

Maritime Sciences



From written accounts to great discoveries, maritime exploration has enabled people to connect the continents and map the planet. The oceans cover more than 70% of the Earth's surface; they regulate the climate, regenerate oxygen, and supply countless resources necessary for human life. The maritime sciences thus cover a large and diverse set of activities, including fishing, farming (fish, shellfish, seaweed), transportation of people and goods, shipbuilding, production of wave and tidal power, oil and gas extraction, telecommunications, river navigation, ports, boating, and coastal tourism.

Programs in the sea sciences are available at all academic levels and lead to some 50 qualifications. Two or three years of study are required for technical programs such as the BTS (postsecondary technical certificate), the Licence (Bachelor), and the Licence professionnelle (vocational Bachelor's degree).

At the Master level, students can specialize in maritime subjects both in the sea sciences and in law, economics, and management. Multiple opportunities exist to gain a double competence by crossing disciplinary boundaries. Many programs are taught in English.

• **91.6 billion** euros in production (2020)

• **500,000** direct jobs in the maritime industry, including sea and river tourism (2020)

• **5,532** enterprises in the boating field (2018-2019)

• **13 million** leisure boats

• **8,500** kms of navigable waterways

• **4,400** fishing boats in metropolitan France

• **17,000** personnel working on fishing boats

Sources: Ministry of the Sea - www.mer.gouv.fr
Cluster Maritime France - www.cluster-maritime.fr

International

With a dozen overseas territories, 5,000 kilometers of coastline, and eight littoral regions, France covers 11 million square kilometers of maritime area, the second-largest expanse in the world. Ninety percent of international commerce goes by sea, which is why metropolitan France has seven major harbours: Dunkerque, Rouen, Le Havre, Nantes-Saint-Nazaire, Marseille, La Rochelle, and Bordeaux. France is also Europe's leading shipbuilder (and number two worldwide).

France's maritime strategy, with respect to both the sea and the nation's coastline, reflects the ambition of a great sea power, with €650 million budgeted for the sector. The strategy's major objectives are reinforcing a model of sustainable fishing and aquaculture and improving the ecological footprint of the country's ports. Other priorities are protecting the environment and biodiversity; improving marine infrastructure and technologies; strengthening sea-based industries; and training skilled personnel to work in the sector.

Since 1989, from its home base in Les Sables d'Olonne, the Vendée Globe is the world's premier single-handed, non-stop yacht race, in which the boats circle the globe with no assistance. Among the 167 competitors to date, only French navigator Michel Desjoyeaux has won more than one of the eight races (in 2001 and 2009). The Earth's circumference (44,996 kms) is the standard length of the race, which takes place in the South Seas during the austral summer season and ends at the Vendée coast in winter. The last race extended over 74 days.

RELATED FIELDS

- Aquaculture • Biology
- Biotechnologies • Chemistry
- Economics • Energy
- Engineering • Environment
- Environmental Sciences
- Geosciences • Halieutic and Aquacultural Sciences
- Law • Management
- Oceanography
- Sea Sciences and Techniques
- Transport

SUBFIELDS

- Aquaculture • Aquacultural production • Aquatic environments
- Coastal management • Engineering of the marine environment
- Exploitation of the seas • Fishing
- Hydrography • Marine biology
- Marine biotechnologies • Marine ecology • Marine ecosystems
- Marine geosciences • Maritime logistics • Maritime operations
- Maritime transportation • Maritime transport law • Maritime and naval industries • Maritime and port systems • Naval and nautical engineering • Navigation
- Ocean energy • Pisciculture
- Renewable marine energy • River tourism • Sailing • Sea and coastal management • Seaweed farming
- Shellfish farming • Shipbuilding



