ERTH 591 Geology of Glacier National Park (2 credits)

Course Goals

The primary purpose of this course is to gain insight into glacial processes and learn how to deduce a timeline of geological events from clues left behind. As a supplement to our understanding, we will also learn basic structural geology, stratigraphy and sedimentology. The focus of our course is on field-based understanding.

Expectations

1. Students will spend all available time in the field, directly observing and working with the rock record. To enjoy the course, students should be prepared to hike from 4 to 5 miles a day for five days in a row. Don’t be overly nervous about this requirement; we are not in a hurry and the elevation of Glacier National Park is comparatively low. However, we will spend 8 to 9 hours a day working outside. Students should be prepared to bring proper equipment and clothing.

2. This is not a tour. Though students need not have any geological background, they will be treated as graduate students with the attendant level of intellectual rigor.

Tentative Schedule

Sunday and Monday

Depart 8 a.m. for east entrance to Glacier National Park
Stratigraphy near Marias Pass.

Mortimer Gulch Campground

Tuesday Grinnell Glacier East Glacier KOA

Wednesday Iceberg Lake East Glacier KOA

Thursday Summary geology from east to west along Going-to-the-Sun-Road West Glacier KOA

Friday Structural Geology near Avalanche Lake. Leave for Bozeman at 12 p.m.

Logistics

Camping is planned in KOAs for Monday through Thursday of the course. Students will have access to showers, sinks and toilets while in camp. Meals include hot breakfast and dinner each day. Lunches will be student prepared box lunches. Students are responsible for personal camp gear including tents, sleeping gear, rain gear, etc.

At least one month prior to departure, an email group will be started for the purposes of pooling gear, sharing tents, etc. so as to minimize travel headaches.

Personal gear should include: rain gear (jacket and pants), warm clothes (no cotton), wool socks, very sturdy boots or shoes, water storage for at least 2L of water per day, a notebook, waterproof pen(s), sunglasses, sunscreen, etc., and a rucksack to throw it all into each day.
Students will be required to have bear spray handy at all times. Students cannot fly with bear spray cans, therefore, they should plan on purchasing spray in Bozeman. Prior to departure, students will be taught how to use it.

**Assignments**

**Stratigraphic Column**

Students will produce an appropriately scaled, described and coded stratigraphic column that covers the main rock units in the park.

**Cross Section**

Using geologic maps (provided), Students will produce an appropriately scaled cross section across two major sections of the park.

**Aerial photographs**

Students will correctly identify major glacial features from an aerial photo (provided), verified by field work.

**Geologic report**

Students will write two brief geologic reports addressing unique questions while we are in the field. Geologic Summary will be due one week after students return. Students will write a cogent geologic history of the Glacier tour.

**Collaboration**

Students are encouraged to work with one another at all stages of our course. Though each student will submit their own work to the instructor, collaboration is encouraged.

**Grading**

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<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
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<tbody>
<tr>
<td>Stratigraphic column</td>
<td>50</td>
</tr>
<tr>
<td>2 Cross sections</td>
<td>25</td>
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<tr>
<td>2 Aerial photographs</td>
<td>25</td>
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<tr>
<td>2 Geologic reports</td>
<td>25</td>
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<tr>
<td>Geologic Summary</td>
<td>100</td>
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**Total** 300