, the University of Rennes 2, INSA Rennes, Institut Mines-Télécom Atlantique, and Ecole Normale Supérieure de Rennes. ENSAI also proposes joint PhD programs in Economics and Computer Science in collaboration with partner establishments from Rennes, Paris Saclay, or institutions abroad.

PhD students at ENSAI take advantage of the dynamic, interdisciplinary research environment of the renowned CREST research lab and its team. The CREST laboratory is characterized by a strong attachment to quantitative methods, data, mathematical modeling, and the continuous movement between theoretical models and empirical evidence to analyze concrete scientific, economic, and societal problems.

# ADMISSION

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**All ENSAI programs are open to international students. Successful candidates may have backgrounds in Mathematics, Statistics, Computer Science, or Economics.**

**For the Engineer Statistician program**, foreign students may be admitted into the 1<sup>st</sup> or 2<sup>nd</sup> year. International applicants for the Master's programs must meet the necessary prerequisites to be admitted into the program. The admissions procedures and requirements vary depending on the program, but the general admissions procedures for degree-seeking students include:

1. Submission of an online application.
2. Evaluation of the application by the selection committee.
3. An interview with the selection committee for short-listed candidates.
4. Official notice of admission or refusal by the selection committee.

Detailed information about ideal candidate profiles, prerequisites, procedures, and important dates is available on the Admissions page of the ENSAI website.

Admission to ENSAI as an Erasmus+ exchange student is possible through established exchange agreements and only after students have been officially nominated by their home university.

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The Master in Statistics for Smart Data was a natural choice for me to take a break from working and resume studies in a foreign country, at a leading institution.

Though very dense, the program provides an excellent overview of cutting edge statistical techniques and the associated software to address both Big as well as Smart Data problems. Classes are often taught by industry experts and rich with real world examples of how the specific techniques are applied. In a few examples the subject is such a recent and active field that further research opportunities are discussed and internships offered on the spot – such is the ENSAI standard.

— Jan VAN WYK DE VRIES,  
International Master's Graduate, Class of 2018

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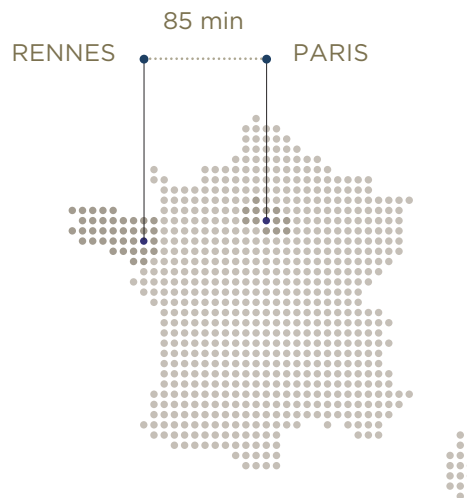
# WHY FRANCE

- Public institutions of higher-education are highly subsidized by the French government (14,000€ per student per year).
- France is the world's 4th leading destination for international students.
- France ranks 6th in the world in terms of domestic spending on research and development.
- France is home to 31 of the world's 500 largest corporations and to more of the world's top 100 most innovative companies than any other country in Europe.
- France offers a pleasant living environment in the heart of Europe. It is steeped in history and its monuments, museums, and landscapes are second to none.
- French is an international language spoken on all five continents.
- France boasts an unparalleled *art de vivre* and gastronomy.
- 9 out of 10 international students recommend France as a study destination.

