Course: Introduction to Earth and Atmospheric Science (ENGR106)

Faculty Information

Professor:

Office Hours:

Course Description

This course is designed to provide the student with an understanding of the earth system on a global scale by studying its component parts or reservoirs (the atmosphere, hydrosphere, geosphere, and biosphere), the interactions, linkages and dynamic equilibrium among these reservoirs at various time scales, and the effect of external forces on the system.
4 credits: 3-hrs lecture, 1 hr lab; Pre/Co-Requisites: ENG 110 & MAT 210.

This course counts as a major elective for the A.S. Degree in Liberal Arts and Science and is required for the A.S. Degree in Civil Engineering: Track II (Environmental Engineering).

Student Learning Outcomes

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

- » Identify common minerals and rocks
- » Compare volcanic processes in the context of plate tectonics
- » Relate seismic activity to plate motion
- » Explain the carbon cycle. Identify at least two sources and sinks in the global carbon budget
- » Understand the relationship between recent continental glaciation and ocean circulation
- » Relate the source of energy for hurricane and their trajectories in the Atlantic
- » Be able to explain at least three major factors that govern climate change.
- » Understand the relationship between wind, atmospheric circulation, and energy transfer.
- » Be able to identify energy sources, the environmental effects of obtaining those resources on the various reservoirs of the earth system.
- » Understand timescales of earth processes.

Required Textbooks

Textbook: *The Blue Planet: An Introduction to Earth System Science* by Brian J. Skinner and Barbara W. Murck, 3rd Edition (2011), Wiley. Available in hardcover (ISBN: 978-0-471-23643-6), binder ready loose-leaf (ISBN: 978-0-470-55648-1) or e-text (ISBN: 978-0-470-91402-1).

Lab Manual: *Laboratory Manual in Physical Geology*, by AGI - American Geological Institute, NAGT - National Association of Geoscience Teachers, and Richard M. Busch, 10th Edition (2015), Pearson. Available in spiral bound hard-copy (ISBN: 978-0-321-94451-1) or e-text (ISBN: 978-0-321-95817-4).

Student Responsibilities

1) **Attendance –** *Attendance is **mandatory for all labs***
   - **If you miss more than two labs, you will be failed.**
   - Make-up exams and missed labs will be evaluated on a case-by-case basis. If you know you will need to miss a class, let me know as soon as possible, and provide a detailed explanation in writing. If you miss class due to illness, you must provide a medical excuse in writing, signed by your health practitioner. In extenuating circumstances, I may grant an INCOMPLETE in lieu of an F.
2) **Be on time & Be prepared -** You should be seated and ready to participate when class begins.
   - Come to class prepared, having completed all assignments (including assigned reading), so that you can participate fully in all class discussions and activities.
   - If you are late, please enter the classroom quietly without making any unnecessary noise.
   - *Excessive lateness will negatively affect your grade*, and will count towards your absences.
3) **Complete and turn in your lab reports (*on time*)**
   - Lab reports will typically be due one week after each lab session. Pay attention to deadlines; Late labs may not be accepted.
   - I expect you to use proper grammar, complete sentences and correct scientific terminology.
   - Specific lab report formats and requirements may vary, so pay attention to instructions.
   - If you are absent for a lab exercise, you will get zero credit for that lab report.
4) **Field trip -** There will be a mandatory field trip, ***outside of regular class time***
   - I expect you to *actively participate* in the out of class field trip, and to complete and turn in a written field trip report in the proper format. Details will be forthcoming.
   - If you cannot attend the field trip, you must make arrangements with me to complete an alternative assignment. Otherwise, you will receive an INCOMPLETE (or F) for the course.
5) **Be proactive**
   - Read the syllabus *in full*, and let me know ASAP if you have any questions or concerns.
   - Check Blackboard and your Hostos email regularly for updates.
   - Pay attention to assignments deadlines and exam dates.
   - Come to me *as soon as possible* if you are having trouble keeping up with the course material, if you need extra help, or if any other problems arise.
6) **Be respectful -** Be respectful and courteous to *myself and to all students in the class*.
   - You should refer to me as “Professor Franzese” or “Dr. Franzese”.
   - Do not engage in any behavior that is disruptive or distracting to myself or your fellow students. Do not engage in conversations unrelated to the class material.
   - Do not engage in any unsafe behavior, especially in the field. Unsafe, unruly and/or disruptive behavior may be subject to disciplinary action.

