Introduction

Unlike most animals, most humans rely on manufactured materials derived from the Earth in order to stay alive. As Americans, we consume inproportionately large quantities of resources, including water, fossil fuels, metals, industrial minerals, and soil, in order to maintain our hyper-consumptive life styles. Extraction of these resources from the earth in order to fabricate things we deem necessary such as shoes, light bulbs, plastic bags, snow-mobiles, paper mache, televisions, shovels, pipe-lines, toilets, jewelry, RVs, organic tofu, monster trucks, highways, ice cream, kayaks, drill bits, and cell phones, invariably alters landscapes and ecosystems, causing environmental degradation. Use of Earth materials commonly causes further environmental degradation on the local and regional scale by polluting the soil and rivers and lakes, and on a global scale by polluting the atmosphere or ocean. The far reaching affects of resource extraction, manufacture, and use are currently causing global climate change as well as mass extinction of many non-human inhabitants of the Earth. Even with all these seemingly tragic consequences, the goal of resource extraction, manufacture, and use is to improve the quality of life for each of us.

Decisions by governments, corporations, and community members about the exploitation of a particular resource (such as an iron ore body) or the use of a material fabricated from that resource (such as a car), should be informed by the knowledge of the basic geologic characteristics of the resource, coupled with an assessment of the benefits of exploitation relative to the environmental and human costs. In other words, how much will our quality of life improve if we mine iron to fabricate cars, versus the decrease in quality of life from pollution caused by mining, processing, and driving cars? In our day to day lives, we tend not to consider the CO$_2$ we are emitting by using a computer or a reading light. And we tend to blame big nasty dirty evil mining companies for the giant holes in the ground and subsequent land and water pollution derived from mining metals. We rarely blame ourselves for these actions as we hop in our car or on our bike and go down a road to some building where we do whatever it is we do. But it is those cars, bikes, roads and buildings that we all use that demand mining companies to exploit our Earth resources in the first place.
In order to make informed decisions in our daily lives, and in our political decisions, it is critical to understand what resources we use daily, where those resources come from, and the costs and benefits, both obvious and less obvious, of using these resources. In this course we will explore the resources we use daily, their geologic formation, and the environmental impacts of their exploitation and use.

**About this online course**

This online course is largely self paced and requires hard work, independent thinking and learning, and a serious time commitment for most students. This class is not meant to be taken as an easy alternative to a traditional class room-taught course. In fact the class is structured quite different from a traditional class room-based course. Although there are tasks and assignments that must be completed at regular intervals throughout the term, there is no attendance or any other time when a student must be present. Your main sources of information for this class will be your textbook, some assigned handouts and short readings, recommended internet sites, and you must also do a fair bit of independent research using sources you come with on your own. I will not upload podcasts of lectures or powerpoint presentations in any attempt to make this class mimic a class room-based course. If you are the type of learner who likes the structure of a classroom and who wants direct contact with an instructor, a live class on campus would probably work better for you. To excel in this class, students should be motivated to work independently for 5 to 10 hours each week to complete the readings and assignments. A bit more effort should be expected around exam times.

If you have any questions about the course, you can feel free to contact me at any time. I will attempt to respond as quickly as I can. Please allow two days for a response. I will always try and respond faster, but I cannot guarantee a quicker response time. This means if you have any questions about any of the assignments, if you email on the day the assignment is due or the day before, I will not likely have time to respond to your question before the assignment is due. So be sure to read your assignments well ahead of time and ask questions early.

**Course Objectives**

· Introduce basic geologic processes and concepts using the framework of Earth resources.

· Show that geologic processes are responsible for the formation and distribution of resources that shape our present day economy, policy, and lifestyles.

· Realize that everything we use comes from somewhere and when we are done with it, it ends up somewhere.

· Think about what resources we use daily, both intentionally and unintentionally, where those resources come from, and environmental consequences of exploitation, manufacturing, and use.

· Consider the science behind politically-charged environmental issues so that informed, and intelligent decisions can be made.
· Consider the reasons for and remedies to environmental problems.

· Show how every-day-decisions made by individuals like you and me affect the land we live on, the water we drink, and air the breath.

· Others I'm sure.

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**Course Structure**

This course will utilize the Blackboard course management system. Access information will be e-mailed to students once their registrations appear on the course roster, beginning the first day of class. Course information and tools, including assignments, exam reviews, and internet resources will be located on the Blackboard course website. For access-related questions or help relating to the course website, contact the folks at the Distance Education office. As there is no class room, there is no mandatory attendance, however to succeed in this class, it is imperative that students keep up with the course shedule and check the blackboard site a minimum of once a week (preferably twice or more). I occasionally post announcements or discussions on the discussion board. Access to the world wide web and to email are mandatory.

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**Textbook**


The book is available at the U of O bookstore, or you may obtain your own copy by some quicker and cheaper method, however you need to have the textbook immediately at the start of class. There are many new and used copies of this book available locally in Eugene or online.

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**Schedule and Assignments**

The class is divided into four sections, each of which will last from 2 to 3 weeks.

The first section covers introductory material, the origin of Earth resources, and resource consumption (weeks 1 and 2).

The second section is devoted to metals, such as copper, iron, and gold. In this section we will study the geologic formation of metals, the uses of the various metals, the processes of mining and refining, and the environmental consequences of metal extraction and use (weeks 3 and 4).

The third section is devoted to energy and will examine the geologic formation of fossil fuels, the world-wide production and consumption of energy, environmental problems caused by the burning of fossil fuels, and alternative (non-fossil fuel) sources of energy such as wind power and hamsters on treadmills (weeks 6, 7, and 8).
In the fourth section, during the final weeks of the class we will learn about the land and soil as a resource as well as fertilizers and freshwater. We will discuss conflicts in desired use of these resources and environmental consequences of land and water use (weeks 9 and 10).

This class requires each student to complete weekly assignments (10 in total), to take a midterm and final exam, and to contribute weekly to discussions of current events related to the class. There are two types of assignments: 1) Those that ask specific questions on specific topics, the answers to which can be derived from specific sources; and 2) those that are essays or presentations prepared by each student based on independent research and presented to the class on the discussion board. These presentations will focus on any of several possible topics relating to each section of the course. For these assignments, students will have some choice and flexibility in guiding their studies.

All assignments will be graded, but in a class of this size and format, I will not be able to give each student specific feedback on each assignment. For the short answer assignments I will make a key available, which will allow a student to judge why they received the grade they received. For the essay/presentation assignments, I have posted a list of criteria I use to grade the assignments, which will hopefully be useful to help each student evaluate the grade they received.

Exams

There will be a midterm and a final exam. You can find the deadlines to take these exams in the schedules folder in the course information folder. I will post test reviews in the weeks leading up to the exams to help guide your studies.

Exams will consist of multiple choice, short answer, and essay questions. Exams are computerized and administered by the Social Science Instructional Laboratory (SSIL). If you have questions about exam scheduling or proctoring, contact the Social Science Instructional Laboratory (SSIL). For more information please see their website. http://distanceeducation.uoregon.edu/

Exam scores will be available 6-10 days after completion.

Grades

Grades will be assigned based on performance on the 10 class assignments, the midterm exam, the final exam, and the weekly discussion and current events topics. The grading breakdown is available in the “grades” folder on the course Blackboard site.

Good Luck, Learn a lot, and contact me anytime with questions.