

**Department of Oceanography
National Sun Yat-sen University
Curriculum for the Graduate School**

Subjects of Compulsory or Elective	Division Ph.D./M.S.	Division of Marine Biology		Division of Marine Chemistry and Geology		Division of Physical Oceanography
				Marine Chemistry	Marine Geology	
Compulsory	Ph.D. Program	<ul style="list-style-type: none"> ●Seminar in Marine Biology(I)(II)(III)(IV) ●Introduction to Oceanography ●Independent Studies in Marine Biology (I)(II)(III)(IV) <p><u>Core Curriculum : (Require 3 out of the 4)</u></p> <ul style="list-style-type: none"> ●Marine Ecology ●Systematics and Evolution ●Physiology of Marine Organisms ●Molecular Cell Biology 		<ul style="list-style-type: none"> ●Colloquium(I)(II)(III)(IV) ●Scientific English(I)(II)(III)(IV) 		<ul style="list-style-type: none"> ●Seminar in Physical Oceanography(I)(II)(III)(IV) ●Advanced Physical Oceanography(I)(II)
	Masters Program	<ul style="list-style-type: none"> ●Introduction to Oceanography ●Oceanographic Cruise <ul style="list-style-type: none"> ●Seminar in Marine Biology(I)(II)(III)(IV) ●Independent Studies in Marine Biology (I)(II)(III)(IV) <p><u>Core Curriculum : (Require 2 out of the 4)</u></p> <ul style="list-style-type: none"> ●Marine Ecology ●Systematics and Evolution ●Physiology of Marine Organisms ●Molecular Cell Biology 		<ul style="list-style-type: none"> ●Technical Writing(I) ●Advanced Marine Chemistry ●Advanced Marine Geology ●Colloquium(I)(II)(III)(IV) 		<ul style="list-style-type: none"> ●Seminar in Physical Oceanography(I)(II)(III)(IV) ●Advanced Physical Oceanography(I)(II)
Elective	Ph.D. Program	<ul style="list-style-type: none"> ●Special Topics on Oceanography ●Practicum in Oral Presentation for International Conferences ●Advanced Scientific English ●Technical Writing in English ●Frontier of Marine Sciences 				
		<ul style="list-style-type: none"> ●Special Topics in Fish Taxonomy ●Special Reading on Environment and Fish Resources(I)(II) ●Special Topics in Fish Nutrition ●Special Topics in Molluscs ●Special Topics on Marine Ecology ●Special Topics in Larval Nutrition 				
	Masters Program	<ul style="list-style-type: none"> ●Ichthyology ●Evolution ●Bioacoustics ●Readings in Evolutionary Biology ●Technical Writing(II) ●Fish Taxonomy ●Evolutionary Ecology ●Fish Nutrition ●Molluscs ●Marine Microbiology ●Readings in Environmental Physiology ●Marine Animal Behavior ●Marine Environmental Toxicology ●Biochemical Adaptation in Animals ●Research Methods in Biology ●Advanced Underwater Survey Technique ●Readings in Marine Molluscs ●Statistical Methods and Data Analysis 	<ul style="list-style-type: none"> ●Readings in Ecology(I)(II) ●Larval Ecology of Marine Invertebrates ●Environmental Biology of Fishes ●Ecology of Marine Benthos ●Aquatic Ecotoxicology ●Fish Ecology ●Atoll Ecology Research* ●Field Experimental Approaches* ●Aquaculture Biotechnology and Physiology ●Research Methods of Molecular Stress Physiology of Marine Animals ●Advanced Phycology and Practice ●Advanced Biochemistry and Practice ●Biology of Coral Reefs ●Marine Ecosystems Modeling and Management ●Advanced Marine Invertebrate Zoology 	<ul style="list-style-type: none"> ●Water Chemistry ●Marine Pollution ●Modern Oceanography ●Marine Analytical Chemistry ●Trace Analysis of Seawater ●Tracers Oceanography ●Introduction to Ocean Modeling ●Ocean Observation and Investigation ●Global Change and the Oceans ●Descriptive Chemical Oceanography ●Sedimentary Biogeochemistry ●Advanced Marine Geochemistry ●Marine Organic Geochemistry ●Estuarine and Marine Biogeochemistry ●Biogeochemistry of Trace Metals in the Ocean ●Analytical Organic Geochemistry and Its Application ●Microbial Processes and Element Cycles in the Ocean ●Theoretical Biogeochemistry ●Creativeness and Creation For New Idea, Marine Science(I)(II) ●Marine Environmental Impact Assessment 	<ul style="list-style-type: none"> ●Climate Dynamics ●Advanced Paleooceanography ●Introduction to Paleoclimatology ●Coastal Geology ●Analyses of Marine Sediments ●Coastal and Estuarine Processes ●Coastal and Estuarine Processes Laboratory ●Stable Isotope Geochemistry ●Advanced Radioisotope Geochemistry ●Independent Studies In Marine Geology and Biogeochemistry (I)(II)(III)(IV) ●Data Processing in Marine Chemistry and Geology 	<ul style="list-style-type: none"> ●Dynamical Oceanography ●Marine Numerical Analysis ●Ocean Currents and Circulation ●Physical Oceanography in Coastal Waters ●Geophysical Fluid Dynamics ●Ocean Turbulence and Mixing ●Field Observations and Data Analysis ●Large Scale Oceanic Waves and Tides ●Wave and Tide ●Independent Studies in Physical Oceanography (I)(II)(III)(IV) ●Signal Processing and Analysis ●Data Analysis in Physical Oceanography ●Environmental Data Analysis and Matlab Programming ●Data Analysis and Web Application Using Python ●Sea Ice and High-Latitude Oceanography
<ul style="list-style-type: none"> ●Advanced Scientific English ●Technical Writing in English ●Frontier of Marine Sciences <p>*These courses have safety concerns. Students attending these courses should pay attention to necessary measures and obtain water safety certificate first. Supplementary health/life insurance required.</p>						