

# **GEOL 10100 sec. 13: Introduction to Geology Lab**

## **Saturday 9:10 AM to 12:00 PM HN 1021 – Spring 2017**

### **Contact Information:**

Professor: Anita Forrester  
Office: 1032 Hunter North, Department of Geography  
Office hours: 12:00 – 1:00 when classes meet on campus  
Live collaborate sessions by appointment

**Email:** [anita.forrester@hunter.cuny.edu](mailto:anita.forrester@hunter.cuny.edu) – I will respond to emails within 24 hours. Make sure that all email messages contain **GEOL10100** in the subject line. Also, make sure that you always sign your name as it appears in CUNYfirst. I do not respond to unsigned email messages.

### **Required materials:**

1. *AGI American Geosciences Institute: Laboratory Manual in Physical Geology* 11th edition ISBN-13: 978-0-13-444660-8
2. Modified Mastering GeologyLab for the laboratory manual – do not buy this before the first class unless you purchase it through Blackboard; I will show you how to do this on the first day of classes. If you buy the Modified Mastering through Blackboard, there is an option to buy the e-book along with it – I found this to be the most cost efficient option if you don't mind using an electronic version of the manual.
3. A dedicated binder for your lab notes, lab exercises (if you are printing them out) and your lab reports.

### **Brief description/purpose of course:**

GEOL 10100, Introductory Geology Lab, is a hands-on laboratory science course. GEOL 10100 assists you, in learning and expanding your understanding of the scale of the Earth and the forces that shape it with hands-on laboratory and field experiences. This course will serve as an introduction to the earth sciences and will prepare you for further coursework in the Environmental Studies program. It will also give you a working knowledge and vocabulary to take other physical geography and geology courses. Moreover, it will introduce you to some of the cutting edge technologies used in the earth sciences, potentially drawing some of you into an earth science related career path. In general, there will be a 1:2 ratio between lecture and lab work over the course of each week.

### **The objectives and goals of this course include:**

- An understanding of the nature of science and the scientific method.
- The importance of thinking critically about scientific data.
- An understanding of how the earth was formed and how it has evolved and continues to evolve.
- A basic understanding of the rocks and minerals that make up the earth and the ability to identify the most important types of rocks and minerals and how they are formed (the rock cycle).
- A basic understanding of plate tectonics.
- An understanding of the vastness of geologic time, the Principle of Uniformitarianism and how geologists assess the ages of geologic features.
- An understanding of the formation and distribution of natural resources and the costs and benefits of their extraction.

This course will fulfill the **Common Core Requirement for category C, Life and Physical Sciences**.

**This course is designed to produce the following learning outcomes:**

- You will apply the fundamental concepts of plate tectonic theory and the rock cycle, fundamental concepts in geology
- You will apply the basic methods of observation and measurement to geological samples
- You will apply the scientific method to explore the rock record, remotely sensed data, seismic data and stratigraphic data to learn about the processes that create and modify Earth materials.
- You will present their observations, measurements, interpretations and conclusions in formal laboratory write-ups
- You will use the tools of geological science to carry out collaborative laboratory explorations
- You will gather, analyze and interpret geological data and present it in effective written laboratory reports.
- You will identify and apply research ethics and unbiased assessment in gathering and reporting their scientific data.

**Further specific learning outcomes include:**

1. A working knowledge of the International System (SI) of Units
2. Familiarity with basic laboratory procedures and the preparation of a proper lab book
3. An ability to interpret data by learning to read and create scientific graphs
4. Knowledge and skills to make a scale model of the Earth system
5. An understanding of the basic principles and tools of direct and remote observation that are used by geoscientists
6. Knowledge and skills to develop and test physical and quantitative models of isostasy and apply them to the Earth system
7. An understanding of convection and its role in plate tectonics
8. Skills to observe spatial geologic data and place it in the framework of Plate Tectonic Theory
9. Proficiency in using graphical and physical models of rock melting to infer how magma forms
10. An ability to identify the common minerals using basic tools of observation
11. Knowledge of “The Rock Cycle” and how it relates to plate tectonic processes
12. An ability to identify and interpret the origins of igneous, sedimentary and metamorphic rocks
13. An ability to deduce basic information about earth processes and history by “reading the rock record”
14. An understanding of how to apply the Principle of Uniformitarianism
15. Ability to apply the principles of relative and absolute dating to analyze the geologic history of an outcrop/region

**Course delivery:**

This course will run as a hybrid section (60/40), meaning that not all class sessions will be held in the classroom at Hunter College. Some of the sessions will be conducted online through Blackboard collaborate sessions with the lecture content delivered through online delivery mode using a combination of PowerPoint and Mastering content as well as utilizing a “flipped”

classroom method which allows us to discuss material that you will have previewed prior to meeting in the classroom giving us the full lab sessions for hands-on laboratory exercises. “The **flipped classroom** is a pedagogical model in which the typical lecture and homework elements of a course are reversed. Short video lectures are viewed by students at home before the class session, while in-class time is devoted to exercises, projects, or discussions.”

