

# MARITIME ACTIVITIES AND MARINE SCIENCE

2009

Thanks to the importance of its EEZ (Exclusive Economic Zone), France is the third maritime power in the world, at least in terms of surface area: more than 11 million km<sup>2</sup> along 7000 km of coast, including its metropolitan and overseas regions. The sea's importance on France's economy comes from three sectors: tourism, fishing (and aquaculture), and the processing of sea products. Close to 400,000 people—160,000 alone from the tourism industry—make their living from the sea.

Even though the transport of passengers and merchandise under national colors has in large part been abandoned, France's ports, through which most products are imported or exported, have enjoyed a renaissance as they are adapted to international norms: acceptance of super-tankers, increased automation of the loading-offloading process, and improvement of the infrastructures linking them to the rest of Europe.

See also the files concerning *Agronomy, Architecture, Sustainable Development, Law, Hotel Business and Tourism, International Relations, Political Science, and Engineering Sciences.*

## ORGANIZATION OF STUDIES IN FRANCE

Although naval construction in France struggles to compete at an international level, numerous prestigious universities and institutes continue to educate the engineers who design ships and carry out their construction. Moreover, as the world leader in the manufacture of both sailboats and inflatable boats, France exports 40% of its maritime production. Its coasts, where an increasing segment of the population lives, even outside of the tourist season, have also become an environment threatened by urbanism. The fishing industry suffers as well from the scarcity of available resources, attributed to the industrial overexploitation of the oceans. Aquaculture, therefore, is one of the answers to this challenge. The sea, as a place of leisure and discovery, a bounty of numerous-yet-fragile resources, and unfortunately a source of conflicts only partly protected by law, provides numerous and varied employment opportunities.

*NB: - Specialization in Oceanography exists starting principally at the Master level or as an option in the final year at some engineering schools. Most of the educational training listed below is related to jobs in the maritime environment, but rarely for employment on ships—unless perhaps as researchers aboard scientific vessels.*

### Universities

Short educational courses (two years)

**IUT (Instituts Universitaires de Technologie)** in Aix-Marseille 1, Caen, Clermont-Ferrand 1, Corse, Bretagne occidentale, Tours, Saint-Etienne, Metz, du Littoral, Perpignan, Strasbourg 1, Toulon and Var, Nantes, La Réunion.

- Université du Littoral Côte d'Opale, <http://www.univ-littoral.fr>

Bachelor, Professional and Master degrees

### Marine science and environmental science

- Aix-Marseille 2, <http://www.univmed.fr>
- Bordeaux 1, <http://www.u-bordeaux1.fr>
- Bretagne occidentale, <http://www.univ-brest.fr>
- Bretagne Sud, Lorient et Vannes, <http://www.univ-ubs.fr>
- Caen, <http://www.unicaen.fr>
- Corse, <http://fst.univ-corse.fr>
- ENS (Ecole Normale Supérieure) Paris, in partnership with Paris 6, Paris 7, Paris 11, Cergy-Pontoise, Versailles-Saint-Quentin, <http://www.ens.fr>
- Joseph Fourier, Grenoble, <http://www.ujf-grenoble.fr>
- Lille 1, <http://www.univ-lille1.fr>
- Littoral Côte d'Opale, <http://www.univ-littoral.fr>
- Le Mans, <http://www.univ-lemans.fr>
- Lyon 1, <http://www.univ-lyon1.fr>
- Paris 6, <http://www.upmc.fr>
- Perpignan, <http://www.univ-perp.fr>
- La Rochelle, <http://www.univ-lr.fr>
- Rouen, <http://www.univ-rouen.fr>
- Sud Toulon-Var, <http://www.univ-tln.fr>
- Toulouse 3, <http://www.ups-tlse.fr>

## Marine economy and the exploitation of marine resources

- Bretagne occidentale, <http://www.univ-brest.fr>
- Bretagne Sud, Lorient et Vannes, <http://www.univ-ubs.fr>
- Caen, <http://www.unicaen.fr>
- Montpellier 2, <http://www.univ-montp2.fr>
- Montpellier 3, <http://www.univ-montp3.fr>
- Nantes, <http://www.univ-nantes.fr>
- Sud Toulon-Var, <http://www.univ-tln.fr>