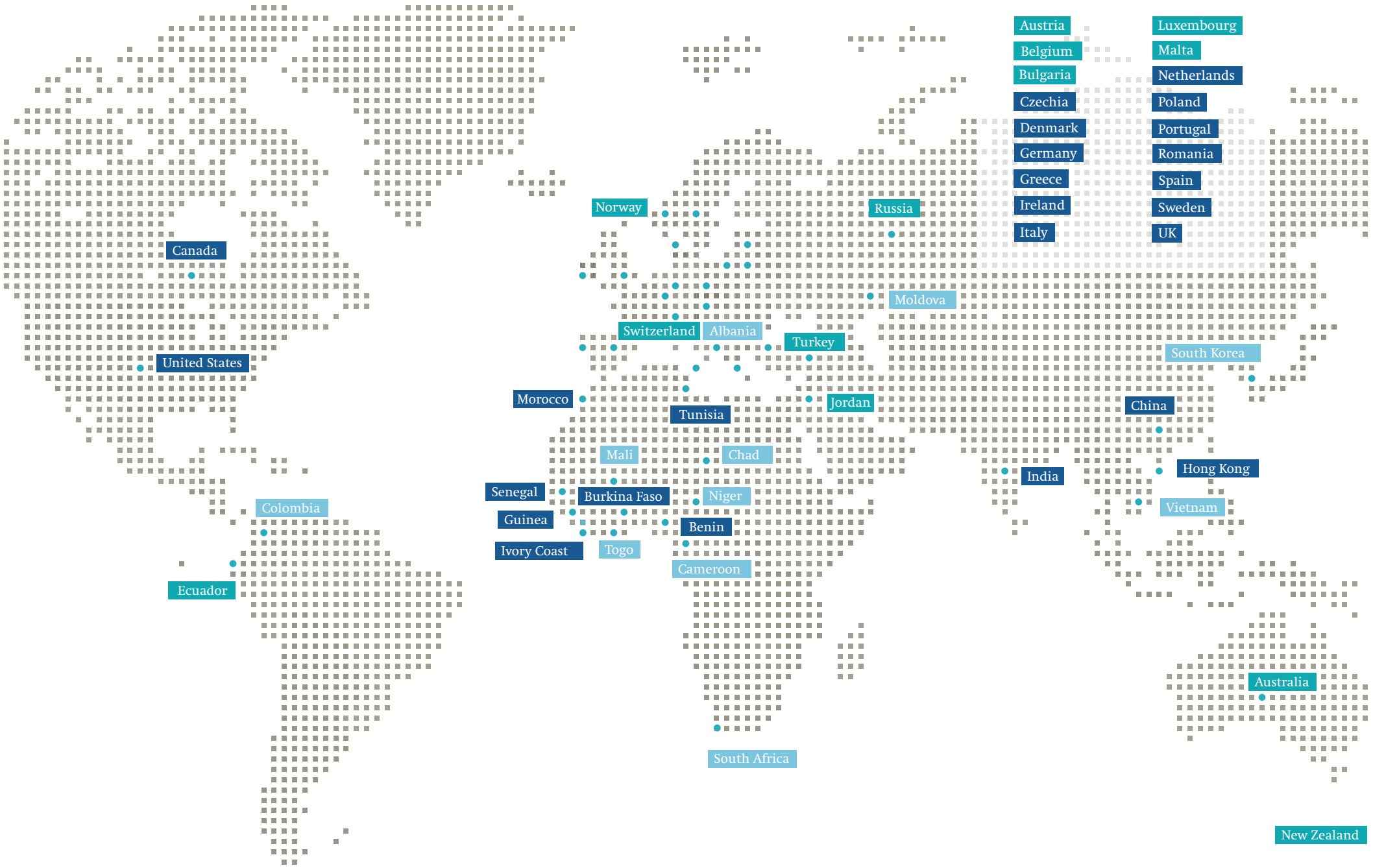


# WHY RENNES

- Rennes is 85 minutes from Paris via the high-speed train.
- Rennes has multiple connecting flights to Europe's international hubs in Amsterdam, Brussels, Madrid, and Paris.
- Students rated Rennes as the city where they are the "happiest."
- Rennes, a lively college-city, is well known for its festivals and cultural events and is home to over 60,000 students from its two universities and many graduate schools.
- Rennes is the capital of Brittany, a region renowned for some of France's most spectacular coastline and scenery.
- Rennes boasts an exceptional 18th-century city center offering the benefits of city life as well as the benefits of being nearby breathtaking landscapes.



