
Professor: Jill Pasteris; Rudolph Hall (Earth & Planetary Sciences bldg.), rm. 233; tel. 935-5434; e-mail: pasteris@levee.wustl.edu. Office hours: I welcome questions and discussions – just come on by. I’m in or near my office most days from 9am until 6pm. If you are unable to stop by then, feel free to call or e-mail me to make an appointment.

Teaching Assistant: Molly Chaney, Rudolph Hall, room 394; tel. 708-446-6628; e-mail: chaney.molly@wustl.edu

Required Text: Craig, Vaughan, and Skinner (2011). Earth Resources and the Environment, 4th ed., Prentice-Hall. This is our main text; you’ll read most of this book for the course. Available at WU bookstore. If you buy it on-line, make sure to get THIS edition.

Additional readings: Books are on reserve in the EPSc library, up on the third floor. Please ask librarians for assistance. Readings assigned to whole class will be on the course website. I also will make you aware of “popular books” on the topic of resources.

Lectures: Monday and Wednesday – Section 1 at 10:00am -11:30am in room 102; Section 2 at 1:00pm -2:30pm in room 102.

Course emphases: scientific view of the earth and its contents as a dynamic resource base, which we must understand better in order to preserve it (where possible) and to use it wisely (in all cases). I will supply the basic geology background that will help students to understand HOW and WHERE these resources form and become concentrated enough to mine/quarry for our use. This information will be used further to understand the environmental impacts of the mining, processing, and use of natural materials. We will build our discussions to the point where we consider how to alleviate some of the present resource-induced environmental problems and how to avoid similar problems in the future through directed technologies and public policies. Emphasis is placed on learning how to make accurate observations, how to use evidence to make (your own) or evaluate (someone else’s) models of how things work, and how to be a "resource-aware citizen." Students practice writing coherently and informatively.

Course requirements: take 2 of 3 scheduled evening exams 6:30-8:00pm (tentatively on Feb. 17th, March 30th, April 28th); take final exam on May 10th; take “positive-point” quizzes; do write-up on in-class exercise; report on an article you choose; attend field trip and two in-class “lab classes” that cannot be made up; do a few short assignments; participate in discussions. [You may take all 3 during-course exams, and the highest 2 will "count".]

Students are required to complete University’s course-evaluation, on-line. Class attendance is required, particularly due to in-class interactive demonstrations and group discussions. In-class review sessions will be held before each during-course exam. A voluntary review session for the final exam will be set up outside of class hours.

Course website contains PowerPoint shows, lecture notes, self-test questions, additional readings: epsc116a.wustl.edu
Course-evaluation website:  http://evals.wustl.edu

Cooperative learning: Students in the class at times will be assigned to collaborative groups of several people (depending on total number of students). The goals of using such groups are to encourage students to learn how to share ideas, to divide larger tasks into more manageable pieces, and to get to know one another better. It clearly is important that each student be an active participant in the group; tasks will be rotated among the members of the groups. Please see Prof. Pasteris about problems concerning group activities (or inactivities!).

Grading:  each project, homework, in-class report, and exam will be graded on the basis of 100 points. Those individual grades will be weighted as follows to derive a final grade for the course (based on 100%)

10% write-up(s) on demonstration(s),
20% short assignment and discussions (your participation counts!),
15% report on an article,
10% field trip worksheet,
25% during-course exams (2),
20% final exam.

Quizzes provide extra points ("positive-point" quizzes)

Letter grades assigned in accordance with the class grade curve. Students taking this course on a pass/fail basis must earn a grade of C- or better to pass. For your reference, the letter grades in this course typically have followed the standard scale (A=90-100%, B=80-89, C=70-79, D=60-69, F= below 60%), and the average grade was in the high 80's (a letter grade of B+) the last two times it was taught.

TENTATIVE LECTURE SCHEDULE (subject to change)


Other assigned readings are on course website at epsc116a.wustl.edu and/or sent by e-mail

Reading assignments are listed on date by which the reading should be done

JANUARY ........................................................................................................................................

Wed 20th  Text ch. 1 & 3: (1) Minerals: Foundation of Society; (3) Earth Resources through History

Mon 25th  Text ch. 1 & 3 (continued) with discussions  

Receive copy of article from Science News. See hand-out for assignment.
Wed 27th Videos and discussion. Read PDF of *Building a Planet*, ch. 1 in Press and Siever’s book *Understanding Earth*, at epsc116a.wustl.edu

January 28th is the last day to drop a course with no notation on permanent record.

FEBRUARY .................................................................

