

## EPS 105L-502 Fall 2015 – Physical Geology: Laboratory Sessions

**Instructor:** Dr. Thomas Whittaker      **E-mail:** [twhittak@unm.edu](mailto:twhittak@unm.edu)      **Office:** A132a      **Phone:** 925-8876

**Office hours:** Tuesdays 9:00-11:00am, and Tuesdays and Thursdays 3:00-4:00pm, or by appointment

**STEM Center hours:** Mondays and Wednesdays 1:30-3:30pm

**Classroom:** This class will meet Wednesday each week from 10:30am-12:30pm in **room H108**

**Textbook:** UNM-Valencia Laboratory Manual in Physical Geology (2012), Prentice Hall.

**Supplies:** Notebook/File-folder containing lined paper; pens and/or pencils; calculator; ruler; eraser

**Optional Supplies:** Colored pens/pencils

<u>Schedule</u>			
Week	Date	Laboratory Topic	Pre-Lab Reading
1	Aug. 19	Lab 1: Observing and Measuring Density	None
2	Aug. 26	Lab2: Making Observations: Mineral Identification	Chapter 2
3	Sep. 2	Lab 3: Igneous Rocks: Properties, Uses and ID	Chapter 3
4	Sep. 9	Lab 4: What can we learn from dirt? (Sed. analysis)	Chapter 4
5	Sep. 16	<b>NO LAB</b>	None
6	Sep. 23	Lab 5: Sedimentary Rocks: Properties, Uses and ID	Chapter 4
	Sep. 22-23	<i>UNM Valencia BioBlitz</i>	
7	Sep. 30	Lab 6: Metamorphic Rocks: Processes and Resources	Chapter 5
8	Oct. 7	Lab 7: Dating of Rocks, Fossils and Geologic Events	Chapter 6
9	Oct. 14	Lab 8: Plate Tectonics	Chapter 1
10	Oct. 21	<b>Fieldtrip to El Cerro Tomé</b>	TBA
	Oct. 20	<i>UNM Valencia Mole Day Celebration</i>	
11	Oct. 28	Lab 9: Working with Paper and Digital Maps	Chapter 7
12	Nov. 4	Lab 10: Geologic Structures and Mapping	Chapter 8
13	Nov. 11	Lab 11: Stream Processes and Landscapes	Chapter 9
14	Nov. 18	Lab 12: Groundwater Processes	Chapter 10
15	Nov. 25	Lab 13: Earthquake Hazards and Human Risk	Chapter 12
16	Dec. 2	Lab 14: Mining Ore in Keweenaw	
17	Dec. 9	<b>NO LAB</b>	None

### Course Goals:

1) *To introduce the principles and process of science using the study of earth science as an aide*

It behooves us to learn how to use the scientific method in our everyday thinking, and to learn how scientists use this method to assign levels of confidence to their findings.

2) *To present Earth system processes and products and the methods by which they are studied*

The solid Earth system consists of the geosphere and the hydrosphere, where interactions between the two form parts of the rock, tectonic and hydrologic cycles. In addition we will investigate how we know what we know about Earth's surface and sub-surface environments and processes; how well we understand these; and what we are able to observe and measure. This will be accomplished through a series of laboratory-based demonstrations and hands-on activities.

3) *To give each student a better appreciation of the world around them, and how it affects their lives and the lives of others*

If nothing else I hope that you come away from this course with a closer connection to your home – the Earth: have a better understanding of the hazards to human life and property due to earth processes; know how rocks are formed, how they are different, and how this gives them properties that make them useful for different human activities; and how earth processes have acted slowly, or quickly, to construct the landscape around us.

