Oceanographic Engineering Program

RPC-SO-24-No.526-2020

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Bachelor of
Science in Oceanographic Engineering

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 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.
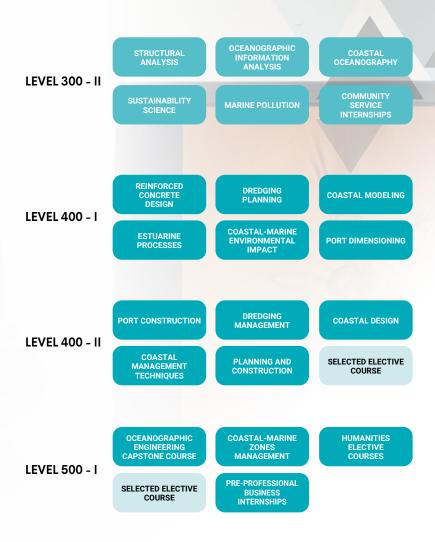
Employability

- ▶ 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 Structure

LEVEL 100 – I

- SINGLE VARIABLE CALCULUS
- PHYSICS: MECHANICS
- GENERAL CHEMISTRY
- PROBLEM SOLVING
- ARTS, SPORTS AND LANGUAGES 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

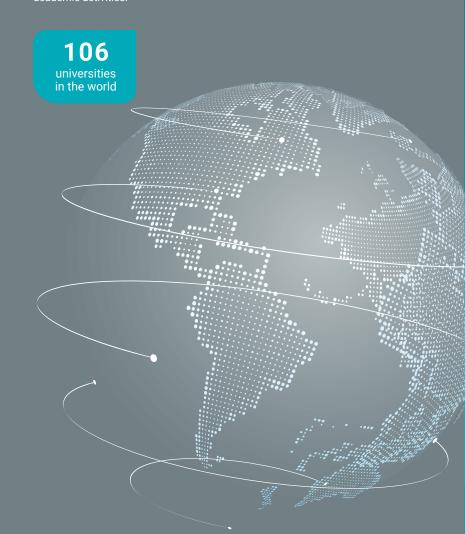|		
OCEANOGRAPHIC ENGINEERING CAPSTONE COURSE	COASTAL-MARINE ZONES MANAGEMENT	HUMANITIES ELECTIVE COURSES
SELECTED ELECTIVE COURSE	PRE-PROFESSIONAL BUSINESS INTERNSHIPS	

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.

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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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