

# *Mineral Depletion – Stealth Bomb of the 21<sup>st</sup> Century*

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Dr. Pride's research include metallic mineral deposits, aspects of geochemical exploration, and application of Geographic Information Systems to mineral exploration. Undergraduate courses taught include Introduction to Geology, Physical Geology, Geology and the National Parks, and Energy and Mineral Resources in Society.

## Course Description

Meeting: one 2-hour session per week (afternoon, M-F).

Readings: Craig, J.R., et al., 2001, Resources of the Earth – Origin, Use & Environmental Impact, 3<sup>rd</sup> ed. Prentice-Hall, 520p.

Web research on population dynamics; and occurrence, history, and use of metallic mineral resources.

## Course Organization and Goals

The first two weeks will introduce the paired topics of population growth and resource use. World and U.S. population growth over the first half of the 21<sup>st</sup> Century can now be projected with some precision, as can per capita use of many resources critical to survival in an ever more complex and challenging world. The instructor will present this first segment of the seminar, encouraging student input whenever possible – population dynamics can readily be accessed from the web, but geologic principles and occurrences of energy and metallic mineral resources can best be introduced by the instructor.

Non-energy resources are widely and unevenly dispersed, and as such will strongly influence the behavior of nations, especially as populations swell. This portion of the course will occupy weeks three thru eight, including “side trips” to Sudbury, Ontario to examine extraterrestrial influences on mineral resources, and the glitter of gold through human history.

**Grades:** Letter grades will be based on the following:

attendance	10 %	
participation	20 %	
metals research write-up	30 %	
class presentation + write-up	40 %	(20 + 20)

Metals Research Write-up

Midway through the term, students will turn in a two-page summary of one metal of interest to them (e.g., copper, silver).

Class Presentation + Write-up

Data gathered from readings and from the Web will be integrated with population projections in presentations by students during the last two weeks of the term. These presentations will be done in teams of perhaps three, and will take a half-hour shared time. One or more metals will be chosen (e.g., copper and molybdenum) and its uses, world sources, mining techniques, environmental consequences, and depletion projections in the light of population growth will be discussed. Students will turn in a 3-4 page write-up, including sources – figures extra. The write-up will be a group exercise, yielding experience with working in groups, making decisions, sharing work, and coming to conclusions. “Going along for the ride” will not be tolerated, and may be reflected in the final grade.

Academic Misconduct: Each student is expected to prepare fully for each class meeting, to include reading of assignments in the textbook, plus conducting appropriate web searches that deal with topics to be discussed. The phrase “academic misconduct” includes all forms of academic misconduct, including plagiarism from any source, or any dishonest practice in connection with assignments. The instructors will report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487).

Disability Services: All students are welcome in this course. Students with disabilities will be appropriately accommodated. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone 292-3307; <http://www.ods.ohio-state.edu/>.

## Proposed Syllabus

Readings from Craig, et al. (2001) will total perhaps 75 pages for the term. The Web is a broad source of information about metals, their uses, world sources, etc. – at least an hour per week recommended to separate wheat from chaff.

<u>Week</u>	<u>Topic</u>
1	World and U.S. population – doubling times and the year 2050
2	Fossil fuels and the SUV conundrum
3	The minerals enigma – When is enough not enough?
4	Public lands and the Mining Law of 1872
5	Major metals (iron, aluminum . . .)
6	Important minor metals (copper, molybdenum . . .)
7	Sudbury, Ontario – meteorite impact and world class nickel
8	Golden Fleece to cyanide – the story of gold
9	Student presentations – mineral resources and the future
10	Student presentations – mineral resources and the future