



## COURSE OUTLINE

1. **Course:** GLGY 433, Metamorphic Petrology - Winter 2022

Lecture 01 : MWF 09:00 - 09:50 in SA 109

<b>Instructor</b>	<b>Email</b>	<b>Phone</b>	<b>Office</b>	<b>Hours</b>
Dr David Pattison	pattison@ucalgary.ca	403 220-3263	ES 154	open door policy, or by email appointment

Lab 03 Th 08:00-10:50

Lab 01 Th 11:00-13:50

Lab 02 Th 14:00-16:50

Lab 04 Th 17:00-19:50

To account for any necessary transition to remote learning in the winter 2022 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:**

In-person labs (starting Th Feb. 3, 2022), probably with the same extensive COVID protocols as successfully used in Glgy 433 in W 2021 (masks, gloves, wiping, cleaning, etc.). Geoscience staff were assiduous with the protocols, and the students were compliant. The result: zero problems.

### **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](#). **Online Delivery Details:**

This course is being offered online in real-time via scheduled meeting times, you are required to be online at the same time.

To help ensure Zoom sessions are private, do not share the Zoom link or password with others, or on any social media platforms. Zoom links and passwords are only intended for students registered in the course. Zoom recordings and materials presented in Zoom, including any teaching materials, must not be shared, distributed or published without the instructor's permission.

### Lectures

Up until until F Jan. 28, 2022:

3 x 50 minute "synchronous" (live) lectures per week: MWF 09:00-09:50.

Starting M Jan 31, 2022 (hopefully):

in-person lectures

### Labs

Up until until F Jan. 28, 2022:

On-line calculations-based labs; exact mode of delivery TBA after consultation with TA and technical support person

Starting Th Feb. 3, 2022 (hopefully):

in-person labs

**Course Site:**

D2L: GLGY 433 L01-(Winter 2022)-Metamorphic Petrology

**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.

**2. Requisites:**See section [3.5.C](#) in the Faculty of Science section of the online Calendar.**Prerequisite(s):**

Geology 323 and 333.

**Antirequisite(s):**

Credit for Geology 433 and either 443 or 533 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 assignments (9) <sup>1</sup>	15%	Ongoing		
Midterm	30%	Mar 03 2022 at 12:00 am (2.5 Hours)	in-person	ES115
Lab final	25%	Apr 07 2022 at 12:00 am (2.5 Hours)	in-person	ES115
Registrar Scheduled Final Exam	30%	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> Due each week.

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>	88.00 %	82.00 %	79.00 %	76.00%	72.00%	69.00 %	66.00 %	62.00%	59.00%	56.00 %	50.00 %

**Grading**

To pass the course, it is necessary to get an aggregate percentage score on the three exams of 50.00% or over.

Labs are graded using a two-stage 0-1-2 scale that will be explained in more detail in the labs. The aggregate lab results will then be converted to a single percentage score. Each exam will be assigned a percentage score. The student's average percentage score for the four components 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 course percentage and letter grade is given below; the Instructor may uniformly lower (but not raise) the numerical cutoffs for the different letter grades depending on a number of factors (difficulty of exams, how hard the marking is, etc.).

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.

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.

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

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

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

Textbook: John D. Winter. *Principles of Igneous and Metamorphic Petrology.*(Second Edition) Prentice Hall, Inc., Upper Saddle River, New Jersey. 702 p.

The Instructor will use material from outside the textbook to enhance student understanding.

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:**

Remote exams will be open book with no limits on external aids. For in-person exams, no use of electronic aids (eg. cell phones, tablets, computers, PDAs) will be allowed, with the exception of the mounting of phones on microscopes to allow for the examination of thin sections. Non-programmable calculators will be permitted to answer quantitative questions on in-person exams, if applicable. Other materials permitted or required for exams will be communicated orally and in writing (email) well in advance of the exam.

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.

In this course, the quality of the student's writing in laboratory reports will be a factor in the evaluation of those reports.

## 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 [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 ([svsa@ucalgary.ca](mailto:svsa@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 (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:** [VP Academic](#), Phone: [403-220-3911](tel:403-220-3911) Email: [suvpaca@ucalgary.ca](mailto:suvpaca@ucalgary.ca). SU Faculty Rep., Phone: [403-220-3913](tel: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:

- Apply concepts from mineralogy to identify and classify metamorphic rocks and their textures and structures in hand sample
- Apply concepts from optical mineralogy to identify metamorphic minerals using the petrographic microscope
- Rationalise the development of metamorphic mineral assemblages in terms of variations in bulk composition and metamorphic grade
- Interpret metamorphic phase diagrams for different bulk compositions to constrain the pressure-temperature (P-T) conditions and P-T path of metamorphic rocks
- Apply concepts from geochemistry (esp. thermodynamics) to estimate pressure-temperature conditions of metamorphic rocks using geothermobarometry
- Predict the type of tectonic setting that different mineral assemblages represent
- Articulate how metamorphic petrology is a unique and irreplaceable tool in understanding Earth evolution and processes

Electronically Approved - Jan 04 2022 23:50

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#### Department Approval

Electronically Approved - Jan 10 2022 10:01

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#### Associate Dean's Approval