

Hydrogeology

Earth Sciences 304

Section: D100

Term: 2007 Fall

Instructor: Dr. Romain Chesnaux

Discussion Topics: General:

Hydrogeology is one of the fastest growing disciplines in the Earth and Environmental Sciences as well as in Engineering. Of greatest concern is the preservation of our groundwater resources.

This introductory course explores physical hydrogeology. The objective of the course is to introduce the basic concepts and principles governing the flow of groundwater in the subsurface environment, and to use these to develop an understanding of aquifers and their physical properties, groundwater sustainability and management, and interaction of groundwater with surface water. In addition, as a foundation course in fluids in geologic media, this course has relevance to the oil and gas and mining industries as well as to engineering applications, such as dewatering. The course forms the basis for EASC 410 and EASC 416, which introduce respectively groundwater chemistry and contamination, and field methods.

Course Contents:

1. Water and the hydrologic cycle
2. Principles of groundwater flow
3. Properties of aquifers
4. Geology of groundwater occurrence
5. Transient flow, boundary value problems and flow nets
6. Regional groundwater flow
7. Groundwater flow to wells
8. Groundwater recharge and interaction with surface water
9. Groundwater as a resource: field methods, management and modeling

Course Organization:

Hydrogeology

1 two-hour lecture and 1 three-hour laboratory. The assignments are based on the theory component of the course, and these will be distributed during lab time. There is also a laboratory project that will be distributed and worked on during lab time over the course of three weeks.

Grading: Laboratory Assignments 25%

Term Project 10%

Midterm Exam 20%

Quizzes 10%

Final Exam 35%

Required Texts: Fetter, C.W. 2001. Applied Hydrogeology. 4th Edition, Prentice Hall, N.J. 598 pp. ISBN: 0-13-088239-9

Recommended Texts: None.

Materials/Supplies: None.

Prerequisite/Corequisite: One of EASC 101 or GEOG 111, and PHYS 126 or 121 (or PHYS 102 with a grade of B or better).

Notes: Field Trip: Date/Location TBA First Week of Classes

This outline is derived from a course outline repository database that was maintained by SFU Student Services and the University's IT Services Department. The database was retired in 2014 and the data migrated to SFU Archives in 2015.