



Course Description

OCP3002 | Survey of Oceanography | 3.00 Credits

This course explores the ocean origin, physical properties, salinity, temperature, sound, radiative properties, heat budget and climatic controls, tides, wind driven motion, monsoon circulation, El Nino phenomenon, subsurface water masses, oceanic circulation and paleoclimates. This course is designed for upper level students pursuing a BS in Science Education. Prerequisites: GLY1010, OCE1001; Corequisite: OCP3002L.

Course Competency	Learning Outcomes
<p>Competency 1: understand that the oceans are the single most dominant and distinctive feature on Earth and that they make our planet unique</p>	
<ol style="list-style-type: none"> 1. Discuss how the oceans control Earth’s climate making our planet fit for life. 2. Describe how the bottom of the Ocean is constantly changing due the Plate Tectonics Cycle. 3. Understand that Plate Tectonics makes our planet an unique place in the Solar System. 4. Summarize the birth and death of an ocean basin. 5. Analyze the chemical composition and physical properties of seawater. 6. Summarize how the ocean provides a three dimensional habitat for a diversity of life forms. 7. Evaluate how the Oceans provide humans with important economic resources. 	
<p>Competency 2: be able to describe the historical development of oceanography</p>	
<ol style="list-style-type: none"> 1. Discuss the development of Oceanography as a scientific discipline. 2. Describe the role Foontaine Maury in the development of Physical Oceanography. 3. List and describe the major branches of modern Oceanography. 	
<ol style="list-style-type: none"> 4. Name some modern research vessels and describe how each is used to explore the oceans. 	

Competency 3: display an understanding of ocean bathymetry	
<ol style="list-style-type: none"> 1. Locate and describe the features of continental margins. 2. Differentiate between passive and active continental margins. 3. Evaluate role of submarine canyons and turbidite currents. 4. Locate and describe the various features of the ocean basins. 5. Describe and give examples of deep-sea trenches and ocean ridges. 6. Analyze the role of fracture zones and tectonic ridges. 7. Describe volcanic activity within and along the margins of the ocean basins. 8. Summarize the origin and evolution of seamount, guyots and atolls. 9. Define salinity, explain how it is measured, and describe some conditions that cause it to vary. 	
Competency 4: understand oceanic chemistry	
<ol style="list-style-type: none"> 1. Identify the major ions found in seawater 2. Relate salinity to the relative amounts of these ions. 3. Identify some substances that they can be removed from seawater. 4. Map the temperature and density zones found in the oceans. 5. Analyze nutrient, oxygen and carbon dioxide variations in the water column. 	
Competency 5: understand biological oceanography	
<ol style="list-style-type: none"> 1. Evaluate the importance of microscopic plants and animals that live in the mixed layer. 2. Describe the different life zones and most 	
important marine ecosystems.	
Competency 6: display an understanding of ocean sediments	

<ol style="list-style-type: none"> 1. List direct and indirect methods of studying sea floor sediments 2. Analyze information obtained from direct samples. 3. Summarize the main families or groups of marine sediments. 4. Name the most important groups of ooze-making organisms and give examples of each. 5. Describe seafloor sediments and identify the sources of these sediments. 	
<p>Competency 7:display an understanding of the ocean/ atmosphere interface</p>	
<ol style="list-style-type: none"> 1. Evaluate the origin and role turbidites. 2. Summarize the positions and physical characteristics of the troposphere, stratosphere, mesosphere, thermosphere, and ozone layers. 3. Describe how convection cells in the atmosphere are created 4. Measure how convection cells affect global climate and wind patterns. 5. Given a weather map, locate warm, cold and stationary fronts, analyze the weather conditions around such fronts and predict the daily weather in those areas. 6. Summarize the life cycle of a hurricane 7. Evaluate the causes, effects, and socio-economic implications of the ENSO. 	
<p>Competency 8:be able to discuss oceanic circulation</p>	
<ol style="list-style-type: none"> 1. Define ocean currents 2. Map the general pattern of surface ocean currents. 3. Define wind driven circulation 4. Summarize how planetary wind patterns and the Coriolis force control surface 	

ocean currents.

5. Define Geostrophic flow and Western boundary effect.
6. Define Thermohaline Circulation.
7. Describe the major sources of deep-water.
8. Evaluate ways in which density currents begin and why they are important.
9. Summarize how upwelling occurs and why upwelling is essential to some marine ecosystems.

Updated: FALL TERM 2007