



UNIVERSITY OF
CALGARY

DEPARTMENT OF GEOSCIENCE
COURSE OUTLINE
FALL 2015

1. **Course:** GLGY 601, Advanced Physical Hydrogeology

Lecture Sections:

L01: MoWeFr, 13:00-13:50, ENA 103

For a listing of all lab sections corresponding with this course, please see the following link:

http://geoscience.ucalgary.ca/geoscience_info/courses/f15

Aaron Mohammed, Office: ES 270, Ph. 403-220-6596, amohamme@ucalgary.ca, Office Hours: Monday, 14:00-16:30 (flexible) or by appointment- second half of the semester.

Dr. Barret Kurylyk, Office: ES 280, Ph. 403-210-5401, barret.kurylyk@ucalgary.ca, Office Hours: Monday, 14:00-16:30 (flexible) or by appointment- first half of the semester.

Geoscience Department ES 118, 403-220-5841, geoscience.ucalgary.ca, geoscience@ucalgary.ca

The course website can be found on D2L (<https://d2l.ucalgary.ca>).

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2. **Prerequisites:** Consent of the Department. See also Geology [Course Descriptions](#) of the University Calendar.

Antirequisites: Credit for both Geology 601 and 401 will not be allowed.

3. **Grading:** The University policy on grading and related matters is described in sections F.1 and F.2 of the online University Calendar. In determining the overall grade in the course the following weights will be used:

Laboratories (9)	20%
Homework Assignments (4)	10%
Term Project	20% (Report and presentation, due date TBD)
Midterm Exam	20% (Tentatively Oct. 23, in class)
Final Exam	30% (To be scheduled by the Registrar)

Each component of the course will be assigned a percentage score. The student's average percentage score for the various components listed above will be combined with the indicated weights to produce an overall percentage for the course, which will then be used to determine the course letter grade. The conversion between course percentage and letter grade is as follows:

Grading Scale							
A+	94-100	B+	80 - 83%	C+	66 - 69%	D+	54 - 57%
A	88 - 93%	B	75 - 79%	C	62 - 65%	D	50 - 53%
A-	84 - 87%	B-	70 - 74%	C-	58 - 61%	F	< 50%

4. **Missed Components of Term Work:** The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in [Section 3.6](#). It is the student's responsibility to familiarize himself/herself with these regulations. See also [Section E.6](#) of the University Calendar

5. **Scheduled out-of-class activities:** There will be no mandatory activities held outside of class hours. Optional tutorial sessions may be held prior to the final exam, but these will be discussed in class prior to the examination period.

REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY. If you have a clash with this out-of-class-time-activity, please inform your instructor as soon as possible so that alternative arrangements may be made for you.

6. **Course Materials:** There is no required textbook, although the course will borrow significantly from the textbooks listed below and select portions of Fetter (2001) may be indicated for readings during the term. The textbooks will be placed on reserve in the Gallagher Library and a limited number of copies of the Fetter textbook are also available at the bookstore. It is strongly recommended that students review the material in at least one of these textbooks, or better yet, purchase a copy for their personal library.

“Applied Hydrogeology”, 4th Edition, Fetter, 2001, Prentice-Hall.
“Groundwater”, Freeze and Cherry, 1979, Prentice-Hall

Online Course Components: Course announcements, lecture and laboratory materials, and additional online resources will be provided on Desire2Learn (<https://d2l.ucalgary.ca>). Please check the D2L course site regularly, since students are responsible for ensuring they have the necessary materials for lectures, laboratories, and assignments.

We will use the Top Hat classroom response system to enhance learning in lectures throughout the term. Although participation is **optional for GLGY601 students** and you will not be graded on this component of the course, all students are encouraged to use their own personal electronic device, such as a cellular telephone, tablet or laptop computer, and register it for use in this course. Instructions for Top Hat registration will be given in class and on Desire2Learn.