I am very excited to share with you these non-traditional delivery methods as I found in my experience that students learn and retain more using these methods. Whether we meet in class or on-line, I will be available via email and online live meetings to discuss content, answer questions or just to share and discuss material relevant to our course and to the field of earth science.

**Grading policy:**

Lab Assignments/ Practicals	40%
BlackBoard Mastering Activities	20%
Lab Reports	20%
Lab Project	10%
Attendance and Participation	10%

**Laboratory notebook preparation:**

The lab book is the most important record that you, as a scientist, can keep. It is a detailed record of your experiments, observations, results, successes and failures. In this class you are required to keep a laboratory notebook as an important record of your laboratory work. It will also serve the practical purpose of keeping all of your assignments in one place, so that you can use it as a reference and a study tool. Your laboratory notebook will be a simple binder with section for your lab notes and any handouts, the lab manual, and the lab reports. You can purchase the binder at any office supply store.

You are required to follow these directions to prepare and keep your notebook:

At the beginning of each new lab, you must come to class with the introduction already written. This is to make sure you are familiar with the laboratory material and have thought about the purpose and methods of the lab. This will enhance your enjoyment of the lab and help you use the laboratory period efficiently.

1. Print your name and semester on the outside cover of your lab book.
2. Number all the pages in your lab book and label the first three pages “Table of Contents”.
3. As you work in the lab notebook date each page with the current date and fill in the “Table of Contents.” All page numbers and dates should be on the upper left of the left-hand pages and the upper right of the right-hand pages.
4. All work must be done in pen. If you need to change an answer, etc., cross out the original with a single line, and clearly make the desired change. The purpose of keeping a lab notebook is to give you experience in creating a permanent record that will allow you, or anyone reading your notebook, to reconstruct your experiment(s) and obtain similar results. Keeping such a record is one of the most important aspects of doing science. You may keep notes that I will give you in the beginning of each laboratory in this notebook, or you may choose to keep these notes in a separate book.
5. Each laboratory assignment will include the following sections: an introduction, procedure, materials used (where relevant), charts and tables that you will fill in on the appropriate pages of your lab manual and attach to your notebook, answers to the

questions posed in the AGI Laboratory Manual, Results/Discussion and a conclusion. You must include the relevant figures, charts, graphs, etc., that a given question and/or answer refers to. Any charts, tables, maps, etc., from the AGI manual are to be stapled or taped into your lab notebook so that both sides of a page are easily readable (if necessary) and so that no paper extends beyond the bounds of the page. This means that if you refer to any diagrams, maps, charts, etc., they must be included in your notebook. Remember to reference the page and figure number to your answers and/or conclusions.

6. Answer all questions in full sentences. **DO NOT RECOPY THE QUESTION IN YOUR NOTEBOOK.** Rather, answer the question so that the question is implicit in the answer. For instance, if the question is “What color is the rock on table A?” your answer might be “The color of the rock on table A is gray.” An unacceptable answer would be “gray.” Use proper grammar and spelling. If you aren’t sure of the spelling use a dictionary.
7. It is your responsibility to make your lab reports clear and legible. It is a summary/conclusion of what you learned in each lab. More details about the lab notebook and reports on the first class session.

There will be **NO INCOMPLETES** (with the exception of a death, serious illness, or work-related issues such as travel). Incompletes must be requested in writing prior to the last class session (unless of an unforeseen emergency as outlined above) and will be given only if student’s grade is at “C” or above at the time the IN is filed, and with evidence of a satisfactory reason. At the time you request an IN you must also complete a Contract to Resolve an Incomplete Grade (form available at the college) and get my signature. Otherwise, I will average your existing grades based on the course grading rubric and record the grade you have earned. To receive a CR/NC you must have completed all the course requirements (Lab assignments, mastering, etc.) and have requested the CR/NC option prior to beginning the final exam. Based on your final score you will be assigned as a letter grade based on the numerical standards that can be found in the Hunter College Undergraduate Catalogue at <http://catalog.hunter.cuny.edu/>

### **Course Policies**

Attendance is mandatory for two reasons: 1. You will not be able to do most of the labs without access to the materials in class; 2. It is part of your grade.

Lateness and/or early departure will also be counted against you. In addition, participation counts towards your grade. Participation can include anything from asking questions during the lecture, lab, via email, before, and/or after class. You must also come prepared with the lab activities printed out and be diligent in class in order to receive a good participation grade.

Missing lab whether it’s an on-campus or virtual collaborate session will negatively impact your performance as there will be things discussed and reviewed in class that are not in your textbook. Although you can read the material that we covered, the hands-on lab experience cannot be duplicated which could impact your grades in the lab assignments as well as the lab reports. Since we meet only once a week, missing a single Saturday session is the equivalent of missing two lab session, or an entire week of regular classes. After the first full day absence, any additional full day or equivalent absence will result in a 5-point deduction from your final grade. If you accumulate more than six unexcused absences, you will fail the course. Attendance will be monitored and recorded during each of the lab session, both on-campus and collaborate.

Any work assigned must be completed before the next class session begins whether you are in class or not. Missing a lab class does not excuse you from completing and submitting the material that was assigned or that was due that day.