Grading Criteria

You will have the opportunity to earn up to 665 points. Letter grades will be awarded as follows (as per http://www.hostos.cuny.edu/Administrative-Offices/Office-of-the-Registrar/Academic-Info/Grades-Policy):

The 665 points will be broken down as follows:

Exams (60%)

You will have three (3) midterm exams (100 pts each), and one cumulative final exam (200 pts). Your lowest midterm grade will be dropped.

Labs (25%)

Your lab grade will be based the overall content of your lab reports, the accuracy of your results, and also on your participation and behavior in the lab. Safety procedures must be followed AT ALL TIMES while working in the lab. Unsafe behavior of any kind may get you thrown out of the lab, and will negatively affect your grade.

You will complete a total of twelve (12) labs over the course of the semester (15 pts each). Follow the specific instructions for each lab report. Answer all assigned questions in complete sentences, using proper grammar and terminology. Lab reports will typically be due one week after each lab session. Pay attention to deadlines; Late labs may not be accepted. If you are absent for a lab exercise, you will get *zero credit* for that lab report. 25% of your final course grade will be based on the average of your lab report grades, with the lowest grade being dropped.

Any student who does not complete all labs will receive an INCOMPLETE grade for the course

Field Trip Report (15%)

There will be one mandatory field trip, outside of regular class time (most likely on a Sunday). Your grade will depend on your active participation during the field trip, and a written field trip report (100 pts). Check Blackboard for details and instructions. If you do not attend the field trip, and/or do not turn in your field trip report, you will receive an INCOMPLETE (or F) for the course.

If you *cannot* attend the field trip, you will be required to complete an alternative assignment. Arrangements must be made with me *in advance*.

Examination Policies

- No student may remove an exam from the classroom under any circumstances.
- Exams are timed; they must be completed within the stated time frame. Students who arrive late for an exam will not receive extra time to complete the exam.
- Students are responsible for correctly completing all test answer sheets. No credit will be given for questions left unanswered regardless of the reason.
- When using a scantron answer sheet, a "#2" pencil must be used to fill in the bubbles.
- Requests for make-up exams will be considered on a case-by-case basis, based upon the merits of the request. *Submitting a request for a make-up exam does not guarantee that permission will be granted.*

Academic Integrity

Academic Dishonesty is prohibited in The City University of New York and is punishable by penalties, including failing grades, suspension, or expulsion, as described within the College Catalogue: http://www.hostos.cuny.edu/sdem/student_life_aip.html).

Students are responsible for upholding the academic integrity of the program by not participating either directly or indirectly in academic dishonesty and by discouraging others from doing so.

Definitions of Academic Dishonesty (Specific examples are also provided within the link above)

Cheating is the unauthorized use or attempted use of material, information, notes, study aids, devices or communication during an academic exercise.

Plagiarism is the act of presenting another person's ideas, research or writings as your own.

Internet Plagiarism includes submitting downloaded term papers or parts of term papers, paraphrasing or copying information from the internet without citing the source, and "cutting & pasting" from various sources without proper attribution.

Obtaining Unfair Advantage is any activity that intentionally or unintentionally gives a student an unfair advantage in his/her academic work over another student.

A Note on Group Work: Collaboration is fundamental in scientific research. As such, you are encouraged to work with your peers. However, there will be times where you are expected to produce your own work, such as individual homework assignments. If you are unsure, please ask. Your written work is expected to be in your own words. Do not turn in identical answers or answers that you cannot explain clearly.

Tips for Success

- Check Blackboard and your Hostos email regularly. Assignments, deadlines and other important information will be conveyed via these media.
- Attend *all* class meetings and *actively* participate.
- Read *and* understand the weekly readings. These provide background information and an introduction to the scientific 'jargon'. If you require additional readings, ask.
- Complete all assignments and be able to explain your answers clearly. Questions in the homework will most likely resemble questions that you will see on the exams.
- Join a study group.
- Practice, practice, practice! Extra practice problems are provided in your textbook.
- Take advantage of your campus resources, including the library staff, HALC, and ARC (if you are eligible)
- Ask for help! Send me an e-mail, stop by during my regular office hours, or make an appointment to come at another time. I am here to help you!