## Law, organization/management and control of the marine environment

- Bretagne occidentale, <http://www.univ-brest.fr>
- Le Havre, <http://https://www.univ-lehavre.fr>
- Lille 2, <http://www.univ-lille2.fr>
- Littoral Côte d'Opale (Dunkerque), <http://www.univ-littoral.fr>
- Lyon 3, <http://www.univ-lyon3.fr>
- Nantes, <http://www.univ-nantes.fr>
- Université du Sud Toulon-Var, <http://www.univ-tln.fr>

## Specialized institutes

- INTECHMER (Institut national des sciences techniques de la mer), Cherbourg, <http://www.intechmer.cnam.fr>

## Architecture and Engineering schools

### Oceanography

- ISITV, Institut des sciences de l'ingénieur de Toulon et du Var (Institute of Engineering Sciences of Toulon and the Var), <http://isitv.univ-tln.fr>

### Shipbuilding

- École d'architecture de Nantes-Atlantique, <http://www.archi-navale.nantes.archi.fr>
- ENSIETA, École nationale supérieure des ingénieurs des études et techniques d'armement de Brest, <http://www.ensieta.fr>
- ENSTA, École Nationale Supérieure de Techniques avancées, <http://www.ensta.fr>

### Marine engineering

- École Centrale de Nantes, <http://www.ec-nantes.fr>
- École Centrale de Marseille, <http://www.ec-marseille.fr>
- ENSAM, École nationale Supérieure des Arts et Métiers, Angers (in partnership with the École navale), <http://www.angers.ensam.fr>
- INPG, Institut National Polytechnique de Grenoble, <http://www.hmg.inpg.fr>

### Production

- Agrocampus Rennes, <http://www.agrocampus-rennes.fr>

## Merchant marine officer academies

Placed under the supervision of the Ministry of the Sea, these academies prepare merchant marines for the international certificates necessary for navigation. The admission of foreign nationals (outside of the European Union) into these four (4) academies depends on the agreement made with the merchant marine authorities of the candidates' country of origin, the obtainment of an assured scholarship (admission fees + living expenses), and the successful completion of a competitive examination or entry exam.

### Transport and management

- EMM (merchant marine academy) Marseille, in partnership with EUROMED, <http://www.hydro-marseille.com>

### Fishing, quality, security, trainer education

- EMM (merchant marine academy) Nantes, <http://www.hydro-nantes.org>

### Port activities

- EMM (merchant marine academy) Le Havre, <http://www.hydro-lehavre.fr>

### Professional pleasurecraft/yachting

- EMM (merchant marine academy) Saint-Malo, <http://www.hydrosaintmalo.fr>

## ► Websites

### Research activities

- CNRS (National Center for Scientific Research, INSU, Institut National des Sciences de l'Univers, relevant to environmental, coastal, and oceanic research), <http://www.insu.cnrs.fr>
- IFREMER, Institut Français de Recherche pour l'Exploitation de la Mer (French Research Institute for Exploration of the Sea), <http://www.ifremer.fr>
- IPEV, Institut Polaire français (French Polar Institute) Paul-Emile-Victor, <http://www.ipev.fr>
- SEANERGIE, center for competitiveness uniting the Brittany and Provence-Alpes-Côte d'Azur regions, <http://www.toulonnais.com/pole-competitivite-toulon.html>
- APMM, Association pour la Promotion des Métiers de la Mer, <http://www.metiersdelamer.com>
- CGG, Compagnie Générale de Géophysique : <http://www.cgg.com>
- CEVA, Centre d'Études et de Valorisation des Algues, documentary funds, international databases <http://www.ceva.fr>
- COMEX SA, World largest marine engineering, technologies, and operations company, <http://www.comex.fr>
- INPP, Institut National de Plongée Professionnelle, professional training for workers in the aquatic and hyperbaric fields, <http://www.inpp.org>
- IRD Editions (research and development institute), <http://www.editions.ird.fr>
- Minister of Transportation, Equipment, Tourism, and the Sea <http://www.mer.equipement.gouv.fr>
- OFIMER, Office National Interprofessionnel des Produits de la Mer et de l'Aquaculture, <http://www.ofimer.fr>
- TECHNIP, one of the 5 worldwide offshore engineering groups, <http://www.technip.com>

