

EAS 4803/8803: Resources, Energy and the Environment

3 credit hours

Required Textbook: Resources of the Earth: Origin, Use, and Environmental Impact (3rd Edition) (Hardcover) by James R. Craig, David J. Vaughan, Brian J. Skinner, David Vaughan. Publisher: Prentice Hall; 3rd edition (January 15, 2001). ISBN-10: 0130834106, ISBN-13: 978-0130834102

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Course Summary

The focus of this course is to learn about the science behind the nature, occurrence and extraction of earth resources used by humans and the environmental impacts of that use. In particular, we will look at energy production, metal mining, and water as a resource.

Format and Grading

The course will consist of lectures and discussions on the scientific aspects and implications for society. Newspaper or magazine article will be used to provide an update to the textbook. Grades will be based on the average of three exams during the semester, a final exam, and a class participation grade. Class participation will be evaluated by the instructor as consisting of: attendance to class without fail (excepting written excuses approved by the instructor), arrival to class as the designated time, constructive participation in discussions, asking relevant questions in class, etc.

Exams 1, 2 and 3: 24% per exam.

Final exam: 24%

Class Participation: 4%

Grading scale: Grades will be rounded to the nearest integer with the following scale: A 90-100% , B 80-89%, C 70-79%, D 60-69%, F 0-59%.

Honor Code

Students in this class are expected to abide by the Georgia Tech Honor Code and avoid any instances of academic misconduct, including but not limited to:

1. Possessing, using, or exchanging improperly acquired written or oral information in the preparation of a paper or for an exam.
2. Substitution of material that is wholly or substantially identical to that created or published by another individual or individuals.
3. False claims of performance or work that has been submitted by the student.

Course Material	Chapter
Introduction	1
Why is it important to learn about this?.....	2
Plate tectonics and the Rock cycle	
Water cycle	
Trends in historic and pre-historic resource usage.....	3
Exam 1	
Energy	
Fossil Fuels: Oil, Coal, Natural Gas.....	5,4
Origin	
Usage	
Environmental impact	
Political impact	
Alternate Fuels: Fuels for the Future.....	6,4
Nuclear	
Hydrogen	
Hydroelectric	
Wind	
Geothermal	
Exam 2	
Rock and Mineral production	
Metals	
Nature of ore deposits.....	7
Abundant metals: Iron, Manganese, Aluminum, Titanium, Silicon	
Scarce and precious metals.....	8
Environmental impact	
Fertilizer.....	9
Needs in modern agriculture	
Nitrogen, Phosphorous, Potassium, Sulfur	
Environmental impact	
Misc.....	10
Building materials	
Gems	
Exam 3	
Water and Soil Resources	
Water.....	11
How we use water	
Mining water	
Run-off and flood control	
Pollution	
Soils.....	12
Land use	
Environmental impact	
Final Exam	