Oceanography (ESCI 3351.002)
Department of Physical and Environmental Sciences
Fall 2019

A. COURSE INFORMATION

Course number/section: ESCI 3351.002
Class meeting time: M W 7:00 pm-8:15 pm
Class location: IH-268
Course Website: https://bb9.tamucc.edu/ (Blackboard Sign In page)

B. INSTRUCTOR INFORMATION

Instructor: Tommy Winning
Office location: NRC 3414
Office hours: M, W 4:00-5:30 pm and T,R 11:00 am-1:00 pm (or by appointment)
Telephone: 361-825-2814 (Don’t use this)
e-mail: twinning@islander.tamucc.edu
Appointments: Please make at least 24 hours in advance by e-mail

C. COURSE DESCRIPTION

Catalog Course Description
Methods and principles of oceanography. A survey of oceanography with emphasis placed on the physical processes affecting water and water masses of the world oceans.
Prerequisites: CHEN 1412, or ESCI 1401, or GEOL 1403, or permission of instructor.

Extended Course Description
Investigates the broad-scale features and dynamics of the Earth’s oceans. The course is roughly divided amongst the four main disciplines of oceanography: marine geology, marine chemistry, physical oceanography (i.e., circulation), and marine biology. Students will learn there is much overlap and interdependence between these disciplines. Specific topics include seafloor spreading, marine sediments, salinity, biogeochemical cycles, ocean structure, currents, waves, tides, primary production, marine ecology, global warming, and much more.

D. PREREQUISITES AND COREQUISITES

Prerequisites: CHEM 1312, or ESCI 1401 and 1402, or GEOL 1403, or permission
Corequisites: None

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES
Required Textbook
Trujillo and Thurman, Essentials of Oceanography 11th Edition. Earlier editions may be used but it is up to the student to keep track of differences. Professor is not responsible for variations between textbooks.

Supplies: None

F. STUDENT LEARNING OUTCOMES AND ASSESSMENT
Assessment is a process used by instructors to help improve learning. Assessment is essential for effective learning because it provides feedback to both students and instructors. A critical step in this process is making clear the course’s student learning outcomes that describe what students are expected to learn to be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with students on how well they are accomplishing these learning outcomes students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning.

By the end of this course, students should be able to:

1. Predict distribution of organisms based on physical and chemical hydrographic data.
2. Assess news with respect to ocean events or oceanography in general; read and interpret articles in the news.
3. Explain interrelationships of oceans to other Earth Systems.
4. Evaluate the interaction between humans and the ocean.
5. Describe ocean chemistry and processes of nutrient cycling.

G. INSTRUCTIONAL METHODS AND ACTIVITIES
The course will be taught through traditional lectures with homework exercises that review and emphasize the lecture material. In addition, there will be a writing assignment that will be due on November 21st at 5:00 pm.

H. MAJOR COURSE REQUIREMENTS AND GRADING
Your final letter grade will be based on the percentage you earn out of a possible 100 points, which are distributed as follows. Participation will be assessed through class attendance and clicker questions.

Term Paper: A paper related and expanding a class topic is due on November 21 by 5:00 pm in WORD format using Blackboard. Paper should be 6-8 pages in length (not counting the title page and the bibliography) using 12 point font, Times New Roman font, double-spaced, 1” margins, APA/MLA citation format), citing at least 5 peer reviewed papers from the past decade. Overdue assignments will be deducted 10 points each day it is late; however, after 5 days, a zero (0) will be given. Please refer to the instructions for further details.
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%. A note on rounding as it will inevitably be asked. For exams, assignments or the overall class grade; a score of X9.5 or higher will be rounded up to the next grade, a score of X9 will not. Rounding in a student’s favor will only occur if all assignments have been turned in.

Any student found cheating will result in an automatic zero for the assignment.

The learning outcomes stated earlier will be assessed through a variety of methods as noted in the following table.

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework and Quizzes*</td>
<td>15</td>
</tr>
<tr>
<td>Participation</td>
<td>10</td>
</tr>
<tr>
<td>Term Paper**</td>
<td>25</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>25</td>
</tr>
<tr>
<td>Final Exam</td>
<td>25</td>
</tr>
</tbody>
</table>

*Assigned periodically throughout the semester
**Reference handout will be provided

