

# Exploring Water Issues (EARTHSCI 204)

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## Description

Introduction to issues affecting the world's fresh water supply with an emphasis on water use, conflict and sustainability.

## Meeting Times

M T 0230P-0418 ML 0115  
W 0230P-0318 ML 0115

## Prerequisite

Earth Sci 100, 105, 121; or Chem 101; or permission of instructor

## Office hours

MTW 1030A-1118  
RF 1118A-1218 ML 0229 or by appointment (e-mail: ibaraki.1@osu.edu)

## 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.

## Course Grades

The course will be graded according to results from examinations, assignments, and class participation, as follows:

- |                              |          |
|------------------------------|----------|
| (1) Two midterm exams        | 20%, 20% |
| (2) Final exam               | 30%      |
| (3) Assignments and projects | 25%      |
| (4) Class participation      | 5%       |

The table below shows letter grades and associated percentages.

Grade	Percent
A	93 - 100
A-	90 - 92
B+	87 - 89
B	83 - 86
B-	80 - 82
C+	77 - 79
C	73 - 76
C-	70 - 72
D+	67 - 69
D	60 - 66
E	59 and below

## **Policies on Attendance and Absences**

Attendance is **required** at all lecture sessions. The instructor should be notified as soon as possible in emergency situations where students must miss class. The deadline for make-up work for missed assignments, quizzes or examinations is one (1) week from the original date of administration. Each student must meet individually with the instructor or GTA regarding make-up work for missed assignments.

## **Disability Services**

Students with disabilities that have been certified by the Office for Disability Services will be appropriately accommodated, and should inform the instructor as soon as possible of their needs. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue (telephone 292-3307, TDD 292-0901, (<http://www.ods.ohio-state.edu/>)).

## **Academic Misconduct**

The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students will complete all academic and scholarly assignments with fairness and honesty. Failure to follow the rules and guidelines established in the University's *Code of Student Conduct* and this syllabus may constitute "Academic Misconduct".

The Ohio State University's Code of Student Conduct (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the University, or subvert the educational process". Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. All suspected cases of academic misconduct will be reported to the University Committee on Academic Misconduct. If academic misconduct has been committed, possible sanctions could include a failing grade in this course and suspension or dismissal from the University.

## **Topical Outline**

The following is a tentative, chronological outline of course lecture and associated group or individual project and exercise topics:

- 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
    - Lake Winnipeg in Canada
- Re-Shaping the Natural World
  - Floods
    - Flood insurance and flood frequency
    - Dispute between local business in Grandview Height, Columbus and FEMA
    - the flood caused by the hurricane Katrina
  - Diverting the flow for cities, industry, and agriculture
    - Los Angeles Aqueduct
    - Colorado River and Central Arizona Project (CAP)
    - Debates between states, Mexico and native Americans
  - Groundwater mining
    - the Ogallala aquifer depletion in Kansas
    - Mexico city water supply
- 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 Gorges Dam Project
  - The water business
- Water Conflicts
  - Scarce water resources and increasing political tensions
  - Weapon of war

### **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)