# Syllabus Fall 2023 GEOL 1020 – Mountains to Lake

(4 credits)

#### Instructors

Dr. Keith Klepeis, PhD (he/him/él)

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- Office hours: Monday 9:00–10:00 AM & Wednesday 9:00–10:00 AM.

Dr. Laura Webb, PhD (she/her)

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Maddy Broda (she/her) teaching Assistant

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- Office hours: TBA

You may elect to meet with us in-person or on-line using MSTeams. Office Hours are first-come, first-served.

#### Pre-requisites: none

#### **Meeting Time and Modality**

This class meets in-person only in *room 101 of Delehanty Hall on Tuesdays for lecture (01:15-02:30) and on Thursdays for lab (01:15 to 05:40)*. Content will be delivered through in-class lectures, group exercises, field trips, discussions, homework, quizzes, and individual activities. The format allows us to combine lecture material on Tuesdays with labs and field trips on Thursdays. Labs, homework exercises and other materials will be available on the course Brightspace page. After completing each homework and lab exercise, students should turn in their assignments into Brightspace by the due date (more info below). For the days we will go outside on field trips, we will meet in Delehanty room 101 before leaving campus. Please do not be late, due to the time constraints we cannot wait for people. Please pay close attention to your email, in-class announcements, and the class schedule to find out what we will be doing each week.

In the case that classes need to be held remotely, Microsoft Teams will be used for online lectures. In such cases, class sessions may be audio-visually recorded for students in the class to refer back to, and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live.

### **Course Description**

Mountains to Lake is an in-person, field-oriented course that takes place both outdoors and in the classroom. In this class, we will use Vermont's natural landscape as a laboratory to learn how geoscientists use rocks, minerals, fossils, soils, measurements, and observations to reconstruct the natural history of places. Most weeks we will visit a different place from deep within Vermont's Green Mountains to the shores of Lake Champlain. Along the way you will learn about the methods of scientific inquiry in the geosciences and develop skills necessary to make informed judgements about geological information and interpretations. There also will be some traditional lectures, although we hope that many of our lecture periods will be interactive. This class has many practical applications, from the exploration of natural resources to learning about changing environments. We think you will find that this class is a lot of fun, particularly if you are interested in learning how to observe and make inferences about the natural world.

#### **Requirements Satisfied**

N2 Natural Science (with Lab). In this course, students become familiar with scientific thought, observation, experimentation, and formal hypothesis testing. They develop the skills necessary to make informed judgments about scientific information and arguments related to the natural world. Students also gain the ability to assess the impacts of our expanding scientific knowledge and technology on the diversity of life on Earth, and the quality of life for our own species. This course provides experiences with the methods of scientific inquiry used to develop new knowledge about the natural world.

### **Course Learning Objectives**

- To develop an understanding of the methods and applications of Earth Science.
- To learn to identify various types of geologic materials and features, and to develop an ability to interpret their evolution.
- To learn how to analyze spatial relationships among natural features in the field.
- Acquire integrated thinking skills and learn to work in a team environment.

#### **Skills Learned**

- Spatial reasoning skills
- Geological observation and digital data collection skills
- Quantitative reasoning skills
- Map and profile construction and interpretation skills
- Skills at synthesizing Earth Science concepts and integrating diverse observations

#### **Required Course Materials**

- 1. A tablet or laptop with WiFi internet access. Please bring your computer to every class.
- Please read this technology check list to make sure you are ready for classes: <u>https://www.uvm.edu/it/kb/student-technology-resources/</u> Students should contact the Helpline (802-656-2604) for support with technical issues.
- 3. A web browser (Chrome or Firefox) installed on your laptop.
- Microsoft Word, Excel and Powerpoint installed on your machines. This software is available free of charge to all UVM students. <u>https://www.uvm.edu/it/software/.</u> Please contact the Helpline (802-656-2604) for support with technical issues.

- We will use a free online textbook (Earle, S. and Panchuk, K., 2019. *Physical Geology* 2nd Edition. Victoria, B.C.: BC Campus. <u>https://opentextbc.ca/physicalgeology2ed/</u>). Additional reading materials will be provided for you, usually as links to webpages, articles, or in lab documents on Brightspace.
- 6. A fully charged smartphone. Please make sure your phone is fully charged before each class.
- 7. Please install these free apps on your smartphone:
  - a. <u>RockD</u> app
  - b. <u>Genius Scan</u> app

#### For the outdoor field trips, please bring these items

1. Protective clothing and supplies. During the field component of this course, we may be in the sun all afternoon. Some of the sites, particularly in August and September, can be hot with little shade. Plan on bringing a hat, sunblock, water and food while we are outside. The terrain we will be on is rocky, uneven and commonly steep. PLEASE DO NOT wear flip-flops or sandals. These are forbidden (see footwear below). Wearing long pants and a shirt with long sleeves or something similar to avoid contact with poison ivy and ticks is helpful. Many of our projects will be in wooded and grassy areas.

