

EES 110-220 – Endangered Planet: Introduction to Environmental Geology (Online)

Class time and location: online (see the information below about accessing the course on Blackboard)

Instructor: Dr. Kent Ratajeski (There is no TA for this course)
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Responses to emails should be expected within 24 hours upon receipt.

Course description and objectives

Environmental geology combines an introduction to basic earth science with a practical treatment of how geology processes have produced and continue to shape the environment in which we live. The interconnections between Earth materials and systems, human interactions with Earth processes, geologic hazards, and human stewardship of Earth resources will all be given special emphasis in this course.

For a list of the topical content covered in this course (“learning objectives”), please see the schedule on p. 6.

By the successful completion of this course, students will be able to

- distinguish environmental geology from other branches of geoscience (comprehension)
- distinguish modern natural science from classical scientia, non-science, and pseudoscience (comprehension)
- practice formulating testable, multiple-working hypotheses (application)
- define and distinguish minerals and rocks (knowledge and comprehension)
- discriminate among the three common asbestiform minerals on the basis of their abundance and relative risk to human health (analysis), and evaluate the risk that harmful types of asbestos pose in various occupational and non-various occupational settings (evaluation)
- describe the origins of various types of geologic materials and how they are useful and necessary for modern society (knowledge)
- construct simple cross-sectional diagrams of the three types of plate boundaries (analysis)
- distinguish various types of volcanoes on the basis of their morphology, eruption behavior (explosive vs. effusive), volcanic products (lava flows vs. pyroclastics), and the hazards they pose to human society (comprehension)
- use river profiles to predict whether various natural and man-made changes to a watershed will result in down-cutting (erosion) or deposition of sediment within a river (application, analysis, and evaluation)
- calculate flood recurrence intervals for a real stream or river given discharge data obtained from the USGS National Water Information System (application)
- distinguish the causes, behavior, and hazards to humans posed by floods in the upper and lower parts of river systems (comprehension)
- quantify the risk to human society from an asteroid impact (application)
- assess the relative risk of different locations to landslides based on topographic and geological characteristics (evaluation)
- given a map of water table topography, predict the direction of a plume of contaminated groundwater emanating from a known point source; or conversely, predict the location of a chemical spill given an array of sampling wells and a map of water table topography (comprehension)
- assess the risk of contamination from municipal solid waste based on topographic and geological characteristics
- distinguish the terms “resources” and “reserves” (comprehension)
- list and describe various environmental problems stemming from the extraction and use of mineral resources, including metallic ores (comprehension)
- list and describe benefits and problems associated with the use of various energy sources (coal, oil/gas, nuclear energy, geothermal energy, solar energy, hydropower, wind, and biomass) (knowledge)
- given information on the depth, thickness, and lateral extent of coal underlying a property, appraise an appropriate royalty rate for leasing the property for mining and compare this value with an offer submitted by a coal company (evaluation)

- quantify and evaluate the long-term risks to the Yucca Mountain Nuclear Repository posed by earthquakes and volcanic eruptions in the region (evaluation)
- apply geologic techniques for analyzing climate history and understand how geologists define climate change (application)
- give examples of arguments for and against human-induced climate change during the last century (comprehension)
- given paleo-climate records of temperature and atmospheric CO₂, evaluate the strength of the evidence for human-induced climate change during the last century (evaluation)

Prerequisites

There are no prerequisites for this course, but a basic knowledge of some high school geography, chemistry, and math will be useful.

Minimal technology requirements and Blackboard course page

In order to participate in this course, you will need access to a computer with the minimum hardware, software and internet configuration. Complete the following steps to make sure your computer is correctly configured and the necessary software is installed. *You will not be able to access course material if you fail to complete these steps.*

1. Go to this site to check the minimum hardware, software and browser requirements for this course: <http://wiki.uky.edu/blackboard/Wiki%20Pages/Bb9%20Hardware%20and%20Software%20Requirements.aspx>
2. Firefox is the recommended, certified Internet browser for the course, NOT Internet Explorer or Safari. Google Chrome is also compatible, but is not as fully certified as Firefox. Go to <https://download.uky.edu/> to download a free version of Firefox. Log in with your Link Blue ID and password and search for Firefox.
3. Go to <http://java.com/en/> and click on the Free Java Download button. Run the installer to get the latest version. *Without the latest version of Java, you may not be able to complete the online tests and quizzes.*
4. You will also need Flash, Adobe Acrobat Reader, Windows Media Player, QuickTime and Adobe Shockwave. Go to <http://wiki.uky.edu/blackboard/Wiki%20Pages/Browser%20Check.aspx> then click BbGO! If you do not have these installed, you can download them from this site.
5. In case you don't already have it, students and faculty can download Microsoft Office Suite (including Word and PowerPoint) from this site: <https://download.uky.edu/>

Once you have satisfied the minimal technology requirements, you can access the Blackboard page at <https://elearning.uky.edu> or through MyUK. Log in using your Link Blue ID.

