GEOLOGY 2408
Geological Field Skills

Fall 2025

Dr. Urbanczyk, WSB 320 (8110, kevinu@sulross.edu)
Office Hours: MW 8:30 – 10, TR 8:30-9:30, W 1-2

Purpose and Organization of Course: This course will focus on field data collection and laboratory computational skills. The course will begin with an overview of field data collection, details of topographic and classed maps, and an overview of computational skills as they relate to field data collection and processing. This will be followed with a review of field survey equipment and field excursions to collect field data for lab processing.

Learning Objectives: After completing this course, students will be expected to be able to utilize the following software to process field data:

- Excel – a standard spreadsheet
- Python – a programming/scripting language
- ArcMap – a Geographical Information System

Students will also be familiar with the operation of the following field data collections tools:

- Brunton compass
- Jacob's staff
- Survey level
- Basic GPS
- Total Station / scanning Total Station / LiDAR
- Survey Grade GPS
- Basic Water Quality Probe
- Stream Flow measurement (Flow Tracker and ADCP)
- Groundwater level measurement tool (sounder, steel tape)
- UAV for creating high resolution topographic map

Lastly, students will be capable of creating topographic and geologic maps using data collected in the field.

Class and lab meets in GIS lab (WSB 320)on TR 2-5

Problem sets: Weekly problem sets will be assigned. Unless otherwise noted, these will be due at the end of lab on Thursday.

In-class quizzes: In-class quizzes will be issued periodically to encourage review of current material.

Field Trip(s): on campus and other destinations TBD.

Semester projects: The extended trip will be used to collect data for a field component – location TBD.

AI tools: Students are invited to use AI to help with assignments and projects. We will learn the basic operations of Excel and Python for manipulating data and AI opens up many opportunities for advancing our ability to process and utilize data collected in the field.

GRADING SCHEME	%
Exam 1	10
Exam 2	10
Final Exam	10
Homework/Field work	15
Term project	15
In-class quizzes	10
Lab	30
Total	100

week	date	Topic	Lab
1	8/26	Field data collection - review	Field data collection - review
	8/28	Software review - Excel, Python	Software review - Excel, Python
2	9/2	Summary of Survey Problem	Survey Problem
	9/4	Solve the Survey Problem	Survey Problem
3	9/9	Pace and Brunton review	Go outside - Pace and Brunton
	9/11	Apmonitor tutorial	process Pace and Brunton data
4	9/16	Jacob's staff review	Go outside and collect data - Jacob's staff
	9/18	**Exam 1**	
5	9/23	Apmonitor tutorial	process Jacob's staff data
	9/25	GPS review	Go outside and collect basic GPS data
6	9/30	Apmonitor tutorial	process GPS data
	10/2	Total Station review	Go outside and collect Total Station data
7	10/7	Apmonitor tutorial	process total station data
	10/9	Total Station	Go outside and collect Total Station data
8	10/14	Total Station	process total station data
	10/16	process data ...	process data ...
9	10/21	Intro UAV / SFM	UAV / SFM data collection
	10/23	UAV/SFM	UAV / SFM data processing
10	10/28	Intro Stream Discharge	Stream Discharge
	10/30	**Exam 2**	Field trip prep
	10/31-11/2	**Field excursion**	**Black Gap Wildlife Management Area**
11	11/4	Stream Discharge data processing	Stream Discharge data processing
	11/6	Scanning Total Station	Scanning Total Station
12	11/11	Intro Scanning Total Station	Scanning Total Station
	11/13	Scanning Total Station	Scanning Total Station
13	11/18	Groundwater measurement	eline / sounder
	11/20	Groundwater measurement	eline / sounder
14	11/25	project work	project work
	11/27	project work	project work
15	12/2	project work	project work
		Final Exam - TBD	

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All full-time and part-time students are responsible for familiarizing themselves with the Student Handbook and the Undergraduate & Graduate Catalog and for abiding by the University rules and regulations. Additionally, students are responsible for checking their Sul Ross email as an official form of communication from the university. Every student is expected to obey all federal, state and local laws and is expected to familiarize themselves with the requirements of such laws.

Academic Integrity
Students in this class are expected to demonstrate scholarly behavior and academic honesty in the use of intellectual property. Students should submit work that is their own and avoid the temptation to engage in behaviors that violate academic integrity, such as turning in work as original that was used in whole or part for another course and/or professor; turning in another person's work as one's own; copying from professional works or internet sites without citation; collaborating on a course assignment, examination, or quiz when collaboration is forbidden. Students should also avoid using open AI sources ***unless permission is expressly given*** for an assignment or course. Violations of academic integrity can result in failing assignments, failing a class, and/or more serious university consequences. These behaviors also erode the value of college degrees and higher education overall.