



## COURSE OUTLINE

### 1. **Course:** GLGY 401, Physical Hydrogeology - Fall 2021

Lecture 01: MWF 10:00 - 10:50 in ST 126

<b>Instructor</b>	<b>Email</b>	<b>Phone</b>	<b>Office</b>	<b>Hours</b>
Dr Edwin Cey	ecey@ucalgary.ca	403 220-8393	ES 220	TBA

#### **In Person Delivery Details:**

Lectures - Lectures will be conducted in person in the scheduled classroom. Students are expected to attend lecture sessions and they will NOT be recorded. Lecture sessions will include 'live' Top Hat questions that require students to respond in real time, so students are expected to participate regularly. Students cannot make up for missed Top Hat questions during lectures, but the bottom 10% of questions will be removed to allow flexibility for occasional missed responses or technical issues.

More information about safety protocols and other relevant information for in-person meetings will be provided to students prior to or during the first week of classes.

Laboratories - All laboratory sessions are currently scheduled in person to allow more hands-on learning. However, if it becomes necessary to address COVID-related safety concerns, the labs would transition to online learning. Regardless, the first four laboratory sessions of the term, as outlined below, will be conducted in person since they require direct visualization of key hydrogeology demonstrations. These in-person laboratory sessions will take place on:

Thursdays, Sept. 16, Sept. 23, Oct. 7, and Oct. 14

Due to the design of the course, a student can only miss one in-person laboratory session. Accommodations for this missed in-person lab will be made on a case-by-case basis and the student will be expected to learn the concepts in the missed session on their own time.

#### **Re-Entry Protocol for Labs and Classrooms:**

To limit the spread of COVID-19 on campus, the University of Calgary has implemented safety measures to ensure the campus is a safe and welcoming space for students, faculty and staff. The most current safety information for campus can be found [here](#).

#### **Course Site:**

D2L: GLGY 401 L01-(Fall 2021)-Physical Hydrogeology

**Note:** Students must use their U of C account for all course correspondence.

The instructor and teaching assistants will attempt to reply to student emails within one (1) full business day whenever possible (which excludes weekends and holidays), however, certain inquiries may require additional time.

### 2. **Requisites:**

See section [3.5.C](#) in the Faculty of Science section of the online Calendar.

#### **Prerequisite(s):**

Geology 353 or Geophysics 457.

#### **Antirequisite(s):**

Credit for Geology 401 and 601 will not be allowed.

### 3. **Grading:**

The University policy on grading and related matters is described in [F.1](#) and [F.2](#) of the online University Calendar.

In determining the overall grade in the course the following weights will be used:

Component(s)	Weighting %	Date
Laboratories (9)	20	
Homework Assignments (4)	20	
Top Hat and Quizzes	10	
Midterm Exam	15	Tentatively Oct. 22, in class
Final Exam	35	To be scheduled by Registrar

Each piece of work (reports, assignments, quizzes, midterm exam(s) or final examination) submitted by the student will be assigned a grade. The student's grade for each component listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade.

The conversion between a percentage grade and letter grade is as follows.

	A+	A	A-	B+	B	B-	C+	C	C-	D+	D
<b>Minimum % Required</b>	95 %	88 %	84 %	80%	75%	70 %	66 %	62%	58%	54 %	50 %

This course will have a final exam that will be scheduled by the Registrar. [The Final Examination Schedule](#) will be published by the Registrar's Office approximately one month after the start of the term. The final exam for this course will be designed to be completed within 2.0 hours.

The University of Calgary offers a [flexible grade option](#), Credit Granted (CG) to support student's breadth of learning and student wellness. Faculty units may have additional requirements or restrictions for the use of the CG grade at the faculty, degree or program level. To see the full list of Faculty of Science courses where CG is not eligible, please visit the following website: <https://science.ucalgary.ca/current-students/undergraduate/program-advising/flexible-grading-option-cg-grade>

#### 4. **Missed Components Of Term Work:**

The university has suspended the requirement for students to provide evidence for absences. Please do not attend medical clinics for medical notes or Commissioners for Oaths for statutory declarations.

In the event that a student legitimately fails to submit any online assessment on time (e.g. due to illness etc...), please contact the course coordinator, or the course instructor if this course does not have a coordinator to arrange for a re-adjustment of a submission date. Absences not reported within 48 hours will not be accommodated. If an excused absence is approved, one possible arrangement is that the percentage weight of the legitimately missed assignment could also be pro-rated among the components of the course. This option is at the discretion of the coordinator and may not be a viable option based on the design of this course.