# A WORLD OF OPPORTUNITIES



## EUROPEAN UNION MEMBER STATES

- Austria
- Belgium
- Bulgaria
- Czechia
- Denmark
- Germany
- Greece
- Ireland
- Italy
- Luxembourg
- Malta
- Netherlands
- Poland
- Portugal
- Romania
- Spain
- Sweden
- UK

## INTERNATIONAL ACADEMIC PARTNERS OF ENSAI



### ERASMUS + EXCHANGE AGREEMENTS

- Czechia**  
Charles University of Prague
- Denmark**  
Aarhus Universitet
- Finland**  
University of Helsinki
- Germany**  
Humboldt-Universität zu Berlin  
LMU Munich  
Trier Universität  
TU Dortmund  
Universität Mannheim
- Hungary**  
Eötvös Lorand University of Budapest (ELTE)
- Ireland**  
University of Limerick
- Italy**  
Sapienza – Università di Roma  
Università degli Studi di Palermo  
Università di Bologna
- The Netherlands**  
Erasmus Universiteit of Rotterdam  
Universiteit Leiden  
Universiteit Utrecht
- Portugal**  
NOVA IMS
- Romania**  
Academia de Studii Economice din Bucuresti  
Universitatea Babeş Bolyai
- Spain**  
Universidad Complutense de Madrid  
Universitat de Barcelona  
Universitat Politècnica de Catalunya
- Sweden**  
Uppsala Universitet
- United Kingdom**  
Queen Mary, University of London  
University of Glasgow  
University of Sheffield  
University of Southampton  
University of Warwick

### DOUBLE DEGREE AGREEMENTS

- China**  
Beijing Normal University  
East China Normal University  
Nanjing Audit University  
Southeast University  
Tongji University
- Germany**  
Humboldt-Universität zu Berlin
- Morocco**  
Institut National de Statistique et d'Economie Appliquée (INSEA)
- Netherlands**  
Erasmus Universiteit Rotterdam
- Romania**  
Academia de Studii Economice din Bucuresti
- Tunisie**  
École Supérieure de la Statistique et de l'Analyse de l'Information (ESSAI)
- United Kingdom**  
University of Southampton

### OTHER AGREEMENTS

- Cameroon**  
Institut sous-régional de Statistique et d'Economie appliquée, Yaoundé (ISSEA)
- Canada**  
University of British Columbia  
University of Montreal
- China**  
University of Hong Kong
- Ivory Coast**  
Ecole Nationale Supérieure de Statistique et d'Economie appliquée, Abidjan (ENSEA)
- Senegal**  
Ecole Nationale de la Statistique et de l'Analyse Economique, Dakar (ENSAE)
- United States**  
Colorado State University (CSU)  
Rochester Institute of Technology (RIT)  
Rutgers University  
University of Wisconsin-Oshkosh



# WHY ENSAI

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- **Not Just a Number**

With around 400 students, ENSAI is a place where you will be more than just a number. A very low student-to-teacher ratio makes it easy to get personal attention and help from professors. Small classes also make it easier to meet people and quickly become part of the ENSAI family.

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- **Excellence**

ENSAI prides itself on high-level teaching and research. Its reputation is well established both in France and around the world. Students are challenged and pushed by their professors and are expected to demonstrate a high level of commitment and drive.

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- **Career Opportunities**

Thanks to the renown of the school, ENSAI alumni are highly sought after by employers in the private and public sectors. Within three months of graduation, nearly 100% are employed, with salaries that outpace those of graduates from other *écoles d'ingénieurs*.

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- **Location**

ENSAI is a great place to study. The school is located in a spacious, strikingly modern building on the beautiful Ker Lann campus. This location, with its park-like setting, offers pleasant living and working conditions, with a wide range of facilities covering accommodation, catering, and sporting activities, all just outside Rennes.

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- **Global Opportunity**

ENSAI is a small school with a big reputation, which has allowed it to develop a network of partners around the world. From top academic institutions in Europe, Asia, and North America to start-ups and multinational corporations around the globe, ENSAI offers its students a vast array of opportunities to study or gain professional experience abroad.

