



## COURSE OUTLINE

### 1. **Course:** GLGY 577, Introduction to Petroleum Geology - Fall 2022

Lecture 01 : TR 11:00 - 12:15 in ENA 233

<b>Instructor</b>	<b>Email</b>	<b>Phone</b>	<b>Office</b>	<b>Hours</b>
Dr Per Pedersen	pkpeders@ucalgary.ca	403 220-8454	ES 264	TBA
Dr Rodolfo Meyer	rmeyer@ucalgary.ca	403 210-7848	ES 110	Open-door policy at anytime or by appointment via email

To account for any necessary transition to remote learning for the current semester, courses with in-person lectures, labs, or tutorials may be shifted to remote delivery for a certain period of time. In addition, adjustments may be made to the modality and format of assessments and deadlines, as well as to other course components and/or requirements, so that all coursework tasks are in line with the necessary and evolving health precautions for all involved (students and staff).

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

The course is currently planned to be in-person for both Lab and Lecture periods.

#### **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 577 L01-(Fall 2022)-Introduction to Petroleum Geology

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

#### **Equity Diversity & Inclusion:**

The University of Calgary is committed to creating an equitable, diverse and inclusive campus, and condemns harm and discrimination of any form. We value all persons regardless of their race, gender, ethnicity, age, LGBTQIA2S+ identity and expression, disability, religion, spirituality, and socioeconomic status. The Faculty of Science strives to extend these values in every aspect of our courses, research, and teachings to better promote academic excellence and foster belonging for all.

#### **Course Outcomes:**

- Explain fundamental concepts and processes of the 'Petroleum System'.
- Read and interpret the response of basic well-logging tools e.g. GR, D-phi, N-phi, Resistivity.
- Describe and interpret core intervals and accessory data (e.g. thin-sections, core analysis data) to infer depositional settings and make qualitative assessments of reservoir quality
- Integrate fundamental sedimentologic, stratigraphic and structural criteria to construct subsurface maps and cross-sections.
- Analyze and interpret subsurface well data to derive qualitative and quantitative measures of reservoir potential.

### 2. **Requisites:**

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

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

Geology 445; and 3 units from Geology 463, 483 or Geophysics 457.

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

Credit for Geology 577 and any of 575, 589.01, 589.02, 589.07, 589.08, 591, 595.01, 596, 689.01, 689.02, 689.07, 689.08, 694.01, 694.03, 696, 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:

Course Component	Weight	Due Date (duration for exams)	Modality for exams	Location for exams
Lab 1 - W. Canada grid system <sup>1</sup>	0%	Sep 14 2022		
Lab 2 - Oil Sands Core and Wells Correlation	15%	Oct 05 2022		
Midterm Exam <sup>2</sup>	15%	Oct 18 2022 at 05:00 pm (2 Hours)	in-person	TBD
Lab 3 - Reservoir Properties (Cores, Logs, Thin Sections)	13%	Oct 19 2022		
Lab 4 - Contouring and Cross Sections	12%	Nov 02 2022		
Lab 5 - Trend, sand, pay recognition	12%	Nov 23 2022		
Lab 6 - Subsurface Reservoir Mapping	13%	Dec 07 2022		
Registrar Scheduled Final Exam	20%	Will be available when the final exam schedule is released by the Registrar	in person	Will be available when the final exam schedule is released by the Registrar

<sup>1</sup> Lab Assignment dates listed are 'Due Dates', typically at the start of the Lab following given Lab Assignment.

<sup>2</sup> The Midterm Exam will be scheduled outside of regularly scheduled lecture class to allow more time for completion of the exam. Regular lecture class that day will be cancelled.

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 %	91 %	88 %	84%	79%	74 %	69 %	65%	61%	56 %	50 %

This course will have a Registrar Scheduled Final exam that will be delivered in-person and on campus. [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 hours.

Students must pass the overall Lab component of the course which constitutes 65% of the course grade.

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.

Lab Assignments will be due on Wednesdays, by the start of the next Lab assignment- see *due dates for each of the Labs listed with the grading components*.

Due dates can only be changed for legitimate reasons (e.g., illness or other justified conflict) with consent from

the TA, who at times may consult with the course instructor. Any accommodations are decided on a case-by-case basis.

Aside from the above, late submissions of Lab Assignments are assigned a penalty of 25% per day, up to a maximum of 2 days (50%).

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

The following out of class activities are scheduled for this course.

Activity	Location	Date and Time	Duration
Midterm	ENA 233 or alternative classroom	Tuesday, October 18, 2022 at 5:00 pm	2 Hours

**REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY.** If you have a conflict with the out-of-class-time-activity, please contact your course coordinator/instructor no later than **14 days prior** to the date of the out-of-class activity so that alternative arrangements may be made.

