**EAS 10600, Sec. M – Earth Systems Science**

Spring Semester, 2018

**Designation:** EAS 10600 is an introductory course in Earth Science for science majors.

It is a required course for Geology, EESS, and Architecture majors; and it is one of the courses that can be taken to satisfy the science distribution requirement in the pre-2013 core curriculum for students majoring in other sciences. It is also approved to satisfy the Life and Physical Sciences and the Scientific World requirements under Pathways.

**Catalog Description:**

A systematic global view of the features, processes, and underlying scientific concepts of the earth, atmosphere, and oceans, emphasizing environmental applications.

**Course Structure:** This four-credit course has two 1¼ - hour lectures and one required 2½ -

 hour laboratory session per week.

**Textbooks:** 1. Skinner and Murck, The Blue Planet: An Introduction to Earth System Science, 3rd Edition, John Wiley and Sons, 2011.

 2. American Geosciences Institute (AGI), Laboratory Manual in Physical Geology, 10th Edition, Pearson, 2014.

 3. Several additional handouts and readings, available on Blackboard or at the Science Library.

**Course Objectives:**

 Students taking this course should be able to:

 1. Identify common minerals and rocks

 2. Describe the evidence for, and basic components of, the theory of plate tectonics

 3. Describe the causes and effects of volcanism and seismic activity

4. Explain the carbon cycle and identify at least two sources and two sinks of the global carbon budget

5. Describe the paths of the surface and the thermohaline circulations in the oceans

6. State the source of energy for a hurricane and indicate the location of hurricanes and their trajectories in the Atlantic

7. Explain at least three major factors that influence climate change

8. Understand the various timescales of earth processes.

**Instructors:** **Lecturer:** Prof. Patricia Kenyon, Earth and Atmospheric Sciences

 Office: J-933; Phone: (212) 650-6472

 Hours: the half hour after class; TuTh, 2:00-4:00 PM; or by appointment

 **Labs:** Rea Khaleda

**Grading:** Students will receive a single grade for the entire course. This grade will be calculated by adding 70% of their lecture grade to 30% of their lab grade. The lecture grade will be based on three in-class exams and a final exam during finals week. Each of these four exams will carry equal credit. The dates for the exams can be found in the course schedule. **No makeups will be offered for missed in-class exams.** If one in-class exam is missed, the grade on the final exam will be substituted for the missing exam. If two exams are missed, a grade of zero (0) will be given for the second exam missed. **Makeups are given and required for the final exam.** If you miss the final, you will receive an INC grade until you make it up.

**Attendance:** Attendance will be taken at every class meeting. Attendance is required at both the laboratory sessions and the lectures. If you must miss a lecture class for reasons beyond your control, arrange to get the notes from one of your classmates. **If you miss more than 2 laboratory sessions or 4 lecture classes, we reserve the right to assign a grade of WU.**

**Electronic Devices:** Cell phones must be turned off or set on vibrate during lectures. During exams, all electronic devices, except your calculator, if needed, must be silenced and remain in your purse or pack.

**Laboratories:** Labs will begin the first week of the course. A detailed list of labs, and other information about the lab sections, will be provided by your laboratory instructor.

**Getting Help:** Brief questions during lecture are permitted and encouraged. If you are lost, please ask; you may not be the only one in that position. For more extensive help with course content, you may see either your laboratory instructor or Prof. Kenyon, either by appointment or during their regular office hours. For administrative concerns regarding the labs, please see your lab instructor. For administrative matters regarding the course as a whole (for example, add/drop), please see Prof. Kenyon.

**Academic Integrity:**

The CCNY policy on academic integrity will be followed in this course. A document describing this policy can be found through the CCNY website by clicking on Current Students → Policies → Academic Integrity. All students must read the details regarding plagiarism and cheating in order to be familiar with the rules of the college. Cases where academic integrity is compromised will be prosecuted according to these rules. In addition, the Policy on Academic Integrity can be found on the College website under Academics/Academic Standards.

TENTATIVE LECTURE SCHEDULE

**EAS 10600, Sect. M / ENGR 10610 - Spring, 2018**

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| **DATE** | **LECTURE TOPIC** | **READING** (Skinner&Murck) |
|  |  |  |
| 1/30 | Introduction; Overview of the Earth | pp. 5-16, 84-96 |
| 2/1 | Earth Systems Science | pp. 9-22  |
| 2/6 | Earth Materials | Chap. 3 |
| 2/8 | Plate Tectonics | pp. 109-125 |
| 2/13 | Plate Tectonics and Local Geology | pp. 125-139 |
| 2/15 | Earthquake Basics | pp. 144-161  |
| 2/22 | More about Earthquakes and Seismic Waves | www.sciencenews.org/sn-magazine/august-5-2017 |
| 2/27 | Volcanoes  | pp. 161-176 |
| 3/1 | Volcanic Processes, Igneous Rocks, and Review for Exam | pp. 176-179, 209-212 |
| 3/6 | EXAM 1 |  |
| 3/8 | Sediments and Sedimentary Rocks | pp. 185-202 |
| 3/13 | Metamorphism and the Rock Cycle | pp. 202-216 |
| 3/15 | Dating of Rocks and Earth History | pp. 426-446 |
| 3/20 | The Earth’s Energy Budget | pp. 31-46, 82-85 |
| 3/22 | The Hydrologic Cycle | pp. 221-241 |
| 3/27 | Water Supply and Pollution | pp. 241-252 |
| 3/29 | The Cryosphere | Chap. 9 |
| 4/10 | Spectroscopy and Remote Sensing | To Be Determined |
| 4/12 | EXAM 2 |  |
| 4/17 | Ocean Circulation | pp. 287-307 |
| 4/19 | Coastal Processes | pp. 307-314 |
| 4/24 | Circulation of the Atmosphere | pp. 321-340 |
| 4/26 | Weather Systems and Severe Storms | Chap. 12 |
| 5/1 | Controls on Climate | pp. 379-392 |
| 5/3 | Climate History | pp. 392-410 |
| 5/8 | Human Effects on Climate | Chap. 19 |
| 5/10 | Energy and Mineral Resources | Chap. 18 |
| 5/15 | EXAM 3  |  |