

# École Nationale Supérieure de **Techniques Avancées** Bretagne

French State Graduate and Research Institute

[www.ensta-bretagne.fr](http://www.ensta-bretagne.fr)

“ A i m h i g h , s a i l f a r ”

ENSTA Bretagne

# [ Excellence ]



ENSTA Bretagne of Brest, a public establishment of higher education and research created in 1971, is a provider of excellent training and a leader in research activities requiring a high level of technical expertise.

Formerly ENSIETA, ENSTA Bretagne, together with ENSTA ParisTech, has formed the ENSTA Group (Ecoles Nationales Supérieures de Techniques Avancées: National Institute of Advanced Technology, Brittany).

ENSTA Bretagne, ENSTA ParisTech and the other 'Grandes Ecoles' under the Ministry of Defense share exacting standards of excellence which have been developed over the years as a self-fulfilling ambition. ENSTA Bretagne campus, research centre and scientific and technological facilities sits at the cutting edge of progress and innovation.

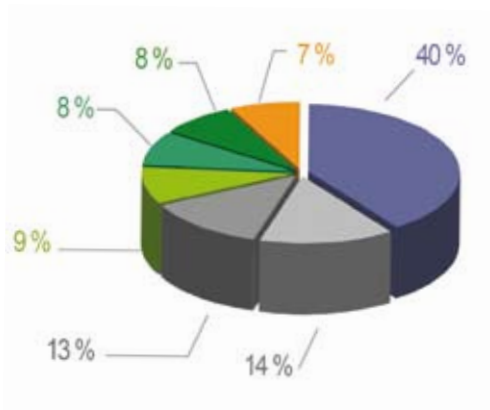
The Institute trains engineers for the most innovative activity sectors: offshore and naval, automotive, aeronautical, defense, and IT industries.

Through its multidisciplinary training, it aims to produce engineers capable of mastering the design of complex, industrial systems in an international environment, required by civil industries and the 'Direction Générale de l'Armement' (DGA), the French Military Procurement Agency: 80% of the students are civilians, 20% have military status.

The excellence of ENSTA Bretagne, recognized by its partners in research activities, training and industry, is a result of its quest for perpetual improvement. The Institute has been certified ISO 9001 since 2007 for all of its activities.

The excellence of ENSTA Bretagne is appreciable through its privileged links with industry. The results of the annual work survey of qualified engineers demonstrate this confidence on the part of industry: of the 94% of qualified engineers, half find a job in the six months before qualifying. These results are far higher than the average for schools in the CGE (Conférence des Grandes Ecoles). Source: 2009, 2010 studies of the CGE of the 2008 and 2009 cohorts.

## >>> ACTIVITY SECTORS: ENGINEER GRADUATES



- Naval industry, oil and Offshore
- Automotive industry
- Electronics - Information and Technology - Telecommunications
- Aerospace Engineering
- Oceanography
- Energy
- Other sectors

> ISO 9001:2008 certification for all its activities.



## > Partnerships

- ACERGY, AIRBUS,
- ALLEVARD REJNA,
- ALTEN, ALTRAN, AREVA,
- ASSYSTEM, AUTOLIV,
- AUTOSUSPENSIONS,
- BULGARIAN SHIP
- HYDRODYNAMICS CENTER,
- BOSCH, BUREAU D'ÉTUDES MAURIC, BUREAU VERITAS,
- CAP GEMINI, CEA, CEGELEC,
- CONSTRUCTIONS MÉCANIQUES DE NORMANDIE,
- CNES, DASSAULT, DCNS, DETI,
- DGA, DORIS ENGINEERING,
- EADS, EDF, FAURECIA, FUGRO,
- GIST, GTT, GERMANISCHER LLOYD AG, IFREMER, IPEV,
- IXSEA, LEGOS, MATRA
- AUTOMOBILE ENGINEERING,
- NEXTER, OCCAR, ORANGE,
- PSA PEUGEOT CITROËN,
- RENAULT, SAIPEM, SBM,
- SEGULA, SHOM, SCHOTTEL,
- SIEPEL, SNECMA PROPULSION SOLIDE, SOFRESID,
- STRYKER BENOIST GIRARD,
- STX, TECHNIP, THALES, TNO,
- TOTAL, UNILOG, VALEO,
- VOLVO, ZODIAC...