Mon 1st Text ch. 11: Water Resources. Lecture, in preparation for lab demo on Wednesday. **Turn in written assignment on Science News article.**

Wed 3rd Text ch. 11: Water Resources (cont.); *with hands-on demonstration***You must attend this class. There are no “make-ups” for the demonstration.*** See hand-out for assignment of write-up on the aquifer demonstration.

Mon 8th Rocks and Minerals. Read PDF of *Rocks & Minerals*, ch. 2 in Montgomery’s book *Environmental Geology* at epsc116a.wustl.edu; *work with hand samples in class*

February 8th is last day to change grade option to Pass/Fail or Audit.

Wed 10th Continue with discussion of rocks and minerals. **Turn in write-up on the aquifer demonstration.**

Mon 15th Short field trip to view rocks and minerals, geologically and as resources. **You will be given a brief hand-out/worksheet to fill out.**

Wed 17th Exam #1 at 6:30-8:00pm on lectures; videos; text ch. 1, 3, 11; discussions; demonstrations. Old exam & answer key will be sent by e-mail. During class: I will (1) finish previous lecture/discussion materials and (2) answer students’ questions on material for exam.

Mon 22nd Text ch. 2: Origins of Mineral Resources **Turn in your completed hand-out/worksheet from the field trip.**

Wed 24th Text ch. 2 (cont.); *with hands-on demonstrations and discussions*

Mon 29th Text ch. 5: Fossil Fuels; *lecture and work with some hand samples in class*

MARCH .................................................................

Wed 2nd Text ch. 5 (cont.): Fossil Fuels

Mon 7th Text ch. 4: Environmental Impact of Resource Exploitation and Use
Wed 9\textsuperscript{th} \hspace{1cm} Text ch. 4 (cont.); example of arsenic in drinking water; \textit{discussions}.

\textbf{March 13\textsuperscript{th} - 19\textsuperscript{th} is Spring Break.} [Did I really need to remind you of that???]

Mon 21\textsuperscript{st} \hspace{1cm} Text ch. 6: Nuclear Power and Other Possible Energy Alternatives

Wed 23\textsuperscript{rd} \hspace{1cm} Text ch. 6 (cont.); \textit{with demonstrations and discussions}

Mon 28\textsuperscript{th} \hspace{1cm} Student discussions of alternative energy sources.

\textbf{Bring your notes to class.} \textbf{See hand-out for assignment.}

Wed 30\textsuperscript{th} \hspace{1cm} \textbf{Exam \#2} at 6:30-8:00pm on lectures; text ch. 2, 4, 5, 6; demonstrations. Old exam \& answer key will be sent by e-mail. During class: I will (1) finish previous lecture/discussion materials and (2) answer students’ questions about material for exam.

\textbf{APRIL} ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

Mon 4\textsuperscript{th} \hspace{1cm} Finish student discussions of alternative energy sources.

Wed \textsuperscript{th} \hspace{1cm} Ore Deposits and Plate Tectonics: Read PDF of \textit{Plate Tectonics}, ch. 20 in Press and Siever’s book \textit{Understanding Earth}, at epsc116a.wustl.edu.

\textbf{Choose your article to write about.} (Directions to be provided in class)

Mon 11\textsuperscript{th} \hspace{1cm} Text ch. 7: Abundant Metals

Wed 13\textsuperscript{th} \hspace{1cm} Text ch. 7 (continued); \textit{with discussions}

Mon 18\textsuperscript{th} \hspace{1cm} Text ch. 8: Scarce Metals

Wed 20\textsuperscript{th} \hspace{1cm} Text ch. 8 (continued); \textit{with discussions}

Mon 25\textsuperscript{th} \hspace{1cm} Text ch. 9: Fertilizer and Chemical Minerals

\textbf{Turn in summary and analysis of chosen article.}

Wed 27\textsuperscript{th} \hspace{1cm} Text ch. 10: Building Materials and Industrial Minerals. \textbf{Exam 3 tomorrow.}

\textbf{Th 28\textsuperscript{th}} \hspace{1cm} \textbf{Thursday Exam \#3} at 6:30-8:00pm on lectures; on text ch. 7, 8, 9, 10, and plate tectonics; demonstrations. Old exam \& answer key will be sent by e-mail. \textbf{No required class today}, but I will be available all day in my office to answer students’ questions on material for exam.

April 29\textsuperscript{th} is last day of classes. Exam period begins on May 5\textsuperscript{th}. 
There will be a voluntary review session for the final exam, time and place TBA. Old final exam & answer key will be e-mailed to you.

***FINAL EXAM on Tuesday, May 10\textsuperscript{th} at 6:00 - 8:00 pm in the lecture room***