

**Oceanography: Global Climate Change
Fall/ Winter 2011 – 2012**

**Syllabus
Dr. John Wnek**

This is a **tentative** list of assignments and topics that will be covered throughout the semester. Please complete the assignments prior to the major unit evaluations. I will check them in your journal books!

| Date | Topic | Assignment |
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| Tue. Sept. 6 | Welcome and Indoctrination Safety Introduction, Journaling, Navigation | Forms and Texts Turn in Summer Assignment |
| Wed. Sept. 7 | Ocean and Atmosphere: Convection Start Meteorology | Chapt. 7 SQ#1 |
| Thur. Sept. 8 | Wind Bands and Convection El Nino Ocean Project Development | Chapt. 7 SQ#3-6 El Nino Article |
| Fri. Sept. 9 | Field Orientation and Meteorological Data Solar Ephemerals, Barometric Pressure, and basic meteorological field observations (possibly aboard the Sirenia) | Chapter 7 SQ #7-10 |
| Sun. Sept. 11 | Beach Plum Festival at Island Beach State Park from 9 a.m. to 3 p.m. | |
| Mon. Sept. 12 | El Nino and Related Articles Global Climate Change Project Development | Chapt.7 SQ#11-13 |
| Tue. Sept. 13 | Use of computers, lesson on statistical Analysis and start Navigation Lessons Ocean Project Development | Chapter 2 - SQ #1-4 |
| Wed. Sept. 14 | Navigation and Basic Dead Reckoning Terminology (45 minutes) Lessons from Hurricane Irene | Chapter 2 SQ #5, 6 |
| Thur. Sept. 15 | NJDEP Water Testing Team Day Excel Work and Graphing Exercise | Chapter 2 SQ #7-10 |
| Fri. Sept. 16 | Navigation – Advanced and Bathymetry Field Navigation Activity UTM's | Chapter 2 SQ #11-14 |
| Mon. Sept. 19 | Bathymetry – How do we measure the Oceans? What is acoustic profiling? In class activity <u>Journal Book Check</u> | Chapter 2 SP#1 Role Development |
| Tue. Sept. 20 | Bathymetry Activity Field Collection of Sediment (Ponar Grab) Measuring the Bottom of the Bay Block 2 in Field | Chapter 4 Introduction SQ #1-3 |

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| Date | Topic | Assignment |
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| Wed. Sept. 21 | Calcareous & Siliceous Composition Measuring the Bottom of the Bay Block 3 in Field | Chapt. 4 SQ#4-6 |
| Thurs. Sept. 22 | Sediment Analysis Laboratory - Use of Sieves - Analysis of Particles - Determining Conductivity | Chapt.4 SQ#7-10 |
| Fri. Sept. 23 | Sediment & Seabed Sources : Why are they Where they are in the oceans? The Bay? | Chapt. 4 SQ#11-12 |
| Mon. Sept. 26 | Global Climate Change Topics Results of a Changing Climate | Chapter 12 SQ#1-5 |
| Tue. Sept. 27 | <i>The Coastal Zones – Types</i> Categorization, Notes, Coastal Features Coastal Feature Project | Chapter 12 SQ#6-8 Journal Work |
| Wed. Sept. 28 | Lesson on Coastal Features: Independent Work on Coastal Feature Project Take Home Evaluation #1 | Chapter 12 SQ#9 |
| Thurs. Sept. 29 | School Closed Rosh Hashanah | Coastal Activity |
| Fri. Sept. 30 | Completion of Coastal Activity Completion of Team Coastal Projects Take Home Evaluation #1 Due | Chapt. 3 SQ #1 |
| Sunday October 2 is Cattus Island Park’s Nature Festival (Volunteers Needed) | | |
| Mon. Oct. 3 | Field Sediment Analysis In field determinations Beach Zones and Beach Analysis Presentation Set 1 | Chapt 3 SQ #2 – 5 |
| Tue. Oct. 4 | Overview of deep sea structures Presentation Set 2 | Chapt. 3 SQ#6-10 |
| Wed. Oct. 5 | Plate Tectonics and Evidence Global Climate Change Presentation Set 3 | Lab Write-up |
| Thurs. Oct. 6 | Island Beach State Park Student Summit All Seniors will assist with this event | Presentations Continued |
| Fri. Oct. 7 | Sediments, Tectonics, Beach Composition Evaluation #2 Today (60 minute class) | Start Currents |

