

Physical Geology GOL 105

“The nuts and bolts of planet Earth: what it’s made of & how it works”
Northern Virginia Community College
Spring 2015 (4 credits)

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Open office hours: Wed/Fri 12pm-1pm + 5:30-7pm

Office hours by appointment:

Wed/Fri 9:30am-12pm.

Textbook: *EARTH: An introduction to Physical Geology* (TARBUCK, LUTGENS, & TASA), 11th edition. (2014) **ISBN:** 9780321814067

Lab manual: *Laboratory Manual in Physical Geology*, Busch & Tasa, American Geological Institute, 10th edition, (2014). **ISBN:** 978-0321944511
(*You could share the lab manual with someone else in your lab group if you want to save money.*)

Lecture: Wednesdays and Fridays from 1pm until 2:15pm, CN 117

Lab: Wednesdays **or** Fridays (one or the other) from 2:30pm until 5:10pm, CS 217

COURSE OBJECTIVES

The objectives of this course are:

1. to develop your ability to comprehend the world, analyze information, and *think*
2. to give you a better understanding of the process and techniques of science
3. to give you an understanding of the basic concepts of geology and thereby a better appreciation of the world around you.

Geology is the study of the solid, non-living earth. We will investigate the nature of earth materials & features, the processes by which these materials & features form, & their exchanges of matter and energy. We will also explore the techniques & thought processes by which we understand the earth and its processes, & the implications for earth history.

Important dates :

| | |
|-------------|--------------------------------------------------------------------------------------|
| Jan 14 | First day of class! |
| Jan 29 | Last day for schedule adjustments with tuition refund; last day to change to “audit” |
| Feb 18 | Midterm exam 1 |
| March 4/6 | Lab Practical exam I |
| March 23 | Last day to withdraw without a grade penalty (“W” on transcript) |
| March 9-15 | Spring Break |
| April 8/10 | Field Trip (Billy Goat Trail, C&O Canal NHP, Maryland) |
| April 24 | Field Trip response paper (essay) & proof of Writing Center visit due in lecture |
| April 17 | Midterm exam 2 |
| April 15/17 | Lab Practical exam II |
| May 6 | Final Exam 12pm-3:40pm |

Grading:

Lecture 65%

Lab 35%

Lecture portion:

Quizzes (10%)**Field trip response (10%)****Midterm exams (25%; 2 @ 12½% each)****Cumulative final exam (20%)**Lab portion: **Lab average [lowest score dropped] 15%****Lab Practical Exam I 10%****Lab Practical Exam II 10%**

Note: nowhere here does it say “effort”. You don’t get any points for trying your best, or persevering through adverse circumstances. It’s **assumed** you will give this class your best effort. Your grade, however, comes from the points you earn.

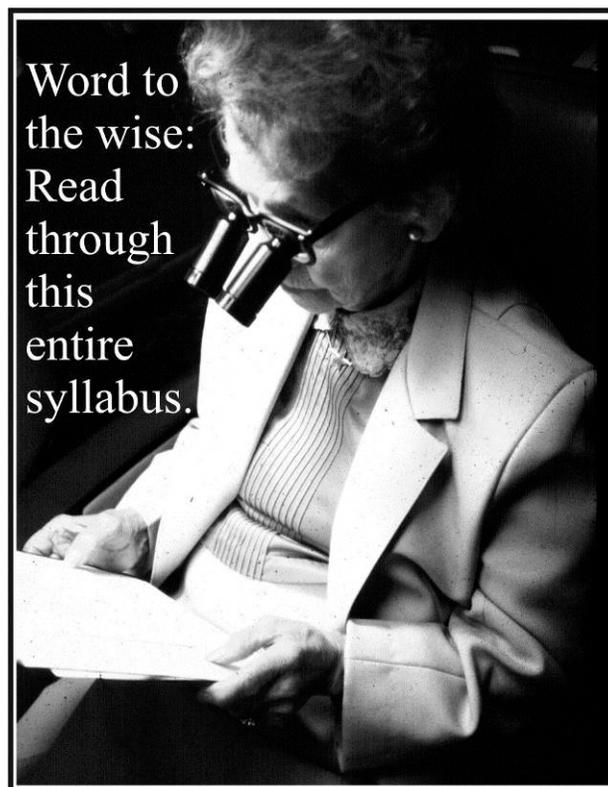
Blackboard:

Important course documents, review sheets, articles, and copies of all PowerPoints “slideware” presentations will be made available to you via Blackboard, an educational “courseware” package available online at <http://learn.vccs.edu>. You are responsible for making sure that you can access Blackboard with a viable user name and password. If you cannot log in, it may be because you have not been “added” to the course – this is something only I can do. So: if you are having problems with accessing the resources available on Blackboard, you should e-mail me immediately at cbentley@nvcc.edu, describing the problem to me. I will solve it.