## ► Keywords

aquaculture - biochemistry - biodiversity - chemistry - civil engineering - climate - commercialization - coastal engineering - coastal management - conversion - culture - ecosystem - electronic - environment - fisheries - geologic engineering - geosciences - history - instrumentation - law - logistics - management - mechanics - meteorological measuring - oceanography - physiological chemistry - physics - processing - resources - signals/signaling - sport - sustainable development - system - teledetection

# AGRICULTURE - AGRI-FOOD

2009

**Agronomy is the science of understanding and improving the mechanisms at work in agriculture. Agronomy brings scientific knowledge and techniques to bear in the practice of agriculture. Its ultimate purpose is to ensure the quantity and quality of humanity's food supply.**

**Agri-food industries are France's second-largest employer, with more than 10,000 businesses active in the sector. The sector depends on many different professional skills and competencies and thus offers many choices for students. In the face of globalization, moreover, the sector is undergoing profound changes. Adjusting to new market structures within the European Union and staying competitive enough to win new international markets are two of the most serious challenges facing France's agri-food industry today.**

#### Fields :

Agriculture, organic agriculture, agri-food, agronomy, aquaculture, fisheries, viticulture.

Also see the following disciplinary profiles: Maritime activities and ocean sciences, Biology, Environment, Sustainable development.

#### Sectors of activity :

manufacturing, production, transformation, environmental protection, business, livestock, grapes and wine, farm crops, logistics, laboratories, others

At the same time, new trends are emerging. Today's consumers care deeply about food safety and the environment. Organic agriculture offers consumers an assurance of product quality. Balanced agriculture based on integrated pest management responds to global pressures for farming practices that go beyond regulatory compliance to ensure a positive impact on the environment and to reduce negative effects while preserving the profitability of agricultural operations.

Ocean fishing and aquaculture now fall within the European Union's common fisheries policy, which is designed to stimulate growth in sectors vital to coastal economies.

Viticulture, or grape-growing, is an important agricultural activity in France. Much of that activity is guided by oenology, the art and science of transforming grapes into wine through the process of vinification. Aspiring winemakers wishing to practice as professional oenologists must obtain the diplôme national d'œnologie (DNO), which requires four years of postsecondary study. The national diploma program in oenology is offered at five institutions: the Faculty of Oenology at the Université de Bordeaux, the Institut Jules-Guyot in Dijon, the Université Paul-Sabatier in Toulouse, the Université de Reims, and ENSA-Montpellier. University studies in oenology have a significant scientific component (biology, chemistry, physics).

## ORGANIZATION OF STUDIES IN FRANCE

Agriculture is an economic sector in flux. One constant amid the change is that the sector is recruiting growing numbers of young graduates. The Ecole d'agriculture de Grignon was founded in 1827. Now part of the AgroParisTech group, Grignon is one of the world's oldest higher schools of agriculture. Across France, a total of 13,000 students of agriculture are enrolled in more than 20 postsecondary institutions.

A wide range of short and long degree programs is available from the CAP to the master. In between, one finds the BTS (Brevet de technicien supérieur) and the DUT (Diplôme universitaire de technologie). At the BTS level, students interested in the agri-food field have their choice of many specializations, such as grains and cereals, biotechnologies, and much more.

**University students** climb the LMD ladder: licence, master, doctorate. Licence students who have majored in life and earth sciences are well prepared for further studies in agriculture and agri-food industries. Armed with their degree, licence recipients may enroll in graduate programs or programs leading to an engineering degree. Professional licence programs are intensive and practical—they prepare students quickly for professional work. Such programs are offered in a wide variety of fields, many in **lycées d'enseignement général et technologique agricole** (LEGTA, schools of general and technical agricultural education).

**The instituts universitaires professionnalisés** (IUP, university-based professional institutes) also provide professionally oriented programs. IUP degree programs require three years of study; internships are an important part of the curriculum. Students are admitted after completing two years of postsecondary study; they earn a level 2 master's degree.

Some **Engineering schools** offer programs in agriculture; others allow students to specialize in agriculture or agri-food areas in the second or third year of the three-year program leading to a level 2 degree equivalent to a European master. Two-year preparatory courses prepare secondary-school graduates for the entrance examinations of the national agricultural engineering schools. These courses, known as *prépas agro-Enita*, emphasize biology, chemistry, physics, and earth sciences.