# [ Become an Engineer ]

ENSTA Bretagne is a multidisciplinary engineering institute based in Brest (France), which offers specialized courses in Naval Architecture, Hydrography, Automotive Engineering, Energetic Materials, IT and related areas.

## > “Formation d’ingénieurs ENSTA Bretagne” equivalent of a Master of Engineering (BAC+5)

- 7 options available:
  - **Hydrography and Oceanography (\*)**
  - **Naval Architecture and Offshore Engineering (\*)**
  - Vehicle Design and Modelling
  - Information Technology and Automation of Embedded Systems
  - Electronics and Signal Processing for Embedded Systems
  - Energetic Materials Engineering
  - Organizational Management and Engineering
- Entry-level requirements
  - To begin in first year : BSc degree
  - To begin in second year : MSc degree awarded by a French university OR an equivalent qualification from a foreign institution which is accepted by the admissions committee OR Engineering degree from a French “Grande Ecole”

## > Specialised Masters (BAC+6)

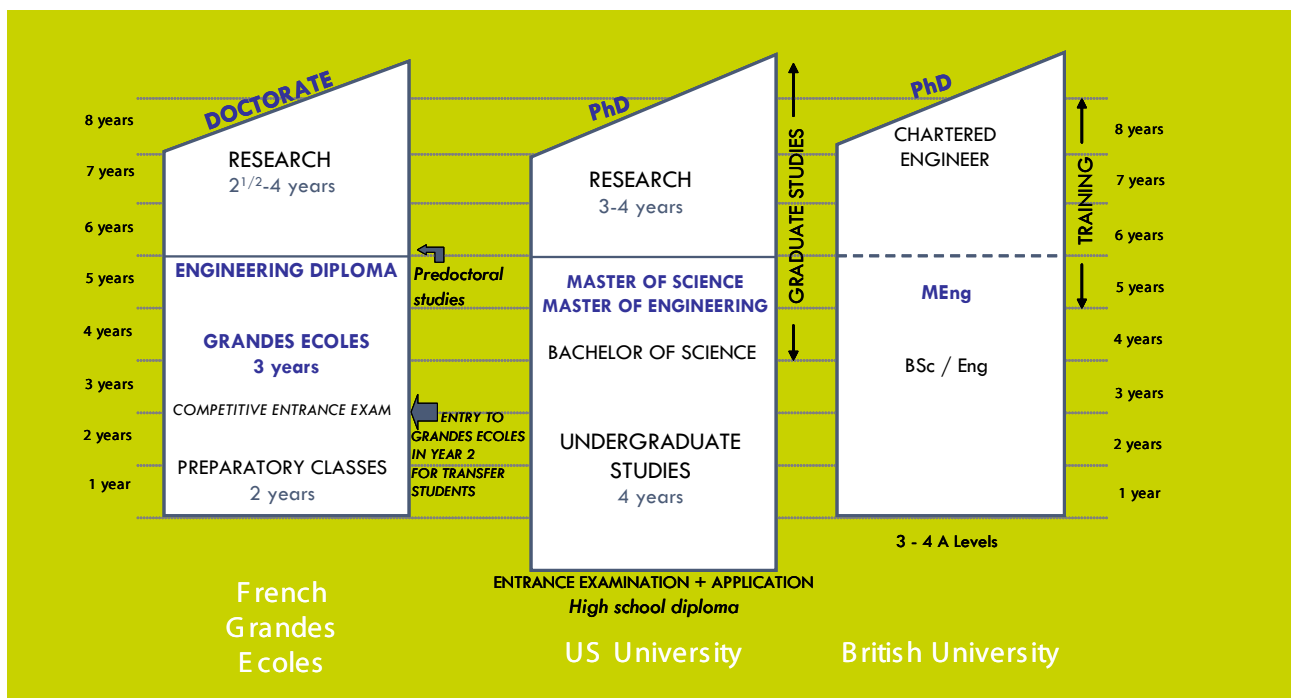
- Renewables Marine Energies
- **Marine Engineering / Naval Architecture and Offshore Engineering (\*)**
- Energetic Materials and Propulsion