Evaluation of your learning and Blackboard:

I will be conducting important evaluations of your learning via the Blackboard courseware platform. Approximately every two weeks (see Schedule of Topics), you will be required to log into Blackboard (at <http://learn.vccs.edu/>) and complete an online quiz. Quizzes are given after week 2, week 4, week 8, and week 10. Each of these quizzes or exams will be available to you for 55 hours only. During those 55 hours (between when lab ends on Thursday afternoon and Sunday midnight), you will need to schedule time to log onto Blackboard and complete the quiz or exam. Once you begin a quiz, you will have a limited amount of time to complete it. For quizzes, this time limit will be 45 minutes. You only get one shot to take each quiz or exam, so once you begin, you must finish it completely. Make sure that you have enough time in your schedule when you sit down at the computer to take the quiz or exam. Naturally, the work you do on Blackboard falls under the Honor Code, and you are on your honor to complete these quizzes on your own, with no assistance from other people or written resources. Quizzes and exams are closed-book.

Technological note: If you open another “window” or navigate to an already-open window while taking the quiz on Blackboard, it will cause the quiz to “freeze up.” In this event, I will have to reset your quiz manually...



Word to the wise:
Read through this entire syllabus.

Quizzes:

There are four scheduled (online) quizzes, available for 55 hours apiece as shown on the Schedule of Topics. You must schedule time to log into Blackboard and complete each of those quizzes during each of those “windows” of time (between when lab ends on Thursday afternoon and Saturday midnight). In addition, **pop quizzes may be given in class** at the instructor’s discretion. Usually, pop quizzes will occur in the first ten minutes of the lecture period, but they may also be given at other times if it is determined that students need “motivation” to sit out the entire lecture. Of course, those who arrive to class on time (and sit out the entire class) will not miss any pop quizzes. I may also opt to deliver **additional** quizzes online, via Blackboard (see above).

When you get papers returned to you, check over the grading and make sure the points add up. Let me know if you didn’t get all the points you deserve.



Exams:

There are three scheduled exams (two midterms and a final). Exams will contain mostly multiple choice questions, multiple answer questions, true/false questions, fill-in-the-blank questions and/or matching questions. There may also be essay questions. Exams will emphasize material presented in lecture; however you may also be tested on material contained in the readings. Exams will not just test your factual knowledge of the material. You will also be expected to *apply* your knowledge and understanding of the course material. In this regard, it is of prime importance to understand geologic concepts, more so than memorizing facts. Some memorization will be necessary, but I consider this of secondary importance. Exams are closed-book.

Make-up exams:

Completion of all exams and quizzes is required. If you know you will miss an exam or quiz, you must notify me at least 24 hours *prior* to the day of the exam/quiz to make other arrangements. E-mails and messages on my answering machine will not qualify as notifying me. You must speak to me in person or receive a reply from me stating I received your notification. I will only consider rescheduling a make-up for documented emergency situations. If you have a conflict with the dates of the exams, come see me. If you miss an exam and fail to notify me ahead of time, you will receive no credit for that exam. Any make-up exams or quizzes at that point will only be offered entirely at my own personal discretion. Make-up exams (if offered) will likely consist of 4 – 5 essay questions.

Word to the wise:
Take notes, even when
you’re not told to.



Field trip:

This course includes a mandatory field trip to the Billy Goat Trail, a 3.5-mile hike along the Maryland side of the Potomac River, downriver from Great Falls. After the field trip, you will be required to write up a ~ 5 page response paper that summarizes (a) relevant geologic observations from the field experience and (b) your interpretations of those observations. Note that this is **not** a cushy museum tour – it's a **real** field trip, **outside, in rough terrain**. More details about the conditions on the trail are available online at: <http://www.nvcc.edu/home/cbentley/105/about.htm>

The field trip will take place on whichever day you have lab: on November 5 or 7. It runs from 11am until 5:30pm. **Note that this starts two hours earlier than class usually begins!** I will provide / coordinate transportation. If you cannot attend the field trip, there are a couple of alternatives: You can take a GOL 135 field course (1 day, 1 credit) for 100% of the field trip assignment credit. You can opt to complete a self-guided Smithsonian trip for 80% of the field trip assignment credit (i.e. 8% of the final grade in the course rather than 10%). The Smithsonian trip requires about four hours and a write-up consisting of answering about a hundred questions and writing an essay. The assignment (whichever option you choose) is due in class on Wednesday, Nov. 19. This assignment counts as 10% of your course grade –the difference between an A and a B, or a C and a D.