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- **Research Opportunities**

ENSAI's research professors belong to the CREST research laboratory, which is a joint venture between ENSAI and its sister school ENSAE along with the Economics researchers from *École Polytechnique*. Students can also pursue double research degrees through partnerships with universities and graduate schools throughout France. Finally, students can continue their studies and pursue a PhD at ENSAI.

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I decided to come to ENSAI for my Erasmus because I wanted to learn French and I was attracted by the high-level education it could offer, but what I got was far more than that! Everybody at ENSAI is extremely kind, from the teachers to the administrative personnel, and my classmates helped me a lot from the first moment I met them. What I found here is more than a school: it's a living community, where I found friends I'll never forget. If I could go back in time, I would make the same choice.

— **Antonio Maiorino,**

Erasmus+ Student, Università di Bologna, 2015-2016

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# STUDENT LIFE

## **Student Union**

The Student Union (Bureau des élèves) coordinates all of the student associations. It oversees a number of clubs: bridge, cinema, art, chess, music, photo, ski, theater, rock, humanitarian activities, debates, and games. It organizes a Welcome Weekend in September and numerous other events throughout the year.

## **ENSAI Gala Association**

This organization plans the annual ENSAI Gala. The event allows students and alumni to come together in a festive atmosphere.

## **ENSAI Junior Consultant (Junior-Entreprise)**

ENSAI Junior Consultant functions as a veritable consulting firm. With the guidance of professors, students provide companies and local authorities with advanced studies using their skills in Statistics, Computer Science, and Economics.

## **Business Forum Association**

This organization is responsible for fostering and maintaining contacts between students and the professional world by organizing professional networking days and forums between students and professionals, as well as lectures and debates.

## **ENSAI Alumni**

The ENSAI Alumni Association encourages contact between the school, its current students, its alumni, and companies.

## **Inter-School Cultural and Sporting Organization**

This group brings together the three *grandes écoles* on the Ker-Lann campus. It is a member of the French University Sports Federation, and it allows students to play sports competitively or for recreation, and to participate in cultural activities.



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My studies at ENSAI gave me the amazing opportunity to travel. During my second year, I spent a semester studying at the Università di Bologna through the Erasmus+ program. Studying abroad, regardless of the destination, is a really rewarding experience for different reasons: it allows you to discover a new culture and to experience different ways of teaching and learning. Then, I did my third-year internship in London. Considering the context or even just the city, it was really different from the Erasmus experience. I learned a lot from doing my internship abroad, which has been really valuable from a personal and professional perspective.

— **Esther Devilliers**, Engineer Statistician, Class of 2017

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# STRONG LINKS WITH THE PROFESSIONAL WORLD

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Thanks to ENSAI's renowned expertise in Data Science and its innovative curriculum, it has built strong ties with both private businesses and public administrations in France, Europe, and beyond.

## Internships

Part of what makes ENSAI's graduates so attractive to employers is the fact that they spend a large part of their time gaining vital, real-world experience during mandatory internships in private companies, public administrations, or research laboratories. Every degree offered by ENSAI requires an internship.

- **Engineer Statistician Program:** Total of 7 to 9 months (1 month after Year 1, 2 months after Year 2, and 5-6 months after Year 3).
- **Master of Science in Statistics for Smart Data:** Total of 4 to 6 months.
- **Master in Public Evaluation and Decision Making:** Total of 4 to 6 months.

## ENSAI Partners

Students benefit from over 380 outside experts that give classes and lead projects as well as an array of rich internship and job opportunities from partners. Partners take full advantage of the skills of ENSAI faculty and students, who solve real-world problems through projects and internships. They also capitalize on increased visibility to recruit ENSAI graduates through participation in the annual business forum organized by ENSAI students.

ENSAI Partners include: Air Liquide, BNP Paribas, Disneyland Paris, EY, INSEE, L'Oréal, Nestlé, Orange, Société Générale, Thalès.



# FINANCIAL MATTERS

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## COST OF LIVING

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Estimated monthly expenses: €600-€900



## COST OF STUDIES

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### Annual Tuition/Registration Fees

Engineer Statistician	€1800
MSc in Public Evaluation and Decision Making	€270
MSc in Statistics for Smart Data	€8,000