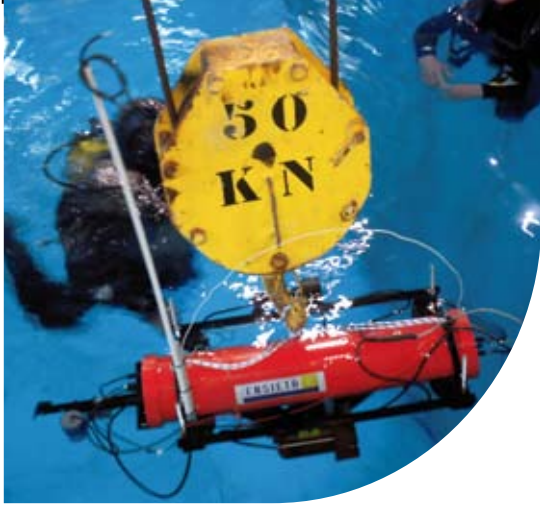
## > A Master’s Degree (BAC+5)

- in Automotive Engineering taught in collaboration with two European partners

(\*: the programmes are mainly given in English)

### >>> ENGINEERING EDUCATION : GUIDELINES FOR CORRESPONDING LEVELS ABROAD





# [ Research ]

There are two main objectives for research activities conducted at ENSTA Bretagne. Firstly, it aims to improve the field of knowledge in the school's areas of expertise which are related to engineering sciences, and thus to meet the needs of industry and of the Ministry of Defense. Secondly, linking training and research ensures that the engineering students receive leading-edge scientific training and instills them with intellectual curiosity, spirit of initiative and creativity.

> Research component is organized into 4 laboratories, comprising all research professors and teaching staff.

An integral part of the academic research environment, the laboratories carry out high-quality scientific studies which in turn lead to an active publication policy.

They are also developing partnerships and contract-based agreements with research institutes and industrial firms working in their field of expertise.

## Thématiques de recherche :

### IT Department

This unites multidisciplinary skills focused on 4 centers of interest.

>>> The MDE\* Team is a member of the LISyC (EA3883) Computer Science Laboratory of Complex Systems.

*\* Model-Driven Engineering*

>>> E3I2 Lab. (Extraction and Exploitation of Information in Uncertain Environments, EA3876) has developed a multidisciplinary research project to set up an information and aid system for decision making in disturbed and changing environments.

- Model-Driven Engineering (MDE)
- Ocean Sensing and Mapping (OSM)
- Radar and Electro-Magnetic Sensing (REMS)
- Passive Acoustics

### Human & Social Sciences Department

Research activities focus on knowledge about engineers and executives, their training and professional socialization, as well as the social, ethical or scientific stakes and challenges met in their work.

>>> SHS Department works in association with the CNAM's Centre for research on training and education in Paris (Paris, EA1410).

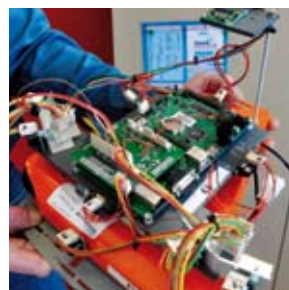
- The curricula of the prestigious French grandes écoles engineering schools
- Building the professional identity of engineers and managers in relation with social contexts, both while in engineering school and once in their professional activity
- Engineering activities, especially in managing social-technical problems

### LBMS, Mechanics and Systems Laboratory of Brest - EA 4325

Research carried out in the LBMS lab deals with reliability of materials and estimates the lifetime of naval structures in the marine environment with all its specificities (phenomena of fatigue, shock and impacts, vibrations and corrosion). Research lecturers from ENSTA Bretagne, the Brest University and ENIB work in this laboratory.

