

Faculty of

**Maritime Engineering
and Marine Sciences**

Oceanographic Engineering

RPC-SO-24-No. 526-2020

espol[®]

Oceanographic Engineer



Applicant profile

The candidate must possess skills in the area of basic sciences (mathematics, physics and chemistry), with critical and analytical thinking.

In addition, they must have a vocation for working at sea, which includes designing solutions to problems arising in the marine-coastal zone, researching ocean-atmospheric processes to better understand these environments, and implementing strategies for the sustainable use of marine-coastal zone resources.



Professional skills

Graduates of this program are able to:

- ▶ Analyze and solve problems that require an understanding of oceanic and marine-coastal processes and their social, ethical, and environmental implications.
- ▶ Integrate teams multidisciplinary, working effectively with professionals from other disciplines to address oceanographic engineering problems.
- ▶ Contribute to the development and innovation of tools, methodologies, and the application of technologies in oceanographic engineering through ongoing knowledge updates.
- ▶ Participate in continuing education, research, and industry outreach programs related to oceanographic engineering as part of their professional development.



Employability

- ▶ You'll be able to practice your profession in areas such as coastal engineering and port works, ocean engineering, oceanography, and coastal resource management.
- ▶ You'll conduct studies on coastal processes, coastal protection, and beach and habitat restoration.
- ▶ Design and manage ports and maritime structures, conduct navigation studies, and plan, execute, and supervise oceanographic studies and projects. Execute coastal development projects and coastal protection projects, taking into account their environmental, risk and disaster reduction, climate change, and sustainability implications.

Curriculum

LEVEL 100 - I

SINGLE VARIABLE
CALCULUS

PHYSICS: MECHANICS

GENERAL CHEMISTRY

PROBLEM SOLVING

ELECTIVE COURSES

ENGLISH I

LEVEL 100 - II

VECTOR CALCULUS

PROGRAMMING
FUNDAMENTALS

PHYSICS:
THERMODYNAMICS
AND OPTICS

FUNDAMENTALS OF
OCEANOGRAPHIC
ENGINEERING

DESCRIPTIVE
OCEANOGRAPHY

ENGLISH II

LEVEL 200 - I

STATISTICS

DIFFERENTIAL
EQUATIONS AND
LINEAR ALGEBRA

NUMERICAL METHODS

COMMUNICATION

CLIMATOLOGY AND
METEOROLOGY

ENGLISH III

LEVEL 200 - II

VECTOR MECHANICS

FLUID MECHANICS

PHYSICAL
OCEANOGRAPHY

MARINE GEOLOGY

MARINE
BIOGEOCHEMISTRY

ENGLISH IV

LEVEL 300 - I

STRENGTH OF
MATERIALS

MARINE WAVES

SOIL AND ROCKS
MECHANICS

ENTREPRENEURSHIP
AND INNOVATION

ENGLISH V

LEVEL 300 - II

STRUCTURAL
ANALYSIS

OCEANOGRAPHIC
INFORMATION
ANALYSIS

COASTAL
OCEANOGRAPHY

SUSTAINABILITY
SCIENCE

MARINE POLLUTION

COMMUNITY SERVICE
INTERNSHIPS

LEVEL 400 - I

REINFORCED
CONCRETE DESIGN

DREDGING PLANNING

COASTAL MODELING

ESTUARINE PROCESSES

COASTAL-MARINE
ENVIRONMENTAL
IMPACT

PORT DIMENSIONING

LEVEL 400 - II

PORT CONSTRUCTION

DREDGING MANAGEMENT

COASTAL DESIGN

COASTAL
MANAGEMENT
TECHNIQUES

PLANNING AND
CONSTRUCTION

SELECTED
ELECTIVE COURSE

LEVEL 500 - I

OCEANOGRAPHIC
ENGINEERING
CAPSTONE COURSE

COASTAL-MARINE
ZONES MANAGEMENT

ELECTIVE COURSE

SELECTED ELECTIVE
COURSE

PRE-PROFESSIONAL
BUSINESS
INTERNSHIPS



By the way...

If you're interested in studying and designing solutions to problems inherent to the country's oceanic and marine-coastal zones, this program is an excellent option.



International Relations

ESPOL, through its Foreign Relations Office, promotes and develops ties with international cooperation agencies and academic and research institutions. These ties generate mobility opportunities for the entire polytechnic community and contribute to the excellence that characterizes us.

More than 165 agreements allow our students to undertake stays abroad, including semester-long or annual exchanges, pre-professional internships, research internships, and participation in conferences, competitions, and other academic activities.

106

universities
in the world



Accredited career



Did you know?

Since 1973, Oceanographic Engineering has trained professionals specializing in the oceans, marine-coastal zones, and adjacent areas. Topics include climate variability, the El Niño-Southern Oscillation, coastal processes, numerical modeling, forecasting, natural hazards and risks, coastal engineering, ports, dredging, pollution, environmental impact, and integrated coastal management. We have collaborative networks that allow for student exchanges, internships, and placements at national and international institutions.

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