OCEAN 210: Integrative Oceanography  
Syllabus (Winter 2019)

**Description:** Fundamentals of ocean science are presented to emphasize the relationships between interdependent physical, chemical, biological, and geological process. Students apply tools from the major scientific disciplines to understand major changes predicted for future oceanic environments. Grades based on quantitative problem sets, midterm and final exams, and class participation.

**Prof:**  
Curtis Deutsch, cdeutsch@uw.edu; Office 309 Ocean Sci. Bldg.

**Logistics:**  
Information that changes each quarter, including dates of exams, names and email addresses of TA’s, location and times of Discussion Sections, can be found in the introductory slides (Ocn210_Introduction.ppt) on the canvas web page.

**Grading**  
- Problem Sets 40%  
- Mid-term exam (In class) 20%  
- Final exam 30%  
- Participation 10%

**Textbooks and Readings:** No textbook is required. Course material will be made available through self-contained lecture slides. Online textbooks and other resources will be provided as optional material for further reading/reference, via links on the course website.

**Topics**  

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<th>Week</th>
<th>I. Ocean Properties</th>
<th>II. Surface Ocean</th>
<th>III. Thermocline and Deep Ocean</th>
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<td></td>
<td>b. Seawater properties and their distributions</td>
<td>b. Ekman transport: Convergence, divergence, upwelling and downwelling</td>
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<td>c. Property Budgets and transport</td>
<td>c. Mixed layer</td>
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<td>d. Steady-state conditions, residence times</td>
<td>d. Plankton community composition, size and function</td>
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<td>e. Net Primary Productivity, top-down and bottom-up controls</td>
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<td>f. Light, temperature and nutrients</td>
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<td>g. Eddies and productivity</td>
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<td>h. Seasonality: the spring bloom, mixed layer depth, light, nutrients</td>
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b. Ocean gyres and connection to surface circulation  
c. Fate of sinking matter  
d. Oxygen depletion  
e. Deep water formation and characteristics  
f. Abyssal circulation

IV. Ocean Climate and Ecosystems
   a. Ocean-Atmosphere Interactions: CO₂ and heat exchange  
   b. Climate variability, El Nino and La Nina events  
   c. Ecosystem variability, Food webs and fisheries  
   d. Anthropogenic Climate Change: ocean warming, sea ice loss, sea level rise, CO₂ uptake and ocean acidification  
   e. Pleistocene Ice Ages: Glacial/Interglacial oscillations, deep water formation rates, iron fertilization, CO₂, role of southern ocean, sea level

Lectures and Discussion Sections: Lectures will be accompanied by slides and work on the whiteboard. Slides will be posted the night before each lecture. Each student is responsible for taking notes on work done on the whiteboard. Discussion sections are dedicated to discussing lecture material and helping with homework problems.

Homework: Homework problems are essential to learning the course material. Assignments will be made available each Monday, and will be due the following Monday in class, unless otherwise noted. Late assignments will lose 10% per day, and will not be accepted once the solutions are made available.

Midterms and Final Exam: The midterm will cover material from the first half of the course. The final exam will be comprehensive and cover all course material. The midterms and final exam will cover the content of lectures and homework assignments. THERE ARE NO MAKE-UP EXAMS.

Participation: Learning is an active, not a passive, process. To encourage your active engagement with the lecture material, we will collect a short written response from each student for each lecture. These may be a response to a question posed in class, or a question/observation/confusion/idea that you have and submit in writing.

A complete syllabus with additional course policies is posted on the course canvas website.

Academic Accommodations: If you anticipate or experience barriers to your learning or full participation in this course based on a physical, learning, or mental health disability, please immediately contact the instructor to discuss possible accommodation(s). A more complete description of the disability policy of the College of the Environment can be found here. If you have, or think you have, a temporary or permanent disability that impacts your participation in any course, please also contact Disability Resources for Students (DRS) at: 206-543-8924 V / 206-543-8925 TDD / uwdss@uw.edu e-mail/ http://www.uw.edu/students/drs

Students must inform the instructor no later than the first week of the quarter of any
accommodation(s) you will or may potentially require. Instructor and TAs will maintain strict confidentiality of any student’s disability and accommodation(s); help all students meet the learning objectives of this course.

**Student Athletes**: The Student Athlete Travel Notification form (supplied by the Department of Intercollegiate Athletics) indicating which classes will be missed must be turned in to instructors at the start of the quarter. We will discuss how you can fulfill the requirements.

**Academic Honesty**: At the University level, passing anyone else's scholarly work, which can include: written material, exam answers, graphics or other images, and even ideas as your own, without proper attribution, is considered academic misconduct. Plagiarism, cheating, and other misconduct are serious violations of the University of Washington Student Conduct Code (WAC 478-120). We expect that you will know and follow the UW's policies on cheating and plagiarism. Any suspected cases of academic misconduct will be handled according to UW regulations. For more information, see the College of the Environment Academic Misconduct Policy and the UW Community Standards and Student Conduct website.