

## GLY5786L/4930 Topics in Field Geology

Syllabus Spring 2024

**Meeting time:** Wednesdays Period 8-9 202 Williamson Hall

**Instructor** Dr. Jim Vogl, 277 Williamson Hall, [jvogl@ufl.edu](mailto:jvogl@ufl.edu), phone: 352-392-6987, Office Hours: TBA

**Course materials:** Required readings will come from journal articles – no textbook is required

**Course objectives:** The goal of this course is to use the American southwest (Arizona) as a laboratory to explore a wide range of different geologic processes and the features that result from these processes (see details below). The course, which will emphasize investigation of these feature and processes in the field, builds on the foundation that geology majors develop through a number of core courses in the curriculum.

**Background and content of the course:** The field trip will cover the southern part of the Colorado Plateau and the transition to the Basin-and-Range province to the south in the regions between Flagstaff, AZ and Tucson, AZ. It will include parts of Saguaro National Park, the spectacularly scenic locations around Sedona, AZ, Sunset Crater National Monument, and several additional areas. We will travel between the >7,000 ft elevations of the Colorado Plateau to the low-elevation deserts of the southern Basin-and Range Province. Our field stops will include a wide array of features, including ductile & brittle fault rocks associated with large-magnitude extension and crustal shortening, calderas, mafic lava flows and cinder cones, Precambrian metamorphic rocks, and sedimentary rocks formed in different tectonic settings.

The Colorado Plateau is a major physiographic province that dominates the “four corners” region (AZ, NM, CO, UT) of the southwestern U.S. and is characterized flat-lying sedimentary rocks that span the Cambrian to Paleogene periods. The areas south and west of the Colorado Plateau, record extensive deformation from Cretaceous shortening and Cenozoic extension, which formed the Basin-and-Range province, both of which only mildly affected the Colorado Plateau. Additionally, Cenozoic volcanic activity is widespread in the areas surrounding the Colorado Plateau, but minor in most areas of the Colorado Plateau.

Thus, this trip allows us to explore the record of subduction-related shortening, large-magnitude post-orogenic extension, and volcanism/magmatism associated with each of these events. Additionally, we will discuss/visit Proterozoic basement rocks exposed in the Basin-and-Range areas and the record of passive margin to foreland basin sedimentation preserved in these areas. In class we will also discuss the mantle geophysics to explore the factors that controlled the different responses to deformation and volcanism of the Colorado Plateau and surrounding areas.

**Logistics:** The course will meet once a week for two hours ahead of a week-long field trip that will be run in March. The trip will likely be run over or overlap with spring break, depending on student schedules. We will fly to Phoenix and rent vans and camp most nights, except potentially the first and last nights.

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### Schedule

Jan 10	Logistics
Jan 17	Overview geologic history
Jan 24	Extensional features of the American southwest
Jan 31	Student presentation: Proterozoic basement and history of Arizona
Feb 7	Student presentation: TBA
Feb 14	Student presentation: TBA
Feb 21	Student presentation: TBA
Feb 28	Student presentation: TBA
Mar 6	Student presentation: TBA

*Field trip: Mid-March*

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