ESCI 6590/4360 Physical Oceanography
TR 3:30-4:45 PM TBD Credit hours: 3

Instructor: Dr. Toshiaki Shinoda
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Course Description: Physical description of the sea, physical properties of seawater and sea ice, methods and measurements, wind-driven ocean circulation, thermohaline ocean circulation. Seasonal and interannual variability such as El Niño/Southern Oscillation phenomenon.

Textbooks:

Student Learning Outcomes: At the conclusion of this course the student should be able to understand (i) fundamental concepts in Physical Oceanography including the physical setting, (ii) the oceanic heat, salt, and mass budget, and (iii) the mean ocean circulation and its variability.

Class Policies: Students are expected to attend all scheduled classes and to participate in class activities. Group discussions are encouraged. However, you are supposed to work out any assignments individually. Work handed in is assumed to be yours, unless specified to be a group project. Please note that university alcohol and drug policies are strictly enforced.

Grading: All classes will be composed of (but not limited to) presentations, discussions and seminars. Assignments will include written summaries of assigned reading, exercises based on the lecture material, class presentations, and debate of class related issues.

The final grade will come from: Mid-term Exam (25%), class assignments (25%), review paper (15%), oral presentation of the review paper (10%), and final exam (25%)

Letter grades will be assigned as follows: A = 90-100%, B = 80-89.99%, C = 70-79.99%, D = 60-69.99% F = 0-59.99%

Paper: A review paper on a topic related to and expanding class material is due four weeks before the end of the semester. Paper should be 10-15 pages long, 1.5 lines spacing, 12pt times new roman font, citing at least 5 peer reviewed papers, 4 figures. The student will make an oral presentation of the paper to the class which will account for 10% of the total class grade.
Notice to Students with Disabilities: Texas A&M University-Corpus Christi complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. If you suspect that you may have a disability (physical impairment, learning disability, psychiatric disability, etc.), please contact the Services for Students with Disabilities Office, located in Driftwood 101, at 825-5816. If you need disability accommodations in this class, please see me as soon as possible.

Academic Advising: The College of Science and Technology requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. The College's Academic Advising Center is located in Faculty Center 178, and can be reached at 825-6094

Grade Appeal Process: A student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is on the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details on the process, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, consult Texas A&M University-Corpus Christi University Procedure 13.02.99.C2.01 Student Grade Appeal Procedures (http://www.tamucc.edu/provost/university_rules/index.html), and the College of Science and Engineering Grade Appeals webpage (http://sci.tamucc.edu/students/GradeAppeal.html). For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school or the College of Science and Engineering Dean’s Office.

Outline of Lecture Topics

1. Introduction to Physical Oceanography
2. Ocean Dimensions, Shapes, and Bottom Materials
3. Physical Properties of Seawater
4. Typical Distributions of Water Characteristics
5. Mass, Salt, and Heat Budgets and Wind Forcing
6. Data Analysis Concepts and Observational Methods
7. Dynamical Processes for Descriptive Ocean Circulation
8. Gravity Waves, Tides, and Coastal Oceanography
9. Atlantic Ocean
10. Pacific Ocean
11. Indian Ocean
12. Arctic Ocean and Nordic Seas
13. Southern Ocean
14. Global Circulation and Water Properties
15. Estuaries, Coral Reefs, and Adjacent Seas
16. Climate and the Oceans