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| Mon. Oct. 10 | <i>School Closed for Columbus Day (Landing on San Salvador)</i> | |
| Tue. Oct. 11 | Start: Surface Currents -Ekman Transport - Upwelling | Chapt. 9 SQ#1-4 |
| Wed. Oct. 12 | The Gulf Stream and Major Ocean Currents | Chapt. 9 SQ#5-9 |
| Thur. Oct. 13 | Global Currents and Circulation -The Gulf Stream and Global Climate Change | Chapt. 9 SQ#10-12 |
| Fri. Oct. 14 | Project Development Day/ Sirenia | Chapt. 10 Read |
| Mon. Oct. 17 | Start Waves aboard the Sirenia (Measurements) - Wave Period - Wave Length - Wave Speed | Chapt. 10 SQ#1-5 |
| Tue. Oct. 18 | Deep versus Shallow Water Waves Bring Calculators | Chapt. 10 SQ#6-9 |
| Wed. Oct. 19 | Wave Table (Lab on Wave Properties) - Diffraction - Reflection - Refraction | Chapt. 10 SQ#10-12 |
| Thur. Oct. 20 | Wave Measurements Write-up on Physical and Geological due tomorrow | Chapt. 10 SQ#13, 15 |
| Fri. Oct. 21 | First Field Write-up on Sediments/Physical Due Tsunami Day! | |
| Mon. Oct. 24 | Evaluation #3 on Currents and Tides Start Tides: In the field tide activity | Chapt. 11 SQ#2 – 6 |
| Tue. Oct. 25 | Tides: Causes and Predictions | Chapt. 11 SQ#7-10 |
| Wed. Oct. 26 | Tides: Consequences for Global Climate Change | Chapt. 11 SQ#11-14 |
| Thurs. Oct. 27 | <u>Journal Book Check</u> Tide Predictions Continued Work on Project | Work on Term Paper |
| Fri. Oct. 28 | Project Work/Flex Day | Work on Term Paper |

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| Mon. Oct. 31 | Start: Properties of Water “Lab-a-thon 2011” | Chapt. 5 Read |
| Tue. Nov. 1 | Happy Election Day! Lab on Heat Capacity | Chapt. 5 SQ#1-4 |
| Wed. Nov. 2 | Major Paper Due Today Lab on Gases in Salt Water | Chapt. 5 SQ#5-9 |
| Thurs. Nov. 3 | Properties of Water Continued | Chapt. 5 SQ#10-13 |
| Fri. Nov. 4 | Light in Water Lab Use of Turbidity Units Testing for Optical Brighteners Field Day | Chapt. 5 SQ #14 |
| Mon. Nov. 7 | Properties of Water: Sound Types of Fog | Study/Review |
| Tue. Nov. 8 | Evaluation #4 on Tides and Salt Water | Start Chapt. 6 |
| Wed. Nov. 9 | Icebergs and Glacial Ice The future based on Global Climate Change | Chapt. 6 SQ#1 |
| Thur. Nov. 10 Fri. Nov. 11 | School Closed for NJEA Teacher’s Convention Use this time to complete college applications | |
| Mon. Nov. 14 | Field Day (Measuring pH, Salinity) | Chapt. 6 SQ#2 |
| Tue. Nov. 15 | Chemical Oceanography: Seawater pH of Seawater: How, Why and the Future | Chapt. 6 SQ#3 & 4 |
| Wed. Nov. 16 | Five Ways to Measure Salinity Lab - Hydrometry - Refractometry - Conductivity - Evaporation - Knudsen Titration | Chapt. 6 SQ#5 |
| Thur. Nov. 17 | <u>Journal Book Check</u> Lab on 5 methods continued | Chapt. 6 SQ#6 |
| Fri. Nov. 18 | Field Collection: Sulfates and Marshes | Chapt. 6 SQ #8, 9 |
| Mon. Nov. 21 | Field Day: Nutrients at the start of winter Cycle collection | Chapt. 6 SQ#10-12 |