### **Classroom Electronics Policy:**

All personal electronics, such as phones, laptops, tablets, etc., must be silenced **AND** put away or turned off before coming into the classroom. If you have an electronic version of the manual, make sure to printout the lab that we are covering that week. There is no need to use a laptop/tablet/iPad during lecture sessions. More about this during the first session.

### **Blackboard:**

Make sure that your Blackboard account is active and that you know how to use it. We will use BB extensively in this course so please make sure that you familiar with the application before the course begins. I will use it for course related work, send out assignments, reminders and emails. There will be classwork and assignments that are Blackboard-based (i.e., exams, quizzes, discussion, etc.) and it will be the delivery method for on-line lectures, discussions, and office hours. We will go over these in our first class session – but please email me as soon as you find that you can't find something or don't know how to get to an activity. I will not be responsible for work that you miss because you do not check your @myhunter email account or you didn't check BlackBoard.

### **Hunter College Policy on Academic Integrity**

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 the CUNY Policy on Academic Integrity and will pursue cases of academic dishonesty according to the Hunter College Academic Integrity Procedures.

### **ADA Policy:**

In compliance with the American Disability Act of 1990 (ADA) and with Section 504 of the Rehabilitation Act of 1973, Hunter College is committed to ensuring educational parity and accommodations for all students with documented disabilities and/or medical conditions. It is recommended that all students with documented disabilities (Emotional, Medical, Physical, and/or Learning) consult the Office of AccessABILITY, located in Room E1214B, to secure necessary academic accommodations. For further information and assistance, please call: (212) 772-4857 or (212) 650-3230.

### **Hunter College Policy on Sexual Misconduct**

In compliance with the CUNY Policy on Sexual Misconduct, Hunter College reaffirms the prohibition of any sexual misconduct, which includes sexual violence, sexual harassment, and gender-based harassment retaliation against students, employees, or visitors, as well as certain intimate relationships. Students who have experienced any form of sexual violence on or off campus (including CUNY-sponsored trips and events) are entitled to the rights outlined in the Bill of Rights for Hunter College.

- a. Sexual Violence: Students are strongly encouraged to immediately report the incident by calling 911, contacting NYPD Special Victims Division Hotline (646-610-7272) or their local police precinct, or contacting the College's Public Safety Office (212-772-4444).

- b. All Other Forms of Sexual Misconduct: Students are also encouraged to contact the College's Title IX Campus Coordinator, Dean John Rose ([jtrose@hunter.cuny.edu](mailto:jtrose@hunter.cuny.edu) or 212-650-3262) or Colleen Barry ([colleen.barry@hunter.cuny.edu](mailto:colleen.barry@hunter.cuny.edu) or 212-772-4534) and seek complimentary services through the Counseling and Wellness Services Office, Hunter East 1123.

CUNY Policy on Sexual Misconduct Link:

<http://www.cuny.edu/about/administration/offices/la/Policy-on-Sexual-Misconduct-12-1-14-with-links.pdf>

**Syllabus Policy:**

Except for changes that substantially affect grading, this syllabus is a guide for the course and is subject to change with advance notice. These changes will be announced in class and through Blackboard announcements. Make sure to check Blackboard regularly.

**Proceed to next page for course schedule.**

**PRELIMINARY COURSE SCHEDULE – SEE BB FOR UPDATES**

<b>Geology 10100-13: Intro to Geology Lab</b>			
<b>#</b>	<b>Date</b>	<b>Topic</b>	<b>Instructional mode</b>
1	26-Aug	Introduction to the course; Lab 1: Filling your Geoscience Toolbox	On-campus session
2	2-Sep	Lab 2: Plate Tectonics	On-campus session
3	9-Sep	Lab 16: Earthquake Hazards and Human Risks	Collaborate session
4	16-Sep	Lab 16: Earthquake Hazards and Human Risks	On-campus session
5	23-Sep	Lab 3: Mineral Properties, Identification, and Uses; Lab 4: Rock Forming Processes and the Rock Cycle	Collaborate session
x	30-Sep	No classes scheduled	
6	7-Oct	Lab 3: Mineral Properties, Identification, and Uses	On-campus session
7	14-Oct	Lab 5: Igneous Rocks and Processes	Collaborate session
8	21-Oct	Lab 5: Igneous Rocks and Processes	On-campus session
9	28-Oct	Lab 6: Sedimentary Processes, Rocks and Environments	Collaborate session
10	4-Nov	Lab 6: Sedimentary Processes, Rocks and Environments	On-campus session
11	11-Nov	Lab 7: Metamorphic Rocks, Processes, and Resources	Collaborate session
12	18-Nov	Lab 7: Metamorphic Rocks, Processes, and Resources	On-campus session
x	26-Nov	No classes scheduled	
13	2-Dec	Lab 8: Dating Rocks, Fossils, and Geologic Events	Collaborate session
14	9-Dec	Lab 8: Dating Rocks, Fossils, and Geologic Events	On-campus session
15	16-Dec	Final Exam	