

# OCEANOGRAPHY - GRADUATE CERTIFICATE

- Ocean geographer: ATOC 5730 Physical Oceanography and Climate, GEOL 5270 Marine Chemistry and Geochemistry and ATOC 5051 Introduction to Physical Oceanography.

Graduate students can pursue the a graduate certificate while earning a normal graduate degree (MS or PhD) at CU Boulder or while taking coursework as a nondegree seeking student through Continuing Education's ACCESS Program, provided they have already earned a bachelor's degree and meet the course prerequisites.

Graduate certificates are noted on the official CU Boulder transcript.

## Requirements

Students who wish to obtain the graduate certificate in oceanography must complete at least three oceanography core courses (see below) passed with a letter grade of B or better. In addition, students may take an independent study course to replace one of the core courses.

### Required Courses and Credit Hours

Code	Title	Credit Hours
Complete at least three of the following courses:		
ATOC 5051	Introduction to Physical Oceanography	
ATOC 5060	Dynamics of the Atmosphere and Oceans	
ATOC 5061	Advanced Ocean Dynamics and Air-Sea Coupled ENSO Mechanisms	
ATOC 5200	Biogeochemical Oceanography	
ATOC 5300	The Global Carbon Cycle	
ATOC 5730	Physical Oceanography and Climate	
ASTR/ATOC 5400	Introduction to Fluid Dynamics	
ASTR 5410	Fluid Instabilities, Waves, and Turbulence	
GEOL 5270	Marine Chemistry and Geochemistry	
GEOL 5430	Paleoceanography and Paleoclimatology	

For additional information about the ATOC Certificate or the Oceanography Certificate, contact [atocasst@colorado.edu](mailto:atocasst@colorado.edu).

## Tracks

A few sample tracks satisfying the Certificate in Oceanography requirements:

- Astrophysical and planetary sciences student: ATOC 5051 Introduction to Physical Oceanography, ATOC 5060 Dynamics of the Atmosphere and Oceans, ASTR 5400 Introduction to Fluid Dynamics and GEOL 5270 Marine Chemistry and Geochemistry.
- Applied math hydrodynamicist: ATOC 5051 Introduction to Physical Oceanography, ASTR 5400 Introduction to Fluid Dynamics, ATOC 5060 Dynamics of the Atmosphere and Oceans and ASTR 5410 Fluid Instabilities, Waves, and Turbulence.
- Aerospace engineer remote sensing of the ocean: ATOC 5051 Introduction to Physical Oceanography, ATOC 5730 Physical Oceanography and Climate and ATOC 5061 Advanced Ocean Dynamics and Air-Sea Coupled ENSO Mechanisms.
- Geology paleoceanographer: GEOL 5270 Marine Chemistry and Geochemistry, ATOC 5051 Introduction to Physical Oceanography, GEOL 5430 Paleoceanography and Paleoclimatology and ATOC 5061 Advanced Ocean Dynamics and Air-Sea Coupled ENSO Mechanisms.