

## Expenses

**Tuition** (current rates for 3 credits)

### In-state

Upper-level	Undergraduate	\$812.49
	Graduate	\$1136.64

### Out-of-state

Upper-level	Undergraduate	\$2008.05
	Graduate	\$2407.41

**Lodging and Transportation Fee** \$525

Lodging will be by tent in State Parks (three nights) and in a dorm at Northern Michigan University (ten nights). Transportation will use WMU vehicles only.

## Meals, Incidentals

Expenses will vary depending on individual needs. Meals can be purchased at the NMU Student Union or in restaurants or be prepared at campsites. Incidental expenses will be for supplies, film, laundry, etc.

## Registration

Students already admitted to Western Michigan University should register for GEOS 4390, as a summer-term course, which will meet continuously for two weeks. Formal admission for non-WMU students is not required for this course. Such students may participate in GEOS 4390 by filing for Permission to Take Classes (PTC) status. Additional information will be supplied upon request. Registration for Summer Session I can be done from February 15 through May 4, 2009.

### For information and registration contact

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# 2009 Geological Mapping Geosciences 4390

In Michigan's Upper Peninsula

Required for Majors in Geology,  
Geophysics, and  
Hydrogeology

**June 13 – June 26, 2009 (Summer Session I)**



Offered by the  
Department of Geosciences  
Western Michigan University

## Course Descriptions

**Dr. Ronald B. Chase, Professor of Geology  
Western Michigan University  
B.A. DePauw University; M.S., Ph.D.  
(1968) University of Montana**

Dr. Chase joined the Geology staff in 1973, having served as Geologist with the U.S. Forest Service, Instructor of Geology at Marshall University, and Assistant/Associate Professor of Geology at the University of Southern Colorado. His field experience includes mapping in New Mexico, Colorado, Wyoming, Montana, Idaho, and Michigan. He has served as field trip leader for numerous excursions, including several to Michigan's Upper Peninsula, and as Visiting Professor of Field Geology at the University of Oklahoma and Indiana University. Dr. Chase is an experienced teacher of introductory geology and field techniques, as well as author of numerous publications, which involve interpretations of field relationships and geologic maps.



**Geosciences 4390 (Geological Mapping)** is a course for students training for a professional career in geology. It will provide you with field mapping experience starting with rudimentary rock observations and compass use, and ending with an extended, independent mapping project. Activities will include rock identifications, contact mapping, orientations of planar and linear features in rocks, cross-section and stereographic constructions, tectonic interpretations, and reconstructions of the depositional, thermal and deformational history of the Marquette region.

This course is designed primarily for students who need an introduction to field methods, but do not plan to pursue a career as a serious hard-rock field geologist. Serious field students should consider enrolling, as a substitute for GEOS 4390, in a six-to-eight-week summer field course taught in a structurally complex region and sponsored by another university, or use GEOS 4390 as a prelude to a more rigorous field camp.

## Schedule

Credit will be given for the Summer I Session, 2009.

Upon departure from Kalamazoo, we will visit the Leelanau Peninsula, Tahquamenon Falls State Park and Pictured Rocks National Lakeshore for geologic discussions. One week will be spent in the Marquette area for purposes of field exercises, cross-section constructions, sample collecting, and geological discussions. Our tour will possibly continue to Porcupine Mountains State Park for additional discussions, thence to the Keweenaw Peninsula, or remain in the Marquette region for additional field work.

