

Geological Sciences 204

WATER RESOURCES

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COURSE DESCRIPTION

The occurrence, movement, and behavior of water in the hydrologic cycle with reference to scientific and technological problems relating to water-resource development, conservation, and contamination.

MEETING TIMES

T R 0930A-1118 ML 0131
W 0930A-1018 ML 0129

OFFICE HOURS

MTWR 0130P-0218 ML 0229 or
by appointment (e-mail: ibaraki@geology.ohio-state.edu)

COURSE OUTLINE

- Crisis in the World Water Supply
 - Fresh water supply in the world
 - Population growth and water supply
 - Rising demand of water in agriculture, industry, and the homes
 - Decline of the Aral Sea in Kazakhstan
- Re-Shaping the Natural World
 - Diverting the flow for cities, industry, and agriculture
 - Colorado River and Central Arizona Project (CAP)
 - Debates between states, Mexico and native Americans
 - Water for Kathmandu
 - Groundwater mining
 - the Ogallala aquifer depletion in Kansas
 - Mexico city water supply
 - Floods
 - Flood insurance and flood frequency

- Dispute between local business in Grandview Height, Columbus and FEMA
- Water Health
 - The largest mass poisoning in the world history – Arsenic poisoning in Bangladesh
 - Organic solvent contamination in Woburn, Massachusetts – Movie “Civil Action”
 - Coliform contamination in drinking water wells in Woster, Ohio
 - Nuclear waste management in Yucca Mountain and Waste Isolation Pilot Plant
- Water Usage, Abuses and Management
 - Water for food
 - Daily water usage and minimum amount of water needed to produce food
 - Irrigation
 - Unsustainable agribusiness and Grandprairie Demonstration Project in Arkansas
 - Water for industry
 - China's Three Goges Dam Project
 - The water business
- Water Conflicts
 - Scare water resources and increasing political tensions
 - Weapon of war

COURSE REQUIREMENTS

- (1) Prerequisites - Geol. Sci. 121; algebra
- (2) Two midterm exams 20% each
- (3) Final exam 30%
- (4) Homework problems 25%
- (5) In-class exercises 5%

COURSE OBJECTIVES

The objectives of this course are:

- (1) to introduce the concepts controlling the movement of surface water and ground water, the distribution of water resources, the ways in which these resources can be exploited and/or contaminated, and
- (2) to give students an appreciation for the need of scientific theory and scientific

methods of investigation and analysis.

REFERENCE

Cech, T.V, 2002. Principles of Water Resources: History, Development, Management, and Policy, Wiley Text Books, p480. (ISBN: 0471438618)

Hornberger, G. M. J.P. Raffensperger, P.L. Wiberg, and K.N. Eshleman, 1998. Elements of Physical Hydrology: Johns Hopkins University Press, Baltimore, Maryland, 314 p.

Clarke, R. and J. King, 2004. The water atlas, New Press, p127. (ISBN: 1565849078)