



Water Resources Contamination

COURSE OUTLINE – Water Resources Contamination

NOTE: This course outline and schedule is tentative and it may be modified depending on the student needs and the time available.

Course Description:

This is a course for MSc. students in Environmental Geology. We will explore important themes such as:

- Basic Definitions
- Air pollution and Acid Rain
- Contaminant Sources (Point Sources and Non-Point Sources)
- Groundwater Contamination
- Contaminant hydrogeology (Solute Transport, Equations of Mass Transport, Retardation and Attenuation of Solutes, Inorganic and Organic Chemicals, Remediation)
- Chemical and Isotope Techniques to Distinguish Contaminations
- Discussions on related chapter books and reports

Course Format

Lecture series will be based on selected topics from text books and papers.
Assignments will be assigned based on discussed material in lecture series

Coordinator

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Course Schedule (Lectures)

All lectures: Faculty of Science, Room (*to be announced*)
Saturday 16:00-18:00 2-hr lectures

Course Evaluation

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|---------------------------------|-----|
| • Assignments | 10% |
| • Paper discussion in class | 15% |
| • Project presentation & report | 25% |
| • Final Exam | 50% |

Policy regarding assignments:

All assignments and reports have to be handed in on the due date. Late and/or sloppy assignments will be penalized: 10% will be deducted for each day that an assignment is late. An assignment that is late by more than 5 days will not be marked.

Suggested Textbooks:

- ❖ Appelo C.A.J., Postma D., (1999). Geochemistry, groundwater and pollution.
- ❖ Berger, A.R., Catherine, H., Skinner, W., (2003). Geology and Health: Closing the Gap. Oxford Univ Pr.
- ❖ Drever J. I. (1997). The Geochemistry of Natural Waters.
- ❖ Fetter C.W., (1999). Contaminant Hydrogeology. Prentice Hall.
- ❖ Fitts, Charles R., (2002). Groundwater Science. Academic Press. Chapter 10 Groundwater Contamination, pp. 339-387.
- ❖ Freeze R.A., Cherry J.A., (1979). Groundwater. Prentice Hall. Chapter 9, Groundwater Contamination, pp. 383-457.
- ❖ Jefferson, B., Parsons, S., (2006). Introduction to Potable Water Treatment Processes. Blackwell Pub Professional.
- ❖ Komatina, M.M., (2004). Medical Geology: Effects of Geological Environments on Human Health. Elsevier Science Ltd.
- ❖ Marcel Van Der Perk, (2006). Soil and Water Contamination: From Molecular to Catchment Scale. Taylor & Francis.
- ❖ Merrington G., Winder L., Parkinson R., Redman M. (2002). Agricultural Pollution. Spon Press.
- ❖ Nielsen D.M., (2006). Practical Handbook of Environmental Site Characterization and Groundwater Monitoring – Second Edition. Taylor & Francis.
- ❖ Razowska-Jaworek Lidia, Sadurski Andrezej (2005). Nitrates in Groundwater. Balkema.
- ❖ Schwarts F.W. Domenico P.A. (2001). Physical and Chemical Hydrogeology. John Wiley and Sons. Chapter 10, Solute Transport, pp. 215-236.
- ❖ Selinus, O., (2005). Essentials Of Medical Geology: Impacts of the Natural Environment on Public Health. Academic Pr.
- ❖ Witkowski, A. J., Kowalczyk, A., Vrba, (2007). Groundwater Vulnerability Assessment and Mapping. Taylor & Francis.