Useful links

- Center for maritime and ocean law, Université de Nantes: <https://cdmo.univ-nantes.fr>
- CFANI (center for apprenticeship training in inland navigation): www.cfa-navigation.fr
- CMF (French maritime cluster): www.cluster-maritime.fr
- ENSM (national maritime school): www.supmaritime.fr
- E-marine lab: <https://emarinlab.obs-banyuls.fr>
- FRANCE, Ministry of the Sea: www.mer.gouv.fr
- FRANCE, Ministry of the Armed Forces, French navy: www.etremarin.fr
- FranceAgriMer (national agricultural and sea products institution): www.franceagrimer.fr
- Institut français de la mer (IFM): www.ifmer.org
- Grand Pavois La Rochelle, international in-water boat show: <http://grand-pavois.com>
- IREMER (French research institute for exploitation of the sea): www.ifremer.fr
- Institut Fluvial, professional training in river navigation: www.institutfluvia.fr
- INTECHMER-Cnam (national institute of sea sciences and techniques): www.intechmer.cnam.fr
- ITIP-Cnam (national institute on international transport and ports): <https://itip.cnam.fr>
- Paris international boat show: www.salonnavtiqueparis.com
- Pleasure craft festival, Cannes boat show: www.riviera-plaisance.com
- Profession: Sailor (sailor training): www.formation-maritime.fr
- SeaTech engineering school, Université de Toulon: <https://seatech.univ-tln.fr>
- Shipbuilders of France: www.armateursdefrance.org
- UN e-SEA: <https://unesea.univ-nantes.fr>
- Vendée Globe: www.vendeeglobe.org
- VNF (navigable waterways of France): www.vnf.fr
- World sea campus: www.campusmer.fr

LEVEL Licence

BREVET DE TECHNICIEN SUPÉRIEUR (BTS)

NATIONAL DIPLOMA – 2 YEARS OF HIGHER EDUCATION – L2
120 ECTS credits

> A BTS in **Maintenance of electro-naval systems** is offered in Fécamp; another in **Fishing and management of the marine environment** is offered in Sète. Both are taught in *lycées*.

www.lycee-anita-conti.fr - www.lyceedelamer.fr

> The BTS in **Aquaculture** is available in ten secondary schools specializing in Agriculture or Sea Sciences.

DIPLÔME D'ÉTUDES UNIVERSITAIRES SCIENTIFIQUES ET TECHNIQUES (DEUST)

NATIONAL DIPLOMA – 2 YEARS OF HIGHER EDUCATION – L2
120 ECTS credits

> The DEUST in **Sea and coastal techniques** is offered in the Université du Littoral Côte d'Opale, at the Centre de gestion de la mi-Voix in Pas-de-Calais.

www.univ-littoral.fr

LICENCE

NATIONAL DIPLOMA – 3 YEARS OF HIGHER EDUCATION – L3
180 ECTS credits

Humanities and Social Sciences, concentration in geography and development, track in **Sea, environment, tourism, development, coastlines**.

PROFESSIONAL LICENCE

NATIONAL DIPLOMA – 3 YEARS OF HIGHER EDUCATION – L3
180 ECTS credits

Maritime-related concentrations and tracks are offered in two broad disciplinary areas at universities and IUTs (university-based Institutes of Technology):

- **Law, Economics, Management:** Concentration in Economics and Management, track in Maritime logistics; concentration in logistics and international transportation, track in Maritime transportation law and management; concentration in Sales management, track in Management of maritime operations.

- **Science, Technology, Health:** Concentration in industrial occupations (naval and maritime industries), tracks in port and ship maintenance, shipbuilding occupations, naval engineering; concentration in maritime occupations, track in sailing and pleasure craft occupations; concentration in automated systems, networks, and industrial informatics, track in marine electronic systems and automation.

Other programs are offered in non-university institutions:

- Marine engineering - www.supmaritime.fr/l3-genie-maritime/
- Technical officer, environmental engineering; technical officer, production and exploitation of marine resources, www.intechmer.cnam.fr
- Oceanographer, prospector (institution's bachelor-level diploma), <https://formation.cnam.fr>

www.campusfrance.org > Students > Studying > Find your program

LEVEL Master

MASTER

NATIONAL DIPLOMA – 5 YEARS OF HIGHER EDUCATION – M2
120 ECTS credits

Master's programs with concentrations and tracks related to maritime operations are offered in several broad disciplinary areas within universities:

- **Sea and Coastal Sciences:** Concentration in Biology, tracks in Marine biology; Marine ecosystems; Halieutic and aquacultural sciences; concentration in Maritime Law; track in Sea and coastal law; concentration in Applied Economics, track in Agriculture, sea, environment; concentration in Environmental Management, track in Advising and management related to coastal environments; concentration in Marine sciences, tracks in Marine geophysics, naval hydrodynamics, ocean and climate physics.