## RESEARCH THEMES

### Environmental preservation and management of rural lands

Research in this area increases knowledge about the functioning of farm ecosystems and thus forms the basis for an ecologically sensitive agriculture that exploits the productive power of the land while protecting biodiversity.

### Food safety

Food is central to the well-being of human populations and an important public health issue. Agricultural researchers work to improve food quality, to protect consumers' health, and to understand food-related behaviors

### Competitive, high-quality processed products

Substantial research is devoted to diversifying the uses of agricultural products, increasing their value, and ensuring quality at every step in the food-supply chain, from farm to fork..

### Deeper knowledge of biological systems

The purpose of research in this area is to increase our knowledge of living systems, with particular reference to the organization, functioning, and evolution of genomes. Other research work focuses on the preservation and commercial applications of biological and genetic resources.

### Innovative and sustainable production systems

Sustainable development is the objective of much research into agricultural practices and production systems. Researchers look for practical applications of new ideas. They seek to develop production systems that integrate environmental protection, product quality, and profitability

### Public policy analysis

Environmental questions now have a clear place in global policy dialogues that involve a growing number of stakeholders. In this new arena, where research subjects often blend with social issues, researchers look for ways to improve stakeholders' organizations and approaches and to support the development of sound public policy.

## INTERNATIONAL STANDING

Over the past quarter-century agricultural production has doubled. France's farms have demonstrated their competitiveness. France is the leading agricultural producer in the European Union and the world's third-largest exporter of agricultural and food products.

(Source : Ministry of Agriculture 2008)

<http://agriculture.gouv.fr/sections/mediatheque/autres-editions/panorama-agriculture/view>

### ► Websites

- AFSSA (Agence française de sécurité sanitaire des aliments; French food safety agency)  
<http://www.afssa.fr/>
- AIRD (Agence inter-établissements de recherche pour le développement; interinstitutional agency for development research), a group of higher education and research institutions dedicated to the development of the countries of the South  
<http://www.aird.fr/>
- ACTIA (Association de coordination technique pour l'industrie agro-alimentaire; association for technical coordination in the agri-food industry), know-how concerning applied research projects and their diffusion, a network of 42 technical centers, applied research in refrigeration and other areas. Address: 16 rue Claude Bernard, F-75231 Paris Cedex 05, France, telephone: 01 44 08 86 20, e-mail: d.majou@actia-asso-eu (no Web site),  
no hay sitio Web, 16 rue Claude Bernard F-75231 Paris Cedex 05, 01 44 08 86 20, mail : d.majou@actia-asso-eu
- ANEFA (Association Nationale Emploi Formation en Agriculture; national association for agricultural employment and training)  
<http://www.anefa.org/>
- APECITA (Association pour l'emploi des cadres, ingénieurs et techniciens de l'agriculture et de l'agroalimentaire; association for the employment of managers, engineers, and technicians in agriculture and agri-food industries)  
<http://www.apecita.com/>
- CIRAD (Centre de coopération internationale en recherche agronomique; center for international cooperation in agronomic research), <http://www.cirad.fr>
- CEMAGREF (Centre national du machinisme agricole, du génie rural, des eaux

et des forêts; national center for agricultural machinery, rural engineering, and water and forest management)

<http://www.cemagref.fr/>

- Chlorofil, a Web space for professionals and organizations in French agricultural education

<http://www.chlorofil.fr/>

- FESIA (Fédération des écoles Supérieures d'Ingénieurs en Agriculture; federation of schools of agricultural engineering),

<http://www.fesia.org/>

- Educagri, an informational and promotional site maintained by France's public institutions of agricultural education

<http://www.educagri.fr/>

- FNSEA (Fédération nationale des syndicats d'exploitants agricoles; national federation of producers' cooperatives),

<http://www.fnsea.fr/sites/webfnsea/>

- Institut du porc (pork producers' council),

<http://www.itp.asso.fr/>

- IFREMER (Institut Français de Recherche pour l'Exploitation de la Mer; French institute for research into commercial uses of the oceans)

