

## BACHELOR OF SCIENCE OPTION IN PHYSICAL OCEANOGRAPHY

***What is Physical Oceanography?*** Physical oceanography is the study of physical conditions and processes within the ocean, especially the motions and physical properties of ocean waters. Major components of physical oceanography include the dynamics of ocean currents, the variability of these currents on time-scales from seconds to millennia, ocean wave phenomena, the distribution of heat and salt and their transport through the ocean basins, and the exchange of momentum, heat, and freshwater between the ocean and the atmosphere. Physical oceanography has important applications in global climate, oceanic mixing, and coastal studies, but is only one of several sub-domains into which oceanography is divided; others include biological, chemical, and geological oceanography.

***How is the UNCW Physical Oceanography Option Unique?***

The UNCW Physics B.S. degree option in Physical Oceanography is rivaled only by a similar program at the University of Rhode Island; there are no others in North America. The strength of UNCW's marine programs results from a common emphasis on marine science within traditional science departments, along with shared cooperative interdisciplinary activities. The



Physics option in physical oceanography combines a sound grasp of physics fundamentals (classical mechanics, electricity and magnetism, experimental physics, thermodynamics, and quantum physics) with a working knowledge of the oceanographic domain. This enables students graduating with a major in physics to significantly improve their career potential in the environmental regime.

***Requirements:*** To complete the B.S. degree *Option in Physical Oceanography*, a student must complete the following coursework:

- All UNCW basic studies requirements
- PHY B.S. core requirements: CHM 101, CHM 102, MAT 161, MAT 162, MAT 261, MAT 361, PHY 201, PHY 202, PHY 311, PHY 321, PHY 335, PHY 411, PHY 444, PHY 455, PHY 495
- PHY Computer Competency requirement: PHY 315
- Additional courses with an oceanography emphasis: GLY 150, PHY 350, PHY 475, PHY 477, PHY 481; plus one of PHY 478, PHY 479, PHY 480

## B.S. Degree Physical Oceanography Option SAMPLE CURRICULUM

FRESHMAN YEAR			
Fall Semester	CH	Spring Semester	CH
ENG 101	3	ENG 201	3
MAT 161	4	MAT 162	4
PHY 201	4	PHY 202	4
CHM 101	4	CHM 102	4
	15		15

SOPHOMORE YEAR			
Fall Semester	CH	Spring Semester	CH
GLY 150	3	MAT 361	3
MAT 261	4	PHY 475	3
BASIC STUDIES	3	PED 101	2
ELECTIVES	5	BASIC STUDIES	6
	15		14

JUNIOR YEAR			
Fall Semester	CH	Spring Semester	CH
PHY 311	4	PHY 350	3
PHY 315	3	PHY 455	3
PHY 321	3	PHY 481	1
PHY 335	4	BASIC STUDIES	6
ELECTIVES	3	ELECTIVES	3
	17		16

SENIOR YEAR			
Fall Semester	CH	Spring Semester	CH
PHY 411	3	PHY 495	1
PHY 444	4	POCN ELECTIVE	3
PHY 477	3	BASIC STUDIES	3
BASIC STUDIES	6	ELECTIVES	9
	16		16

**Notes:** All Basic Studies courses must be selected in accordance with guidelines specified in the Undergraduate Catalog.

† Must be selected from PHY 478, PHY 479, PHY 480

**TOTAL: 124 HOURS**

### *Oceanography-Related Curricular Offerings in Physics:*

<b>PHY 350</b>	Fluid Mechanics
<b>PHY 420</b>	Global Climate Change
<b>PHY 475</b>	Physical Oceanography
<b>PHY 477</b>	Observational Methods and Data Analysis in Physical Oceanography
<b>PHY 478</b>	Geophysical Fluid Dynamics
<b>PHY 479</b>	Ocean Circulation Systems
<b>PHY 480</b>	Coastal and Estuarine Systems
<b>PHY 481</b>	Undergraduate Cruise Experience