

## GLG 451 FIELD GEOLOGY I Spring 2003

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**Web page:** <http://www.public.asu.edu/~jmichal/class/glg451.html>  
**Text:** Manual of Field Geology by Robert R. Compton, John Wiley and Sons  
**Prerequisite:** GLG 310 Structural Geology  
**Time:** Some Fridays 3-4:30 PM, plus three full weekends and most of Spring Break

**Purpose:** An introduction to geologic field methods, including observation of rocks and surficial deposits, geologic mapping, interpretation of geologic maps and structures, and field-based problem solving. The course will emphasize accurate observation and recording of geologic information, three-dimensional interpretation of map units and geologic structures, and reconstruction of geologic history. During the course, you will gain experience with many different kinds of lithologic units and geologic structures, including Paleozoic and Precambrian sedimentary rocks, Cretaceous and Tertiary volcanic and granitic rocks, low- and high-grade Precambrian metamorphic rocks, and Quaternary deposits. The course is foremost a field geology course, but will include lab-based and computer-based exercises designed to compliment your field studies. Field projects in each area will be accompanied by written reports, prepared geologic maps, cross sections, and other figures.

**Location:** Friday meetings will be held only occasionally, and in PSH 457 where we have access to computer facilities and large map tables. You will not have access to this room except during class time, but the departmental computer lab will be available at other times. Some weekend field trips will be local, leaving from and returning to ASU each day (Saturday and Sunday), but some later in the year may be overnight camping trips. The Spring Break field trip will leave from ASU on Saturday morning (March 15) and be away from Phoenix and ASU until the following Thursday early afternoon (March 20). You will not have the opportunity to return to Phoenix during this week, since the trip involves mapping in a distant mountain range. Lodging accommodations, covered by the department and by class fees, is in a small-town motel near the field site.

**Geologic Mapping:** The primary tool for understanding the geology and attaining field skills is geologic mapping. Students will work in pairs, observing, describing, and mapping aspects of the local geology. The skills that will be developed include map location, description and recognition of units, interpreting the three-dimensional geologic structures, and testing those models in the field by collecting critical data. It should be emphasized that efficient mapping requires careful observation, critical thinking skills, and hypothesis building and testing. Geologic mapping, including the process of locating yourself on a map, is one of the purest examples of how science is done. Interpretation of the mapping results and preparation of a professional quality geologic map, cross sections, and reports will be done during the evenings and after we return to Phoenix.

**Writing Geologic Reports:** Based on field observations and descriptions, geologic mapping, and interpretations of the geology made through constructing geologic cross sections, students will write detailed geologic reports for each weekend and Spring Break trip. These reports will be graded for both content and writing style. Written feedback as well as help sessions will be provided to help students improve their skills in technical writing and their understanding of the local geology.

**Grading:** Grades will be earned based on the following breakdown:

Geologic Maps	40%
Notebooks	20%
Geologic Cross Sections and other Figures	15%
Geologic Reports	25%

**Dates of Field Trips:** February 8-9; February 22-23; March 15-20 (Spring Break); April 5-6