The **Midterm Exam** is scheduled for 5:00-7:00pm on Tuesday, October 18. The exam is scheduled out of regularly scheduled class times to allow more time than the regularly scheduled lecture periods.

#### 6. **Course Materials:**

Recommended Textbook(s):

Malcolm Rider and Martin Kennedy, *The Geological Interpretation of Well Logs (3rd Edition, paperback)* Rider Publishing.

The textbook "The Geological Interpretation of Well Logs" is strongly recommended, not so much because it will be required reading in the course [*it is not!*], but because it is an excellent, very well written book on subsurface well logs which is one of the key tools of a petroleum geoscientist.

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:**

No aids are allowed on tests or examinations. Exceptions to this rule will only apply upon explicit specifications from the instructor(s) of the course.

The **Final Exam** will be scheduled by the Registrar as a 2-hour period.

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.

#### 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.

- a. **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 their [website](#) or call [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](#). The complete University of Calgary policy on sexual violence can be viewed [here](#).
- 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](#)  
[Faculty of Science Academic Misconduct Process](#)  
[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 (FOIPP). 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:** [SU contact](#), Email SU Science Rep: [sciencerep1@su.ucalgary.ca](mailto:sciencerep1@su.ucalgary.ca), [Student Ombudsman](#)
- 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.

**Lecture & Lab Topics Schedule for GLGY 577 - Fall 2022** (subject to slight changes)

Week	Date	Lecture Topics (Tu Th 11:00-12:15) - ENA 233	Labs (Wed 11:00-13:50) ES 149*
1	Tues - Sept. 6	1. Introduction	Lab 1 - Western Canada Grid System
	Thurs - Sept 8	2. Petroleum System	
2	Tues - Sept. 13	3. Petroleum System <i>continued</i>	Lab 2 - Athabasca Oil Sands Core Exercise Week1
	Thurs - Sept. 15	4. Drilling, cores, wireline logging, Gamma ray well logs	
3	Tues - Sept. 20	5. Porosity-Density-PEF well logs	Lab 2 - Athabasca Oil Sands Core Exercise Week 2
	Thurs - Sept. 22	6. Density porosity <i>continued</i>	
4	Tues - Sept. 27	7. Neutron porosity well logs	Lab 2 - Athabasca Oil Sands Core Exercise Week 3
	Thurs - Sept 29	8. Permeability. Resistivity well logs	
5	Tues - Oct. 4	9. Resistivity well logs <i>continued</i>	Lab 3 - Reservoir properties from core, logs, & thin-sections Week 1
	Thurs - Oct. 6	10. Resistivity, fluid saturations, effect of clays	
6	Tues - Oct. 11	11. Tools of the industry 1: Stratigraphic correlations; mapping; contouring	Lab 3 - Reservoir properties from core, logs, & thin-sections Week 2
	Thurs - Oct. 13	12. Tools of the industry 2: Scales of investigation, potential, limitations	
7	Tues - Oct. 18	<b>NO CLASS - same day MIDTERM exam tentatively scheduled 5-7pm</b>	Lab 4 - Contouring and Cross-Sections Week 1
	Thurs - Oct. 20	13. Stratigraphic concepts for subsurface mapping	
8	Tues - Oct. 25	14. Stratigraphic concepts for subsurface mapping <i>continued</i>	Lab 4 - Contouring and Cross-Sections Week 2
	Thurs - Oct. 27	15. Review of Midterm Exam	
9	Tues - Nov. 1	16. Sedimentologic Concepts for Lab 5	Lab 5 - Trend, sand and pay recognition Week 1
	Thurs - Nov. 3	17. History of Canadian Petroleum Geology; WCSB Overview	
10	Tues - Nov. 8 Thurs - Nov. 10	<b>TERM BREAK: NO CLASSES</b>	
11	Tues - Nov. 15	18. Seismic imaging and location of resources	Lab 5 - Trend, sand and pay recognition Week 2
	Thurs - Nov. 17	19. Source rocks	
12	Tues - Nov. 22	20. Source rocks <i>continued</i> and unconventional resources	Lab 6 - Subsurface reservoir mapping Week 1
	Thurs - Nov. 24	21. Unconventional reservoirs	
13	Tues - Nov 29	22. Topics in Structural Geology	Lab 6 - Subsurface reservoir mapping Week 2
	Thurs - Dec 1	23. Sustainable Petroleum Geology	

14	Tues - Dec. 6	24. Summary Discussion & Review	<b>NO LAB this WEEK</b>
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\* Labs 2 and 3 will also take place in the core viewing room EEEL 133.

Electronically Approved - Sep 05 2022 10:20

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**Department Approval**

Electronically Approved - Sep 06 2022 09:41

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**Associate Dean's Approval**