

Syllabus
Marine Science, OCE 4006-001, (11710) 3 Credits

Prerequisites: CHM 2045, 2045L, 2046, 2046L

Co-requisites: None

Course Logistics: Lectures will take place at Harbor Branch Oceanographic Institute at FAU (MC 209), Mondays and Thursdays, 3:00 to 4:20 p.m.

Instructor Contact Information:

Dr. Mingshun Jiang, office: Rm 205, Lab 2 Building, HBOI_FAU, 5600 Old Dixie Hwy, Fort Pierce, FL 34946, jiangm@fau.edu, (772) 242-2254, office hours Friday 11 a.m. -1pm, and by appointment.

Course Description:

An introduction to geological, physical and chemical oceanography.

Course Objectives and Learning Outcomes:

This course is intended to provide a survey of marine geology, physical oceanography and marine chemistry. Through lectures and homework assignments, students will achieve a broad understanding of the fundamental concepts in these three branches of marine science.

Course Evaluation Methods:

Final grades will be based upon the following student activities:

- Marine Geology (25%)
 - Exam (20%), homework (5%)
- Physical Oceanography (50%)
 - Exam (40%), homework (10%)
- Marine Chemistry (25%)
 - Exam (20%), homework (5%)

Course grading scale:

Course grading scale will be following,

- 93-100=A
- 90-92=A-
- 87-89=B+
- 83-86=B
- 80-82=B-
- 77-79=C+
- 73-76=C
- 70-72=C-
- 67-69=D+
- 63-66=D
- 60-62=D-
- 0-59=F

Homework:

Homework exercises will be handed out before the relevant classes. Each exercise has a due date, but it can be handed in early. Homework handed in late will not receive full credit. Points obtained from homework will be added to points obtained from exams to determine a student's final grade.

Attendance Policy:

Students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance. Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations or participation in University approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.

Incomplete Grade:

A grade of Incomplete ("I") is reserved for students who are passing a course but have not completed all the required work because of exceptional circumstances. A grade of "I" will only be given under certain conditions and in accordance with the academic policies and regulations put forward in FAU's University Catalog. The student must show exceptional circumstances why requirements cannot be met. A request for an incomplete grade has to be made in writing with supporting documentation, where appropriate. As per university policy, an incomplete grade will only be given to a student who fulfills all of the following criteria:

- misses multiple exams or the final examination due to a legitimately documented emergency as defined by the FAU Academic Policies and Regulations:http://www.fau.edu/academic/registrar/09-10_catalog/academics.html
- has a grade of C or better
- submits evidence of the emergency and signs an incomplete agreement.

Safety:

No food or drinks are permitted in the laboratory.

Classroom Etiquette Policy:

University policy on the use of electronic devices states: "In order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular telephones and pagers, are to be disabled in class sessions." You may be asked to leave the class session for noncompliance.

Student Honor Policy:

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty, including cheating and plagiarism, is considered a serious breach of these ethical standards, because it interferes with the University mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the University community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see University Regulation 4.001 at http://www.fau.edu/ctl/4.001_Code_of_Academic_Integrity.pdf

Cheating is a serious offense. If you are caught cheating, you will receive an F in the course. In addition, you will be referred to the Dean of Student Services and charged with an academic crime. Test procedures and rules will be stated at the beginning of each exam.

Disability Policy Statement:

In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) — in Boca Raton, SU 133 (561-297-3880); in Davie, LA 203 (954-236-1222); or in Jupiter, SR 117 (561-799-8585) — and follow all SAS procedures

Code of Academic Integrity Statement:

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see University Regulation 4.001 <http://www.fau.edu/ctl/4.001> Code of Academic_Integrity.pdf

Important Dates:

The following dates are based upon the current university academic calendar. Changes to these critical dates have occurred in the past and you are responsible for checking the academic calendar on the university website for any changes during the academic term.

<http://www.fau.edu/registrar/pdf/acadcal1819.pdf>

Last day to withdraw without consequences	January 17 th
Last Day to withdraw without receiving a “W”	January 21 st
M.L.K. Jr. Holiday	January 20 th
Last day to withdraw w/o receiving an "F"	April 10 th
Spring Break	March 9 th -15 th

University Final exam Schedule: <http://www.fau.edu/registrar/courses/final-exams.php>

Required Text/readings:

“Oceanography. An Invitation to Marine Science,” (9th Edition, 2015), by Tom Garrison, Brooks/Cole, Cengage Learning.

