

# ***GEOL 005 ~ Mountain to Lake: Geology of the Lake Champlain Basin***

## **ISEE Course Fall 2018, 4 Credits**

The following syllabus represents my best effort at describing the content and format of the course, but some modifications during the semester will probably happen. Modifications in assignments, dates, topics etc. will always be presented in class.

### **Instructor:**

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**Class: Tues. and Thurs. 10:05-11:20; Labs: Tues. 10:05-2:20** (on Tuesdays you should come to class dressed for lab activities and bring lunch; we may leave for the field at 10:00 AM on some days).

***“Mountain to Lake: The Geology of Vermont”*** is a course designed to introduce you to principles, methods, and products of natural science applicable to the Champlain Basin. The course is **field oriented** with lecture periods providing a forum for discussion and explanation of field observations. Although there will be some traditional lectures, I hope that many of these class times will be more interactive. **There will be no tests in this course, and grades will be based upon reports/papers and participation.** Laboratories 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 writing assignments. This course counts as a **laboratory science credit** in the College of Arts and Sciences.

### **COURSE GOALS**

- Course Goal #1:** *Acquire integrated thinking skills and learn to work in a team environment*
- Course Goal #2:** *Develop knowledge of appropriate techniques and field methods for measuring and recording both past and present Earth structures and processes.*
- Course Goal #3:** *Demonstrate the ability to collect and analyze data, interpret results, and present scientific information clearly in written and oral form*

**Texts:**

- Handouts
- Excerpts from “New views on an Old Planet”, van Andel

**Some specifics about assignments:**

1) Because writing assignments (except short response writings) will have at least **one draft**, you must do them using a word processing program on either a Windows or Mac platform (MSWord). **Always make a backup (maybe 2)!!!** Plan your work in consideration of due dates; computer problems/crashes, printer malfunctions, disk read errors etc. are **not acceptable reasons** for late submission. (Format will be: font = Times; size = 12; margins = top 1 inch, left = 1 inch, right = 1 inch, bottom = 1 inch; double spaced, page numbers centered at the bottom on papers longer than 2 pages)

2) Use of computers is integral to this course. As indicated above, papers must be word-processed. In addition, completion of assignments will require knowledge and use of spreadsheet applications and manipulation of data including the ability to create and label various types of graphs.

3) Because the laboratory is an essential component of this course it is imperative that you **participate in all field trips and laboratories**. On field trips, dress appropriately - these are outdoor, sometimes wet and/or dirty activities. Footwear, raingear and warm clothing (especially as the semester progresses) are important. You should be aware that field trips and field activities do pose risks of physical injury, and there is no way to eliminate this.

4) Because many of these assignments are structurally complex, we will provide continued guidance, instructions, assistance, etc. **during class and by e-mail**. If you miss a class (which you shouldn't) it is your responsibility, not ours, to make sure that you are aware of any new information or modifications to existing assignments/activities. **You are responsible for checking your e-mail**.

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 to create reasonable and appropriate accommodations via an accommodation letter to professors with suggested accommodations as early as possible each semester.

Contact ACCESS: A170 Living/Learning Center; 802-656-7753; [access@uvm.edu](mailto:access@uvm.edu); or [www.uvm.edu/access](http://www.uvm.edu/access)

**The tentative Fall 2018 Field laboratory schedule** is the following:

- Aug. 28: Mount Philo: Introduction to Basin Geography and Geology
- Sept. 4: North Beach: Modern Beach processes
- Sept. 11: Salmon Hole: Ancient Beach processes
- Sept. 18: Isle La Motte: Ancient reefs
- Sept. 25: RV Melosira: Lake Processes
- Oct. 9: Jonesville and Bolton: Metamorphic rocks
- Oct. 16: Lone Rock Point: Champlain Thrust Fault
- Oct. 23: South Hero: Lessor's Quarry
- Oct. 30: Allen Hill I: mapping bedrock geology
- Nov. 6: Allen Hill II: mapping bedrock geology

## **Grades**

Grades in this course will be based upon attendance and participation, laboratory reports, short laboratory summaries and a final presentation, as follows:

Beach Processes/Ancient and Modern	15%
Melosira Lake Processes	10%
Reefs, ancient and modern	10%
Metamorphism and Faults "Megalab" (Jonesville, Lone Rock Point & Lessor's quarry)	20%
Bedrock Mapping Project (Allen Hill)	20%
Final project/Presentation	15%
Participation & attendance	10%

## **Day Labs/ Questions & Discussions:**

One short field lab (Mt. Philo) will require a 1-2 page write-up consisting of a summary of the pertinent facts/information and a discussion/analysis of these facts (this is not "I liked...", "I really enjoyed...", "this was really interesting/cool", etc). The report is due on the Thursday following the field trip/lab (unless otherwise stated). In addition, I will occasionally be handing out **questions for the readings** that will be discussed in class.

