GEOL 101—ENVIRONMENTAL GEOLOGY ONLINE (4 Credits)

INSTRUCTOR: Dick Ehrman

PHONE: Cell: (402) 429-1327 (if no answer leave a message)

E-MAIL: 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 as well.)

NOTE: As per Doane policy, you MUST submit ALL coursework for a grade in online courses via your Doane email account or through Blackboard. Since much of the communication in this class will take place via email, please make sure that your Doane account is activated and functioning before beginning this class.

MEETING TIME: ONLINE CLASS; no regular class meetings.

INITIAL ORGANIZATIONAL MEETING: Monday, August 18, 2015 from about 6:00-9:00 PM. If students and/or the class as a whole desire, we can schedule more “formal” class meetings at various times throughout the term. The Fall term runs from Aug. 17-Oct. 17, 2015.

“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 by about 4:30 PM in either Room 303 or 305, and I normally have lab or am working on Saturday mornings from 8:30 AM to about noon, again usually in Room 303 or 305. Feel free to stop by and visit me at either of these times if you’re in Lincoln, otherwise, specific appointments can be scheduled. In addition, I will plan on arranging a few times throughout the term when I will come to the Omaha campus for in-person meetings if necessary; we’ll discuss that at the organizational meeting.

ISBN: 978-1-118-02152-1

NOTE: This is the same text that I use for Geology 103-Physical Geology as well as Geology 104-Historical Geology. Don’t worry—the information in these classes is related but I place emphasis on different subjects for each class. Also, affordable texts dealing specifically with Environmental Geology are hard to find!

In addition, I’m working on getting Nebraska-specific references from the University of Nebraska; if I can locate those they will be provided to you at the organizational meeting and/or at the appropriate time.
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/science sites to get you started:

Earth Science on the Web:  www.geology.com
About Geology:  http://geology.about.com
United States Environmental Protection Agency:  www.epa.gov
LiveScience:  www.livescience.com
NewScientist:  www.newscientist.com
Science Daily Magazine:  www.sciencedaily.com

COURSE DESCRIPTION: An examination of how geologic processes and hazards influence human activities. The geologic aspects of Earth resources and environmental issues related to water, soils, minerals, and fossil fuels are investigated. Hazards such as earthquakes, landslides, flooding, volcanism, and surface deformation are included. A geologic framework for environmental issues, including rocks and minerals, tectonic process, and geologic time is provided. Upon successful completion of this course, students will demonstrate an understanding of the structure and dynamism of geology as well as the natural and human-induced changes in geologic systems. Lecture and laboratory.

Geology 101 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: 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. Learn the characteristics and properties of earth materials like minerals, rocks, and ores, and to understand how those properties impact the environment;
3. Discuss the role of geology in the production, consumption, and management of energy and mineral resources;
4. Understand the major features and history of modern plate tectonic theory as a controlling element in Earth’s environment;

5. Discuss various potentially hazardous geologic phenomena such as earthquakes, tsunamis, landslides, and mass wasting, and understand what can be done to deal with them;

6. Understand the basic geologic factors which contribute to the occurrence of water resources, and discuss what modern society can do to affect the use and conservation of water;

7. Gain an understanding of the general history of the Earth and what that tells us about issues such as climate and environmental change;

8. Understand specific environmental/geologic features and issues of Nebraska and the midcontinent of North America, and what human actions might be taken to address them;

9. More confidently discuss, consider, and evaluate scientific ideas; and

10. Utilize her/his basic knowledge of geology and the environment to live a more fulfilling and effective life as an individual, parent, employer/employee, and citizen.

PREREQUISITES: An interest in learning more about the world and the environment, especially as they relate to Earth materials and processes.
In addition, since this course is mostly online (except for an organizational class meeting), you MUST have or have access the following:

1. A computer equipped with Microsoft Word word processing software
2. An internet connection (since much of the class involves visiting graphics-intensive websites, a fairly fast connection (e.g. DSL, cable, etc.) rather than dial-up is recommended)
3. An email account

Much of the course work and discussion will be performed via emails between you and me. As per Doane policy, I can ONLY accept work submitted for a grade from your Doane email account. So, please make sure your Doane email account is activated and functioning before beginning this class. In addition, common course resources (course documents, PowerPoint presentations, some assignments, etc.) will be posted on Doane’s Blackboard website. If you are not familiar with using Blackboard, instructions will be provided to you at the organizational class meeting.