Supplemental reading materials may be provided before the classes.

Counseling and Psychological Services (CAPS) Center

Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU’s Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to <http://www.fau.edu/counseling/>

Course Lecture Schedule:

The schedule of topics to be discussed is subject to changes during the semester, depending on the needs of the class. Exams will be given during the usual class periods (same time, except for the chemistry exam; same room).

Week 1: Monday, January 13th Lecture 1: Introduction to the course, introduction to marine geology, Earth's structure, plate tectonics. Assigned reading: Chapter 3

Week 1: Thursday, January 16th Lecture 2: Plate tectonics (continued). Assigned reading: Chapter 3.
Homework exercise due January 17th: Plate tectonics

Week 2: Monday, January 20th No Class (M.L.K. Jr. Holiday)

Week 2: Thursday, January 23rd Lecture 3: Continental margins and ocean basins. Assigned reading: Chapter 4

Week 3: Monday, January 27th Lecture 4: Sediments I. Assigned reading: Chapter 5.
Homework exercise due January 27th: Continental margins & ocean basins

Week 3: Thursday, January 30th Lecture 5: Sediments II. Assigned reading: Chapter 5.

Week 4: Monday, February 3rd Lecture 6: Coasts. Assigned reading: Chapter 12.
Homework exercise due February 4th: Ocean sediments & Coasts

Week 4: Thursday, February 6th Marine Geology review.

Week 5: Monday, February 10th Marine Geology Exam

Week 5: Thursday, February 13th Lecture 7: Introduction to physical oceanography, temperature structure, water masses, density and sigma-t, sound and light. Assigned reading: Chapter 6

Week 6: Monday, February 17th Lecture 8: Air-Sea interactions: trade winds, hurricanes, sea breezes, wind-driven circulation. Assigned reading: Chapter 8
Homework exercise due February 17th: Ocean water properties

Week 6: Thursday, February 20th Lecture 9: Air-Sea interactions (continued) & Ocean energy: heat and the heat budget, potential and mechanical energy. Assigned reading: Chapter 8 & handouts

Week 7: Monday, February 24th Lecture 10: Ocean Waves: kinematics, wave-induced transport, internal waves, energy from ocean waves. Assigned reading: Chapter 10.
Homework exercise due February 24th: Air-sea interactions & ocean waves

Week 7: Thursday, February 27th Physical Oceanography I review.

Week 8: Monday, March 2nd Physical Oceanography Exam 1

Week 8: Thursday, March 5th Lecture 11: Ocean tides I: basic principles, tidal constituents, tide predictions, energy from ocean tides. Assigned reading: Chapter 11.

Week 9: Monday, March 9th No class (Spring Break)

Week 9: Thursday, March 12th No class (Spring Break)

Week 10: Monday, March 16th Lecture 12: Ocean tides II: Tides in the World Ocean; Sea level rise. Assigned reading: Chapter 11.

Homework exercise due March 17th: Ocean tides & Sea level rise

Week 10: Thursday, March 19th Lecture 13: Ocean circulation I: basic principles, equation of motion, measurement techniques. Assigned reading: Chapter 9.

Week 11: Monday, March 23rd No class (Oceanographic Experience Cruise)

Week 11: Thursday, March 26th No class (Oceanographic Experience Cruise)

Week 12: Monday, March 30th Lecture 14: Ocean circulation II: surface circulation in regional seas and major ocean basins, circulation in the deep ocean. Assigned reading: Chapter 9.

Homework exercise due March 31st: Ocean circulation

Week 12: Thursday, April 2nd PO II review

Week 13: Monday, April 6th Physical Oceanography Exam 2

Week 13: Thursday, April 9th Lecture 15: Introduction to Chemical Oceanography: Chemical composition of seawater, Assigned reading: Chapter 7

Week 14: Monday, April 13th Lecture 16: Marine nutrient cycles, Assigned reading: Chapter 7 & handouts.

Homework exercise due April 13th: Chemical composition of seawater

Week 14: Thursday, April 16th Lecture 17: Trace metal chemistry and iron cycle, Assigned reading: Chapter 7 & handouts.

Week 15: Monday, April 20th Lecture 18: Dissolved gases in seawater; carbonate chemistry, Assigned reading: Chapter 7.

Homework exercise due April 22nd: Marine nutrient cycle and trace metal

Week 15: Thursday, April 23rd Lecture 19: Carbonate system in the sea (continued) & ocean acidification, Assigned reading: Chapter 7.

