OCEAN ENGINEERING (PH.D.)

http://ccom.unh.edu/phd

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 will be expected to take a minimum of 12 courses (exclusive of dissertation research) beyond those required for a B.S. degree.

Requirements

Required Courses

Select one of the following courses in oceanography or ocean science:		3-4
ESCI 850	Biological Oceanography	
ESCI 852	Chemical Oceanography	
ESCI 858	Introduction to Physical Oceanography	
ESCI 859	Geological Oceanography	
Select three of the following core courses in ocean engineering:		10-12
OE 810	Ocean Measurements Laboratory	
OE 854	Ocean Waves and Tides	
OE 857	Coastal Engineering and Processes	
OE 865	Underwater Acoustics	
OE 871	Geodesy and Positioning for Ocean Mapping	
OE 874	Integrated Seabed Mapping Systems	
OE 875	Fundamentals of Ocean Mapping II	
Select two of the following courses in advanced OE topics (two at 900 level):		6-8
OE 965	Advanced Underwater Acoustics	
OE 972	Hydrographic Field Course	
OE 973	Seafloor Characterization	
OE 995	Graduate Special Topics	
Select two of the following courses (one at the 800 level; one at the 900 level):		6-8
MATH 845	Foundations of Applied Mathematics I	
MATH 846	Foundations of Applied Mathematics II	
MATH 853	Introduction to Numerical Methods	
MATH 856	Principles of Statistical Inference	
MATH 888	Complex Analysis	
MATH 896	Topics in Mathematics and Statistics	
MATH 931	Mathematical Physics	
ME 886	Introduction to Finite Element Analysis	
ME 986	Advanced Finite Element Analysis	
Select four of the following electives (two at the 800 level; two at the 900 level):		12-16
ME 807	Analytical Fluid Dynamics	
ME 886	Introduction to Finite Element Analysis	
ME 909	Viscous Flow	
ME 910	Turbulence	
ME 827	Advanced Mechanics of Solids	
ME 824	Vibrations Theory and Applications	
ME 877	Computer Aided Engineering	
CEE 822	Introduction to Marine Pollution and Control	
CEE 866	Introduction to Geotechnical Earthquake Engineering	
CEE 868	Geo-Environmental Engineering	
CEE 878	Foundation Design I	
CEE 879	Foundation Design II	
CEE 934	Advanced Bioenvironmental Engineering Design	
ECE 814	Introduction to Digital Signal Processing	
ECE 857	Fundamentals of Communication Systems	
ECE 860	Introduction to Fiber Optics	
ECE 939	Statistical Theory of Communications	
ECE 940	Information Theory	
ECE 941	Digital Signal Processing	
Total Credits		37-48

The general progress of a student through this program is expected to follow the time frame listed:

Year 1: Coursework, qualifier at the end of the year

Year 2: More coursework, thesis proposal presentation at the end of the year

Year 3: Research

Year 4: Research/thesis defense

Year 5: Research/thesis 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 student's specific area of interest after the first year, but no later than 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 and the student's area of interest. For each student there will be a list of mustknow topics; e.g., physical oceanography, underwater acoustics, fluid dynamics, mathematics. A formal Ph.D. proposal will then be written and presented in a seminar, which constitutes an oral exam. After successful completion, the student will be advanced to candidacy and work on the dissertation. The dissertation will be defended in a public forum when completed.