- Material and assembly mechanics
- Fluid, material and structure dynamics
- Control and Diagnosis of Electromechanical systems

>>> The CMA Team (Conception Mécanique Appliquée / Applied Mechanical Design) provides industry with mechanical expertise in R&D, transfer of innovative technologies and employee training.





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# [ Aim high, sail far ]

## BECOME AN ENGINEER Scientific and open-minded

ENSTA's motto of "Aim High, Sail Far" is apparent when arriving on the Brest campus of ENSTA Bretagne. It expresses the dedication of the institute to training engineers open to the world, science and innovation. "Aim High, Sail Far" encapsulates the determination of our students to combine scientific excellence with a spirit of enterprise, team spirit and creativity. Stimulated by the technological challenges awaiting them, they learn to place sustainable development and personal satisfaction at the heart of the success of their projects.

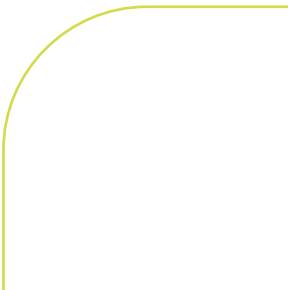
The cultural diversity of the students, together with the variety of study paths, the civilian-military mix and the multidisciplinary approach of their studies, all contribute to the development of a wide range of professional profiles, of interest to high-tech industries. "Aim High, Sail Far" refers to the wide range of careers that our Alumni follow in different activity sectors: naval and offshore engineering, renewable marine energies, automobile and aerospace engineering, hydrography, pyrotechnics, defense, electronics, IT and Computing Science.

Finally, "Aim High, Sail Far" is this energy which characterizes Brest, this maritime city, European capital of marine sciences and technologies, where the institute draws upon almost two centuries of maritime expertise, well known on an international level. The engineering courses in Hydrography, Oceanography, Naval architecture and Offshore engineering are among the most prized. Furthermore, the ENSTA Bretagne Research Center is a key component of the Brest Center of Maritime Excellence in several areas: submarine drones and observatories, surveillance and cartography of the oceans, durability of marine structures.

## RESEARCH Foundation for training and drive for development

The laboratories of ENSTA Bretagne conduct research in Mechanical Engineering, Signal Processing, Electronics, IT and Automation, as well as in Human Sciences.

The Institute is at the heart of active networks engaged in higher education, research and industry. ENSTA Bretagne is a member of the "GIS Europôle Mer" and the following clusters : "Pôle Mer Bretagne" (sea), "ID4CAR" (automotive industry), "Images et Réseaux" (Command, Control, Communications and Intelligence), "EMC2" (Mechanical Engineering).



" Aim high, Sail far "

> Our

## HISTORY

[2010]  
Creation of the ENSTA Group with ENSTA ParisTech and adoption of the new name ENSTA Bretagne

[2009]  
First graduates of our company-linked sandwich courses

[2007]  
ISO 9001:2000 certification for the entire range of activities

[2005]  
The Ministers of Defense, Higher Education and Research inaugurated the research center

[1992]  
The beginning of research activities

[1990]  
The competitive entrance examination was opened to civilian students

[1971]  
Creation of the Institute

[1819]  
Creation of the French Navy Arsenal Schools to provide training in naval architecture



Almost 200 ENSTA Bretagne engineers are graduate each year, 80% destined for high-tech civil industries, 20% destined for the 'Direction Générale de l'Armement' (DGA), the French Military Procurement Agency. About 30% will take up positions outside France.

The Brest campus of 7 hectares offers its 650 students exceptional surroundings for living and studying.

Approximately 60 doctoral candidates of diverse nationalities work on their theses in ENSTA Bretagne laboratories.

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