Homework exercise due April 24th: Dissolved gas and carbonate chemistry

Week 16: Monday, April 27th Chemical Oceanography overview

Week 16: Chemical Oceanography Exam (TBD)

Provost Syllabus Guidelines

- _____ 1. **Course title/ Prefix- Course-Section-CRN# for current term and number of credits**
(Example: Biodiversity BSC 1010-001-34560-3credits)
- _____ 2. **Course prerequisites, co-requisites, and where course fits in program of study (if applicable)**
In addition to listing prerequisites and co-requisites
NOTE: if the course meets a particular requirement, such as WAC (with grade of "C" or higher), Intellectual Foundations Program, required course for entry to particular program of study, etc.
- _____ 3. **Course logistics (term, class location and time, if classroom based or notation if online)**
- _____ 4. **Instructor contact information (name, office address, office hours-minimum 2 hours per Course, phone, email)**
- _____ 5. **TA contact information (if applicable) TA name, office address, office hours, contact telephone number, and email address**
- _____ 6. **Course description:**
(The course description should be consistent with the description found in the University Catalog)
- _____ 7. **Course objectives/student learning outcomes**
(Provide the students an understanding of what they will be expected to learn as a result of successfully completing the course)
- _____ 8. **Course evaluation method**
(Include a breakdown of the graded course components and their weight in determining the overall course grade (e.g. Midterm exam--20%, Essay #1--15%, Attendance and Participation--10%, etc.). Students are entitled to know how they are progressing in a course based on the individual grades received. If you have a policy about how unexcused class absences will affect the final grade, clearly state your policy. Please note that the University Provost, in order to identify and assist students at academic risk, requests that courses with freshmen have graded assignments well before midterm. If applicable also note the minimum grade required to pass the course (if not a "D-").
- _____ 9. **Course grading scale**
(Many faculty include in their syllabi some type of grading rubric: what constitutes "A" work in the course or in particular assignments, "B" work, what constitutes a "Pass" or "Fail," etc. The equivalent letter grade in the course is the decision of an individual faculty member. If a faculty member plans to exercise the option to use a unique grading scale or curve, that needs to be stated in the syllabus.
- _____ 10. **Policy on makeup tests, late work, and incomplete (if applicable) and Religious accommodations**
If you do not accept late work or apply penalties to late work, state so. Please note that students may not be penalized for absences due to participation in University-approved activities, including athletic or scholastics teams, musical and theatrical performances, and debate activities. Instructors must allow these students to make up missed work without any reduction in the student's final course grade. Reasonable accommodation must also be made for students participating in a religious observance. Also, note that grades of Incomplete ("I") are reserved for students who are passing a course but have not completed all the required work because of exceptional circumstances. If your college has elaborated on this policy, state so here.

Religious Accommodations: Students who wish to be excused from coursework, class activities or examinations **must notify the instructor in advance of their intention to participate** in religious observation and request an excused absence.
- _____ 11. **Special course requirements (if applicable)**
State if any requirements are associated with the course, such as mandatory field trips or film viewings, special fees, or purchase of course-related materials.

_____ 12. **Classroom Etiquette Policy (if applicable)**

If you have a particular policy relating to student behavior in the class, such as relating to tardiness or on the use of electronic devices in the classroom, state so here. Recognizing the unique relationship between faculty and student and adhering to the principles of academic responsibility, any such policies must be reasonable, non-discriminatory and not impede the educational mission. If you have a policy on the use of recording devices, please include a statement here.

_____ 13. **FAU Attendance Policy Statement:**

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○ _____ 15. **Counseling and Psychological Services (CAPS) Center**

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✓ _____ 16. **Code of Academic Integrity policy statement:**

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<https://www.fau.edu/ctl/4.001> [Code of Academic Integrity.pdf](#)

✓ _____ 17. **Required texts/readings**

_____ 18. **Supplementary/recommended readings (if applicable)**

✓ _____ 19. **Course topical outline, including dates for exams/quizzes, papers, completion of readings and ** Out of class assignments**

Include a breakdown of topics covered (generally, **by class day or by week**), deadlines for course assignments/requirements, and dates of exams and quizzes.

(SEE PROVOST POLICY AND PROCEDURES: FOR CREDIT HOUR REQUIRMENTS FOR OUT OF CLASS ASSIGNMENTS)