Course Objectives M. Helper, 2010

Why a class in geological field methods? Geology is first and foremost a field science. Field geology and field geologists provide literally the ground truth for geologic concepts and theories of how the earth works. *The degree to which we, as geologists, are successful observers and interpreters of rocks in the field depends in large measure on what we are prepared to see and record.* The old adage "I wouldn't have believed it if I hadn't seen it" is, in the case of field geology, more truthfully "I wouldn't have seen it if I hadn't believed it". We explore. We discover. Unfortunately, without sufficient experience and preparation we also frequently ignore or discount what we don't recognized or understand. Developing what anthropologists have called "professional vision", the ability to recognize features that are important to professional practice, is a critical part of any geoscientist's training. This class is part of that training.

Successful field work also depends greatly on how well we can formulate and test ideas while in the field. Without proper preparation, including a strong grounding in field methods, we are little better than rock hounds out for a day of casual collecting. Field geology is not merely collecting data and samples; it is about making sense of the geology around you, about making geologic interpretations. Landscapes are histories, with time marked by boundaries in the rocks, soil and sediment. A geologic map or a measured section is the coded articulation of that history, with each line, for example, marking a before and after, a hiatus that might have lasted a second or a billion years. Through our symbolic maps and graphical logs, we represent time as space. *The ability to create, read and interpret such products is best developed from training and practice in a field setting*. It all begins by making and recording observations. An accurate record in the form of a map, measured section, photograph, sketch, a carefully documented sample, field notes, etc. provides a permanent, solid basis upon which to develop testable ideas and interpretations – the plot of the story. Without such evidence, interpretations are fanciful fables; there is no scientific basis to objectively evaluate them.

Geology is rooted in the scientific method, so the process of formulating and testing hypotheses through careful data collection is a fundamental skill to geologists. There is no better place to do so than the field, where reasoning can be integrated with direct observation.

Finally, *field proficiency has long been a distinguishing characteristic of our science*. As a geoscientist, you are expected to be a proficient scientific observer and recorder. Your unique skills and training in this area separate you from lawyers, engineers, chemists and other professionals with whom you might one day work.

As suggested by the course name, this class contains two main components. This semester our principal objectives are to: 1) learn and apply geologic field methods to *describe, measure*, *map, sample* and *report on* rocks in the field and in the laboratory; 2) acquire an understanding of the elements of stratigraphy (e.g. what is a Formation? what are lithostratigraphic, biostratigraphic and chronostratigraphic units? what is a type section? how are rock units correlated?) and the field methods upon which they are based. Like all sciences, geology has its own vocabulary. There is no better way to learn a language than to be immersed in it and field experiences, however brief, provide that immersion.

It is often said "The best geologist is the one who has seen the most rocks" and there is much truth to it. Six weekend field trips and a semester of labs will provide an introduction, the beginnings of a mental catalog of rocks and field relationships that can provide a framework to build upon in future classes, later field work and a future career in the geosciences.