Course Syllabus

Course	GEOS1103.102
Course Title	Physical Geology Laboratory
Professor	Dr. Siloa Willis
Term	F25
Meetings	Tuesday 10am-12:45pm
Location	SLC 1.206

Professor's Contact Information

Office Location	ROC 2.301Q
Email Address	siloa.willis@utdallas.edu
Office Hours	By appointment
Other Information	TA: Clint Crowley, Clinton.Crowley@UTDallas.edu

General Course Information

Pre-requisites, Co-requisites, & other restrictions

GEOS 1303

Course Description

A laboratory to accompany GEOS 1303. The exercises include mineral and rock identification. Topographic maps, geologic maps, and aerial photographs are used to study surface landforms, geologic phenomena and tectonic processes. Lab fee of $30 required. The student will learn to use basic materials and tools of physical geology to identify common rocks and minerals. The student will also draw, analyze and interpret topographic maps and as well as aerial photographs, geologic maps and geological cross sections, and develop a basic understanding of stratigraphy and its principles.

Learning Outcomes

- Learn how to apply simple physical and chemical tests to identify common minerals.
- Learn how to identify hand samples of igneous rocks by their mineralogy and texture, and relate these rocks to magma composition, cooling rates, and their position on Bowen's Reaction Series.
- Learn how to identify hand samples of sedimentary rocks by their texture and mineralogy and relate these rocks to their environment of deposition.
- Describe the process of metamorphism and learn how to identify hand samples of metamorphic rocks by their mineralogy and foliation.
- Apply stratigraphic principles to the interpretation of the rock record.
- Construct topographic maps and topographic profiles.
- Measure and relate distances using scales in topographic maps and aerial pictures.
- Identify major landform features on topographic maps and aerial photos, and relate them to basic geologic processes of stream, groundwater, glacial, or marine erosion and deposition.

- Construct block diagrams and models illustrating the basic types of faults, unconformities, and structural folds.
- Interpret geologic maps and geologic cross-sections.

Required Texts & Materials

- Lab Manual (LM): Laboratory Manual for Physical Geology: 15th or 16th Edition by Zumberge, Rutford & Carter.
- Supplies:
    - ruler, protractor, and a calculator for some of the lab exercises

Suggested Texts, Readings, & Materials

- Simon & Schuster's Guide to Rocks and Minerals by Simon & Schuster (ISBN13: 9780671244170); Red or Blue version is fine
- Timefulness: How Thinking Like a Geologist Can Help Save the World by Marcia Bjornerud

Assignments and Dates

The schedule and due dates are subject to change, always check eLearning for updated version. Note that "LM" refers to the Lab Manual.

Week	Date		Lab Topic	Lab #	Lab due dates
1	August	26	Introduction to the lab, Introduction to Minerals (LM pp. 1-20)	1	-
2	September	2	Introduction to Minerals (LM pp. 1-20)	2	Lab 1 DUE (4pts)
3		9	**Lab Practical 1 (10pts)**	-	Lab 2 DUE (4pts)
4		16	Introduction to Igneous Rocks (LM pp. 21-33)	3	-
5		23	Introduction to Sedimentary Rocks (LM pp. 33-42)	4	Lab 3 DUE (4pts)
6		30	Introduction to Metamorphic Rocks (LM pp. 45-53)	5	Lab 4 DUE(4pts) Final topic DUE (3pts)
7	October	7	**Lab Practical 2 (10pts)**	-	Lab 5 DUE (4pts)
8		14	Introduction to the Geologic Column and Geologic Time (LM pp. 55-71)	6	-
9		21	Introduction to the Geologic Column and Geologic Time continued (LM pp. 55-71)	7	Lab 6 DUE (4pts)
10		28	**Lab Practical 3 (10pts)**	-	Lab 7 DUE (4pts) Final outline DUE (3pts)
11	November	4	Introduction to Topographic Maps (LM pp. 80-93)	8	-
12		11	Geologic Interpretation of Topographic Maps	9	Lab 8 DUE (4pts)
13		18	**Lab Practical 4 (10pts)**	-	Lab 9 DUE (4pts)
14		25	**Fall Break (no class)**	-	-
15	December	2	Lab reflection/final preparation	10	Final draft DUE (3pts)
16		9	**Final Practical (student presentations)**	-	Lab 10 DUE (4pts) Final presentations DUE (6pts)

Grading Policy

Class participation: 10pts
Labs: 40pts
Lab practical (1-4): 40pts
Final Practical: 15pts

Course & Instructor Policies

Lab Practicals

Throughout the semester, you will complete a series of four lab practicals plus one final lab practical project. Each practical is designed to assess not only your ability to identify and interpret geologic materials and data, but also your ability to explain how you reached your conclusions. You will work individually, but you may ask clarifying questions. The emphasis is on process, reasoning, and communication as much as on the final answer.

