Field Course Dates:  Sept. 7 - 13, 2019  
Location:  Stevens Hall 134 and areas of ND, WY and SD!  
Instructor:  B. Saini-Eidukat, 127 Stevens Hall, ext. 1-8785  
  email: bernhardt.sainieiduk@ndsu.edu  
Office hours:  Tuesday, 2:00 - 4:00 pm or by appointment  
Web Site:  http://www.ndsu.edu/pubweb/~sainieid/black-hills/  
Class Meet Time:  Tuesdays, 4:00 - 4:50 pm, Aug. 27 and Sept 3  

Course Description from Bulletin:  
Stratigraphy, structure, and mineralogy of the Black Hills and Williston Basin. Weekly lectures, plus seven-day field excursion. Two Semester Credits. Offered periodically. Fee required. Recommended: GEOL 105, 105L, 106, 106L.

Intended Student Outcomes:  
This course will provide the student with an introduction to the geologic units and processes active now and in the past in the region of western North and South Dakota and eastern Wyoming and Montana. Students will achieve an appreciation of the stratigraphy, paleontology, karst areas, geologic history, economic geology (both energy and minerals), structural geology, mineralogy, and petrology of the Black Hills and Williston Basin.

Itinerary:  
Theodore Roosevelt National Park, ND; Makoshika State Park, Montana: Stratigraphy of the Hell Creek (U. Cretaceous) and Tullock (= Ludlow) (Paleocene) Formations; Fossil collecting in the Cedar Creek Valley; Cedar Creek Anticline; Devils Tower National Monument, WY; Black Hills, SD: Bridal Veil Falls; Homestake Mine Pit; Museum of Geology at South Dakota School of Mines; Mount Rushmore; Igneous and metamorphic rocks; Structures of the Black Hills; Karst features; South Dakota Badlands.

Sat Sept 7:  
  Leave Stevens Hall 7:00 am  
  Glacial geology  
  Heritage Center, Bismarck  
  Geology, paleoecology and sedimentary environment of sediments exposed in Theodore Roosevelt Natl Park  
  Overnight camping Cottonwood Campground, Theodore Roosevelt Natl Park

Sun Sept 8:  
  Theodore Roosevelt Natl Park  
  Glendive area  
  Makoshika State Park  
  Colgate Member of the Fox Hills Formation  
  Cedar Creek anticline and Cretaceous fossil hunting  
  Overnight at Camp Needmore, near Ekalaka, MT
Mon Sept 9:  
Devils Tower, Wyoming  
Spearfish Canyon and Bridal Veil Falls  
Homestake Mine overlook, Lead, SD  
Overnight at No Name City RV Park, Sturgis, SD

Tues Sept 10:  
Wharf Mine near Lead, SD  
Pegmatite Mines, Igneous and Metamorphic Petrology  
Mount Rushmore  
Overnight at Fort Welikit Campground, Custer, SD

Wed Sept 11:  
Tip Top pegmatite mine  
Wind Cave  
Mammoth Site, Near Hot Springs, SD  
Return to Fort Welikit Campground, Custer, SD

Thurs Sept 12:  
SD Hwy 44 southeast  
Badlands National Park  
Volcaniclastic, fluvial and lacustrine deposits of the White River and Arikaree Groups. Pierre Formation. Clastic dikes, paleosols,  
Overnight at Farm Island Recreation Area, Pierre, SD

Fri Sept 13:  
Return to Fargo via Mobridge SD

**Post-trip paper / project assignment:**  
Each participant will volunteer for (or be assigned) a topic related to a stop for the field trip, itself, or a general topic related to the trip. The participant will thoroughly research the topic, and prepare a 6 to 8 page report to be submitted after the trip. Topics must be approved by the instructor. Alternate project submission formats (Wikipedia entry edits, etc.) will be considered. For help in selecting a topic and discussing a project format, please visit with the instructor.

The paper / project should include an adequate, professional, and even rigorous overview of the chosen topic. It should be supported by graphics, by citations in the text to reference sources, and a well-presented list of reference sources. References should give author name(s), date, title, journal or book title, and volume/page numbers.

**Deadline for submission of assignment:**  
11:59 p.m. MONDAY, NOV 4, 2019. (uploaded to Blackboard)

**Grading:**  
Grades will be based on the following considerations:
For undergraduates (Geol 302), the primary criterion (70%) will be attendance and evaluation of the field notebook, including specific field exercises, to be turned in after the trip. 25% of the grade will be based on a post-trip paper / project. The final 5% of the grade will be based on the student's participation and cooperation with the instructor and fellow course participants, and the student's level of engagement with the course.

Those students registering for graduate credit (Geol 695) will be assessed as follows: attendance (60%) including evaluation of the field notebook including specific field exercises to be turned in after the trip, a post-trip research paper / project (20%), and an oral presentation (15%). The presentation could be in the field during the trip, or after the trip at a time to be arranged. The final 5% of the grade will be based on the student's participation and cooperation with the instructor and fellow course participants, and the student's level of engagement with the course.

Additional information will be posted on the course web site:
http://www.ndsu.edu/pubweb/~sainieid/black-hills/

**Special Needs**: Students who need special accommodations for learning or who have special needs are invited to share these concerns or requests with the instructor as soon as possible.

**Academic Responsibility**: All work in this course must be completed in a manner consistent with NDSU University Senate Policy, Section 335: Code of Academic Responsibility and Conduct (www.ndsu.nodak.edu/policy/335.htm).

Version June 10, 2019 – Subject to Change