<http://www.ifremer.fr/>

- INRA (national institute for agronomic research),

<http://www.inra.fr/>

- Institut technique de l'aviculture (technical institute for poultry research)

<http://www.itavi.asso.fr>

- List of postsecondary institutions of agricultural education:

[http://www.portea.fr/fileadmin/user\\_upload/PDF/formations\\_Sup/Liste-etablissements.pdf](http://www.portea.fr/fileadmin/user_upload/PDF/formations_Sup/Liste-etablissements.pdf)

- Ministry of Agriculture and Fisheries

<http://agriculture.gouv.fr/>

- Ministry of Ecology, Energy, Sustainable Development, and Land Planning

<http://www.developpement-durable.gouv.fr/>

- Oenology in France

<http://www.oenologie.fr/>

- Clusters and competencies in the sciences and technologies of living systems and the environment,

<http://www.portea.fr/enseignement-agricole/enseignement-superieur-agricole/repartition-geographique-des-poles-de-competences.html>

- Portea, the Web portal of French agricultural education

<http://www.portea.fr/>

- n+i network for engineering education

<http://www.nplusi.com/>

- AgroParisTech network,

<http://www.agroparistech.fr/>

- Network of institutes of plant and animal studies

<http://www.acta.asso.fr/>

### ► Keywords

agriculture – agricultural – agri-food – agro-environmental – agronomy – animal – aquaculture – aquatic science – biodiversity – biology – business – coastal – commerce – commercialization – computer science – consumption – cultural preservation – development – ecology – economics – ecosystems – engineering – environment – exploitation – fishing – food – fruit – forest – forestry – geology – globalization – health – horticulture – industry – information science – land – livestock – living organisms – logistics – maintenance – management – marketing – meat – milk – mountains – nature – oenology – plant – policy – production – research – resources – rural – rural areas – sciences – sustainable – technician – technology – tourism – vegetables – vine – viticulture – water – wine – wood



Search for schools, majors, and degree programs on the CampusFrance website.

CampusFrance's online catalog contains information on every program in France—from the licence (bachelor) level to the doctorate.

[campusfrance.org](http://campusfrance.org) > academic programs and research opportunities in France

**Licence and master level** : Enter a field of study and academic level, and the search engine will tell you what degrees are offered and where.

<http://www.campusfrance.org/fr/d-catalogue/>

**Doctoral level** : search the directory of doctoral programs

<http://www.campusfrance.org/ecoledoc/index.htm>

**CampusBourse** : search the directory of scholarship programs:

<http://www.campusfrance.org/fr/d-catalogue/campusbourse/cfbourse/index.html>



# POSTSECONDARY PROGRAMS IN AGRONOMY, VETERINARY MEDICINE, AND LANDSCAPE DESIGN AND PRESERVATION

## Les Formations

French postsecondary programs in agronomy, veterinary medicine, and landscape design and preservation take two forms:

- Short programs—BAC + 2: technical certificate in agriculture (BTSA); BAC + 3: vocational licence
- Long programs—BAC + 5: engineering degree, master's degree; BAC + 8: doctorate

### 1- Short programs

- Short programs in agriculture (BAC + 2) lead to a technical certificate in agriculture in 16 fields of study spanning the full range of agricultural and rural careers. Taught in agricultural secondary schools, short programs are professionally oriented, combining academics and practical training. Many courses are taught by practicing professionals. Students gain experience with farming operations on the school's land and in its technical workshops. Internships are required. Programs feature cooperation with local governments, career development, general education (Sociocultural Studies), and international exposure (internships abroad). Housing opportunities include rooms with 1, 2 or 4 beds.

*Some BTSA certificates can be acquired through continuing education.*

### ► Fields of study:

- 1- landscape design
- 2- agricultural, biological and biotechnical analysis
- 3- analysis and operation of crop systems
- 4- tropical agriculture
- 5- agricultural equipment engineering
- 6- forest management
- 7- water management and control
- 8- management and protection of natural habitats
- 9- agri-food industries
- 10- animal production
- 11- aquaculture
- 12- horticulture
- 13- rural services
- 14- technological-commercial agricultural supplies, beverages, wines and spirits, food products, forest products, ornamental plants
- 15- plant technologies
- 16- viticulture, œnology

### ► Centralized application procedure

SRFD-DRAF Bourgogne 22D boulevard W. Churchill BP 87865  
21078 Dijon cedex

- tel: 33 3.80.39.30.67 - fax : 33 3.80.39.31.92
- E-mail: [http://www.denis.lachia@educagri.fr](mailto:http://www.denis.lachia@educagri.fr)
- For more information:  
<http://www.educagri.fr/parcours/index.cfm>

BAC + 3 : Holders of a BTSA may elect to continue their studies so as to earn a vocational licence degree from a university, in partnership with an agricultural educational institution.