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| Tue. Nov. 22 | Nutrients and Seawater: How different are they than freshwater? Eleven Major Constituents in Seawater | Chapt. 6 SQ#13 |
| Wed. Nov. 23 | Project Development Day | Work on Project |
| Thur. Nov. 24 Fri. Nov. 25 | Happy Thanksgiving Happy Left-over Day | |
| Mon. Nov. 28 | Field Collection of Gas Data | Chapt. 6 SQ#14 |
| Tue. Nov. 29 | Evaluation #5 on Chemical Oceanography Analysis of Data and Overview of Seawater and Gases: Implications for Climate Change | Chapt. 8 SQ#1 |
| Wed. Nov. 30 | Density of Seawater: Water Types and Water Masses: Lab Set up | Chapt. 8 SQ#2 |
| Thur. Dec. 1 | Lab on Densities (Temp/Density Differences) | Chapt. 8 SQ #3,4 |
| Fri. Dec. 2 | Field: T-S Diagrams Analysis | Chapt. 8 SQ#5 |
| Mon. Dec. 5 | Field Visit to Rutgers IMCS (Tuckerton) Measuring the Ocean Layers (Tentative) | Chapt. 8 SQ#6-8 |
| Tue. Dec. 6 | Field Write-up on Rutgers Visit A Comparison of Oceans | Chapt. 8 SQ#9,10 |
| Wed. Dec. 7 | Activity of Water Types and Masses | Work on Activity |
| Thur. Dec. 8 | Energy from the Ocean: Ocean Thermal Energy and Feasibility | Chapt.8 SQ#11,12 |
| Fri. Dec. 9 | <u>Journal Book Check</u> Project Development | Chapt. 8 SQ#15 |
| Mon. Dec. 12 | Field Activity TBD | Review Chapt. 8 |
| Tue. Dec. 13 | Review Chapter 8 on Ocean Circulation Start Ocean Warrior by Paul Watson | Review Chapt. 8 |
| Wed. Dec. 14 | Evaluation #6 on Ocean Circulation | Project Development |
| Thur. Dec. 15 | Project Development | Ocean Warrior Chapters Assigned |
| Fri. Dec. 16 | Field: Ocean and the Atmosphere | Chapt. 7 Read Section 1 |

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| Mon. Dec. 19 | Project Development | Find Paper for Journal Review #2 |
| Tue. Dec. 20 | Work on Field write-up #2 on Chemical & Physical | Work on Field Write-up |
| Wed. Dec. 21 | Project Development Work on Field Write-up #2 Ocean Warrior Questions | Ocean Warrior Chapters Assigned |
| Thur. Dec. 22 | Field Write-up #2 Due | Ocean Warrior Reading |
| Fri. Dec. 23 | Project Development Happy Holidays! | |
| Mon. Jan. 2 | School Closed for New Year's Day Observed | |
| Tue. Jan. 3 | Work on Project | Readings as Assigned Work on Take-Home |
| Wed. Jan. 4 | Work on Project | Readings as Assigned Work on Take-Home |
| Thur. Jan. 5 | Global Climate Change: Weather Extremes! | Readings as Assigned Work on Take-Home |
| Fri. Jan. 6 | Project Day (Possible Field Day) | Work on Take Home |
| Mon. Jan. 8 | School Closed for Dr. Martin Luther King Jr. Day We will have a volunteer opportunity for those wanting to do service | |
| Tue. Jan. 9 | Project Team Presentation(s) | Work on Take Home |
| Wed. Jan. 10 | Take Home Evaluation Due (Eval #7) Project Team Presentation(s) | Project Work |
| Thur. Jan. 11 | Project Evaluations and Critiques | Review for Final |
| Fri. Jan. 12 – Jan. 24 | Estuary Topics TBD and Review | |
| Mon. Jan. 20 | <u>Final Journal Book Check</u> | |

Final Exam to Be Determined: Comprehensive Exam