- **Law, Economics, Management:** Concentration in Company law, track in Maritime and port law; concentration in Business law, track in Maritime operations and management; concentration in International and European law, tracks in law of the sea and maritime risk, law of the sea and maritime operations; concentration in Development economics, track in Economics of the sea and coastal development; concentration in Environmental, energy, and transportation economics, track in Management of sustainable development projects (environment, ocean energy); concentration in European and international studies, track in Law and security of maritime and oceanic operations; concentration in Management of production, logistics, and purchasing, track in Port and maritime management; concentration in Public management, track in Coastal and sea management.

- **Humanities and Social Sciences:** Concentration in Archaeology and archaeological sciences, track in Archaeology of the ancient Mediterranean; concentration in Geography, planning, environment, and development, tracks in Geography and planning for maritime spaces, coastal and sea management; concentration in History, track in Maritime and coastal history.

- **Science, Technology, Health:** Concentration in Biotechnologies, track in Marine biotechnologies (international Master); concentration in Chemistry and life sciences, track in Marine environmental chemistry; concentration in Mechanics, track in Maritime engineering; concentration in Sea sciences, tracks in Marine biology and ecology; Biodiversity and conservation of marine ecosystems; Environment/water/coast; Island and ocean environments; track in Exploitation of live coastal resources; track in Functioning of marine ecosystems and global changes; Marine geosciences and aquatic environments; Biotic interactions and man-made disturbances in the marine environment; track in Ocean, atmosphere, climate, and spatial observations; Biological oceanography and marine ecology; Physical and biogeochemical oceanography and marine environments; concentration in Earth and planetary sciences and the environment, tracks in Ocean geosciences; Engineering and management of coastal resources; concentrations in Marine technology, maritime environments and navigational safety; Public and maritime works.

Schools of engineering confer specialized credentials:

Diplôme d'études supérieures (Diploma of Higher Study) for the Merchant Marine, www.supmaritime.fr; Master of Sea and Coastal Sciences, tracks in Marine geophysics, naval hydrodynamics, ocean and climate physics, www.ensta-bretagne.fr

www.campusfrance.org > Students > Studying > Find your program

Maritime Sciences

Programs Taught in English:

Master in Reliability-based Structural Maintenance for Marine Renewable Energy - <https://english.univ-nantes.fr>

Master in Marine and Coastal Sciences with a specialization in biotechnologies - www.univ-brest.fr

Master in Marine Environment and Resources - www.u-bordeaux.com

Master in Marine Technology - Atlantic Master on Ship Operation & Naval Engineering - www.ec-nantes.fr

Master in Marine Technology - Hydrodynamics and Ocean Engineering - www.ec-nantes.fr

Master Marine Ecology, Fisheries and Seafood - www.univ-littoral.fr

Master's degree in Marine and Maritime Intelligent Robotics - www.univ-tln.fr/-University-of-Toulon-.html

Master's degree in Marine Physics - www.univ-brest.fr

Master's degree in Marine Sciences / speciality Physics of the Environment for Risk Assessment - www.univ-tln.fr/-University-of-Toulon-.html

Master in Maritime and Coastal Archeology - momarch.hypotheses.org

MSc in Science, Conservation and Valorization of Atlantic Resources - <http://univ-cotedazur.fr>

Programs Taught in English - <https://taughtie.campusfrance.org>

TITRE D'INGÉNIEUR DIPLÔMÉ (ENGINEERING DEGREE)

MASTER LEVEL – 5 YEARS OF HIGHER EDUCATION – M2
120 ECTS credits

French engineering schools confer the professional title of Graduate Engineer, accredited by the CTI (Commission des Titres d'Ingénieur), with specializations:

- ENSM (Ecole Nationale Supérieure Maritime): Marine Engineering, www.supmaritime.fr

- SeaTech School of Engineering, Université de Toulon: Sciences and technologies of the maritime sector: <https://seatech.univ-tln.fr>

LEVEL

Beyond the Master level



MASTÈRE SPÉCIALISÉ® (MS)

INSTITUTION DIPLOMA – 1 YEAR OF HIGHER EDUCATION

The MS is an institutional credential accredited by the CGE (*Conférence des Grandes Écoles*). Available programs include: Analysis of the ship's life-cycle; Cybersecurity of maritime and port systems; Offshore wind and marine engineering; Design and exploitation of autonomous maritime systems; Expert consultant on renewable marine energies or on maritime and port projects; Maritime engineering; Marine engineering and naval and offshore architecture; Naval networks and telecommunications.

- www.cge.asso.fr/formations-labellisees/liste-formation-ms/
- https://ressources.campusfrance.org/esr/diplomes/en/mastere_spe_en.pdf