The 3-year program allows for in-depth study that facilitates entry into the job market.

<http://www.educagri.fr/systeme/diplomes/ensup/licpro.htm>

### ► Short postsecondary programs in brief

- 132 agricultural high schools
- 274 BTSA programs enrolling 13,311 students

**2- Long programs: Long postsecondary programs in agronomy, veterinary medicine, and landscape design and preservation prepare students for cutting-edge careers in rapidly changing sectors at the heart of rural concerns and contemporary societies:**

- **Food, from crop and livestock production to food safety:** Agricultural, forest, and fisheries; horticulture; agrifood industry; hygiene; food quality and safety; nutrition; plant protection; organic agriculture
- **Developing and managing wilderness areas:** Environment, waters and forests, land management, environmental protection and preservation, rural tourism
- **Protecting nature for future generations:** Management of natural resources, sustainable development, bioenergy
- **Biotechnical innovation**
- **Understanding and managing economic and social systems** Rural development, international development assistance, integrated study of agrarian systems, pedagogical consulting
- **Animal health and veterinary medicine:** Animal protection, tropical diseases

### ► Education that combines theory, practice, and research

The academic content of all programs is delivered by renowned research faculty. Students complement their courses with laboratory training, internships with companies, and basic and applied research.

### Open to the world

France's postsecondary programs in agronomy, veterinary medicine, and landscape design and preservation are active in international partnerships and exchanges that make it possible for students to participate in programs abroad—in a university, laboratory, or company.

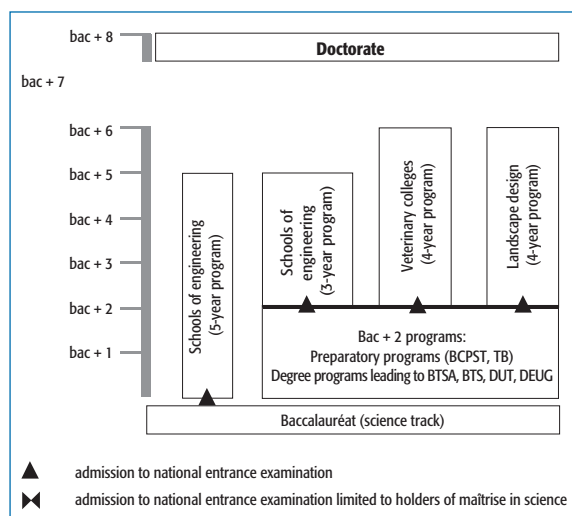
Financial and organizational support is available from the Ministry of Agriculture (MAAPAR), the General Directorate for Teaching Research (DGER), and European education programs such as Erasmus, Tempus, Meda, and Asialink.

Graduates have an excellent grasp of international issues. The world is their stage.

### ► Long postsecondary programs in brief

- 26 institutions (19 public and 7 private)
  - 20 engineering schools
  - 4 veterinary colleges
  - 1 landscape school
  - 1 teacher training institution
- 13,000 students taught by 850 research faculty, 250 instructors and professors, 900 engineers and technicians, and 500 administrative personnel

### Courses of study and degrees



### Contact

#### Sous-direction de l'enseignement supérieur DGER

1<sup>er</sup> av de Lowendal 75700 Paris SP 07  
33 1 49 55 52 76 fax 33 1 49 55 42 65

#### General inquiries:

sup.bfs@educagri.fr  
fopdac.bci@educagri.fr

#### General inquiries:

pnci@educagri.fr

#### International student inquiries:

#### Pôle National de Compétences à l'International

1101 av Agropolis - BP5098 34033 Montpellier cedex 01  
pnci@educagri.fr