

## Hydrogeology

Earth Sciences 304

Section: D100

Term: 2011 Fall

Instructor: Dr. Diana Allen

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Discussion Topics: General:

This is an introductory course in physical hydrogeology. 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 environmental and engineering applications. The objective of the course is to introduce the basic concepts and principles governing the flow of water in the subsurface environment (i.e. groundwater), and to use these to develop an understanding of aquifers or oil reservoirs and their physical properties. The course forms the basis for environmental courses EASC 315, EASC 405, EASC 410, and EASC 416, which introduce respectively groundwater chemistry, groundwater contamination and transport, and field methods in hydrogeology. The course is also required for EASC 420 (Petroleum Geology).

Course Topics:

1. Water and the Hydrologic Cycle
2. Principles of Groundwater Flow
3. Properties of Aquifers
4. Geology of Groundwater Occurrence
5. Groundwater Flow to Wells
6. Regional Groundwater Flow
7. Recharge and Interaction with Surface Water
8. Groundwater as a Resource (Field Methods, Management and Modelling)

Course Organization:

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%

Laboratory Project                      20%

Mid-term Exam                          20%

Final Exam                                      35%

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Required Texts: Fetter, C.W. 2001. Applied Hydrogeology. 4th Edition, Prentice Hall, N.J. 598 pp. ISBN: 978-0-13-088239-9

Recommended Texts: None.

Materials/Supplies: None.

Prerequisite/Corequisite: EASC 101 and PHYS 102 or 121 or 126 or 14; and 12 additional units in Earth Sciences, Physical Geography or Environmental Science.

Notes: Field Trip: to North Vancouver Outdoors School, BC Date: TBA

\*There may be a supplementary fee\*

"Be aware that during the field trip there will be periods of strenuous hiking, hiking close to cliffs and crossing roads with busy traffic. Appropriate clothing and footwear should be worn. Further details regarding safety, food, and field trip supplies will be discussed prior to the field trip."

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.