

# **GEOLOGY 103--PHYSICAL GEOLOGY**

## **COURSE OUTLINE AND SYLLABUS**

### **Summer Term, 2017**

- INSTRUCTOR:** Dick Ehrman
- PHONE:** Cell: 429-1327 (if no answer leave message on machine).
- E-MAIL:** [richard.ehrman@doane.edu](mailto:richard.ehrman@doane.edu) (Note: I may not check my e-mail every day, so if your e-mail is particularly important, it may be a good idea to contact me by phone or text as well; if you do text me please identify yourself!)
- MEETING TIME:** Tuesday evenings, May 23-July 19, 2017 from 6:00-10:30 PM. Also, Saturday morning labs as scheduled from approximately 8:30 AM-12:00 noon. The Summer term runs from May 22-July 22, 2017.
- “OFFICE”:** Of course, I don’t have an assigned office space, but if you need to see me in person, I am normally at Doane-Lincoln on scheduled class evenings (usually Tuesday) by about 4:30 PM, usually in Room 305 and I normally have lab or am working on Saturday mornings from 8:30 AM to about noon, again usually in Room 305. Feel free to stop by and visit me at either of these times, otherwise, specific appointments can be scheduled.
- TEXTS:** **Main text (required):** Spooner, A.M. 2011. *Geology for Dummies* (Hoboken, NJ: Wiley Publishing, Inc.). 360 p. ISBN: 978-1-118-02152-1.
- Additional text (provided):** Conservation & Survey Division, UNL- IANR. 2013. *The Groundwater Atlas of Nebraska* (Resource Atlas #4b). 36 p. (This is referred to as GWAN in your reading assignments; it's provided with your lab map packet which you will pick up at the first class meeting.)
- Additional text (not required but made available via Blackboard):** Murck, B.W. 2001. *Geology: A Self-Teaching Guide*. New York: John Wiley & Sons. 328 p. ISBN: 0-471-38590-5. **IMPORTANT NOTE:** This text is out of print, but it is available as a PDF file at NO COST to you! You will be given instructions on accessing it on Blackboard at the initial class meeting.
- WEBSITES:** In addition to the resources listed above, the internet is a nearly endless source of geological information about almost any subject. Simply go to your favorite search engine and type in "geology" or whatever topic you're interested in and you'll come up with dozens of sites to explore.

Your assignments will include links to a lot of great websites, but here are some of my favorite general geology sites to get you started:

U.S. Geological Survey: [www.usgs.gov](http://www.usgs.gov)

Earth Science on the Web: [www.geology.com](http://www.geology.com)

About Geology: <http://geology.about.com>

**COURSE DESCRIPTION:** A study of the earth including earth materials, processes of weathering and erosion, and processes acting to elevate earth surfaces. Lecture and laboratory. Study includes oceanography.

Geology 103 fulfills a requirement for the Scientific Perspectives Foundational Area of Knowledge (FAK). Courses in this FAK will allow Doane students to gain a greater understanding of scientific thinking and applications using core ideas in courses that include laboratory or field experience. Students will consider the complexities of scientific methodologies in one or more disciplines of the natural sciences, the scientific context of issues they will confront as informed citizens, and the scientific impact on the global community. Students will work to achieve the following learning outcomes:

1. Employ methods of science for inquiry in a scientific discipline;
2. Develop their scientific literacy and ability to critically evaluate scientific information; and
3. Consider the ethical and social implications of scientific study and use of scientific findings.