2. Suitable Footwear. Please wear boots suitable for walking on rocks and hiking (i.e. shoes that cover your ankle). NO FLIP FLOPS.

3. A small daypack with food and water. You will need this for carrying field gear, water, food, rain gear.

4. Field equipment includes:

- a) A fully charged smart phone running either iOS and Android. You are expected to have your phone fully charged before class.
- c. Please download these two apps from either the Apple App store or Google Play: RockD <u>https://rockd.org/, Genius Scan</u> app
- b) Geological Compass. Although the apps we will use have a digital compass built int them, we also will be using an analogue compass for the cases where digital compasses fail. You should purchase one at the bookstore. They are Brunton Truarc 15 Mirrored compasses, which have level bubbles on them. They cost about \$38.00.
- c) A few colored pencils for annotating hand-drawn sketches (colored pencils can be purchased at Brooks Drug or a similar place downtown). You may also use drawing tools on a iPad or other tablet sketch pad.
- Notebook A yellow "write-in-the-rain" waterproof notebook (4.75" X 7.5" or larger) is best. As an alternative: a 10 1/8" by 7 7/8", hard covered notebook produced by The National Blank Book Co. will work. (bookstore). This will be used to keep both class notes and detailed field sketches.
- e) Pencils for sketching and taking notes. Do NOT use pen.
- f) A protractor and a metric ruler marked into 10ths (bookstore). The small red plastic ones that combine a ruler and protractor in one are best.
- g) Optional: A clipboard (bookstore) is useful for keeping track of class handouts but it is not required. If you choose to get one, I like the 7 X 5 or 8 X 10 inch variety.

5. You are required to print and bring all lab materials to the lab each week. This includes lab worksheets. All materials can be found on Brightspace

#### **Grading and Assignments**

The majority of the workload in this class involves weekly lab assignments, readings, homework, and quizzes. Class attendance and participation is required. There is no formal mid-term or final exam. Grades will be based upon the quality of your lab assignments, homework, weekly quizzes, and participation. Labs will be field-based, emphasizing observation and interpretation of natural phenomena, and will include sample/data collecting for subsequent analysis and interpretation. An important component of this course will be group projects and peer editing of assignments.

Typically each lab assignment will be due ~1 week after it has been assigned, unless otherwise specified. To be accepted, all assignments must be uploaded into Brightspace before the start of class (i.e., before 01:15 PM) on the due date. Labs up to 1 week late will be accepted but reduced in grade by one letter grade per day. Labs turned in later than 1 week are not accepted. The class is fast-paced with many labs building on the material presented the previous week, so it is important to keep up and turn in your assignments on-time. Some assignments will be verbal. All hand written sketches, notes, drawings or short answers must be clearly legible. It is your responsibility to ensure this. If your work is illegible, it will not be graded. You are expected to write and present your own lab reports. Please avoid plagiarism. Here is a breakdown of the assessment policy:

- 20% Attendance, Class Participation and readings. This is based on your level of preparation for, and participation in, the class lectures and labs and discussions during the class. It also is based on your understanding of the material and concepts developed throughout the course. There will be weekly reading quizzes (on Brightspace) to test your comprehension. Reading quizzes typically are assigned weekly on Tuesday and are due before class on Thursday of the same week.
- 65% weekly homework, lab reports (called lab quizzes in Brightspace). Some lab reports, including the Allen Hill Project are more substantial and are weighted more heavily than other labs. The Allen Hill Project takes the place of a mid-term exam and is worth twice as much as other labs. We will alert you to which other labs are weighted more than the others.
- 15% Final project. The final project involves a group exercise and a verbal presentation. You will receive two grades for the presentation, the first is based on your performance as a group, the second is based on your individual effort and performance. You will be required to help evaluate your peer's work as well as your own.

