Geological Field Mapping– ESCI 422 – Summer at CBFS

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Office Hours:
TBD

Course Description:
"Examination and interpretation of geologic materials and structures in the field. Students prepare a geologic map, stratigraphic column and structural cross-sections of an assigned field areas." – Undergraduate Catalog

Expected Learning Outcomes of the Course:

1. Learn traditional geologic mapping techniques, including:
    a. Locating positions on a map using compass-clinometer
    b. Measuring distance and stratigraphic thickness
    c. Collecting geologic data in the field on multiple scales and plotting it appropriately
    d. Sketching exposures, and making small scale maps
    e. Record structural information on maps including: fractures, folds, faults, joints, and veins
    f. Correctly identifying rocks in the field
    g. Interpreting and working with rocks, or "reading" outcrops
    h. Effective notetaking and use of a field notebook
    i. Collecting and labelling samples (sediment, groundwater, surface water, and rock), including oriented samples of rock

2. Learn how technology is used in geologic mapping

3. Produce detailed and accurate reports that summarize geologic findings; students should be able to construct geologic maps, cross-sections, and stratigraphic columns

4. Use field observations to interpret the geologic history of an area and integrate observations with regional data and previously published reports

Course Materials:

There is no textbook for this course. You do, however, need the following:

1. A 10x hand lens
2. A rock hammer (optional)
3. A geologist's compass
4. A field notebook

The hand lens and field notebook must be individually purchased by the student. Compasses can be borrowed from the Millersville ESCI department. Compasses will be handed out at the beginning of the term, and students must return their compass at the end of the class. To borrow a compass, students must make a $55 deposit with the instructor. This will be returned when the compass is returned unbroken. The instructor will have one rock hammer available for student use, however you may want your own.

Student Conduct:
ESCI 422 is a field oriented course and most of the instructional time will be spent outdoors. This may mean working outside in the elements (heat, rain, snow, etc.). If conditions become unsafe, we will stop work. Students are expected to be prepared for the weather, dress appropriately, and wear appropriate shoes. I expect students to participate fully in all activities. **Students must attend every field trip to pass this course.**

For the limited indoor instructional time, I expect students to arrive on time and stay current on reading/assignments. Keeping up and staying attentive are critical to your success in the class. Any distracting behavior, such as cell-phone use (including texting), sleeping, or browsing the internet, can be detrimental to you and other students in the class and is prohibited. I may restrict computer use in class.

Means of Assessment:

Grading is based on field reports, field notebooks, collecting accurate measurements, maps, and assignments. This course is 3 weeks long (15 daily field trips). Each mapping assignment will have a grading rubric, which you will receive before you begin the assignment. Your final grade will be determined as follows:

Mapping assignment 1	20%
Groundwater and sediment sampling	10%
Mapping assignment 2	7.5%
Fracture Analysis	7.5%
Stratigraphic Analysis	15%
Fault Zone and Thin sections	10%
Mapping assignment 3	10%
Final mapping project	20%
	100% total

Final grades will be based on a curve that will not exceed the following: a final score of 90% will yield a minimum grade of A-; 80% a minimum grade of B-; 70% a minimum grade of C-; 65% a minimum grade of D. A final overall score of less than 65.00% will result in a grade of E.

Expected Work Load:

This course meets on an abbreviated schedule, with only three weeks of meetings. This means that all day M-F will be spent in class, in the field, or working on class projects. Students will have the weekends off, but may need to work long hours during the week. Due to the nature of this class, this may mean over 40 hours for some weeks.

Reading Assignments (subject to change):

Reading assignments will be minimal, but any readings will be posted on D2L and announced in class.

Original Answers Policy.

Group work may be allowed on field trips. You may find it tempting or convenient to enter answers as a group into a single document, and then create a copy of that document for everyone in the group. However, this diminishes the learning experience for some members of the group and therefore is unacceptable. Field notebooks and field reports should always be completed individually. Any submissions containing one or more answers that match word-for-word with another submission will receive a score of zero. Do you own work, but please work together on data collection.

Make-up Policy:

Students with documentation of an excused absence (see section 2 of the MU Class Attendance Policy) may make up missed lectures. Due to the nature of the class, it may not be possible to make up a field trip. The policy is outlined at:

http://millersville.edu/registrar/faculty/attendance_policy.php

Office Hours:

I will be available to help students with write-ups, drafting, and analysis every afternoon or evening (depending on when our daily fieldwork ends).

Accommodations:

Millersville University will make reasonable academic accommodations for persons with documented physical, emotional or learning disabilities. Students should consult with the Office of Learning Services (Learning.Services@millersville.edu) or ask me about any needed accommodations during the first week of the semester.

Academic Dishonesty:

See the guidelines for academic dishonesty at Millersville University:

(http://www.millersville.edu/about/administration/policies/pdf/academics/Academic%20Policy%20-%20Academic%20Honesty%20and%20Dishonesty.pdf)

This contains complete details regarding the definition and penalties for cheating and plagiarism. Please reference fully all material in your writings (from printed and from internet sources). If you need guidance with referencing, please let me know. Any plagiarized work will receive a zero and a grade of F will be assigned to any quizzes and exams involving cheating.

Transport to the field

Students will not be allowed to drive themselves in personal vehicles on field trips. We may, however, need students to help drive university vans. You will get paid for driving on field trips. Please contact me if you are interested in driving.

Students are responsible for their own transportation to the CBFS or to MU (the starting location for field trips).

Title IX Responsibilities of Faculty:

Millersville University and its faculty are committed to assuring a safe and productive educational environment for all students. In order to meet this commitment, comply with Title IX of the Education Amendments of 1972, 20 U.S.C. §1681, et seq., and act in accordance with guidance from the Office for Civil Rights, the University requires faculty members to report to the University's Title IX Coordinator incidents of sexual violence shared by students. The only exceptions to the faculty member's reporting obligation are when incidents of sexual violence are communicated by a student during a classroom discussion, in a writing assignment for a class, or as part of a University-approved research project. Faculty members are obligated to report to the person designated in the University Protection of Minors policy incidents of sexual violence or any other abuse of a student who was, or is, a child (a person under 18 years of age) when the abuse allegedly occurred.

Information regarding the reporting of sexual violence, and the resources that are available to victims of sexual violence, is available at http://www.millersville.edu/sexualviolence/index.php.

Tentative Schedule:

Week 1: Chincoteague Bay Field Station

Day 1: Basic mapping methods, constructing first map, and techniques for improving accuracy
Day 2: Finish first map, introduction to mapping technology
Day 3: Map making technology, finish second map
Day 3: Groundwater and surface water sampling and analysis
Day 4: Sediment sampling and analysis
Day 5: Finish all analysis and complete sampling write-up and turn in
Day 6: Off-optional beach and boat trips
Day 7: Off-return home/to MU

Week 2: Millersville University and Central PA geology

Day 1: Mapping the Pequea Silver Mine
Day 2: Fracture mapping and analysis
Day 3: Measuring stratigraphy, stratigraphic column construction
Day 4: Description of Core
Day 5: Mapping Fault Zones, making thin sections
Day 6: Off
Day 7: Off

Week 3: Start at MU, traveling through Virginia

Day 1: Gettysburg, Harper's Ferry, and nearby outcrops
Day 2: Shenandoah National Park and nearby outcrops
Day 3: Burnsville Cove Virginia, Butler Caves, and nearby outcrops
Day 4: Burnsville Cove Virginia, Butler Caves, and nearby outcrops
Day 5: Burnsville Cove Virginia, Butler Caves, and nearby outcrops
Day 6: Drive back to MU