You may bring a "cheat sheet": one standard sheet of paper (~8.5" x 11"), front and back.

Practical 1: Mineral Identification

You will be given a set of mineral samples and asked to identify them by observing their physical properties (e.g., hardness, luster, cleavage, streak). Once you have made your identifications, you will present your answers to the professor or TA and explain your reasoning process. If your identification is incorrect, you may return to your station, reconsider the evidence, and try again with a new explanation**.** You will have the duration of the lab period to complete the practical (unless you have received a University-approved accommodation).

Practical 2: Rock Identification

This practical follows the same format as Practical 1 but will focus on rock samples (igneous, sedimentary, and metamorphic). You will again identify your samples and explain how you determined your answer.

Practical 3: Stratigraphic Column Construction

Using data provided by your professor, you will create a stratigraphic column that accurately represents the vertical sequence of rock layers. You will then present your column and explain the evidence you used to determine lithology, order, and relationships.

Practical 4: Topographic Interpretation

You will draw a topographic profile from a map and present your result. In addition, you will describe the changes in elevation and landforms along a given transect (Point A to Point B). For example: "We begin at a topographic high, descend into a drainage, cross a flat valley, and then climb out of the canyon toward Point B."

Final Practical: Student Teaching Project

For the final practical, you will teach the class a short lesson (5-10 minutes) on a geoscience topic of your choice. You may use any format: PowerPoint/Canva/Google Slides, hands-on demonstration, field trip (restricted to campus), creative artwork, video, or other presentation style. The only limitation is that it is created by you. Some possible ideas include:

- Explaining a mineral property (e.g., cleavage, hardness) in a mini lecture
- Bringing in a rock or artifact from your personal collection and explaining its composition or origin
- Leading a short campus field trip to view a rock, talk about a building material, see how Earth Materials are used in art (e.g., to the UTD rock garden or museum).
- Designing a mini activity/game that explains a lab concept to your classmates.
- Creating a painting that shows a geologic process (e.g. the rock cycle, the water cycle, the carbon cycle, plate tectonic environments, etc.). Then explaining the process to the class.

This final practical is your opportunity to showcase your creativity and personal interests in the Earth sciences.

Your grade will come from the satisfactory completion of:

1. **3pts: 9/30** - Submit your topic
2. **3pts: 10/28** - Submit your final practical outline (explain how you will present your topic and what you need to prepare). This may be a storyboard, PowerPoint, flow chart, etc.
3. **3pts: 12/2** - Submit a draft of your final presentation
4. **6pts: 12/9** - Submit and present your final project

Class Attendance

The University's attendance policy requirement is that individual faculty set their course attendance requirements. Regular and punctual class attendance is expected. Students who fail to attend class regularly are inviting scholastic difficulty.

Class Participation

Regular class participation is expected. Students who fail to participate in class regularly are inviting scholastic difficulty. A portion of the grade for this course is directly tied to your participation in this class. It also includes engaging in group or other activities during class that solicit your feedback on homework assignments, readings, or materials covered in the lectures (and/or labs). Class participation is documented by faculty. Successful participation is defined as consistently adhering to University requirements, as presented in this syllabus. Failure to comply with these University requirements is a violation of the Student Code of Conduct. with these University requirements is a violation of the Student Code of Conduct

Class Recordings

Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student AccessAbility has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

The instructor may record meetings of this course. These recordings will be made available to all students registered for this class if the intent is to supplement the classroom experience. If the instructor or a UTD school/department/office plans any other uses for the recordings, consent of the students identifiable in the recordings is required prior to such use unless an exception is allowed by law.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

"As a Comet, I pledge honesty, integrity, and service in all that I do."

Academic Support Resources

The information contained in the following link lists the University's academic support resources for all students: http://go.utdallas.edu/academic-support-resources.

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus. Please review the catalog sections regarding the credit/no credit or pass/fail grading option and withdrawal from class.

See http://go.utdallas.edu/syllabus-policies for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.