The college maintains a Writing Center for your benefit. I am requiring you to take your rough draft to the Writing Center for feedback before submitting the final draft of your paper to me. This is required, and is guaranteed to result in a higher score for you on this assignment! The Writing Center staff requests that you schedule your appointment at least a week before the assignment is due, so that means you should immediately get to work on your rough draft, then visit them ASAP. (The Writing Center is closed on Fridays but open on Saturdays.) They allow you one 30-minute appointment per class per week, but have unlimited walk-ins. **I'd advise you to schedule your appointment with a writing counselor NOW** (perhaps for Monday the 13th?), before the semester gets really busy. Students can make appointments by stopping by the Center (CG 409), calling 703-323-3341, or emailing writingAN@nvcc.edu. You will be required to submit proof of your visit to the Writing Center, stapled to your paper when you submit it (-20% if it's not there).

Honor Code:

This course operates under the rules of the honor code. Please be familiar with the code. Academic misconduct is defined as the *“giving, receiving, or soliciting of information and the unauthorized use of notes or other material during the examination or quiz.”* (NOVA Student Handbook, pages 63-64) Exams are closed book and your answers must be your own. If I suspect an honor code violation, I will collect evidence and submit that evidence to my supervisor for judgment. You do not want to put yourself in the position of dealing with the Assistant Dean. He issues severe penalties with little compunction. Take every effort to avoid even the appearance of academic misconduct:

HONOR IS EXPECTED OF A GEOLOGIST.



Please turn off your cell phones when you are in class, in particular during lecture. Thanks!

Study habits:

This is not a course for slackers. We have an entire planet's worth of material to cover. I try and make this introductory course as comprehensive as possible, but this has consequences: Students with poor study habits can feel overwhelmed by the volume of information. First off, it's essential to keep up with your reading in the textbook. (After all, why did you spend all that money on it?) Second, it's essential to pay close attention in lecture, and think about the ideas, evidence, and interpretations being presented. Sorry to say it, but you're going to have to think!

Hints for success:

- Read textbook chapters **before** coming to lectures (...and lab chapters **before** going to lab).
- Sit as **close** to the front of the class as possible (people between us can be distracting).
- Consider **taping** lectures (prevents any "distraction gaps").
- **Review** your notes briefly later in the same day you took them (helps lock in the info long-term).
- View the "**Earth Revealed**" videos at <http://www.learner.org/resources/series78.html>
- Form **study groups** prior to exams or quizzes (dissect, discuss, and question your notes).

Laboratory:

This class includes a mandatory laboratory. Lab will meet every day except for the first day of class. Lab is an important part of the course, and I rely upon the lab exercises to supplement the lecture material. The purpose of the lab section is to solidify concepts and provide hands-on application. All labs will be held in CS 217. A lab preparation schedule is provided at the end of this document; it outlines the lab schedule and your preparation for each lab.

Each lab exercise has a written piece to be submitted for grade. These are meant to be completed during the lab period. Labs will not be accepted for grade beyond the date on which they are due. You are responsible for preparing for each lab session. All labs are mandatory, but to compensate for a single lab absence (or your single worst graded lab), I will drop your lowest lab score at the semester's end. Labs will typically be designed for discussion, completion, and submittal *as a group*, therefore students are expected to work on labs in small cooperative teams of 2-4 persons. **No more than four will be permitted.** Every person in each group will receive a set of lab handouts to complete, but I will collect and grade only the single best version that your group designates as the "recorder copy". The names of all group members must appear on the lab cover page, which will be initialed as the lab reports are submitted. Each group-member will receive the same grade, based on the single recorder copy; corrections made to it need to be shared with all team members, so make time for that. You're welcome to switch your group affiliation from week to week.