CLASS SCHEDULE

As already specified, this is primarily an online class and as such there is no “schedule” per se w/ lectures, class meetings, in-class tests, etc. You will be provided with ALL the materials necessary to complete the course (except for the textbook—that one’s on you!) at the organizational meeting and within 24 hours of that meeting. An approximate schedule follows—it is provided more as a guide so you can keep up with your text reading and online work than anything else. You can vary your schedule at your own discretion, but just remember that all “weekly” Assignments 1-7 and the short essay exam are due on the specified dates if you
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I wish to have me give you feedback; your remaining work (lab quizzes, multiple choice exam) is due by the end of the term (i.e. Saturday of Week 9). REMEMBER: There are FOUR (4) required activities for this class:

1. The seven (7) weekly assignments;
2. The short essay exam;
3. The multiple choice exam; and
4. The four (4) lab quizzes.

These assignments and instructions will be emailed to your Doane address within 24 hours of the organizational meeting. They will also be posted, along with additional supporting material, on Doane’s Blackboard site; instructions for accessing this material will be provided at the organizational meeting.

You may also do extra credit work as outlined in the course description. ALL COURSEWORK (the 4 required activities and any extra credit work) is due by the end of the term. IF YOU DO NOT TURN IN ALL REQUIRED WORK BY THE END OF THE TERM, YOU WILL ONLY RECEIVE THE POINTS EARNED ON THOSE ASSIGNMENTS TURNED IN.

SUGGESTED SCHEDULE
(You can complete your assignments at your own pace BUT REMEMBER THE DEADLINES FOR COMMENTS AND FINAL DEADLINE AS NOTED BELOW!)

<table>
<thead>
<tr>
<th>Date</th>
<th>Topics</th>
<th>Readings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>The Scientific Method</td>
<td>Ch. 1-2</td>
</tr>
<tr>
<td>(Aug. 22)</td>
<td>Some History—Geology and the Human Environment</td>
<td>Assignment 1</td>
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<tr>
<td>Week 2</td>
<td>Earth Materials</td>
<td>Skim Ch.5</td>
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<td></td>
<td>Assignment 2</td>
<td>Ch. 6-7</td>
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<td></td>
<td>Lab Quiz #1—Earth Materials</td>
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<tr>
<td>Week 3</td>
<td>Plate Tectonics</td>
<td>Ch. 8-10</td>
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<tr>
<td>(Sept. 6)</td>
<td>Assignment 3</td>
<td></td>
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<tr>
<td></td>
<td>ASSIGNMENTS 1-3 DUE FOR COMMENT!!!</td>
<td></td>
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<tr>
<td>Week 4</td>
<td>Volcanoes</td>
<td>Ch. 8-10</td>
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<tr>
<td>(Sept. 13)</td>
<td>Earthquakes, Oceans, and Tsunamis</td>
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<td></td>
<td>Weathering, Soils, and Mass Wasting</td>
<td>Ch. 11</td>
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<td>Assignment 4</td>
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<td></td>
<td>Lab Quiz #2—Land Surfaces</td>
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<tr>
<td>Week 5</td>
<td>Water</td>
<td>Ch. 12, 13, 15</td>
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<tr>
<td>(Sept. 20)</td>
<td>Glaciation</td>
<td>Ch. 14</td>
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<td></td>
<td>Assignment 5</td>
<td></td>
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<tr>
<td>Week 6</td>
<td>Geologic time</td>
<td>Ch. 16</td>
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<tr>
<td>(Sept. 27)</td>
<td>Climate, change, and geology</td>
<td>Ch. 3, esp. p. 33-37</td>
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<td></td>
<td>Assignment 6</td>
<td></td>
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<td></td>
<td>Lab Quiz #3—Water table mapping</td>
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Week 7  
(Oct. 3)  
Nebraska, Geology, and the Environment  
Assignment 7  
Lab Quiz #4—Environmental Investigation  
ASSIGNMENTS 4-7 DUE FOR COMMENT!  
SHORT ESSAY EXAM DUE FOR COMMENT!