If you experience technical difficulties with accessing course materials, first contact the UK IT Helpdesk at (859) 218-HELP or by e-mail at helpdesk@uky.edu. Please also inform the instructor when you are having technical difficulties.

Textbook

One textbook is required: *Introduction to Environmental Geology*, 5th Edition, by Edward A. Keller (ISBN: 0-321-72751-7). While the online lectures may not always come directly from this text, there will be a large amount of overlap between the two sources of information. Make sure the copy you purchase includes an access code to the textbook website which you will need to do most of the homework assignments. Instructions for accessing the textbook website is included below under "Homework Assignments".

Books may be purchased from a variety of suppliers:

- Kennedy Bookstore, 405 S. Limestone, (606) 252-0331 or 1-800-892-5165, <http://www.kennedys.com>
- Wildcat Text Books, 563 S. Limestone, (606) 225-7771, <http://www.wildcattext.com>
- UK Bookstore, 106 Student Center Annex, phone (606) 257-6304 or 1-800-327-6141, <http://www.ukbookstore.com>
- or any major online bookseller (e.g., amazon.com, bn.com, etc.)

Distance Learning Library Services

As a Distance Learning student you have access to the Distance Learning Library services at <http://www.uky.edu/Libraries/DLLS>. This service can provide you access to UK's circulating collections and can deliver to you manuscripts or books from UK's library or other libraries. The DL Librarian may be reached at 859-

257-0500, ext 2171, or 800-828-0439 (option #6) or by mail at dlservice@email.uky.edu. For an interlibrary loan visit: http://www.uky.edu/Libraries/linpage.php?lweb_id=253&llib_id=16

Policies

“Attendance”

All course materials are on-line and it is your responsibility to access material in a timely manner. To help keep you on track, I have provided a lecture schedule that you should follow. Because this is a full-semester course condensed into the span of six weeks, *you will probably have to spend a minimum of 3 hours per day interacting with the course material to succeed in this course.*

Missed homework and online discussion due dates, quizzes, and exams can be made up only for excused absences related to:

1. Significant illness of the student or serious illness of a member of the student’s household (permanent or campus) or immediate family; formal verification must be furnished to allow a makeup.
2. The death of a member of the student’s household (permanent or campus) or immediate family; formal verification must be furnished to allow a makeup.
3. Trips for members of student organizations sponsored by an academic unit, trips for University classes, and trips for participation in intercollegiate athletic events. When feasible, the student must notify the instructor prior to the occurrence of such absences, but in no case shall such notification occur more than one week after the absence. Formal notification from appropriate university personnel is required to document the student’s participation in such trips and to allow a makeup.
4. Major religious holidays; students are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day for adding a class.

Please note that *conflicts with work schedules are not acceptable reasons for makeups*. Exam times and assignment due dates cannot be changed to accommodate your work schedule.

Please direct all requests for makeup quizzes and exams to Dr. Ratajeski by email. This request must be made within 48 hours of the missed quiz or exam (except where prior notification is required). Be sure to mention the course number (EES 110), the specific quiz or exam you missed, and the reason you are requesting a makeup. You must also arrange for “formal verification” to be sent to my email address (this email cannot be written by yourself). If the reason fits one of the criteria above, I will make arrangements to accommodate your situation and have you take the exam at a different time, or extend the deadline for an assignment.

Student conduct, academic integrity, and resources

Students are expected to maintain decorum that includes respect for other students and the instructor, to regularly log in to the course, and to display an attitude that seeks to take full advantage of the educational opportunity. I expect students to be prepared to work and actively participate in class activities. Consult the UK Student Rights and Responsibilities (<http://www.uky.edu/StudentAffairs/Code/>) regarding the steps for addressing unresolved academic issues.

Cheating of any type will not be tolerated. Cheating is defined in the Student Handbook of Rights and Responsibilities, but in particular for this course, includes relying too much on another student’s work (e.g., simply copying another student’s work) and/or using your notes, textbook, the Internet, or other sources of information while taking online exams. The following protocol will be followed should there be evidence of cheating on an assignment:

1. Instructor will discuss the matter confidentially with the student(s) involved; if not satisfactorily resolved,
2. Instructor will discuss the matter confidentially with Department Chair and the student; if not yet resolved,
3. Instructor will discuss the matter confidentially with the Academic Ombud and the student.

Based on the outcome of this procedure, instances of cheating may result in a grade of “0” for the assignment and possibly additional penalties including a failing grade for the entire course.

Online quizzes and examinations

Material from the online lectures, reading assignments, and homework assignments is fair game for quizzes and exams, administered online. No quantitative problems requiring calculators will occur on any quiz or exam.