**COURSE OBJECTIVES:** In addition to the FAK outcomes described above, this course will achieve a number of specific objectives relating to modern geology. A student who earns a passing grade in this course should be able to:

1. understand the scientific method and its applications to geology, other sciences, and life in general;
2. understand the difference between minerals and rocks and how each contributes to the solid framework of the earth;
3. discuss the major properties of minerals and use simple laboratory tests to demonstrate these properties so as to identify common rock-forming minerals;
4. differentiate between the three main types of rocks and use simple laboratory tests to identify common rocks;
5. understand and describe the most important surficial processes shaping the earth (e.g. weathering, stream action, wind, glaciers, ground water, etc.)
6. understand the most important aspects of the earth's interior structure;
7. relate the critical nature of plate tectonic theory as a unifying theory capable of explaining many observed geologic phenomena;
8. describe the most important features of Nebraska's geology;

9. more confidently discuss, consider, and evaluate scientific ideas; and
10. utilize her/his basic knowledge of geology to live a more fulfilling and effective life as an individual, parent, employer/employee, and citizen.

### **CLASS SCHEDULE**

<b><u>Date</u></b>	<b><u>Topics</u></b>	<b><u>Readings</u></b>
May 23	Introduction; Scientific Method History of Geology Begin Minerals Lab—Begin Minerals	Ch. 1, 2 Ch. 3 Ch. 5 Lab #1
Mar. 27 (Lab)	Lab—Minerals	Lab #1
May 30	Finish Minerals Rocks Lab—Finish Minerals	Ch. 6 Ch. 7 Lab #1
June 3 (Lab)	Lab—Minerals	Lab #1
June 6	<b>TEST I</b> Begin Plate Tectonics Lab—Begin Rocks	Ch. 8 Lab #2
June 10 (Lab)	Lab—Rocks	Lab #2
June 13	Finish Plate Tectonics Lab—Finish Rocks	Ch. 9, 10 Lab #2
June 17 (Lab)	Lab—Rocks	Lab #2
June 20	<b>TEST II</b> Mass Wasting Lab—Begin Topographic Maps	Ch. 11 Lab #3
June 24 (Lab)	<b>OPTIONAL FIELD TRIP</b> (Weather permitting)	TBA
June 27	Water	Ch. 12, 15

	Glaciers	Ch. 13
	Lab—Finish Topographic Maps	Lab #3
July 1 (Lab)	Lab—Topographic Maps	Lab #3
July 4 & 8	<b>NO CLASS OR LAB—INDEPENDENCE DAY</b>	
July 11	Wind	Ch. 14
	Nebraska Geology	GWAN
	Lab—Begin Geologic Maps	Lab #4
July 15 (Lab)	Lab—Geologic Maps	Lab #4
July 18	<b>TEST III</b>	
	Course evaluation	

**GRADES:** You will earn your grade in this class by completing the three in-class exams, each of which is worth 100 pts. toward your final grade; you can also increase your point total by completing extra credit work as noted below.

**THE TOTAL NUMBER OF POINTS AVAILABLE ON THE THREE IN-CLASS EXAMS WILL BE 300;** your final grade will be calculated against that 300 pt. total as outlined below.

**GRADE SCALE:** Grades will be assigned on a simple point accumulation basis. There are 300 points possible on the three exams; your grade will be determined relative to those 300 points based upon the following scale:

<u><b>POINTS</b></u>	<u><b>GRADE</b></u>
290 & above	A+
280-289	A
270-279	A-
260-269	B+
250-259	B
240-249	B-
230-239	C+
220-229	C
210-219	C-
200-209	D+
190-199	D
180-189	D-
179 & below	See you next term

**EXTRA CREDIT:** In addition to the required work described above, you may do extra credit work if you so desire. There are several categories you can choose from:

**1. Short Research Paper:** Papers can be on **ANY** subject, book, or article pertinent to this class, as long as the subject is cleared with me first. They should be typewritten or neatly handwritten, and should be about 5 pages with references. Any standard format is acceptable.

**2. Book/Article Review:** You may review a book or scientific article on a topic that is pertinent to this class. There are a multitude of such works, but anything that relates to geology is okay. The length will vary with the type of review you do, but generally a few pages is adequate, again typewritten or neatly handwritten.

