

OCEAN & ATMOSPHERE SCIENCE

FACULTY OF SCIENCE

The major in Ocean & Atmosphere Science, offered by the Department of Oceanography, covers the physical, chemical and biological properties of seawater and sea ice, and the multi-faceted and interactive roles played by the ocean and atmosphere in the climate system. Understanding the ocean and atmosphere is fundamental to understanding weather and climate, as well as climate change and its impacts on humans and ecosystems. The ocean is principally forced by the atmosphere, which leads to the tides, currents, and waves. Currents and water masses transport nutrients and gases within and between ocean basins, controlling the productivity of marine waters and thus, the success of socio-economically important fisheries, along with determining how much atmospheric CO₂ the ocean can absorb.

The ocean covers 71% of the planet, yet is one of the least understood environments on Earth. It has absorbed the bulk of the heat and carbon released by humans since the Industrial Revolution, and supplies food resources and multiple services to coastal communities. In our courses, you will build quantitative skills that you will apply to learn about the physical and biogeochemical functioning of the ocean and atmosphere-ocean interactions from the tropics to the polar seas and from coastal waters to the abyssal depths. The more advanced courses focus on an integrated approach to physical-biogeochemical interactions in different oceanic regions and on the dynamics of the ocean-atmosphere system that are the basis of numerical models used for forecasts and climate projections.

WHO WOULD BE INTERESTED IN THIS MAJOR?

All students who are interested in Earth and environmental sciences, in how the oceans work, in weather and climate patterns, and in climate change. This major provides an excellent opportunity to understand the critical role of the ocean and the ocean-atmosphere system in keeping our wonderfully diverse and complex planet habitable for all.

WHAT COURSES WILL YOU TAKE?

The courses listed below are required for a major in Ocean & Atmosphere Science.

1ST YEAR LEVEL COURSES

- Chemistry
- Geosystems: Introduction to Earth & Environmental Sciences
- Mathematics and Statistics
- General Physics

2ND YEAR LEVEL COURSES

- Principles of Oceanography
- Marine Systems

3RD YEAR LEVEL COURSES

- Ocean & Atmosphere Dynamics
- Atmospheric Science

POSTGRADUATE OPPORTUNITIES FOR GRADUATES

The Oceanography Department also offers postgraduate opportunities for Honours, MSc, and PhD degrees. If you wish to continue with Honours in the Department, it is strongly recommended that you include a course in computer science and statistical methods in your curriculum. A Masters in Oceanography can be obtained either through a dissertation study or through the coursework + dissertation MSc program in Applied Ocean Sciences (Operational Oceanography stream). Postgraduate research brings opportunities to participate in oceanographic research expeditions and in major international projects on ocean, atmosphere, and climate. The research topics offered by the Department are listed on the website (<https://sea.uct.ac.za>).

CAREER OPPORTUNITIES FOR GRADUATES

Students graduating with a BSc degree with a major in Ocean & Atmosphere Science gain a multidisciplinary background in quantitative science with highly transferable skills. They are well placed to study further at postgraduate level, to join private industry firms, marine and environmental consulting firms, government agencies such as the South African Weather Service and Department of Forestry, Fisheries & Environment, or research institutes such as the Council for Scientific Research (CSIR), the Institute of Maritime Technology, and the South African Environmental Observation Network (SAEON). UCT postgraduates in ocean and atmosphere sciences are internationally recognized, and several alumni are working in major research institutions and companies worldwide.

MINIMUM ADMISSION AND SUBJECT REQUIREMENTS

FPS of 550 (but admission only guaranteed at FPS above 660)

Mathematics 70% & Physical Science 60%
NBT in Mathematics, AL & QL to be written



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