There will be two lab exams (called "practicals" because they test for your *practical* skill in completing lab tasks). One will take place halfway through the course and the other will take place at the end of the course. Exact dates are on the "Schedule of Topics" later in this syllabus. Lab practical exams and quizzes are *strictly* your own work: individual, not group. Lab practicals are **open-note** and **open-book**. Bring your lab manual and your textbook with you to the lab practical. Before coming to the lab practical, be sure that everyone in your group has a copy of the graded labs for reference; you will not be permitted to trade individual lab copies back and forth during the practical.

Lab logistics and rules:

Students should bring to lab their own writing material and their lab manual each week. Materials used for specific lab assignments will be provided. At the end of each lab, students are responsible for returning the lab materials in good order, as they received them from the instructor. Misuse of lab equipment and materials will be penalized.

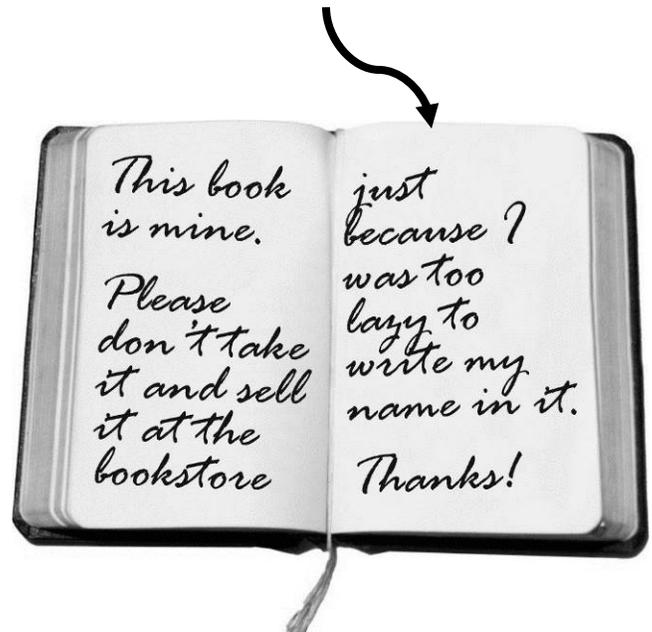
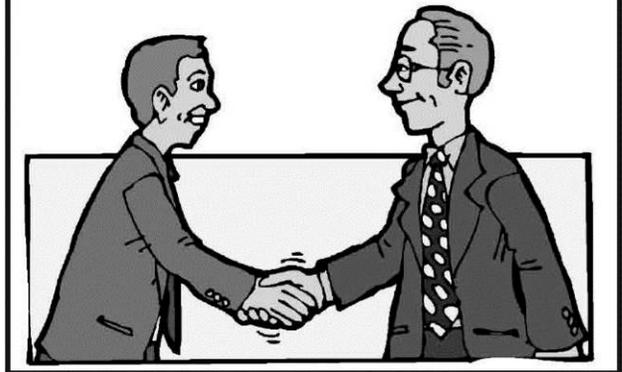
Students take responsibility for their actions during GOL 105 lab time. Students are requested to familiarize themselves with the safety procedures and devices in the lab. A short safety review will be given in lab prior to the first lab. Some safety precautions should be obvious and will be enforced. You must wear shoes that cover your entire foot. No sandals or other open-toed shoes will be allowed in the lab. (Think about what happens to unprotected toes when heavy rocks fall on them!) If you wear sandals, you will not be allowed to enter the lab. You cannot eat or drink anything in the lab. Do not throw objects; put anything in your mouth, run with scissors, etc.

Also **please write your name inside the cover** of your (expensive!) textbooks so they can be returned to you easily when you forget them in the classroom or lab:

Extra credit?

No: there is none. Ever. Don't ask. Especially don't ask at the end of the semester, after the final exam when you don't get the score you were hoping for. The plan of action here is to follow the course of study I have organized for you. Follow it well, and to the best of your ability. The score you earn will determine your grade, and that's that. No exceptions, no matter how deserving the individual's situation, no matter how important it is to your future plans. To do otherwise would be academically dishonest: every student can expect to be treated by the same set of rules. **If you want to get a good grade in Physical Geology, you will have to demonstrate that you have learned a lot of Physical Geology:** there is no other route to success in this course!

