

Spring 2013 CE 45100 Environmental Water Resources

Catalog Description: Water and water pollution in the natural world. The hydrologic cycle. Atmospheric, surface and subsurface water. Hydrographs, unit hydrographs and flow routing. Mechanisms of contaminant transport. Sources and remediation of water pollution. Pollution in surface and groundwater. Design problems.

Prereqs: CE 35000 (min. C grade), CE 36500. 3 hr./wk; 3 cr.

Required/Selective: required for environmental/water resources specialization.

Textbook: David Chin, Water-Resources Engineering, Prentice Hall, 2nd ed, 2006.
ISBN: 0-13-1481192-4

Office hours: Mon, Wed 2:00-4:00 pm

Time and location: M,W 5:00 - 6:15 PM SH 379

Instructor: Prof. Hansong Tang

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Topics and hours:

1. Introduction (1 class).
2. Hydrologic cycle (1 class).
3. Analysis of hydrologic data (2 classes).
4. Flow in open channel (1 class)
5. Precipitation, evaporation, transpiration and infiltration (7 classes). --- Exam1
6. Flow routing (2 class).
7. Groundwater Hydrology (6 classes).
8. Mechanisms of contaminant transport, numerical modeling (3 classes). --- Exam 2
9. Meetings with project groups (4 classes).
10. Presentation of student projects (1 class).

Grades:

1. Homework assignments and attendance (15%)
2. Quizzes (15%)
3. Exams (20%)
4. Final (30%)
5. The Research Project: (20%)

Course Learning Outcomes:

By the end of the course, the students should be able to:

1. Describe the components of the hydrologic cycle and explain how they interact and how they transport various materials.
2. Practice quantitative techniques for estimating the magnitude of different components of the hydrologic cycle (and their transported materials).
3. Become more comfortable in making reasonable estimates, utilizing data, and addressing open-ended questions in engineering problem solving and design.
4. Become familiar with local agencies, organizations, and institutions participating in scientific research and management
5. Communicate technical information on water resources in written form and orally
6. Better their ability to do research: identify and collect needed information, analyze data, draw and support appropriate conclusions, and provide recommendations for future studies.
7. Improve their ability to work as part of a team effectively.
8. Develop their skills in completing an open-ended project under time constraints using a systematic, phased approach.