Instructor: Dr. James E. Smith (smithja@mcmaster.ca)  Office: GSB 221  Office Hours: Wed, Thurs 2:30-3:20

T.A.: Jazwiec, Wijayarathane

Lectures: Wed, Thurs 1:30-2:20 HSC 1A4

Labs: Wed, Thurs. 8:30-11:30am and Thurs 2:30-5:20pm in BSB 315 only scheduled weeks (one major Wet Lab)

Course Description: This course will focus on the occurrence, distribution, and movement of groundwater as a function of the geological environment and as a valuable essential resource. The topic will be covered from both a theoretical and practical perspective.

Required Text: GROUNDWATER, by R.A. Freeze and J.A. Cherry, Prentice Hall, 1979 (FREE DOWNLOAD)

Topics:
week 1: introduction, physical properties, aquifers, wells
week 2: Hydraulic Head, Darcy’s law, hydraulic conductivity
week 3: vadose zone, fractured rock, aquifer properties
week 4: mathematical basis for groundwater flow
week 5: mathematical basis for groundwater flow, flow nets
week 6: regional groundwater flow
week 7: groundwater - surface water interaction
week 8: groundwater resource evaluation: well response and tests
week 9: groundwater resource evaluation: pumping test analysis (continued)
week 10: groundwater resource evaluation: well efficiency, well interference, boundaries
week 11: groundwater resource evaluation: groundwater management
week 12: groundwater resource evaluation: modelling groundwater flow

Mark Distribution:
Lab/Assignments (total 4; 2x3%; 2x7%)  20%
Midterm I [Th Oct 20, 2016]  20%
Midterm II [Th Nov 10, 2016]  20%
Final Exam  40%

A calculator, graph paper, and internet access are required to complete the lab reports. You will work in groups in the lab, although are expected to hand in your own reports.

Attendance at all lectures and laboratories as scheduled is mandatory. All work must be handed-in on or before the due date and time indicated. Late work will not be accepted and will be assigned a grade of zero unless official university documentation excusing the student for a relevant time period is received. See your Associate Dean of Studies Office for related consideration.

Academic Dishonesty: Academic dishonesty consists of misrepresentation by deception or by other fraudulent means and can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: “Grade of F assigned for academic dishonesty), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various kinds of academic dishonesty please refer to the Academic Integrity Policy, specifically Appendix 3, located at http://www.mcmaster.ca/senateacademic/ac_integrity.htm

The following illustrates only three forms of academic dishonesty:
- plagiarism, e.g. the submission of work that is not one’s own or for which other credit has been obtained
- improper collaboration in group work
- copying or using unauthorized aids in tests and examinations

The University reserves the right to change any aspect of this course outline. The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.