GEOLOGICAL OCEANOGRAPHY (CMSS 6334)  
Department of Physical & Environmental Sciences  
Fall 2016

A. COURSE INFORMATION
   Course number/section: CMSS 6334.001  
   Class meeting time: TR 11:00 am -12:15 pm  
   Class location: Bay Hall 202  
   Course Website: https://bb9.tamucc.edu

B. INSTRUCTOR INFORMATION
   Instructor: Dr. Hussain Abdulla  
   Office location: CS-242  
   Office hours: MWF 11am-13:00 PM  
   Telephone: 361-825-6050  
   e-mail: hussain.abdulla@tamucc.edu  
   Appointments: Appointment should be arranged a head of time via e-mail.

C. COURSE DESCRIPTION
   Catalog Course Description
   Integrated examination of the geology and geochemistry of the marine environment.  
   Evolution of ocean basins, continental margins and plate boundaries; geology of oceanic  
   crust; controls on the types, origin, and distribution of marine sediments; and introduction to  
   paleoceanography.

   Extended Course Description
   The course is designed around understanding the processes governing the chemical  
   composition of the ocean. For example: Riverine input; air-sea exchange; sediment-bottom  
   water exchange; hydrothermal input; internal cycling by physical processes. It will also  
   introduce some numerical modeling in chemical oceanography.

D. PREREQUISITES AND COREQUISITES
   Prerequisites
   ESCI 3351 Oceanography, or GEOL 4316 Marine Geoscience, or permission of instructor.

   Corequisites
   None.

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES
   Required Textbook(s)
   Assigned readings of journal articles and book chapters.
Optional Textbook(s) or Other References


All other materials related to each topic will be posted on Blackboard or provided in class.

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) Identify the endogenic and exogenic processes that shape the earth.
2) Recognize the processes that govern the chemical composition of the ocean.
3) Utilize different numerical modeling to predict the effect of different processes in the distribution of major and minor elements in the ocean.
4) Predict the implications of altering specific geochemical process in the chemical composition of the ocean.

G. INSTRUCTIONAL METHODS AND ACTIVITIES

Coursework involves the analysis of research articles, several problem sets, class participation, and a final exam.

H. MAJOR COURSE REQUIREMENTS AND GRADING

Problem Sets:
A number of problem sets related major topic of the course including: Geochemical cycles, Box-model, Mixing model, mass balance model, Redfield model, Kinetic model, air-ocean exchanges, riverine inputs to the ocean, sediment-ocean exchange, and hydrothermal processes.

Presentation:
A 15-minute PowerPoint presentation will be required of all students, on presenting selected
scientific papers related to the main topics.

**Final Exam:**
The final exam is comprehensive and will cover the material that has been covered in class.

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<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
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<tbody>
<tr>
<td>Problem Sets</td>
<td>5 @ 10 pts each</td>
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<tr>
<td>Presentations</td>
<td>2 @10 pts each</td>
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<td>Final exam</td>
<td>30 pts</td>
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<td><strong>Total Course grade</strong></td>
<td><strong>100 pt</strong></td>
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The grading scale will be: A \( \geq 90\% \) of possible points, B \( \geq 80 \% \), C \( \geq 70 \% \), D \( \geq 60 \% \), F < 60%.

### I. COURSE CONTENT/SCHEDULE

<table>
<thead>
<tr>
<th>WEEK</th>
<th>TOPIC</th>
<th>ASSIGNMENTS</th>
<th>Remarks</th>
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<tr>
<td>Aug. 25th</td>
<td>Introduction to Earth Geochemistry</td>
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<tr>
<td>Aug. 29th</td>
<td>Endogenic and Exogenic Processes</td>
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<tr>
<td>Sept 5th</td>
<td>Geochemical Cycles</td>
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<td>Lectures by Dr. Thomas Naehr</td>
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<td>Sept 12th</td>
<td>Air- Sea Exchanges -1</td>
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<td>Sept 19th</td>
<td>Air- Sea Exchanges-2</td>
<td>Assignment 1</td>
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<td>Sept 26th</td>
<td>Riverine Input-1</td>
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<td>Oct. 3rd</td>
<td>Riverine Input-2</td>
<td>Assignment 2</td>
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<td>Oct. 10th</td>
<td>Sediment Geochemistry-1</td>
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<tr>
<td>Oct. 17th</td>
<td>Sediment Geochemistry-2</td>
<td>Assignment 3</td>
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<td>Oct. 24th</td>
<td>Hydrothermal Vents</td>
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<td>Oct. 31st</td>
<td>Mass Balance Model</td>
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<td>Nov. 7th</td>
<td>Redfield Model</td>
<td>Assignment 4</td>
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<td>Nov. 14th</td>
<td>Box Model</td>
<td></td>
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<td>Nov. 21st</td>
<td>Thanksgiving Holiday</td>
<td>No Classes</td>
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<tr>
<td>Nov. 28th</td>
<td>Kinetic Model</td>
<td>Assignment 5</td>
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<td>Dec. 8th</td>
<td>Final Exam</td>
<td>Take home exam</td>
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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.
J. COURSE POLICIES

Attendance/Tardiness
Attendance and participation in class discussions is required and will count for a significant portion of your grade.

Late Work and Make-up Exams
There will be a 10% reduction, per day, in credit for overdue assignments.

Extra Credit
There will be no extra credit in this course.

Cell Phone Use
Before you enter the lecture hall turn OFF your cell phone! Beepers must also be turned off or put on silent mode. Electronic interruptions will NOT be tolerated!

Laptop Use
Laptops and tablets are allowed in the classroom for course related activities only.

Food in Class
No food is allowed in the classroom, unless related to academic activities, medically necessary, or nutritionally sound with teacher permission. But beverages in spill proof containers are permitted.

Missed Exam
If an exam date is missed and the student cannot fulfill the above requisites for excuse, an exam grade of 0 will be recorded. Providing a student with an opportunity to make up an unexcused missed examination will remain at the sole discretion of the Professor.

Participation
Participation in class discussions is required and will count for a significant portion of your grade.

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)**
  The grade of W will be assigned to any student officially dropping a course. Please consult with the instructor before you decide to drop to be sure it is the best thing to do. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Should dropping the course be the best course of action, visit the Office of the University Registrar for the Course Drop Form that must be submitted. No student is eligible to receive a W without completing the official drop process by this deadline. Please consult the Academic 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, and the College of Science and Engineering Grade Appeals webpage at 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/](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.