To Receive an A	To Receive a B	To Receive a C	To Receive a D or less
Come to class fully prepared <sup>A</sup>	Come to class mostly prepared	Come to class often unprepared	Come to class mostly unprepared
Actively promote useful discussion appropriate to the material. Achieve a score of ≥95% on reading quizzes.	Be a regular and active participant in appropriate discussions. Achieve a score of ~85% on reading quizzes.	Offer occasional engagement in appropriate discussions. Achieve a score of ~75% on reading quizzes.	Hardly engage in class discussions. Achieve a score of ≤65% on reading quizzes.
Complete all of the labs at a satisfactory level and achieve a score of ≥95% <sup>B</sup>	Complete at least 20 of the 22 labs at a satisfactory level and achieve a score of ~85% <sup>B</sup>	Complete at least 18 out of 22 labs at a satisfactory level and achieve a score of ~75% <sup>B</sup>	Complete less than 16 out of 22 labs at a satisfactory level and achieve a score of ≤65% <sup>B</sup>

Here is a breakdown of grading principles:

| Complete the Final Field Report          |
|--|--|--|--|
| and achieve a score of ≥95% <sup>B</sup> | and achieve a score of ~85% <sup>B</sup> | and achieve a score of ~75% <sup>B</sup> | and achieve a score of ≤65% <sup>B</sup> |

<sup>A</sup> Prepared means completing the pre-lab homework and readings

<sup>B</sup> "Pluses" will be given if the final score is greater than that indicated. "Minuses" will be given if the final score is less than that indicated. Standard course grading scales are:

A+ (97-100)	B+ (87-89)	C+ (77-79)	D+ (67-69)	F (below 60)
A (94-96)	B (84-86)	C (74-76)	D (64-66)	
A- (90-93)	B- (80-83)	C- (70-73)	D- (60-63)	

**Academic Integrity:** The policy addresses plagiarism, fabrication, collusion, and cheating. http://www.uvm.edu/~uvmppg/ppg/student/acadintegrity.pdf

**Grade Appeals:** If you would like to contest a grade, please follow the procedures outlined in this policy: http://www.uvm.edu/~uvmppg/ppg/student/gradeappeals.pdf

**GPA:** For information on grading and GPA calculation, go to www.uvm.edu/academics/catalogue and click on Policies for an A-Z listing.

#### **Brightspace**

We will be using Brightspace to view, track and discuss assignments. Materials, assignment and grades will be regularly posted on the course Brightspace page. Make sure to access it often. On Brightspace you will be able to:

- 1. Find a copy of the course syllabus (this document) describing course objectives, policies, class schedule, and assessment.
- 2. View/download lecture slide decks.
- 3. Download lab assignments for you to print and bring to class.
- 4. Access supplemental course materials
- 5. Turn in your lab reports and take online reading quizzes.

**Course Evaluation:** At the end of the semester you will be asked to provide a short course evaluation. The evaluations will be anonymous and confidential, and the information gained, including constructive criticisms, will be used to improve the course.

**General Statement Regarding Potential Changes During The Semester:** The University of Vermont reserves the right to make changes in the course offerings, mode of delivery, degree requirements, charges, regulations, and procedures contained herein as educational, financial, and health, safety, and welfare considerations require, or as necessary to be compliant with governmental, accreditation, or Public Health Directives.

**Intellectual Property Statement/Prohibition On Sharing Academic Materials:** Students are prohibited from publicly sharing or selling academic materials that they did not author (for example: class syllabus, outlines or class presentations authored by the professor, practice questions, text from the textbook or

other copyrighted class materials, etc.); and students are prohibited from sharing assessments (for example homework or a take-home examination). Violations will be handled under UVM's Intellectual Property policy and Code of Academic Integrity.

**Student Learning Accommodations:** In keeping with University policy, any student with a documented disability interested in utilizing accommodations should contact ACCESS, the office of Disability Services on campus. ACCESS works with students and faculty in an interactive process to explore reasonable and appropriate accommodations via an accommodation letter to faculty with recommended accommodations as early as possible each semester.

Contact ACCESS: A170 Living/Learning Center; 802-656-7753; access@uvm.edu; www.uvm.edu/access

#### UVM's policy on disability certification and student support:

www.uvm.edu/~uvmppg/ppg/student/disability.pdf

**Religious Holidays:** Students have the right to practice the religion of their choice. If you need to miss class to observe a religious holiday, please submit the dates of your absence to me in writing by the end of the second full week of classes. You will be permitted to make up work within a mutually agreed-upon time.

Code of Student Rights and Responsibilities: www.uvm.edu/~uvmppg/ppg/student/studentcode.pdf

**FERPA Rights Disclosure:** The purpose of this policy is to communicate the rights of students regarding access to, and privacy of their student educational records as provided for in the Family Educational Rights and Privacy Act (FERPA) of 1973. http://www.uvm.edu/~uvmppg/ppg/student/ferpa.pdf

A Note on Sexual Misconduct: Our school is committed to fostering a safe, productive learning environment. Title IX and our school policy prohibits discrimination on the basis of sex. Sexual misconduct — including harassment, domestic and dating violence, sexual assault, and stalking — is also prohibited at our school.