The major laboratory reports must initially be submitted **ON** the due date. They should then be revised and resubmitted in your final portfolio at the end of the semester for a new grade. **The final grade for a report will be calculate as follows: 1/3 first grade + 2/3 second grade.** All other material will be graded only once and must be submitted during class on the date indicated. Past experience has shown that timely submission of all materials is essential for successful completion of the assignments. All material submitted late will lose points. We will accept materials only during regularly scheduled class times (in the past papers have been given to secretaries, deposited in front of office doors etc., with no confirmation of receipt and a high potential for being misplaced).

**Basic Materials** necessary for laboratory activities (in addition to appropriate field clothing!):

**White paper for sketches**

**Colored pencils and eraser (do not use a pen for sketches!)**

**Pencil sharpener**

**Readings:** You will be expected to demonstrate by reference and discussion in your written assignments your familiarity with, and understanding of, the material presented in the chapters and handouts listed as reading assignments below.

**Geol 005 Class Topics:** (*FIELD LABS IN ITALICS*)

<b>Aug. 28</b>	Course Introduction. <b><i>Recent history of L. Champlain Basin. Mt. Philo.</i></b>
Aug. 30	Geologic Fundamentals I: Minerals and rocks ( <b>Read:</b> RG p. 1-21, vA 13 opt.)
<b>Sept. 4</b>	Introduction to Beach Processes. <b><i>North Beach Lab</i></b>
Sept. 6	Geologic Fundamentals II: Geologic Time and stratigraphy ( <b>Read:</b> vA 1 & 2)
<b>Sept. 11</b>	<b><i>Sedimentary Structures. Ancient Beach Processes-Salmon Hole</i></b> ( <b>Read:</b> vA 9)
Sept. 13	Lakes and Paleolimnology
<b>Sept. 18</b>	<b><i>RV Melosira: Lake Processes</i></b>
Sept. 20	Melosira data analyses (Computer Laboratory)
<b>Sept. 25</b>	<b><i>Isle La Motte: Ancient reefs</i></b>
Sept. 27	Modern Reefs (Computer Laboratory)
<b>Oct. 2</b>	<b>No Class</b>
<b>Oct. 4</b>	<b>No Class</b>
<b>Oct. 9</b>	Metamorphic rocks. <b><i>Jonesville and Bolton</i></b>
Oct. 11	Metamorphic Rx (cont.). Earth's Structure ( <b>Read:</b> vA 6-8)
<b>Oct. 16</b>	Plate tectonics. <b><i>Lone Rock Point: Champlain Thrust</i></b>
Oct. 18	Structural Geology: How the Earth deforms
<b>Oct. 23</b>	Structural Geology (cont.) <b><i>South Hero: Lessor's Quarry</i></b>
Oct. 25	The geological history of Vermont ( <b>Read:</b> RG p. 22-49, Doolan paper)
<b>Oct. 30</b>	Igneous Rocks. <b><i>Allen Hill mapping I</i></b>
Nov. 1	Igneous Rocks (cont.)
<b>Nov. 6</b>	<b><i>Allen Hill mapping II</i></b>
Nov. 8	Maps and cross-sections. Final Projects.
<b>Nov. 13</b>	<b>Maps and cross-sections (cont.)</b>
Nov. 15	Work on Allen Hill reports
<b>Nov. 20</b>	<b>Thanksgiving recess</b>
Nov. 22	Thanksgiving recess
<b>Nov. 27</b>	<b>Work on presentation for final project</b>
Nov. 29	Work on paper for final project
<b>Dec. 4</b>	<b>Final Project Presentations (with bagels)</b>
Dec. 6	Revised labs and final papers due