Quizzes

The online quizzes will be submitted electronically through Blackboard and must be submitted by the stated deadline. Each quiz will consist of 10 true/false questions and are open-book (you can use the lecture videos, your textbook, the Internet, and any other source of information). Online quizzes will be automatically graded and your score will be available immediately. The lowest quiz score will be dropped from the calculation of your running weighted average and final grade.

The due dates of the quizzes are as follows (all times are Lexington, KY time):

Quiz 1 – June 30, 11:59 PM	Quiz 4 – July 21, 11:59 PM
Quiz 2 – July 7, 11:59 PM	Quiz 5 – July 28, 11:59 PM
Quiz 3 – July 14, 11:59 PM	Quiz 6 – Aug. 1, 11:59 PM

Exams

The online examinations will be submitted electronically through Blackboard and must be submitted by the stated deadline. The two regular examinations will consist of 50 questions; the final exam is comprehensive and will consist of 100 questions (about half of the material will come from the content covered after Exam 2). All examinations will be available at 7:00 PM on the date listed below and on the attached schedule. It is your responsibility to make sure that you access the material during that time period. You can access the examination any time during the available time window. For regular exams, once you open the exam, you will have 1 hour to complete the exam between 7:00-10:00 PM, so the latest you should begin is 9:00 PM. For the final exam, you will be given 2 hours to complete the exam between 7:00-11:59 PM, so the latest you should begin is 10:00 PM. If you go over the time you will not be able to submit any more answers, but your previous work will be recorded for grading. It is your responsibility to watch the time and submit the examination in time.

Online examinations are closed-book examinations. You cannot access the lecture videos, your textbook, other Internet sites, or any other sources of information when taking an examination, and given the time limits, you will generally not have enough time to do so anyway. You are on your honor to take the examination on your own without the assistance of any other person or materials; violations of this policy will result in a zero grade for the exam. The instructor can access the electronic record of when you access materials from the Blackboard site, and you will receive a 0 if that time coincides with the time you take an exam.

Online examinations will be automatically graded and your score will be available immediately.

If you encounter technical problems when taking an exam, follow these steps as far as is necessary:

1. Log off of Bb, log back in, and start the exam again; it should pick up where you left off. Please note that the exam timer will still be running during the time you were off-line, so do this as quickly as possible.
2. If this doesn't solve the problem, call the UK IT Helpdesk at (859) 218-HELP.
3. If this doesn't solve the problem, email or call the instructor. The instructor will be near a computer and phone during each exam.

The times of the exams are as follows (all times are Lexington, KY time):

Exam 1 – July 11, 7:00-10:00 PM
Exam 2 – July 25, 7:00-10:00 PM
Final Exam (comprehensive) – August 1, 7:00-11:59 PM

If you think there may be a conflict during any of these times with your work schedule, it is your responsibility to make the necessary arrangements well in advance for time off to take the exams at the scheduled times.

Homework exercises

Most of the homework assignments will use the “Hazard City” exercises included on the textbook website. I strongly suggest that you start these assignments on the day that they are assigned. Without an excused absence, late homework will not be accepted and cannot be made up at a later time. The lowest HW score will be dropped from the calculation of your running weighted average and final grade.

The due dates of the homework exercises are as follows (all times are Lexington KY time):

HW 1 – June 27, 11:59 PM	HW 4 – July 15, 11:59 PM
HW 2 – July 7, 11:59 PM	HW 5 – July 19, 11:59 PM
HW 3 – July 12, 11:59 PM	HW 6 – July 31, 11:59 PM

Instructions for accessing the homework exercises are as follows:

1. Go to <http://www.mygeoscienceplace.com>
2. Click on “Register”. You will need the student access code provided with your textbook. During registration, you will establish a personal login name and password that you will use each time you access the website. When you finish registering, you receive a registration confirmation email containing your login name and password.
3. Once you have logged into the textbook website, click on “Hazard City” on the gray menu bar on the left.
4. Choose the appropriate exercise from the menu bar on the left or from the drop-down menu across the top.

Online discussions

Four online discussions (on Blackboard) based on assigned readings will occur throughout the semester. The purpose of these discussions is to include current issues related to the course and to encourage critical thinking and the exchange of ideas related to these issues. These discussions require you to submit three posts, each between 1-2 paragraphs long, evenly distributed during the discussion period (not concentrated all on one day or at the beginning and/or end of the period). Further instructions and a grading rubric for these discussions are available on the Bb site in the section “Readings for discussions”. The lowest online discussion score will be dropped from the calculation of your running weighted average and final grade.

