MARINE GEOLOGY (GEOL-280)
Hunter College
Department of Geography

Dr. Shruti Philips
Office: HC North, Room 1032
Office Hours: *Tues & Fri 9.15-9.45 am or by appointment*
Telephone: (212) 772 – 5265
E-mail: geoprof@verizon.net , sph0001@hunter.cuny.edu
Class Meeting: *Tues & Fri -9.45-11.00 am* (Hunter North, Room 1022)

Introduction:

Marine Geology is the study of the seafloor. In this course we shall attempt to answer the questions "what?", "where?", "when?" and more importantly "how?" in order to better understand the processes that shape the ocean basins and determine the structure and composition of the oceanic crust. The main patterns of sediment distribution in the ocean basins and how sediments preserve a record of past climatic and sea-level changes will be explored. In addition, the role of fluids in ocean sediments and the oceanic crust will be examined. The seafloor sediments will be studied with a focus on their role in marine biogeochemical cycles.

Basic material covered in the course include:

- The structure, formation and evolution of ocean lithosphere
- Hydrothermal circulation in the oceanic crust
- Sources & composition of marine sediments
- Climatic imprint on marine sediments
- Paleoceanography & sea-level changes
- Biogeochemical processes in deep-sea sediments

Learning Objectives: This course is designed to introduce students to the geology of the sea floor. It is expected that the student will emerge from this course with the following competencies:

- An appreciation & understanding of scientific methodology
- A greater understanding of the processes that shape the ocean basins
- An understanding of the ocean's role in the evolution of Earth's climate and life.
- An appreciation of the oceans as an integral part of global chemical cycles

Required Reading: *available at the Hunter college bookstore*

1. **The Ocean Basins: Their structure and evolution**, Open University Team, 2nd Edn. Elsevier, 2004.
2. **Marine Biogeochemical Cycles**, Open University Team, 2nd Edn. Elsevier, 2007.

Assessment and Grading Policy: There will be a **midterm** exam given during the semester and a **final** exam at the end of the semester. Exams are based on lecture, assigned readings, films shown in class and text material. These exams will count 30% each for a total of 60% of the grade. The remaining 40% of the grade will be based on **attendance, in-class quizzes and detailed summaries of assigned readings** for a grand total of 100%.

Midterm→ 30%
Final → 30%
Assigned readings →20%
In-class quizzes →15%
Attendance →5%

Exam Policy: Make ups for the midterm and final exams will be given only if you miss them because (1) you are ill and can prove that with a physician's note; and (2) you e-mail me BEFORE the exam and leave your name & phone number at which you can be reached. There will be no make-ups for missed quizzes.

Attendance: Attendance will be taken at all class meetings. Students are urged to attend ***all*** classes. ***There is a direct correlation between good grades and good attendance.*** All students are responsible for work covered in their absence and must be sure to obtain any hand-out material.

Tips for getting good grades: ***In general, the more time you put in, the better your grade will be.*** Be sure to read the chapters BEFORE each lecture and read carefully. Note the things you do not understand and ask questions during the lecture. Review each chapter afterwards. Work through review questions.
Be sure to work hard throughout the semester as there will be no extra credit assignments!

Blackboard: Please note that course documents, hand-out sheets, and useful links will be posted on Blackboard. Announcements and other information will also be posted from time to time, so please check the site regularly. Important: Students should check their Hunter e-mail messages regularly for messages from the instructor!

Classroom Etiquette: Cell phones must be turned off in class. Any student whose phone rings will be asked to leave the room. Conversation during class and walking in and out of the room is disruptive and must be kept to a minimum. Please keep eating and drinking to a minimum and discard all trash in garbage or recycling bins. Your cooperation will be appreciated by the instructor and your fellow students.

Academic Integrity: Please note that Hunter College regards acts of academic dishonesty (e.g., plagiarism, cheating on examinations, obtaining unfair advantage, and falsification of records and official documents) as serious offenses against the values of intellectual honesty. The college is committed to enforcing CUNY Policy on Academic Integrity and will pursue cases of academic dishonesty according to the Hunter College Academic Integrity Procedures.
See the following report by the Hunter College Senate for more details:
http://www.hunter.cuny.edu/senate/assets/Documents/Hunter%20College%20Policy%20on%20Academic%20Integrity.pdf

Tentative Syllabus for Fall 2009

Dates	Topic	Chapter
F 8/28	Introduction and overview	1 OB
T 9/1	Introduction and overview	1 OB
F 9/4	**The shape of the Oceans**	**2 OB**
T 9/8	Continental margins, ocean ridges, transform faults, deep ocean	2 OB
F 9/11	**The evolution of the Ocean Basins**	**3 OB**
T 9/15	Red Sea, Mediterranean Sea	3 OB
T 9/22	**The structure & formation of the Oceanic Lithosphere**	**4 OB**
F 9/25	Pillow lavas, segmentation of spreading axes, seamounts, volcanic islands	4 OB
F 10/2	**Hydrothermal Circulation in Oceanic crust**	**5 OB**
T 10/6	Chemical changes, biological significance, black & white smokers	5 OB
F 10/9	**Biogeochemical processes in sea water**	**2MBC**
T 10/13	Biological particle cycle	2MBC
F 10/16	Vertical & lateral variations, & behavior of dissolved constituents	2MBC
T 10/20	Wrap up for midterm	
F 10/23	**MIDTERM EXAMINATION**	
T 10/27	**Sediments in the Ocean**	**6 OB**
F 10/30	The distribution & nature of deep-sea sediments	**1 MBC**
T 11/3	**The Accumulation of Deep Sea sediments**	**3MBC**
F 11/6	Biogenic sediments	3MBC
T 11/10	Terrigenous sediments	3MBC
F 11/13	**Authigenesis & Diagenesis**	**5 MBC**
T 11/17	Authigenesis & Diagenesis	5 MBC
F 11/20	**Deep Sea Sediments and Paleoceanography**	**4MBC**
T 11/24	Evolution of the ocean basins, use of proxies	4MBC
*T 12/1	Reconstructing past oceans	4MBC
F 12/4	**Paleoceanography & Sea Level changes**	**6OB**
T 12/8	**The Global cycle**	**7 OB**
T 12/11	Wrap up & Film	
M12/21	**FINAL EXAMINATION (9am-11am)**	

- *All assignments due by this date.
- OB = The Ocean basins: Their Structure and evolution
- MBC =Marine Biogeochemical Cycles