7. **Examination Policy:** All exams will be closed book. Only writing instruments, erasers, rulers and non-programmable calculators will be permitted on exams. No other aids will be allowed. An instructor-prepared equation sheet will be provided. Students should also read the Calendar, [Section G](#), on Examinations.
8. **Writing across the curriculum statement:** In this course, the quality of the student's writing will be a factor in the evaluation of all written work (laboratories, assignments, term project, and exams). Students are expected to submit high quality work. In all cases, quality work must be well organized, clearly written and presented, and have all information sources properly noted. Where applicable, questions should be labelled and in order, all tables and diagrams properly labelled, assumptions clearly stated, and final answers clearly indicated (with appropriate units and significant figures). You are expected to **show all your work**, including equations and sample calculations where necessary (especially when relying on spreadsheets or computer programs to generate results). See also [Section E.2](#) of the University Calendar.

9. **OTHER IMPORTANT INFORMATION FOR STUDENTS:**

- (a) **Academic Misconduct:** (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under [Section K](#). Student Misconduct to inform yourself of definitions, processes and penalties
- (b) **Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on [assembly points](#).
- (c) **Academic Accommodation Policy:** Students with documentable disabilities are referred to the following links: Students with Disabilities: <http://www.ucalgary.ca/pubs/calendar/current/b-1.html> and Student Accessibility Services: <http://www.ucalgary.ca/access/>
- (d) **Safewalk:** Campus Security will escort individuals day or night (<http://www.ucalgary.ca/security/safewalk/>). Call 220-5333 for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.
- (e) **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). As one consequence, students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information see also <http://www.ucalgary.ca/secretariat/privacy>.

- (f) **Student Union Information:** VP Academic Phone: 403 220-3911 Email: suypaca@ucalgary.ca
SU Faculty Rep. Phone: 403 220-3913 Email: science1@su.ucalgary.ca, science2@su.ucalgary.ca and
science3@su.ucalgary.ca; Student Ombuds Office: 403-220-6420 Email: ombuds@ucalgary.ca;
<http://ucalgary.ca/provost/students/ombuds>
- (g) **Internet and Electronic Device Information:** You can assume that in all classes that you attend, your cell phone should be turned off unless instructed otherwise. Also, communication with other individuals, via laptop computers, Blackberries or other devices connectable to the Internet is not allowed in class time unless specifically permitted by the instructor. If you violate this policy you may be asked to leave the classroom. Repeated abuse may result in a charge of misconduct.
- (h) **U.S.R.I.:** At the University of Calgary, feedback provided by students through the Universal Student Ratings of Instruction (USRI) survey provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses (www.ucalgary.ca/usri). Your responses make a difference – please participate in USRI Surveys.

Department Approval ORIGINAL SIGNED

Date August 17, 2015

Preliminary schedule for GLGY 401 and 601.

Week	Week of	Lecture Topic	Lectures			Laboratory
			Mon	Wed	Fri	Thur
1	07-Sep	Intro & hydro cycle				None
2	14-Sep	Porosity and potential			A1 Out	Lab # 1: Porosity
3	21-Sep	Darcy's Law and GW flow				Lab # 2: Physical flow model
4	28-Sep	Hydrogeologic units			A1 Due/A2 Out	Lab # 3: Water flow in sediments
5	05-Oct	GW storage				Lab # 4: Potentiometric surface
6	12-Oct	GW flow equations	Thanksgiving		A2 Due	Lab # 5: Propagation of hydraulic pulse
7	19-Oct	Flow nets			Midterm Exam	Midterm tutorial
8	26-Oct	Vadose zone		A3 OUT		Lab # 6: Flownet construction
9	02-Nov	Regional GW flow				No lab
10	09-Nov	Regional flow and hydraulics		No classes (Reading)		Lab # 7: Groundwater flow model
11	16-Nov	Aquifer hydraulics	A3 Due/A4 Out			Lab # 8: Pumping test
12	23-Nov	Aquifer hydraulics & well tests			A4 Due	Lab # 9: Single well response (comp.)
13	30-Nov	Transport				Review session
14	07-Dec	Review		End of classes		