Tutorial and Counseling Services

The Hostos Academic Learning Center (HALC), located in C-596, is a complete learning environment that allows students to receive the academic help they need in a setting that is rich in resources and supports academic success. Throughout the academic year, HALC schedules activities that focus on the skills development of students, including tutorial support, self-guided tutorials, Basic Skills Preparatory workshops, and in-center workshops, some of which are offered through the Writing Center.

Hostos Counseling Center offers a variety of services in multiple languages, including individual and group counseling, crisis intervention, consultations and referrals to on- and off-campus resources. Please call (718) 518-4351 if you are in need of any counseling support.

Students with Disabilities

The Americans with Disabilities Act (ADA) prohibits discrimination based on disability and requires the College to be physically and programmatically accessible. Beyond the basic requirements of the ADA, Section 504 of the Rehabilitation Act and New York State and New York City statutes, the college has created an office, Services for Students with Disabilities (SSWD) that provides services to help each student with a disability maximize his or her potential for success. Based on an intake interview and documentation provided by a student, a variety of accommodations may be provided to assist qualified students to attain their academic objectives. Intake and counseling are provided in English and Spanish. As provided within the College Catalogue http://www.hostos.cuny.edu/sswd/txt/html/geninfo.html.

As required by section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, reasonable accommodations are provided to ensure equal opportunity for students with verified disabilities.

If you have a disability that requires accommodations, go to the Accessibility Resource Center: http://www.hostos.cuny.edu/Administrative-Offices/SDEM/Accessibility-Resource-Center-(ARC)

Savoy (D) Building, Room D101P
120 Walton Ave, Bronx, NY 10451
(718) 518-4467 (Voice)
(718) 518-4454 (Voice/TTY)

If you are already registered with the Accessibility Resource Center and have a letter from them verifying that you are a qualified student with a disability, please present the letter to me as soon as possible. I will work with you and the Accessibility Resource Center to plan and implement appropriate accommodations. If you plan to take your exams at the Accessibility Resource Center, make those arrangements in advance of the exam date. Remember that you will need my signature, and I will need to send them the exam.

Lecture Schedule

Tentative, subject to change. Check Blackboard regularly for updates

Unit 1: The Solid Earth

Topic	Reading
Overview & Introduction	Ch. 1: pp 5-28
Time	Ch. 4: pp. 101-105 (Time & Change)
Energy	Ch. 2: pp 31-38; 42-43
Matter & the Structure of the Earth	Ch. 3: pp. 53-63 (1st half)
Minerals & Rocks	Ch. 3: pp. 64-79 (2nd half)
Plate Tectonics	Ch. 5: pp. 109-140
Earthquakes & Volcanoes	Ch. 6: pp. 144-183
The Rock Cycle	Ch. 7: pp. 186-219

Unit 2: Sediments and Earth's Fluid Envelope

Topic	Reading
The World Ocean	Ch. 10: pp. 287-301; 306-307
Energy Balance & Temperature	Ch. 2: pp. 38-42; 43-46
The Atmosphere	Ch. 11: pp 322-333; 335-340
Atmospheric Circulation & Weather	Ch. 12: pp. 350-377

Unit 3: Climate Change, Pollution, and Resources

Topic	Reading
The Cryosphere	Ch. 9: pp 257-284
The Climate System	Ch. 13: pp 379 – 411
Paleoclimate	To be determined
The Resource Cycle	Ch. 17: pp 520-539
Mineral and Energy Resources	Ch. 18: pp 542-571; Ch. 3: pp. 46-48
The Changing Earth System	Ch. 19: pp 573 - 604; Ch. 10: pp. 311-314

Lab Schedule

Tentative, subject to change. Check Blackboard regularly for updates

Unit 1: The Solid Earth

- Observation & Measurements
- Topographic Maps
- Minerals
- Discovering Plate Boundaries
- Igneous Rocks
- Sedimentary and Metamorphic Rocks

Unit 2: Sediments and Earth's Fluid Envelope

- Relative and Absolute Dating
- Ocean Circulation
- Solar Energy and/or Reflectance
- Urban Heat Island

Unit 3: Climate Change, etc.

- Vostok Ice Cores – Paleoclimate
- Calcium Carbonate Solubility