



Welcome to OS311 – Geological Oceanography!

Geological Oceanography is the study of the rocks, sediment and geological processes in the ocean. In this course we explore how ocean basins are created, where and how different types of marine sediments originate and deposit, tools and methods applied to studying the age, formation and movement of marine sequences, deep ocean geochemistry and marine resource extraction. This course builds on Physical Geology (OS204), and, as one of the four foundational disciplines in oceanography, is tied to the biology, chemistry and physics of the oceans.

Assessments:

- Exams - 60% (30% each exam)
- Current Issues Discussion - 20%
- Weekly Posting - 15%
- Participation - 5%

Assessments Details:

- **Weekly Posting:** Discussion on themes/topics connected to the week's class content.
- **1st Exam** – Week 7
- **2nd Exam** – During Finals Week
- **Current Issues Discussion** – Perspective engagement on a current issue in marine resources.

Grade Assignment

90 and above = A; 80-89 = B; 70-79 = C; 60-69 = D; Below 60 = F

Class Schedule (schedule may change; changes will be announced in class)

Week (W)	Content
(W1)	Introduction and Syllabus Chemical and Physical Models of the Earth
(W2)	The Hypsometric Curve Bowen's Reaction Series Plate Tectonics Overview
(W3)	Dynamic Models – What's Fast and What's Slow? Tectonics: Plate Margin Processes - Spreading Centers Tectonics: Plate Margin Processes - Subduction Zones
(W4)	Tectonics: Plate Margin Processes - Subduction Zones (cont.) Tectonics: Plate Margin Processes - Transverse Faulting Tectonics: Arc Volcanism and Mantle Plumes
(W5)	Large Igneous Provinces and Flood Basalts Continental Margins and Ocean Basin Formation Continental Margins and Ocean Basin Formation (cont.)
(W6)	Evaporites, Salt Deposits and Mud Diapirs Marine Geophysics and Geophysical Methods Interpretation of Marine Geophysical Data
(W7)	Exam 1 – Q&A Prep and Exam
SPRING BREAK	
(W8)	Paleoclimatology – Biological Methods Paleoclimatology – Chemical Methods Paleoclimatology – Physical Methods
(W9)	Offshore Sediment Transport: Fans and Turbidites Offshore Sediment Transport: Aeolian Transport and Bio-Sedimentation Atolls, Reefs, Chalk Cliffs and Oozes
(W10)	CCD + Amorphous vs Crystalline Mineral Stability Global Sea Level Curves and Coastal Onlap/Offlap Sequence Stratigraphy
(W11)	Seafloor Hydrothermal Vents and Chemosynthesis Sulfide and Sulfate Mineral Stability Clathrates
(W12)	Phosphorites Big Data - Remote Sensing and Aids to Navigation Contamination and Environmental Impacts
(W13)	Contamination and Environmental Impacts – Case Study: Deepwater Horizon Contamination and Environmental Impacts – Case Study (cont.) Contamination and Environmental Impacts – Case Study (cont.) – Guest Speaker
(W14)	Current Issues Discussion: Seafloor Mn Mining (prep) Current Issues Discussion: Seafloor Mn Mining Current Issues Discussion: Seafloor Mn Mining
FINALS WEEK	Exam 2