Our school encourages anyone experiencing sexual misconduct to talk to someone about what happened, so they can get the support they need and our school can respond appropriately. If you wish to speak confidentially about an incident of sexual misconduct, want more information about filing a report, or have questions about school policies and procedures, please contact our Title IX Coordinator, which can be found on our school's website. Our school is legally obligated to investigate reports of sexual misconduct after a formal complaint is filed or signed by the Title IX Coordinator, but a request for confidentiality will be respected to the extent possible.

**Center for Health and Wellbeing:** <u>https://www.uvm.edu/health</u>, Counseling & Psychiatry Services (CAPS), Phone: (802) 656-3340

C.A.R.E. If you are concerned about a UVM community member or are concerned about a specific event, we encourage you to contact the Dean of Students Office (802-656-3380). If you would like to remain anonymous, you can report your concerns online by visiting the Dean of Students website at https://www.uvm.edu/studentaffairs

**Final Exam Policy:** This course does not have a final exam. Instead, we will have group presentations and a summative project (Allen Hill).

**Alcohol And Cannabis Statement**: The Division of Student Affairs has offered the following statement on alcohol and cannabis use that faculty may choose to include, or modify for inclusion, in their syllabus or Brightspace site:

**Statement on Alcohol and Cannabis in the Academic Environment:** As a faculty member, I want you to get the most you can out of this course. You play a crucial role in your education and in your readiness to learn and fully engage with the course material. It is important to note that alcohol and cannabis have no place in an academic environment. They can seriously impair your ability to learn and retain information not only in the moment you may be using, but up to 48 hours or more afterwards. In addition, alcohol and cannabis can:

- Cause issues with attention, memory and concentration
- Negatively impact the quality of how information is processed and ultimately stored
- Affect sleep patterns, which interferes with long-term memory formation

It is my expectation that you will do everything you can to optimize your learning and to fully participate in this course.

## **Class Schedule**

(content and schedule may be changed or adapted during the semester) Earle, S. and Panchuk, K., 2019. *Physical Geology* – 2nd Edition. Victoria, B.C.: BC Campus. <u>https://opentextbc.ca/physicalgeology2ed/</u>.

		Outdoor lab Indoor lab	Ch: chapter
	Tuesday (Lecture)	Thursday (Lab)	Readings
Week 1 8/29, 8/31	Course Introduction, Fundamentals and Equipment	Lone Rock Point, Overview of topics and place-based geology, RockD	Ch 1.1-1.3
Week 2 9/5, 9/7	Geological Fundamentals, Classification of Rocks and Minerals	Rocks and Minerals Lab, Hand lens required	Ch 1.4, Ch 2, Ch 3.1
Week 3 9/12, 9/14	Intro to Surface Processes and Sedimentary Environments	North Beach, Modern Beach Environment, grain size, sorting and ripple formation	Ch 17.1-17.3
Week 4 9/19, 9/21	Geologic Time and Stratigraphy, Reconstructing Ancient Environments	Salmon Hole, Ancient Coastal Environments	Ch 1.6, Ch 6, Ch 8, Ch 13.3-13.5
Week 5 9/26, 9/28	Earth's Changing Climate, the recent past, lake cores, mass wasting	Salmon Hole River Walk, Soil Profiles, Mapping Landslides	Ch 5.1-5.4, Ch 15, Ch 16, Ch 19.1
Week 6 10/3, 10/5	Earth's Changing Climate, the Deep Past, Plate Motions	Ancient Tropical Reefs Chazy Reef at Isle La Motte	Ch 1.5, Ch, 9, Ch 10
Week 7 10/10, 10/12	Making Oceans, Continents and Precious Minerals,	Inside an ancient magma chamber Igneous Processes, Barre Granite	Ch 3, 4, Ch 18.2
Week 8 10/17, 10/19	Heat, Pressure and the Making of Mountains	Inside an orogenic core, Metamorphic Processes, Bolton/Jonesville or Oven, Collecting Orientation data I	Ch 7
Week 9 10/24, 10/26	Styles of Earth Deformation, Faulting and Earthquakes	Allen Hill Mapping Project, Collecting Orientation Data II	Ch 11, Ch 12
Week 10 10/31, 11/2	Methods of Exploring the Subsurface	Allen Hill Mapping Project, Making Maps and Profiles	Ch 14, Ch 20
Week 11 11/7, 11/9	Allen Hill report assignment details	Work on Allen Hill report	
Week 12 11/14, 11/16	Finish and Turn in Allen Hill Report	Lone Rock Point Visit and Reflection, Discussion of Final Projects	Ch 21, 22
Week 13 11/21, 11/23	Thanksgiving break	Thanksgiving break	
Week 14 11/28, 11/30	Work on Final Projects	Work on Final Projects	
Week 15 12/5, 12/7	Final Project Presentations	Wrap-up and Reflections	