I. COURSE CONTENT/SCHEDULE
### Physical Oceanography

<table>
<thead>
<tr>
<th>Week No.</th>
<th>Week</th>
<th>TOPIC</th>
<th>Learning Concepts</th>
<th>Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>August 26</td>
<td>Class introduction</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>August 28</td>
<td>World oceans</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>September 2</td>
<td>No Class-Labor Day</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>September 4</td>
<td>Plate tectonics and the ocean floor</td>
<td>Seafloor spreading, convection, paleomagnetism, IODP</td>
<td>Ch. 2</td>
</tr>
<tr>
<td>3</td>
<td>September 9</td>
<td>Using the library</td>
<td>Tutorial for library research</td>
<td></td>
</tr>
<tr>
<td></td>
<td>September 11</td>
<td>Marine Provinces</td>
<td>Mid-ocean ridges, subduction zones, transforms</td>
<td>Ch. 3</td>
</tr>
<tr>
<td>4</td>
<td>September 16</td>
<td>Marine Sediments</td>
<td>Size, Stokes’s Law, terrigenous, calcareous, siliceous</td>
<td>Ch. 4</td>
</tr>
<tr>
<td></td>
<td>September 18</td>
<td>Marine Sediments</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Chemical Oceanography

<table>
<thead>
<tr>
<th>Week No.</th>
<th>Week</th>
<th>TOPIC</th>
<th>Learning Concepts</th>
<th>Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>September 23</td>
<td>Water and Seawater</td>
<td>Heat, temperature, density, light, sound</td>
<td>Ch. 5</td>
</tr>
<tr>
<td></td>
<td>September 25</td>
<td>Water and Seawater</td>
<td></td>
<td>Ch. 5</td>
</tr>
<tr>
<td>6</td>
<td>September 30</td>
<td>Biogeochemical Cycles</td>
<td>Redox, photosynthesis, respiration, Redfield ratio</td>
<td>Supplement</td>
</tr>
<tr>
<td></td>
<td>October 2</td>
<td>Biogeochemical Cycles</td>
<td></td>
<td>Supplement</td>
</tr>
</tbody>
</table>

### Physical Oceanography

<table>
<thead>
<tr>
<th>Week No.</th>
<th>Week</th>
<th>TOPIC</th>
<th>Learning Concepts</th>
<th>Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>October 7</td>
<td>Air-Sea Interaction</td>
<td>Solar radiation, atmospheric circulation, Coriolis force</td>
<td>Ch. 6</td>
</tr>
<tr>
<td></td>
<td>October 9</td>
<td>Ocean Circulation</td>
<td>Upper ocean currents, deep ocean currents, upwelling</td>
<td>Ch. 7</td>
</tr>
<tr>
<td>8</td>
<td>October 14</td>
<td>Midterm 1</td>
<td></td>
<td>Ch. 1-7 and supplement</td>
</tr>
<tr>
<td></td>
<td>October 16</td>
<td>Waves and Water Dynamics</td>
<td>Wave forces, sea state, deep vs. shallow</td>
<td>Ch. 8</td>
</tr>
<tr>
<td>Week No.</td>
<td>Week</td>
<td>TOPIC</td>
<td>Learning Concepts</td>
<td>Reading</td>
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</tr>
<tr>
<td>9</td>
<td>October 21</td>
<td>Tides</td>
<td>Gravitation, amphidromic points, moon phases</td>
<td>Ch. 9</td>
</tr>
<tr>
<td></td>
<td>October 23</td>
<td>Tides</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>October 28</td>
<td>Coastal Processes</td>
<td>Beach processes, shoreline erosion, estuaries, lagoons</td>
<td>Ch. 10</td>
</tr>
<tr>
<td></td>
<td>October 30</td>
<td>Coastal Processes</td>
<td>-</td>
<td>Ch. 11 (353-372)</td>
</tr>
</tbody>
</table>

**Biological Oceanography & Ecosystem Function**

<table>
<thead>
<tr>
<th>Week No.</th>
<th>Week</th>
<th>TOPIC</th>
<th>Learning Concepts</th>
<th>Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>November 4</td>
<td>Marine Life, Biological Productivity</td>
<td>Classification, adaptation, ecosystems, primary production</td>
<td>Ch. 12-13</td>
</tr>
<tr>
<td></td>
<td>November 6</td>
<td>Marine Life, Biological Productivity</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>November 11</td>
<td>Pelagic and Benthic Animals</td>
<td>Coral reefs, rocky intertidal, deep sea, hydrothermal vents</td>
<td>Ch. 14-15</td>
</tr>
<tr>
<td></td>
<td>November 13</td>
<td>Pelagic and Benthic Animals</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>November 18</td>
<td>Marine Pollution</td>
<td>Point source vs. non-point source pollution</td>
<td>Ch. 11 (373-393)</td>
</tr>
<tr>
<td></td>
<td>November 20</td>
<td>Climate Change</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>November 25</td>
<td>Climate Change</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>November 27</td>
<td>Reading Day-No Class</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>December 2</td>
<td>Catch-up Day</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>December 4</td>
<td>Final Exam Review</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>December 11</td>
<td>Final Exam</td>
<td>7:00 p.m.-9:45 p.m.</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: Changes in this course schedule may be necessary and will be announced to the class by the instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.

*Final will be cumulative, but with a heavier distribution from after the mid-term. We’ll talk about it when it’s much closer.