The due dates of the online discussions are as follows (all times are Lexington KY time):

Reading #1 – June 30, 11:59 PM	Reading #4 – July 28, 11:59 PM
Reading #2 – July 14, 11:59 PM	Reading #5 – Aug. 1, 11:59 PM
Reading #3 – July 28, 11:59 PM	

Disability accommodation and other student resources

If you have a documented disability that requires academic accommodation(s), please see me as soon as possible. In order to receive accommodations in this course, you must provide me with a Letter of Accommodation from the Disability Resource Center. The center is located in Room 2, Alumni Gym. If you have not registered with the Disability Resource Center for coordination of campus disability services, please contact the Center by calling (859) 257-2754 or by email to the center director, Jacob Karnes, jkarnes@email.uky.edu.

A full list of student academic services is available at <http://www.uky.edu/US/>

Grading

Final grades will be calculated as follows:

12.5%	Exam 1
12.5%	Exam 2
20%	Final exam (comprehensive)
20%	Online discussions (5) – lowest score will be dropped*
20%	HW’s (6) – lowest score will be dropped*
15%	Quizzes (6) – lowest score will be dropped*

Weighted average grades will be rounded to the nearest whole number and assigned a letter grade according to the following scale: A = 85-100, B = 75-84, C = 65-74, D = 55-64, and E (or F) = 0-54. No curves will be applied in the grading. A running weighted average will be made available throughout the semester on the Blackboard gradebook, so you can check your grade at any time.

* Low scores will still be visible within your Blackboard grade book, but will not be factored into the calculation of your running weighted average or final course grade.

Now you can get started!

Here are the first steps you should take to begin work on this course:

1. Print out a copy of this syllabus for future reference. Make a note of all deadlines (I recommend putting these on a calendar you keep handy).
2. You should check that the e-mail address listed for you at UK is your current e-mail address (it does not have to be a UK address just the e-mail that you regularly use). If it is not your regular e-mail address, then go to TOOLS to change it to your current address (except for Hotmail accounts which sometimes aren't compatible with Bb) and click submit. This is the address that I will use to communicate with you.
3. Download the first lecture and HW assignment. As you work through the course materials, you should take notes the same way you would for a "regular" lecture course. Please be aware that some files that you will be downloading are fairly large and may take a while (several minutes) to download especially if you are accessing the course material using a modem or a slow broadband connection. Given that all course material is delivered through the Internet, occasional problems may arise with accessing course material. If you have problems accessing course material, or if web links appear to be not functioning, please contact me and we will get the problem rectified as quickly as possible.

Good luck, and let me know how I can help you in this class!

Schedule

Week of	Lectures, text readings, and related HW's and readings for online discussions	HW and online discussion due dates	Quizzes and Exams
June 20-23	Introduction – HW #1, Reading #1 What is science? (Ch. 1) Population growth and resources (p. 12-17)	(none)	(none)
June 24-30	Minerals (Ch. 3.1-3.2) Rocks (Ch. 3.3-3.7) Earth's interior (Ch. 2.1-2.2)	HW #1 (June 27) Reading #1 (June 30)	Quiz 1 – due June 30, 11:59 PM (syllabus, introduction, science, population growth)
July 1-7	Plate tectonics (Ch. 2.3-2.7) Earthquakes (Ch. 6) – HW #2 Volcanoes (Ch. 7) – HW #3, Reading #2	HW #2 (July 7)	Quiz 2 – due July 7, 11:59 PM (minerals, rocks, Earth's interior, plate tectonics)
July 8-14	Rivers and floods (Ch. 9) – HW #4 Mass wasting (Ch. 10) Coastal processes (Ch. 11) Meteorite impacts (Ch. 12)	HW #3 (July 12) Reading #2 (July 14)	EXAM 1 – July 11, 7:00-10:00 PM (intro to volcanoes) Quiz 3 – due July 14, 11:59 PM (earthquakes, volcanoes, rivers, floods)
July 15-21	Water resources (Ch. 13) – HW #5, Reading #3 Water pollution (Ch. 14) Mineral resources (Ch. 15) – Reading #4	HW #4 (July 15) HW #5 (July 19)	Quiz 4 – due July 21, 11:59 PM (mass wasting, coasts, meteorite impacts)
July 22-28	Soils (Ch. 17) Solid waste disposal (Ch. 19.4) Fossil fuels (Ch. 16.1-16.6) – HW #6, Reading #5 Alternative energy (Ch. 16.7-16.9)	Readings #3 and #4 (July 28)	EXAM 2 – July 25, 7:00-10:00 PM (rivers to mineral resources) Quiz 5 – due July 28, 11:59 PM (water resources, water pollution, mineral resources)
July 29-Aug. 1	Global climate change (Ch. 18)	HW #6 (July 31) Reading #5 (Aug. 1)	Quiz 6 – due Aug. 1, 11:59 PM (soils, solid waste disposal, fossil fuels) FINAL EXAM – August 1, 7:00-11:59 PM (comprehensive)