**3. Site Visit:** You can also make a visit to any geologically-oriented location (e.g. Morrill Hall on the UNL campus, Schramm Park, Pioneers Park, etc.) and write up a short report of your visit there, emphasizing the displays or portions which deal with geology, paleontology, etc.

**4. Website Reviews:** Geology (like most sciences), is fast becoming an Internet-based endeavor. So, for this class, you can visit a related website (OTHER than the ones required in your online assignments), and write a short synopsis/critique of the site (what it was about, what you liked/disliked, why, etc.). Again, length will vary, but generally 1-2 pages (you may also download pages, pictures, etc.) is okay.

Each of these activities is worth 5 pts. toward your final grade, and you may pick any combination of up to 4 different items. Thus, the total possible extra credit you can earn in this class is **20 POINTS!!!!** Your extra credit work will be due to me by the end of the term.

**FINAL GRADES:** Final grades will be assigned after final exam. All work will be graded by the grade submission due date established by Doane for each term. **ALL ELECTRONIC SUBMITTALS OF ASSIGNMENTS, EXAMS, OR PAPERS/PROJECTS WILL BE DELETED NO EARLIER THAN 24 DAYS AFTER THE END OF A TERM. HARDCOPY VERSIONS OF THE SAME WILL BE DESTROYED AT THE SAME TIME UNLESS THE STUDENT REQUESTS THEIR RETURN.**

**LAB MATERIALS:** This is a 4-credit lab course, and therefore you will be required to perform certain basic lab activities. In addition to performing lab activities in class, you will be issued the following lab materials for your study at home:

- A set of 22 mineral specimens & 10 test specimens (green box labeled "MINERALS")
- A set of 24 rock specimens & 10 test specimens (green box labeled "ROCKS")
- A mineral & rock identification kit (plastic container) containing:
  - 1 glass scratch plate
  - 2 porcelain streak plates (1 white and 1 black)
  - 1 small magnet
  - 1 nail
  - 1 magnifying glass
  - 1 plastic squeeze bottle containing diluted hydrochloric acid
- A set of topographic maps, containing one standard USGS 7.5 minute topographic quadrangle for the following areas in Nebraska:
  - Lincoln
  - Chadron NE
  - Overton
  - Burwell

- Rulo
- 2 geologic maps (individual manila envelopes containing 1 X 2 degree bedrock maps) for the following areas in Nebraska:
  - Grand Island
  - Lincoln/Nebraska City
- NOTE: The topographic maps and geologic maps are provided in the large padded manila envelope labeled “Topographic and Geologic Maps.”

The mineral and rock sets and the identification kit are meant for at-home study. In addition, I have larger, more complete sets of minerals and rocks in the geology lab in Room 305 at Doane. These larger collections will be available for your study on Saturday mornings, at arranged meeting times, and/or any other time when Room 305 is not otherwise occupied.

In order for you to receive credit for this class, **ALL LAB MATERIALS MUST BE RETURNED IN GOOD ORDER AND CONDITION. IF YOU FAIL TO RETURN YOUR LAB MATERIALS, YOU WILL BE ASSESSED AN ADDITIONAL \$100 FEE!!!!** I don’t require this because the lab stuff is all that valuable, but more because I need the lab materials for upcoming classes. In other words, if you don’t turn your lab materials in, future students won’t have them available for study. So please arrange to get the lab stuff back to me as soon as you’re done with them!!! Also, these lab materials are meant for lots of hands-on work, but please use common sense and take care of them; if they are taken care of I don’t have to replace them so often and therefore your lab fees can remain reasonable. Also, please note that these materials are meant for the use of adult Doane-Lincoln students only; **PLEASE OBSERVE ALL SAFETY STATEMENTS AND KEEP THE LAB MATERIALS OUT OF REACH OF CHILDREN.**

