GEOL 1450-001 (Lecture) and 1450-011 (Lab)– Introduction to Oceanography

This course satisfies the University of Arlington core curriculum requirements in Life and Physical Sciences.

Textbook:

Course Description:
This course is a general introduction into marine sciences including marine geology, biology, chemistry, and physics. Fieldtrips on nearby lakes are included.

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Assessment of Learning Outcome - Course Policies and Grading:

Grading:
Lecture Portion: 75% of course
Lab Portion including signature project: 25% of course

Lab Portion: 15% of course
Signature Assignment: 10% of course
Lecture Portion: 75% of course

Lecture Portion:
Quizzes (3): 10% of course (3.3% each)
Exams (3): 45% of course (15% each)
Final Exam: 20% of course

Final grade calculation:
0.25 x lab + 0.10 x quizzes + 0.45 x exams + 0.20 x final exam
Score will be translated into a grade based on class average.

Grades will not be released over the phone or by email. Grades must be either obtained in person or from the UTA online database.

Exams: Exams will be mostly multiple-choice questions, but the final exam will also contain essay questions. No early exams are allowed.

Exams must be taken at the scheduled time. Make-up exams can be only taken in cases of illness or family emergency. A note from the University disciplinary officer or doctor may be required in these cases. Students who do not take an exam receive zero points as a grade on that exam. Make-up exams are scheduled and set by the instructor.

Quizzes:
Lecture quizzes are not announced. The 3 best quizzes will be counted towards the total grade. There are no make-up quizzes.

Fieldtrip (recommended): Fieldtrip is recommend for the signature project. Participation will result in 20% extra credit on the signature assignment.

Homework: Ten homework assignments as part of the lab section will be given throughout the semester. Maximum average grade of labs will be no more than 100%.

Teamwork: Teamwork is encouraged to stimulate scientific discussion in lecture and lab. Teamwork is allowed in the lab and for the signature project. Maximum team size is 3 students.

Oceanography Research Project (signature project): A signature research assignment in the area of oceanography is part of the core curriculum assessment and is designed to stimulate critical thinking skills, teamwork skills, communication skills, and empirical and quantitative skills. Physical and biogeochemical measurements (e.g. temperature, salinity, oxygen, nutrients) from the lake fieldtrip will be analyzed as part of the project. Total report length for each team will be 6 pages, letter size, single-spaced, 12 pt times new roman font including references. Each team will present the project in a 10-minute presentation.

Attendance: Attendance is required and may be taken occasionally. Lack of attendance may influence the final grade.
**Student Learning Outcomes:**

After completion of this class, students will be familiar with the key terminology pertaining to the oceans and will have a well-rounded understanding of the major geological, biological, chemical, and physical process in oceanography as well as the complex interactions among the various components of the climate system. The student will be able to:

- Identify reasons why sustainable practices regarding ocean resources (e.g. fisheries, hydrocarbons) are important and affect, e.g., our lives and the world economy.
- Explain the theory of plate tectonics and its relationship to the formation of major features of the seafloor.
- Summarize the major physical and chemical properties of seawater and how each affects marine life
- Understand the feedbacks of the ocean’s processes with processes in other components of the Earth’s climate system (atmosphere, terrestrial biosphere, cryosphere, and geosphere).
- Analyze the atmospheric and the oceanic circulation system.
- Describe the principles involved in the generation of waves and tides and evaluate their effects on coastal processes and marine ecosystems.
- Evaluate environmental problems due to oil spills, toxic waste, toxic algae blooms, and invasive species and discuss strategies to reduce these problems.
- Explain the relationship between plants and animals in the ocean and how they affect the cycling of carbon among the ocean, atmosphere and sediments.
- Identify the consequences of a rise in sea level on the coastal zone and society, and possible mitigation and adaptation strategies.
- Identify major factors leading to climate change, and assess future climate projections.
- Discuss the societal relevance of marine sciences for global initiatives and political decisions.

This knowledge will enable the students to better understand topics of great societal importance, such as future climate change, marine resources, tsunamis, large-scale pollution, and environmental sustainability.

**Critical Thinking Skills:** Critical thinking skills in the area of oceanography will be trained through experiments in the classroom, fieldwork on a local lake, and discussion and exercises in lecture and labs. The assessment of the critical thinking skills in oceanography will be done by a signature assignment (field project) that is related to oceanography. The goal is understand environmental measurement techniques and analysis of ocean data sets, for example stratification, ventilation of water masses, carbon and nutrient cycles.

**Communication Skills:** Communications skills will be assessed through scientific discussion in lecture, laboratory, and field. An oral presentation as part of the signature project will be used to assess the communication skills.

**Teamwork:** Teamwork will be promoted in lecture and lab through discussion and review of the lecture material and through empirical and quantitative laboratory exercises. The teamwork skills will be assessed by the signature project.

**Empirical and Quantitative Skills:** Quantitative skills are trained in lecture and labs with on-line interactive models. The assessment of the quantitative skills will be performed through classical problem solving (e.g. wave speed and height estimates or calculation of density of sea water) and through on-line tools to learn how natural and man-made perturbations can affect oceanic conditions (e.g. surface temperature, surface and deep sea circulation).

Students will be guided to design experiments (e.g. wave tank and oil spill experiments) and compare quantitative estimates with observations on nearby lakes in the signature project.
**Drop Policy:**  
Students may drop or swap classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance.**

**Students with Disabilities (Americans With Disabilities Act):**  
Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at [www.uta.edu/disability](http://www.uta.edu/disability) or by calling the Office for Students with Disabilities at (817) 272-3364.

**Academic Integrity:**  
Academic dishonesty (such as cheating, plagiarism, taking an exam for another person, etc.) will not be tolerated in any form and will be disciplined in accordance with University regulations and procedures. All students enrolled in this course are expected to adhere to the UT Arlington Honor Code:

*I pledge, on my honor, to uphold UT Arlington’s tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence. I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.*

**Student Support Services:**  
UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at [www.uta.edu/resources](http://www.uta.edu/resources).

**Electronic Communication:**  
UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at [http://www.uta.edu/oit/cs/email/mavmail.php](http://www.uta.edu/oit/cs/email/mavmail.php).

**Student Feedback Survey:**  
At the end of each term, students enrolled in classes shall be directed to complete a Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student’s feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington’s effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit [http://www.uta.edu/sfs](http://www.uta.edu/sfs).
No use of cell phones (or other electronic devices) during class/exams.