All assigned work (homework, laboratories, term projects) should be submitted when due. Due dates for homework assignments and term projects are indicated clearly on the student handout, and unless otherwise indicated all laboratory reports are due at 9:00 am on the Monday morning immediately following each laboratory. All late work will be subject to a late penalty of 10% per day (including weekends and holidays). Arrangements for submitting late assignments must be made with the instructor. Any student who fails to submit an assignment or similar required piece of work for legitimate reasons (e.g., illness, religious conviction) must discuss an alternative course of action with the instructor.

Students (or student groups where there is team-based work) are permitted one 'free, no questions asked' 48-hour extension during the term for a homework assignment or laboratory report of their choosing. Students must request the 'free' extension by email from the instructor **before the due date** (no exceptions).

#### 5. **Scheduled Out-of-Class Activities:**

There are no scheduled out of class activities for this course.

## 6. Course Materials:

Recommended Textbook(s):

C.W. Fetter, *Applied Hydrogeology (4th ed)*: Waveland Press (formerly Prentice-Hall).

**Online Course Materials:** Course announcements, lecture and laboratory materials, and additional online resources will be provided on Desire2Learn (<https://d2l.ucalgary.ca/d2l/home>). 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 and interaction in lectures throughout the term. This is a required component for GLGY 401 students and your grade (as indicated above) will include a component related to in-class Top Hat evaluations. Students are required to have a portable electronic device, such as a cellular telephone, tablet or laptop computer. Instructions for Top Hat registration will be given in class and on D2L.

In order to successfully engage in their learning experiences at the University of Calgary, students taking online, remote and blended courses are required to have reliable access to the following technology:

- A computer with a supported operating system, as well as the latest security, and malware updates;
- A current and updated web browser;
- Webcam/Camera (built-in or external);
- Microphone and speaker (built-in or external), or headset with microphone;
- Current antivirus and/or firewall software enabled;
- Stable internet connection.

For more information please refer to the UofC [ELearning](#) online website.

## 7. Examination Policy:

All midterm and final exams will be in-person, closed-book exams. Only writing instruments, erasers, rulers and non-programmable calculators will be permitted on exams. No other aids will be allowed. Students are expected to work entirely on their own to complete the exams, with no interaction or input from any other individuals other than the instructor or TA. An instructor-prepared equation sheet will be provided.

Students should also read the Calendar, [Section G](#), on Examinations.

## 8. Approved Mandatory And Optional Course Supplemental Fees:

There are no mandatory or optional course supplemental fees for this course.

## 9. Writing Across The Curriculum Statement:

For all components of the course, in any written work, the quality of the student's writing (language, spelling, grammar, presentation etc.) can be a factor in the evaluation of the work. See also Section [E.2](#) of the University Calendar.

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).

## 10. Human Studies Statement:

Students will not participate as subjects or researchers in human studies.

See also [Section E.5](#) of the University Calendar.

## 11. Reappraisal Of Grades:

A student wishing a reappraisal, should first attempt to review the graded work with the Course coordinator/instructor or department offering the course. Students with sufficient academic grounds may request a reappraisal. Non-academic grounds are not relevant for grade reappraisals. Students should be aware that the grade being reappraised may be raised, lowered or remain the same. See [Section I.3](#) of the University Calendar.

- Term Work:** The student should present their rationale as effectively and as fully as possible to the Course

coordinator/instructor within **ten business days** of either being notified about the mark, or of the item's return to the class. If the student is not satisfied with the outcome, the student shall submit the Reappraisal of Graded Term work form to the department in which the course is offered within 2 business days of receiving the decision from the instructor. The Department will arrange for a reappraisal of the work within the next ten business days. The reappraisal will only be considered if the student provides a detailed rationale that outlines where and for what reason an error is suspected. See sections [I.1](#) and [I.2](#) of the University Calendar

- b. **Final Exam:** The student shall submit the request to Enrolment Services. See [Section I.3](#) of the University Calendar.