Weeks 8-9  
(Oct. 10-17)  
Revise assignments  
Complete lab assignments/exams (if not already done)  
Complete multiple choice exam  
Course evaluation  
MULTIPLE CHOICE EXAM, LAB QUIZZES, AND ALL REMAINING WORK DUE NO LATER THAN THE END OF WEEK 9!!!  
*REMEMBER* that you need to turn in all 4 required activities (the 7 weekly assignments, the essay exam, the multiple choice exam AND the 4 lab quizzes), AS WELL AS YOUR LAB MATERIALS!!!

GRADES: You will earn your grade in this class by completing the following activities: specific online assignments/exercises, a short essay exam, a multiple choice exam, and lab exercises. **NOTE THAT ALL FOUR ACTIVITIES ARE REQUIRED FOR THIS CLASS.**

**REQUIREMENT #1:** Online assignments/”weekly” exercises (100 pts. total): These are the basic, “day-to-day” exercises which will illustrate some of the fundamental concepts and activities which make up the study of environmental geology. Typically, these will involve visiting a website(s), reading an article(s) or the textbook, or some similar action, and based upon that action, you will answer a series of short questions (i.e. each involving a few sentences or paragraphs) about that activity. These assignments will be due to me by the dates indicated on the course schedule. If you submit those assignments by the date indicated, I will provide feedback on your answers, and if you so desire, you can then revise your answers to improve your grade. In order to be eligible for revision, you MUST attempt to complete ALL of a given assignment, and that completion must be a valid attempt at correctly answering that material. If you do not submit those assignments by the date indicated, you will still get credit for your work, but you will not have the opportunity to revise your answers and you will not receive any detailed feedback; *i.e.* your first grade on those assignments will be your final grade. IF YOU DO NOT SUBMIT THE ASSIGNMENTS BY THE FINAL DAY OF THE TERM, YOU WILL LOSE THE POINTS ASSOCIATED WITH THOSE ASSIGNMENTS.

**REQUIREMENT #2:** Short essay exam (100 pts. total): The exam is a series of short essay questions designed to give you an opportunity to research and write in a little more depth on several important topics, and to bring together a variety of detailed concepts to explain a number of “large” questions in environmental geology. Although there is no specific requirement for length, most of these questions are designed to be answered in a few paragraphs to a few pages each. This exam is due by the date indicated on the course schedule (Week 7). If you submit your exam by Week 7, I will provide feedback on your answers, and if you so desire, you can then revise your answers to improve your grade. In order to be eligible for
revision, you MUST attempt to complete ALL of the exam, and that completion must be a valid attempt at correctly answering that material. If you do not submit the exam by the date indicated, you will still get credit for your work, but you will not have the opportunity to revise your answers and you will not receive any detailed feedback; i.e. your first grade on the exam will be your final grade. IF YOU DO NOT SUBMIT THE EXAM BY THE FINAL DAY OF THE TERM, YOU WILL LOSE THE POINTS ASSOCIATED WITH THAT EXAM.

REQUIREMENT #3: Multiple choice exam (50 pts. total): This is a traditional multiple choice exam, dealing with a number of detailed concepts, definitions, etc. Simply complete the exam by checking the boxes for the correct answer for each question, save the exam to your computer, and submit it to me. This exam is due by the end of the semester. Also, there are no revisions allowed for this exam, so make sure your answers are correct before you submit it! IF YOU DO NOT SUBMIT YOUR MULTIPLE CHOICE EXAM BY THE FINAL DAY OF THE TERM YOU WILL LOSE THE POINTS ASSOCIATED WITH THAT EXAM.

REQUIREMENT #4: Lab quizzes (50 pts. total): These are “hands-on” lab exercises, and consist of activities involving earth materials, land surface issues, water concerns, and a simplified, simulated environmental site investigation based on real-life situations here in Nebraska. Once you’ve completed the lab activities, each topic has a short lab quiz that you must complete and submit to me. You must complete the lab quizzes by the end of the term. Also, there are no revisions allowed on your lab work, so make them good the first time! IF YOU DO NOT COMPLETE YOUR LAB WORK BY THE FINAL DAY OF THE TERM YOU WILL LOSE THE POINTS ASSOCIATED WITH THOSE ITEMS.

