

GEOL 10100-3L01 - Introductory Geology Laboratory Syllabus
Monday and Wednesday class
3L01 – 11:40 PM to 2:48 PM

Instructor: Dr. Paul M. Feinberg
Classroom: HN 1021
Office: HN 1032, ring the doorbell
Office hour: MW 7:00 – 8:00 p.m.
Email: feinbergpaul@yahoo.com

Brief description/purpose of course:

GEOL 10100, Introductory Geology Lab, is a hands-on laboratory science course. GEOL 10100 assists you, the student, 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.

Expected Student Outcome

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.

Expected Learning Outcomes:

By the end of this course, students will be able to:

- interpret data by learning to read and create scientific graphs, test physical and quantitative models of isostasy and apply them to the Earth system
- define and discuss Plate Tectonic Theory
- identify the common minerals using basic tools of observation
- classify and identify igneous, sedimentary and metamorphic rocks
- apply the principles of relative and absolute dating to analyze the geologic history of an outcrop/region

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 laboratory notebook

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 understanding of how to analyze samples of minerals
11. An ability to identify the common minerals using basic tools of observation
12. Knowledge of “The Rock Cycle” and how it relates to plate tectonic processes
13. An ability to identify and interpret the origins of igneous, sedimentary and metamorphic rocks
14. An ability to deduce basic information about earth processes and history by “reading the rock record”
15. An understanding of how to apply the Principle of Uniformitarianism
16. Ability to apply the principles of relative and absolute dating to analyze the geologic history of an outcrop/region
17. An understanding of the costs, benefits and consequences of extraction of economically valuable geologic deposits.

Required textbook:

AGI/NAGT *Laboratory Manual in Physical Geology*, 11th ed. Richard M. Busch, ISBN-10:0134446607; ISBN-13: 978-0134446608

I. Course evaluation/grading:

| Assignments | Weighting |
|------------------------------|------------------|
| Question/conclusionwrite ups | 40% (6% each) |
| 3 topical exams | 30% (12% each) |
| Final Exam | 20% |
| Participation | 10% |

While the exams are technically not cumulative, material covered in the latter part of the course is dependent on the material from the earlier part of the course. Please make sure to be vigilant in returning any exam you take in a timely fashion.

Participation is a very important part of your final course grade. It can include anything from asking questions and participating in class discussions during the lecture/lab, via email, before, and/or after class.

A final grade of IN (incomplete) is not normally given in this course except, again, under the most extraordinary and documented circumstances. You must contact me within 48 hours of the scheduled day/time of the final exam and complete a Contract to Resolve an Incomplete Grade. Otherwise, I will average your laboratory, exam, and attendance and participation grades and record what you have earned. To qualify for Credit/No Credit you must have completed all eight laboratory exercises, taken the three exams, and have satisfactory attendance and participation. Credit/No Credit forms will be accepted up to 15 minutes prior to the start time for the third exam. I will not accept a Credit/No Credit slip after the third exam is distributed. The Hunter College grading system will be used in this class and can be viewed in the latest undergraduate catalog available online at <http://catalog.hunter.cuny.edu/>.

II. Classroom policies:

Since there is no classroom in remote learning, I just ask that when we are on a Zoom call, that you mute your microphone if there is any excessive background noise at your location.

III. Laboratory Preparation:

Come to class prepared. I expect you to have read the laboratory exercise listed for each class *prior* to the beginning of that class period. Laboratory exercises are complex, and if you do not read them before class you will have difficulty turning them in on time.

IV. Laboratory Question Sets:

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 however, you are only required to respond to the questions given for each of the laboratories we cover in the classes. Since we are in remote learning mode, your answers to questions assigned should be put in a document that you can email me by the beginning of the next class.

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. Each laboratory exercise written up should include also: an introduction, procedure, answers to the questions assigned, and a conclusion.
2. Answer all questions in full sentences. 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. A very convenient online dictionary can be found at www.m-w.com.

V. Lab Homework:

Each laboratory exercises needs to be completed by the beginning of the next lab. In other words if the lab we are going through is scheduled for more than one day, the questions will be due at the beginning of the next day of a new lab. The introductions and conclusions of your labs must be in your own words.

The grading of your laboratory exercises will be as follows: 5=excellent, 4=good, 3=fair, 2=poor, 1=terrible, 0=not handed in. You will automatically lose points if your laboratory exercise is sloppy, or done in pencil (unless specified) and if your pages are not numbered and dated or does not adhere to any of the above criteria.

VI. When are lab exercises due?

Lab exercises are due, in lab, at the beginning of your next class meeting – when you start the next lab. Late lab exercises will have their grade **reduced 10% for each day received late** unless you have a valid excuse that can be documented.

VII. Extra Credit:

No extra credit is expected to be given in this course. Whatever effort you would otherwise put into an extra credit assignment, put into completing the lab exercises and studying for exams.

VIII. Schedule of topics and readings: Below is a schedule of class meetings (for summer 2020 with a Monday/Wednesday schedule), topics and pertinent chapter, according to the sequential number of the chapter in the lab manual. I reserve the right to change the schedule and/or assignments as necessary.

Hunter College Policies

Hunter College statement 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 CUNY Policy on Academic Integrity and will pursue cases of academic dishonesty according to the Hunter College Academic Integrity Procedures. Plagiarism, dishonesty, or cheating in any portion of the work required for this course will be punished to the full extent allowed according to Hunter College regulations.

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 Accessibility to secure necessary academic accommodations.

Sexual Misconduct

In compliance with the CUNY Policy on Sexual Misconduct, Hunter College affirms 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 relationship. 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, on 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 or 212-650-3262) of Colleen Barry (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>

Continue to next page for course schedule.

| Week | Date | Laboratory Assignment | Date | Laboratory Assignment |
|------|--------|---|--------|---|
| 1 | May 25 | Memorial Day | May 27 | Lab 1 Observing and Measuring Earth Materials and Processes |
| 2 | Jun 8 | Lab 2, Plate Tectonics and the Origin of Magma | Jun 10 | Lab 3, Mineral Properties, Uses, and Identification |
| 3 | Jun 15 | Lab 3; mineral quiz | Jun 17 | Lab 4, Rock-Forming Processes and the Rock Cycle |
| 4 | Jun 22 | Lab 5, Igneous Rocks and Volcanic Hazards | Jun 24 | Lab 6, Sedimentary Rocks, Processes, and Environments |
| 5 | Jun 29 | Lab 7, Metamorphic Rocks, Process, and Resources; rock quiz | July 1 | Lab 8 – Dating of Rocks, Fossils and Geologic Events; relative age quiz |
| 6 | July 6 | Lab 8/Review; on-line final exam | | |