

Effective Date: Fall 2008-2009

Course Description

Prerequisites: A grade of “C” or better in each of the following: MATH 1021, GEOL 1001, GEOL 1002 and GEOL 1003. Surface water and groundwater physical processes, water chemistry, and related environmental problems.

Rationale

This course is a class designed for students who have taken introductory geology classes and understand basic geologic processes. Geophysical and geochemical principles are used in studying the nature of surface water and ground water. PHSC 1001, PHYS 1001, or PHYS 2001 would be helpful in understanding physical processes and techniques taught in this course.

Course Objectives

Students will:

1. Obtain an understanding of hydrologic processes, particularly the processes of precipitation, evaporation, infiltration, and surface water processes.
2. Learn about methods of hydrologic analysis, including unit hydrograph, flow routing, and basic statistical methods.
3. Learn how to assess chemistry of water from a health perspective.
4. Learn legal aspects, international issues related to water bodies, as well as waste disposal.

Procedures to Evaluate these Objectives

1. In-class problems after concept presentation
2. In-class exams
3. Projects/homework
4. Cumulative final exam

Use of Results of Evaluation to Improve the Course

1. Student responses from in-class problems will be used to provide immediate feedback to students on concept misunderstanding.
2. In-class exams will be graded and returned with written evaluations to provide improved understanding of student difficulties in understanding.
3. The cumulative final exam will be graded and examined to determine areas of teaching which could use improvement.
4. All evaluation methods will be constantly monitored to determine if there is a more effective method of presenting the material

Detailed Topical Outline

1. Global Issues in Hydrology
2. Stream Discharge
3. Gauging/Hydrographs

4. Hydrologic Cycle
5. Recurrence Intervals
6. Flooding
7. Aquifers
8. Darcy's Law
9. Dams
10. Water chemistry
11. Contaminant Plumes
12. Remediation
13. Confined Aquifers
14. Wellhead Protection