**ACADEMIC INTEGRITY POLICY:** In keeping with the mission of Doane-Lincoln in particular and higher education in general, the Doane College Academic Integrity Policy will be adhered to in this class. All projects and tests will represent your own work. Any use of others' ideas and words without proper citation of sources is plagiarism and will result in a loss of all points for that particular assignment or test. You are allowed and encouraged to collaborate with other students as you work through this class, but **MAKE SURE THAT ALL WORK IS SUBMITTED IN YOUR OWN WORDS. I WILL UTILIZE A VARIETY OF PLAGIARISM DETECTION SOFTWARE THROUGHOUT THIS CLASS; IF YOUR WORK IS SUBSTANTIALLY PLAGIARIZED YOUR WORK WILL EITHER BE RETURNED, POINTS WILL BE DEDUCTED FROM YOUR WORK, OR YOU WILL RECEIVE A GRADE OF ZERO AT MY DISCRETION.**

This being the case, I **HIGHLY** recommend that you utilize plagiarism checkers to help you modify your work and avoid plagiarism. Here are a few online tools I use:

<http://plagiarisma.net/>  
<http://www.dustball.com/cs/plagiarism checker/>  
<https://www.grammarly.com/plagiarism-checker>

But there are MANY plagiarism checkers available online; just search “Plagiarism checker” or something similar, and you’ll have lots of options. Again, **MAKE SURE THAT THE WORK YOU TURN IN IS IN YOUR OWN WORDS AS MUCH AS IS POSSIBLE.**

**READINGS AND NOTES:** I've provided you with a set of course notes which give you an outline of the topics that I consider to be most important for a beginning student of geology. The text readings are intended as supplementary to these notes. In addition, my course lectures in the form of PowerPoint presentations will be posted on the Blackboard system so you can download them if you wish. Between the text, other printed resources, and especially the internet, there is an ENORMOUS amount of information available on geological topics which makes it pretty easy to get lost or overwhelmed. So, I want to make sure that you have a good idea of what I think is important (and what topics you're likely to be evaluated on). You'll also notice that the text I use is a lot more informal than many texts you're used to. This being the case, we'll cover some stuff that's not covered in depth or at all in the text. Thus, it's important that you read the material that I assign, but particularly so as it relates to the stuff that is in the notes. So please feel free to use any other source of information that works for you; but remember that the course notes represent a kind of common baseline of the things that I hope you remember when you finish this class (and the things that will show up on exams or exercises). So, making judicious use of all the sources of information you can get your hands on will help you learn more about geology.

**INCOMPLETES:** As you might be aware, Doane has a specific policy on incompletes. Please keep this in mind as you do your classwork; the policy is as follows:

An Incomplete (I) may be given if a student is not able to complete the work required for a course by the last day of the course due to sickness or other extenuating circumstance that the student has discussed with the instructor. When awarding an incomplete, the instructor will assign an expiration date NO LATER THAN the last day of the next term. If the expiration date passes without a grade change from the instructor, the incomplete grade will automatically convert to an "F". This is a final grade and will not be changed, per the grade change policy.

In order to receive an incomplete (I), a student must have completed at least 75% of the coursework required for the course. If a student wishes to receive an incomplete for a course, the student will obtain a form from the registrar that will allow the teacher and the student to detail the coursework required to remove the incomplete. The student must complete the form, obtain the signature of the instructor on the form, and return it to the Registrar's office.

**QUESTIONS:** Heartily encouraged at all times and about any subject you're having trouble with. Remember, in this class, **THERE IS NO SUCH THING AS A DUMB QUESTION!!!!** You may get some rather absurd answers from time to time, but don't let that stop you. It's sometimes easy to get confused or lost, so don't let that happen. Ask LOTS of questions in class, send me an email, give me a call, or set up an in-person meeting and I'll help you out. That's not an inconvenience—it's what you're paying me for!

So, with all these pleasant thoughts in mind, relax, sit back, and enjoy a little geology. The most important thing to remember is **DON'T WORRY!!!!** Worrying about your grade, class status, image, etc. spoils more learning opportunities than just about anything else. With a little bit of work and thought, you'll pass this