Who are you?
Stop by sometime and introduce yourself. Tell me about your circumstances, challenges, and goals. Getting to know one another makes us both more invested in your success.



| Week | Days & Dates | Lecture topics (Wed./Fri. at 1pm) | Reading (before lecture) | Lab topic + chap. (Wed. / Fri. 2:30p.m.) |
|------|--------------|---------------------------------------------------------------------------|-----------------------------|---------------------------------------------|
| 1 | Wed 1/14 | Introduction to the course and to geology | Text 1 | <i>No lab this week</i> |
| | Fri 1/16 | Plate tectonics I: Continental drift, seafl.spd. | Text 2 | Online survey ?s |
| 2 | Wed 1/21 | Plate tectonics II: Plate boundaries | Text 2 | Plate tectonics |
| | Fri 1/23 | Matter and minerals QUIZ | Text 3 | LM 2 |
| 3 | Wed 1/28 | Major mineral families | Text 3 | Mineral properties |
| | Fri 1/30 | Igneous rocks | Text 4 | LM 3 |
| 4 | Wed 2/4 | Volcanoes | Text 5 | Igneous rocks |
| | Fri 2/6 | Weathering and soils QUIZ | Text 6 | LM 4, 5 |
| 5 | Wed 2/11 | Sedimentary rocks | Text 7 | Sed. rocks |
| | Fri 2/13 | Metamorphic rocks (<i>video</i>) | Text 8 | LM 6 |
| 6 | Wed 2/18 | Midterm exam 1 | Text 1-8 | Meta. rocks |
| | Fri 2/20 | Earthquakes and seismology | Text 11 | LM 7 |
| 7 | Wed 2/25 | The earth's interior | Text 12 | Earthquakes |
| | Fri 2/27 | Crustal deformation & structure QUIZ | Text 10 | LM 16 |
| 8 | Wed 3/4 | Evolution of continents & ocean basins | Text 13, 14 | Lab Practical I (LM 2-7, 16) |
| | Fri 3/6 | Geologic time | Text 9 | |
| 9 | Wed 3/11 | <i>Spring Break</i> | | Geologic dating |
| | Fri 3/13 | | | Take-home "lab" |
| 10 | Wed 3/18 | Geology of Virginia | n/a | Topo maps I |
| | Fri 3/20 | Mass wasting & start of Running water QUIZ | Text 15, 16 | LM 9 |
| 11 | Wed 4/1 | Remainder of Running water | Text 16 | Topo maps II |
| | Fri 4/3 | Groundwater | Text 17 | LM (9) & 11 |
| 12 | Wed 4/8 | Field trip: Billy Goat Trail, MD 11am-5:30pm | | <i>Online pre-trip readings (see Bb)</i> |
| | Fri 4/10 | <i>(No lecture or lab this week; only the field trip on your lab day)</i> | | |
| 13 | Wed 4/15 | Glaciers and glaciation (w/take-home "lab") | Text 18 | Lab Practical II <i>LM: 8-13</i> |
| | Fri 4/17 | Midterm exam 2 | Text 9-18 | |
| 14 | Wed 4/22 | Carbon and climate, part I | Text 21 | Carbon and climate |
| | Fri 4/24 | Carbon and climate, part II | Text 22 | |
| 15 | Wed 4/29 | Carbon and climate, part III | Text 23 | Carbon and climate |
| | Fri 5/1 | Carbon and climate, part IV | | |
| 16 | Wed 5/6 | Final Exam 12pm-3:40pm | <i>Text: all ‡</i> | |

* Note: the field trip response (& proof of Writing Center visit) at the beginning of class on **April 24**.

‡ Note that we won't be covering Chapters 19, 20, or 24 in this class.

Attendance/Student Participation:

Education is a cooperative endeavor between the student and the instructor. Instructors plan a variety of learning activities to help their students master the course content. Your contribution is to participate in these activities within the framework established in the class syllabus. Faculty will identify specific class attendance policies and other requirements of the class in the class syllabus that is distributed at the beginning of each term. Successful learning requires good communication between students and instructors; therefore, in most cases, regular classroom attendance, or regular participation in the case of a non-traditional course format, is essential.

It is your responsibility to inform your instructor prior to an absence from class if this is requested by the instructor in the class syllabus. You are responsible for making up all course work missed during an absence. In the event of unexplained absences, your instructor may withdraw you administratively from the course.

If you do not attend at least one class meeting or participate in a distance learning class by the Last Day to Drop with a Tuition Refund (also known as the Census Date), your class registration will be administratively deleted. This means that there will be no record of the class or any letter grade on your transcript. Furthermore, your class load will be reduced by the course credits, and this may affect your full-time or part-time student status. Your tuition will not be refunded.