## 12. Other Important Information For Students:

- a. **Mental Health** The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 370, MacEwan Student Centre, [Mental Health Services Website](#)) and the Campus Mental Health Strategy website ([Mental Health](#)).
- b. **SU Wellness Services:** For more information, see [www.ucalgary.ca/wellnesscentre](http://www.ucalgary.ca/wellnesscentre) or call [403-210-9355](tel:403-210-9355).
- c. **Sexual Violence:** The Sexual Violence Support Advocate, Carla Bertsch, can provide confidential support and information regarding sexual violence to all members of the university community. Carla can be reached by email ([syva@ucalgary.ca](mailto:syva@ucalgary.ca)) or phone at [403-220-2208](tel:403-220-2208). The complete University of Calgary policy on sexual violence can be viewed at (<https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Sexual-and-Gender-Based-Violence-Policy.pdf>)
- d. **Misconduct:** Academic integrity is the foundation of the development and acquisition of knowledge and is based on values of honesty, trust, responsibility, and respect. We expect members of our community to act with integrity. Research integrity, ethics, and principles of conduct are key to academic integrity. Members of our campus community are required to abide by our institutional [Code of Conduct](#) and promote academic integrity in upholding the University of Calgary's reputation of excellence. Some examples of academic misconduct include but are not limited to: posting course material to online platforms or file sharing without the course instructor's consent; submitting or presenting work as if it were the student's own work; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; borrowing experimental values from others without the instructor's approval; falsification/fabrication of experimental values in a report. Please read the following to inform yourself more on academic integrity:

[Student Handbook on Academic Integrity](#)  
Student Academic Misconduct [Policy](#) and [Procedure](#)  
[Research Integrity Policy](#)

Additional information is available on the [Student Success Centre Academic Integrity page](#)

### e. **Academic Accommodation Policy:**

It is the student's responsibility to request academic accommodations according to the University policies and procedures listed below. The student accommodation policy can be found at: <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Student-Accommodation-Policy.pdf>

Students needing an accommodation because of a disability or medical condition should communicate this need to Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities: <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Accommodation-for-Students-with-Disabilities-Procedure.pdf>.

Students needing an accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a Protected Ground other than Disability, should communicate this need, by filling out the [Request for Academic Accommodation Form](#) and sending it to Jennifer Cuthbertson by email [cuthberj@ucalgary.ca](mailto:cuthberj@ucalgary.ca) preferably 10 business days before the due date of an assessment or scheduled absence.

- f. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIP). 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 [Legal Services](#) website.

- g. **Student Union Information:** [VP Academic](#), Phone: [403-220-3911](#) Email: [suvpaca@ucalgary.ca](mailto:suvpaca@ucalgary.ca). SU Faculty Rep., Phone: [403-220-3913](#) Email: [sciencerep@su.ucalgary.ca](mailto:sciencerep@su.ucalgary.ca). [Student Ombudsman](#), Email: [ombuds@ucalgary.ca](mailto:ombuds@ucalgary.ca).
- h. **Surveys:** At the University of Calgary, feedback through the Universal Student Ratings of Instruction ([USRI](#)) survey and the Faculty of Science Teaching Feedback form provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses. Your responses make a difference - please participate in these surveys.
- i. **Copyright of Course Materials:** All course materials (including those posted on the course D2L site, a course website, or used in any teaching activity such as (but not limited to) examinations, quizzes, assignments, laboratory manuals, lecture slides or lecture materials and other course notes) are protected by law. These materials are for the sole use of students registered in this course and must not be redistributed. Sharing these materials with anyone else would be a breach of the terms and conditions governing student access to D2L, as well as a violation of the copyright in these materials, and may be pursued as a case of student academic or [non-academic misconduct](#), in addition to any other remedies available at law.

**Course Outcomes:**

- Describe and explain the components of the hydrologic cycle, with particular emphasis on the role of groundwater for both the storage and flow of water
- Use the principles of hydraulic head and Darcy's Law to estimate groundwater flow directions, volumetric fluxes, and average flow velocities (in 3 dimensions)
- Apply groundwater flow and storage concepts to predict and/or evaluate the hydraulic response of transient and steady-state groundwater flow systems
- Explain the role of geologic deposits and geologic heterogeneity in controlling groundwater flow from the pore-scale to regional-scale flow systems
- Collect, analyze and interpret hydrogeologic data to either support or refute a conceptual model for a groundwater flow system
- Create and implement graphical, numerical, or analytical techniques to quantitatively evaluate groundwater flow problems
- Communicate the concepts of groundwater flow and the transport of dissolved substances through formal reports or presentations and through informal conversations with scientific peers and the general public

Electronically Approved - Sep 04 2021 15:35

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**Department Approval**

Electronically Approved - Sep 07 2021 16:19

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**Associate Dean's Approval**