Expenses

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

<table>
<thead>
<tr>
<th></th>
<th>In-state</th>
<th>Out-of-state</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper-level</td>
<td>Undergraduate</td>
<td>$1122.99</td>
</tr>
<tr>
<td></td>
<td>Graduate</td>
<td>$1541.91</td>
</tr>
<tr>
<td>Upper-level</td>
<td>Undergraduate</td>
<td>$2775.51</td>
</tr>
<tr>
<td></td>
<td>Graduate</td>
<td>$3265.86</td>
</tr>
</tbody>
</table>

**Lodging and Transportation Fee** $680

Lodging will be by tent in State Parks (three nights) and in a dorm at Northern Michigan University (14 nights). Transportation will use WMU-provided 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 9 through May 11, 2015.

For information and registration contact
Dr. Joyashish Thakurta
Department of Geosciences
Western Michigan University
Kalamazoo, MI 49008
(269) 387-3667
joyashish.thakurta@wmich.edu

---

2015
Geological Mapping
Geosciences 4390
In Michigan’s Upper Peninsula
Required for Majors in Geology, and Geophysics
Optional for Hydrogeology
June 6 – June 23 (Summer Session I)

Offered by the
Department of Geosciences
Western Michigan University
Dr. Thakurta joined the Geosciences Department of Western Michigan University in 2012 after having served as a visiting assistant professor at Ohio University and as an exploration geologist for the mining company Freeport McMoRan Copper & Gold in Arizona and Colorado. His field experience includes mapping in southeastern Alaska, California and eastern and southern India. He is the director of the Economic Geology unit at the Michigan Geological Survey and in collaboration with the mining industry he manages a field based research program on the economic mineral resources in the Precambrian basement rocks of the Upper Peninsula area of Michigan. Dr. Thakurta is an instructor for courses in mineralogy, petrology and introductory geology in the department and operates two labs in economic geology and stable isotope geochemistry.

Course Descriptions

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, 2015.

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.