# OCEAN ENGINEERING (PH.D.)

https://ceps.unh.edu/ocean-engineering/program/phd/ocean-engineering

## Description

Students admitted to the ocean engineering Ph.D. program come from traditional engineering degree programs including physics, mathematics, computer science, and in some cases, marine science programs. Those entering the Ph.D. program with a B.S. degree from an engineering program should be prepared to begin the Ph.D. program directly. Those coming from a B.S. in physics, mathematics, or computer science will have their transcripts more carefully reviewed on an individual basis, as additional courses may be required.

A student in the ocean engineering Ph.D. program with a B.S. in engineering will be expected to take a minimum of 12 courses (exclusive of dissertation research and Ocean Seminars). A student entering with a relevant M.S. degree with comparable content will be expected to take a minimum of six courses (exclusive of dissertation research and Ocean Seminars).

## Requirements

### Required Courses

The full course requirements below are for students entering with a relevant B.S. degree.

Students entering with an M.S. degree must take a minimum of six of the listed courses, of which at least three must be at the 900 level. Students entering with an M.S. must either take the listed core courses or demonstrate equivalent knowledge from other programs to be able to successfully pass the OE Ph.D. qualifying exam. As part of preparation for their research, students often take additional, dissertation-specific courses. Additional graduate courses may also be required based on recommendations by the supervisor or dissertation committee.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>OE 990 &amp; OE 991</td>
<td>Ocean Seminars I and Ocean Seminars II</td>
<td>2</td>
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Select one of the following courses in oceanography or ocean science:

- BIOL 855 Biological Oceanography
- ESCI 852 Chemical Oceanography
- ESCI 858 Introduction to Physical Oceanography
- ESCI 859 Geological Oceanography

Complete the following core courses in ocean engineering:

- ESCI 820 Ocean Measurements Lab
- OE 853 Ocean Hydrodynamics
- OE 854 Ocean Waves and Tides
- OE 856 Spectral Analysis of Geophysical Time Series Data
- OE 865 Underwater Acoustics

Select two 900 level courses from the following list:

- ME 910 Turbulence
- OE 965 Advanced Underwater Acoustics
- OE 972 Hydrographic Field Course
- OE 995 Graduate Special Topics

Select an additional two CEPS electives (one at the 800 level; one at the 900 level):

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<tbody>
<tr>
<td>ME 886</td>
<td>Introduction to Finite Element Analysis</td>
<td>3-4</td>
</tr>
<tr>
<td>ME 986</td>
<td>Advanced Finite Element Analysis</td>
<td>3-4</td>
</tr>
</tbody>
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The general progress of a student through this program is expected to follow the time frame listed:

- **Year 1**: Coursework
- **Year 2**: Coursework, qualifier by the end of the year, form graduate dissertation committee
- **Year 3**: Research, dissertation proposal defense
- **Year 4**: Research
- **Year 5**: Research, dissertation defense

The course selection and sequencing will be established in consultation with the student’s guidance committee. There will be a qualifying examination on the core courses by the end of the second year. The goal of this exam is to test the breadth of a student’s knowledge in topic areas essential to ocean engineering. A formal dissertation proposal defense will include a written proposal, a public presentation and an oral exam. After successful completion of the qualifying exam and dissertation proposal defense, the student will be advanced to candidacy. The dissertation will be defended in a public forum when completed.

## Student Learning Outcomes

- Can conduct original research and develop new technologies in ocean engineering.
- Communicate research results through peer-reviewed publications and public presentations.