Public Policy Course:
Environmental Science and Policy

Fall 2022
Chicago Harris
University of Chicago

Professor Don Coursey
219-781-1376
d-coursey@uchicago.edu

Course Overview and Outline

Course Content

This course is designed to address environmental issues that have both a science and a policy dimension. The development of policy regarding these issues requires an understanding of the underlying science. Policy and science meet in the context of these specific environmental issues. In this course, science is discussed only to the extent that it contributes to our understanding of an environmental topic that has specific policy relevance. The primary purpose of this course is to explore ways of thinking, and thinking about thinking, in which the dialogue between hard science and social science can be improved so as to lead to more effective environmental policy.

Readings

As the course proceeds, the professor will identify readings that will provide additional background on material covered in the lectures.

Exams and Grading

The sole requirement for the course is a research paper that will be discussed during the first day of class.

OUTLINE OF COURSE

I. What is the "Environment"?

A. What is the environment?
B. Space and time scales of relevance to policy
C. The Earth system
D. Couplings between modern civilization and the environment
E. Unintended, system consequences

II. Melding Social and Physical Sciences: A Structure for Analyzing Problems.

A. Simple versus complicated environmental feedback loops.
B. A classification system for phenomena generated in environmental policy.
C. Overview of textbook versus pragmatic considerations.
D. Tools used in correcting environmental problems.
E. How do the politics of science and policy interact to achieve solutions?

IV. What Do We Need to Understand About Environmental Risks?

A. What are the scientific seed ideas that generate public policy?
B. History of environmental policy and development.
C. What is known about how people respond to environmental risks?
D. What problems for environmental policy occur when individuals make choices under uncertainty
E. Efficient methods for communicating risks to the public.

V. Air Quality and Air Pollution Chemistry.

A. Primary and secondary air pollutants.
B. Meteorological factors in air pollution.
C. Air pollution chemistry: The formation of "photochemical smog".
D. Atmospheric Particulate Matter
E. The Clean Air Act and air pollution policy; how do we decide if something is bad?
F. Command and Control versus markets: Why so few markets?
G. Emerging policy issues.

VI. Natural Resources, Industrialization and Urbanization

A. Micro-environmental policy in a federal/state system.
B. Current environmental policy in the cities.
C. Emerging trends in urban environmental policy.
D. Raw Materials: Overview
E. Wood
C. Stone, cement, concrete, and glass
F. Metals: Aluminum and Iron
G. The Growth of Cities
H. Temperature in Urban Areas: The Urban Heat Island

VIII. Water Resources.

A. Water supply and water quality.
C. An input/output analysis of water.
D. Wastes in water; human health issues and policy.
E. The Clean Water Act and state policies.
F. Water problems as the root of all evil; risk and water policy.

G. Emerging trends in water policy.

IX. Modern Civilization and the Environment – Waste Products.

A. The history of garbage: From ashes and horse carcasses to aluminum cans and batteries.
B. Solid and liquid waste products.
   1. What does our garbage consist of?
   2. What can be done with waste products?
   3. Landfills, incinerators, recycling, composting, energy generation.
C. Turning wastes into wealth.

X. Summary and the Major Themes of the Class.

A. How do scientific information, the economics of scientific research, and the politics of science interact with and influence public policy?
B. How efficient is the resulting process?
C. Can existing policies be improved. Can new policies be better designed?
D. How can a more effective dialogue be promoted between the social and physical sciences?