GEOL 406 Senior Seminar in Earth Science: Earth Science Policy
Spring 2005
T,R 3:00-4:15, David King 2074

Prerequisites: GEOL 101, 102, completion of 90 credit hours, completion or concurrent enrollment in all other required general education courses

Instructors. Dr. Rick Diecchio, Professor of Geology
3040 David King Hall, 993-1208, rdiecchi@gmu.edu
Dr. Robert Clark, Professor of Government and Politics
305 Enterprise Hall, 993-1111, rclark@gmu.edu

Date	Topic
25 Jan	**Introduction**
27 Jan	**Environmental ethics - Dr. Roger Paden** • Rachels, J., A short introduction to moral philosophy. • White, L., 1967, Historical roots of our ecological crisis: *Science*, v. 155, p. 1203-1207.
1 Feb	**Paradigm for analyses of issues** • Clark, R., 2002, *Global Awareness*, p. 36-40.
3 Feb	**Paradigm for analyses of issues - Systems** • Clark, R., 2002, *Global Awareness*, Ch. 3 • Peet, J., 1992, *Energy and the Ecological Economics of Sustainability*, Ch. 5
8 Feb	**Politics of scientific issues – issue networks, symbolic & tangible politics** • Poly-Cy website, http://www.polsci.wvu.edu/polycy/policy/psppenv.html • Beder, S., Agenda setting for environmental protection policies at http://www.uow.edu.au/arts/sts/sbeder/ecopolitics.html
10 Feb	**Politics of scientific issues –private & public goods, private property rights** • Kaul, I., Grunberg, I., and Stern, M.A., 1999, Defining Global Public Goods, in Kaul, Grunberg and Stern, eds, *Global Public Goods*, p. 2-19 • http://www.law.georgetown.edu/gelpi click on "The Takings Issue" and read various links including "Introduction" and Rypkema's presentation on "Takings".
15 Feb	**Environmental law – Dr. Grant Reynolds**
17 Feb	**Issues networks – student presentations**
22 Feb	**Environmental Law – Dr. Grant Reynolds** • handout: Environmental Law and the Legal System
24 Feb	snow day – school closed

1 Mar **LAND & WATER USE ISSUES: mineral resources and mining**

- Flawn, P. T., 1966, *Mineral Resources*, ch. 1, 2, 7.

3 Mar **mineral resources and mining – Dr. Kai Anderson, Staff, Sen Harry Reid (D/NV)**

8 Mar **use of water in arid lands**

- Powell, J.W., 1878, Report on the lands of the arid region of the United States, preface, ch. 1, 2, 3.
- Reisner, Marc, 1986, *Cadillac Desert*, Introduction

10 Mar **Resource and land use economics – Dr. Dawn Parker**

Spring break

22 Mar **use of water in arid lands**

- Hely, A.G., 1969, Lower Colorado River water supply – its magnitude and distribution: USGS Prof. Paper 486-D
- U.S. Geological Survey, 2002, Report to Congress - Concepts for national assessment of water quality and use: USGS Circular 1223

24 Mar **Water Resources - David Berry, Sustainable Water Resources Roundtable**

29 Mar **large scale land use planning: Tysons Corner**

- Bernknopf, R.L., and others, 1993, Societal value of geologic maps: USGS Circular 1111.
- U.S. Geological Survey, 2003, Sustainable growth in America's heartland – 3-D geologic maps as the foundation: USGS Circular 1190.

31 Mar **large scale land use planning–Steve Griffin, Planning Director, Prince William Co.**

5 Apr **ENERGY ISSUES**

- Peet, J., 1992, *Energy and the Ecological Economics of Sustainability*, Ch.3
- Simil, V., *Energy in World History*, Ch. 1
- Dukes, J., 2003, Burning buried sunshine: human consumption of ancient solar energy: *Climate Change*, v. 61, p. 31-44
- Clark, R., 2002, *Global Awareness*, Case Study 3, "What determines the price of gasoline? The global energy system", p. 93-106.
- Doyle, R., 2004, Energy Geopolitics: *Scientific American*, October 2004, p. 36
- Parris, T.M., 2004, Connecting to alternative energy sources: *Environment*, v. 46, no. 7, p. 3.

7 Apr **Energy policy – Dr. David Applegate, U.S. Geological Survey**

Student presentations

12 Apr	**oil & gas**
14 April	**oil & gas**
19 April	**coal**
21 April	**hydroelectric**
26 Apr	**geothermal**
28 Apr	**nuclear**
3 May	**solar, wind**
5 May	**tidal, ocean thermal**

Paradigm: Each topic of discussion should include consideration of the following items:

1. The natural system and the nature of our scientific understanding.
2. The interaction between humans and the natural system.
3. Legal and political issues related to each topic.
4. Ethical considerations.
5. Synthesis and possible courses of action.

Grading:	Class participation	40%
	Presentations and leading of discussion	30%
	Term paper	30%

Students will make presentations and lead discussions for energy issues. Each student will write a term paper based on the topic of her/his presentation.

Websites to monitor, and for sources of information:

American Geological Institute	
Geotimes	http://www.geotimes.org/current/
Government Affairs Program	http://www.agiweb.org/gap/index.html
Energy & Environment Daily	http://www.eenews.net/EEDaily.php