

## **Preliminary schedule and plans: GS 190 “Research in the Field” Summer 2017**

Notes to instructors and TA's: By design and prior decision (due to doubling up two years of students taking 190), this class will be worth 6 credits (3x2) and include about 4 weeks (28 days) of work in the field. It will be held at the beginning of summer. Unless no one is involved in graduation and we can leave earlier (unlikely), we will leave Monday morning after graduation June 19th. GS 190 will be listed as a spring quarter class so that graduating seniors can walk through with an I or an L grade.

**June 7** Last day classes

**June 9-14** End quarter exams

**June 18** Graduation

**June 19** Leave for field

Full day drive out there. Hopefully with enough evening light to set up camp. Campsite: N. Grant Range/ southern tip White Pine Range. Ely is about an hour away and Lund about half hour to 40 minutes away.

**Forest Service undeveloped campsites. There are two alternatives, one close to the road and lower down and the other 1.8 miles up (negotiating with USFS).**

Location of possible camp: 38°50.174'N, 115°21.697'W technically in White Pine Range N of the highway from Tonopah to Ely. This site has abundant running water in creek. Trees. Higher elevation. There is another camp near the highway, it is a nice open meadow with trees by the creek. So not too shabby, less water in creek (I think taken out for irrigation further up) and a lone picnic table.

June 20-24 or 25. Instructor: Erik Sperling. Map and describe section in Paleozoic carbonates and shale.

June 25 or 26: Final draft map/strat column.

June 26 or 27: Begin Horse Camp Basin/Grant Range Project. A. Volcanic rocks and the base of the Tertiary section beneath Horse Camp Basin. Goals: practice describing a range of volcanic units and documenting what is there in order to see how and when it shows up in the overlying Miocene Horse Camp Basin sedimentary succession. B. Horse Camp Basin mapping and structural data collection on small-scale faults. C. Initiation of avalanche deposits into the basin. D. Upper bounding fault. E. Paleozoic footwall rocks and Mesozoic folds.

*Goals: it's never been actually mapped in detail before, but has been sedimentologically studied by Horton. It's an unusual Miocene basin as it has a big thickness of sediments beneath the first avalanche deposits, which is not like the other Miocene basins in the Basin and Range that begin with avalanche and lacustrine deposits as Miocene faults initiate and begin to move... So there are some questions here that are interesting. Why is this basin different? What do the sediments tell you about Basin and Range faulting and when it began? The section gets very messy in the avalanche region... may be difficult to map not knowing the Paleozoic formations... Also, of structural interest: the Horse Camp Basin section is cut by small offset normal faults at the outcrop scale that are measurable. They dip steeply with respect to bedding but both are tilted, beds dip east, faults are near flat. This is a nice little*

*structural project that we can all collect data for, analyze fault angles, rotation, etc. etc. Further east lies the Horse Camp Basin-bounding fault. To the east lie Paleozoic units that have been described as folded at the map scale, which we also plan to map and study.*

July 3 Office day catch up.

July 4 and 5 off. Possible activities: Hike Wheeler Peak, Great Basin National Park; Mount Moriah, N. Snake Range Mount Moriah Wilderness.

July 6 Continue Hose Camp Basin/Grant Range project to completion.

July 14-15 Office day and move to Sierra Nevada.

July 16 First day intro to field work/camp move to Saddlebag site late afternoon/eve

July 17,18, 19, 20, 21 Map Saddlebag Lake region. Igneous intrusions and their metamorphic country rocks

July 21 or 22 Return to Stanford. Need one day of office work.

Images below: view of Tertiary unconformity on Paleozoic strata and volcanic section above unconformity. Views of Horse Camp Basin strata Google Earth~ 38°43.521N 115°26.961W







Image above is the Paleozoic (folded?) section east of the fault that bounds the Horse Camp Basin

Image below is Saddlebag Lake roof pendant, eastern Sierra Nevada off Hwy 120 Granites, metamorphic rocks, interesting minerals, pegmatites, etc.





Basalt craters near Grant Range-White Pine Range