All of these activities will typically be submitted to me electronically. In each case, just download the appropriate file(s) and fill in your answers in the space provided. If possible, please provide your answers in a different color or font so it’s easy for me to see your answers. Then, just save your assignment in a MS Word file or PDF, and email it to me as an attachment when you’re done. I will normally view and grade the activity online, but may print out the activity if necessary, and will let you know via email what your grade is for that activity. For those assignments that are submitted on time (that is, the weekly assignments and short essay exam), I will provide feedback/suggestions via email, and you will have the opportunity to revise your answers for a better grade.

I will make every attempt to respond to any student’s email submittals, questions, or requests for more information within one week of receiving an email. However, my regular job sometimes puts me in places where I may not have email access. That being the case, if you send me an email and I have not responded to you in your desired timeframe and you need an answer or feedback, please contact me on my cell phone (402-429-1327) and I’ll be happy to assist you.

The online assignments, short essay exam, multiple choice exam, and lab exams will be worth the points indicated above. THE TOTAL NUMBER OF POINTS AVAILABLE ON THE ONLINE ASSIGNMENTS, SHORT ESSAY EXAM, MULTIPLE CHOICE EXAM, AND LAB EXAMS WILL BE 300; your final grade will be calculated against that 300 pt. total as outlined below.
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GRADE SCALE: Grades will be assigned on a simple point accumulation basis. There are 300 points possible on the three required activities (assignments, exams, and labs); your grade will be determined relative to those 300 points based upon the following scale:

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

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 generally 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, an environmental cleanup site, etc.) and write up a short report of your visit there, emphasizing the displays or portions which deal with geology, the environment, 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 2-5 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 due date for all work (the end of the term). Normally, I'll grade your assignments as I get them, then let you know via email what your grade was for that particular activity. Assignments, exams, or papers/projects received at
the end of term 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.**

**SUBMITTAL OF WORK:** As described above, your work will be submitted via email, usually in the form of attachments. However **PLEASE MAKE SURE THAT ANY ELECTRONIC SUBMITTALS ARE IN MICROSOFT WORD FORMAT (.doc or .docx) or PDF.** I have considerable difficulty converting some other forms of submittals (especially .wps files), so please submit your work in standard Microsoft format or PDF. **Also, please remember that any electronic submittals MUST come from your Doane email account; I CANNOT ACCEPT ANY ELECTRONIC SUBMITTALS FROM ANY OTHER EMAIL ACCOUNT AND WILL RETURN IT TO YOU UNGRADED.**

**LAB MATERIALS:** This is a 4-credit lab course, and therefore you will be required to perform certain basic lab activities. At the organizational meeting (or at an arranged time), you will be issued a set of lab materials, which will typically consist of mineral, rock, and ore specimens, and a variety of maps.

The mineral, rock, and ore sets are meant for at-home study and to complete the lab quizzes. In addition, I have larger, more complete sets of specimens, as well as microscopes for more detailed examination, in the geology lab in Room 305 at Doane. These larger collections will be available for your study on Tuesday evenings and Saturday mornings, at arranged meeting times, and/or any other time when Room 305 is not otherwise occupied. If necessary and/or requested, I will arrange for such additional specimens to be made available at non-Lincoln campuses.

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 A $100 ADDITIONAL FEE!!!!** I don’t require this because the specimens are that valuable, but rather because I need them for students each semester, so **PLEASE** return your lab materials on time so I can have them available for future classes. In addition, 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, so **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 AND CONSTITUTES YOUR OWN WORK. I WILL UTILIZE A VARIETY OF PLAGIARISM DETECTION SOFTWARE THROUGHOUT THIS CLASS; IF YOUR WORK IS SUBSTANTIALLY PLAGIARIZED**
YOUR WORK WILL EITHER BE RETURNED OR YOU WILL RECEIVE A GRADE OF ZERO AT MY DISCRETION.

INCOMPLETES: As you might be aware, Doane has a 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. In an online setting, it’s sometimes easy to get confused or lost, so don’t let that happen. 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 class, and you might just learn something to boot!