**Term paper due Thursday November 21, 2019 at 11:59 pm**

**J. COURSE POLICIES**
Attendance/Tardiness
Each student’s individual career experiences provide valuable perspective to their peers. Therefore, it is critical that you attend class regularly to be a partner in this enhanced learning environment. At each class meeting, attendance will be noted. It is each student’s responsibility to contact the instructor directly (phone or e-mail), in advance, if class will be missed. The instructor will not accept late work without valid reasons. Students with a university approved scheduled absence (athletics, military duty, etc.) must contact the instructor well in advance (>72 hrs) of a scheduled absence. Exams may be taken early in those specific cases. Students who do not arrange to take exams ahead of time will not be eligible for this special consideration. A written excuse from the university department involved is required.

Students are encouraged to contact the instructor any time they are not achieving their intended level of success, prior to taking any other action. Students who need to withdraw must complete an official form and submit it consistent with college policy no later than the official published date. “Incomplete” grades are awarded only when an emergency prevents a student from completing a minor portion (less than 20%) of the course assignments.

Active participation is a part of your grade. It includes (1) asking questions; (2) answering questions with supportive evidence; (3) responding to other student’s comments, etc. Students are expected to be on time for class, to address others with respect, and to project an attentive and concerned demeanor.

Late Work and Make-up Exams
All exams count toward your class grade. No exam grade will be dropped. No make-up exams will be given. If an exam is missed with proper prior notification, the test may be taken as soon as possible after the exam date. If the exam is not taken, a grade of zero (0) will be entered.

Extra Credit
Extra credit assignments are at the discretion of the instructor.

Cell Phone Use
The use of cell phones and other personal electronic devices (PEDs) are a distraction and prohibited during class. All cell phones must be turned off during the class period, unless an exception is warranted. Voice recording of lectures is allowed, but no video or photography is allowed during class.

Laptop Use
Laptop computers and tablets may be used in the classroom as long as they are not a nuisance or distracting to other students. Loud typing, viewing content that is not relevant to the class or otherwise inappropriate.

Food in Class
Snacks and drinks are permitted to the extent they are not a distraction.

Missed Exam
If an exam is missed with proper prior notification, the test may be taken as soon as possible after the exam date. If the exam is not taken a grade of zero (0) will be entered.

**Participation**
Four or more absences, with the exception of death in the immediate family, sick child/spouse, military service, or personal sickness may result in a failing grade. Please contact the instructor by phone message or e-mail before class to let the instructor know of your absence.

**Other**
Cheating is defined as:
- Copying to any extent the work of another student
- Intentionally assisting another student during an examination
- Having access to material related to an examination during an examination
- Possessing or having access to unauthorized copies of an examination
- Departing from any stated examination conditions

*Cheating or other academic dishonesty for exams and assignments will not be tolerated and will result in a Failing (F) grade for the class and suspension.*

**Plagiarism** involves:
- Submitting another person's work as one's own
- Submitting work from any source that is not properly acknowledged by footnote, bibliography, or reference within a paper
- Submitting work pieced together from phrases and/or sentences from various sources without acknowledgement
- Submitting work with another person's phrase(s) rearranged without acknowledgement
- Submitting work that uses any phrase, sentence, or stylistic mannerism without acknowledgement
- Omitting quotation marks from any directly quoted material
- Failure to use an ellipsis (...) to indicate omission of one or more words
- Any other actions deemed to be plagiarism by the faculty

**K. COLLEGE AND UNIVERSITY POLICIES**

- **Academic Integrity (University)**
  University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a failing grade.

- **Classroom/Professional Behavior**
  Texas A&M University-Corpus Christi, as an academic community, requires that each
individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

- **Statement of Civility**
  Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

- **Deadline for Dropping a Course with a Grade of W (University)**
  I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. *Please consult with your academic advisor, the Financial Aid Office, and me, before you decide to drop this course.* Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Please consult the Academic Calendar ([http://www.tamucc.edu/academics/calendar/](http://www.tamucc.edu/academics/calendar/)) for the last day to drop a course.

- **Grade Appeals (College of Science and Engineering)**
  As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, 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 upon 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, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at [http://www.tamucc.edu/provost/university_rules/index.html](http://www.tamucc.edu/provost/university_rules/index.html), and the College of Science and Engineering Grade Appeals webpage at [http://sci.tamucc.edu/students/GradeAppeal.html](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, the Office of the College of Science and Engineering Dean, or the
Office of the Provost.

- **Disability Services**
  The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call (361) 825-5816 or visit Disability Services in Corpus Christi Hall 116.

If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

http://disabilityservices.tamucc.edu/

- **Statement of Academic Continuity**
  In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.

L. **OTHER INFORMATION**

- **Academic Advising**
  The College of Science & Engineering 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. Meetings are by appointment only; advisors do not take walk-ins. Please call or stop by the Advising Center to check availability and schedule an appointment. The College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

**GENERAL DISCLAIMER**

I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.