

**Course Syllabus, Field Geology 1  
GEOL 448, Fall 2022**

Instructor: Michael Wells  
Office: LFG 208; phone: x50828  
michael.wells@unlv.edu  
Office Hours: Tu & W, 1:30-3:00

T.A.: Hayden Kombrink  
Office: Tech 222; phone: x54255  
hayden.kombrink@unlv.edu  
Office Hours: Th, 1:00-4:00

The purpose this course is to introduce the techniques of geological field mapping, to produce geologic maps and interpreted geologic cross sections. Geologic maps are information-rich scientific documents that show the distribution and orientation of geologic features including rock types and faults. Geologic maps are used in a wide variety of applications including geologic research; exploration for minerals, oil and gas; land use planning; and hazard mitigation. These maps are created by the process of geologic field mapping, which incorporates three kinds of information: direct observation and measurement, interpretation, and determination of age relations and hence history. Because the activity of geologic mapping engages the field mapper in real time observation, reasoning, hypothesis testing, critical thinking, interpretation, and error analysis, geologic mapping is a critical component in the training of Geoscience students.

**Course Learning/Outcome Objectives:**

Upon completion of the course, students should have an understanding of:

- techniques of field mapping, including:
  - use of the brunton compass (e.g., measurement of attitude of geologic features at outcrop and at distance, triangulation for position location, location of distal geologic contacts from known location)
  - use of topographic maps including basic map reading and location, location and mapping of geologic contacts on a topographic base map
  - basics of collection and recording of field observational data in a field notebook, including, rock descriptions and measurements of geologic features (e.g., bedding, foliation, lineation, joints, faults)
- construction of a geologic map
- construction of geologic cross sections from measured field orientation data and mapped geologic contacts
- preparation of field rock descriptions of mappable units and analysis and description of field structural data

**Schedule:**

Project 1: Fri Sept 9, Fri-Sun Sept 23-25, Fri-Sun Oct 7-9

Project 1 Due: Friday, Oct 28

Project 2: Fri Oct 21, Fri-Sun Nov 4-6, Fri-Sun Nov 18-20

Project 2 Due: Friday, Dec 9

**Assessment (grading)**

The assessment of these learning/outcome objectives will be based on the geologic map, cross section, and abbreviated field reports produced for each of the two project areas (see handout on field reports).

Course grade is based on:

Mapping Project 1: 50%

Mapping Project 2: 50%

Each mapping project will be assessed as follows:

Geologic Map: 60%

Cross Sections: 20%

Report: 20%

Mapping projects will entail detailed mapping of 2 project areas. You will be expected to produce a professional map in the style of a USGS, NBMG, or Utah GS geologic quadrangle. If you are unfamiliar with these, I will post an example of one of the geologic quads that I have published, the Kelton Pass quadrangle. We want to see a clean, neat map with an abundance of attitude data. In addition to the geologic map, you will also be asked to construct cross-sections of each map area. An abbreviated geologic report that explains the geology and geologic history of the map area (a recommended outline is provided – see Guidelines for Geologic Reports) is also required.

**Camp citizenship during field trips:**

Everyone is expected to participate in camp life. This involves helping load and unload vehicles, cooking, cleaning, doing dishes, building camp fires, helping change tires, etc. Everyone must carry their own weight or a camp does not run smoothly and leads to a poor academic setting. If you see garbage, pick it up, if it's your turn to cook have fun with it, if it's your turn for dishes, step up!

Students should be familiar with the relevant University Policies articulated in the University Policies summarized in "Syllabi Content Fall 2022" available here

<https://www.unlv.edu/policies/additional>, including the UNLV Student Conduct Code <https://www.unlv.edu/studentconduct/student-conduct>