### Student Learning Objectives (SLOs):

1. Students will be able to construct a hypothesis, propose a test, and then complete the test using quantitative and spatial data.  
(Relates to UNM/HED Area 3, Competencies 1, 2)
2. Students will be able to make measurements and make calculations using those measurements that lead to graphical display and interpretation of data.  
(Relates to UNM/HED Area 3, Competency 4)
3. Students will be able to analyze graphical data and use the graphs to make interpretations.  
(Relates to UNM/HED Area 3, Competency 2)
4. Students will complete a written report that effectively communicates an interpretation of quantitative and spatial data to evaluate a societally relevant geologic problem.  
(Relates to UNM/HED Area 3, Competencies 3, 5)
5. Students will provide written descriptions of rocks that correctly use geological terminology and links these descriptions to an acceptable explanation of rock origins.  
(Relates to UNM/HED Area 3, Competency 3 and disciplinary content)
6. Students will be able to provide a written explanation of the geologic history (including ages of events) of a location portrayed in a photograph or diagram.  
(Relates to UNM/HED Area 3, Competencies 3, 4 and disciplinary content)
7. Students will be able to interpret scales and elevations on a topographic contour map.  
(Relates to disciplinary content)
8. Students will demonstrate understanding of plate motions.  
(Relates to UNM/HED Area 3, Competency 4 and disciplinary content)

### Reading:

Suggested reading from the course laboratory manual is given in the above syllabus. In each case I advise reading at least the introduction and looking at all of the pictures and diagrams. This reading is best done before each class takes place. In most cases this will allow you to **finish the lab earlier** and ultimately provide you with a much better understanding of the course material.

### Attendance & Drop Policy:

Due to the hands-on nature of this class, regular attendance is *necessary* for successful completion. Therefore I strongly encourage you to make the effort to be present. If you miss the first **2** classes of the semester, without good reason and without contacting me about your absence, you will be dropped from the class. Beyond the second week poor attendance and disruptive behavior will initiate a dialogue between you and I that could ultimately conclude in you being dropped.

### Grading:

Your final grade will be based on grades you earn from laboratory write-ups. Note that you need a C grade (73%) or better to get science credit for this class. Grading is as follows:

In-class laboratory write-ups: 14 each worth 7.75 percent	108.5 %
<i>Minus your lowest 2 laboratory write-up scores</i>	<i>-15.5 %</i>
Fieldtrip attendance (2%) and report (5%)	<u>7.0 %</u>
Total available points	<u>100 %</u>

Grades & Scores: A+ (>97%), A (93-96.9%), A- (90-92.9%), B+ (87-89.9%), B (83-86.9%), B- (80-82.9%), C+ (77-79.9%), C (73-76.9%), C- (70-72.9%), D+ (66-69.9%), D (63-65.9%), D- (60-62.9%) and F (<60%)

**Laboratory Write-Ups:**

Write-ups for each laboratory session must be completed and handed in before the end of each lab. The graded write-up will be returned to you during the next laboratory session. The lowest two laboratory write-up scores will not be considered (i.e. dropped) for your final grade.

**Fieldtrip:**

On October 19<sup>th</sup> I would like to run a short fieldtrip to El Cerro Tomé. We will carpool to the base and take the 1 mile round-trip hike to the summit. Please take note of the weather and dress appropriately. We will take time to think about volcanism and igneous rocks, plate tectonics, and geologic time in the context of our local surroundings: the middle Rio Grande Valley. Attendance is worth 2% of your final grade in this class.

A **fieldtrip report** will be due before Thanksgiving Break. It is worth 5% of your final grade in this class. A rubric will be provided for this assignment on Blackboard Learn.

**Access:**

If you have a documented learning disability, please provide me with a copy of your letter from Equal Access Services to ensure that your accommodations are provided for in a timely manner.

**Office Hours:**

My office is room 132a in the Academics building. Please **do not be afraid** to come and talk to me about issues relating to this class. That is what my office hours are for. I will also be available via e-mail to answer your questions, but I cannot guarantee to be as fast as if we talked during office hours.

**Plagiarism/Cheating:**

I encourage you to talk with one another about assignments before, and while, you do them, but all written (and submitted) work must be in your own words. Blatant copying (plagiarism) will result in a score of zero for all students involved. A second offense will earn all involved an F for this course. In addition I would draw your attention to the University of New Mexico's policy on Dishonesty in Academic Matters:

*"Each student is expected to maintain the highest standards of honesty and integrity in academic and professional matters. The University reserves the right to take disciplinary action, including dismissal, against any student who is found responsible for academic dishonesty. Academic responsibility includes, but is not limited to, dishonesty in quizzes, tests or assignments; claiming credit for work not done or done by others; hindering the academic work of other students; and misrepresenting academic or professional qualifications within or outside the University".*