Field Methods in the Earth Sciences

GEOL 311

Fall 2017

Wednesday 5-5:50 p.m. **Friday 1-5 p.m.**

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Purpose

Geology differs from many branches of science in that field research is important. Although techniques for studying the Earth have become more sophisticated and laboratory research is critical to the success of most projects, the field provides our primary data. At the end of this course you will be competent at doing fieldwork in a variety of settings. You will improve your powers of observation, become familiar with making geologic maps and geologic cross sections, logging borings, measuring stratigraphic sections, and conducting a geophysical survey. This course will focus on both traditional geologic fieldwork, as well as applied geological skills that are used in geotechnical fields. At the end of the semester we'll deliver a set of talks on the fruits of our labors, some of our field projects may yield new discoveries. The skills and the savvy that you acquire in this course will be useful in more ways than you know.

The Plan

Week 1	Introduction & Purpose
Wed, Fri., Aug 30 & Sept 1	Earth materials, GPS, and the Brunton compass *A campus excursion- field notes due*
Week 2	Surveying, topographic maps, and soils
Wed, Fri., Sept 6 & 8	*College Woods 1- surveying & soils- field notes due*
Week 3	Rocks, sediments, & structures
Wed, Fri., Sept 13 & 15	*The Real Rock Garden write-up due- Wed., Sept 13* *Fall Zone trip 1*
Week 4	Geology of the Atlantic Coastal Plain
Wed, Fri., Sept 20 & 22	*College Woods topographic map due- Wed., Sept 20* *The 500 Acre Tract trip 1- field notes due*
Week 5	1st month review, NO CLASS on Friday
Wed, Fri., Sept 27 & 29	**Departmental Field Trip to canoe the James River (optional)**
Week 6	NO CLASS on Wed., Oct. 4- Chuck @ Geological Soc. of Washington
Wed, Fri., Oct 4 & 6	*Fall Zone trip 2 - field notes due*
Week 7	Fall Zone Review
Wed, Fri., Oct 11 & 13	NO CLASS on Friday- Beginning of Fall Break/ Virginia Geological Field Conference (optional)
Week 8	College Woods mapping strategy
Wed, Fri., Oct. 18 & 20	*College Woods 2- boring & mapping*
Week 9	Lake coring and geomorphology
Wed, Fri., Oct. 25 & 27	*Blue Ridge prequel due- Fri., Oct 27* ***Sat./Sun., Oct. 28/29-*** *Maple Flats trip- lake coring & surficial mapping*
Week 10	Tracking sea level through time
Wed, Fri., Nov 1 & 3	*College Woods project due- Wed., Nov. 1* *The 500 Acre Tract trip 2*

Week 11	Funkiness in the Fall Zone
Wed, Fri., Nov. 8 & 10	*Maple Flats map & sections due- Wed., Nov. 8*
	Fall Zone trip 3
Week 12	Magnetic surveying- an introduction
Wed, Fri., Nov. 15 & 17	*500 Acre Tract project due- Fri., Nov. 17*
	Sat./Sun, Nov. 18/19- *Ash-Lawn/Highland- a geophysical study*
Week 13	**No Class- Thanksgiving Break**
Wed, Fri., Nov. 22 & 24	
Week 14	Geophysical data reduction
Wed, Fri., Nov. 30 & Dec. 1	*Fall Zone project due- Wed., Nov. 30*
Week 15	Work with your partners on the research talk
Wed, Fri., Dec. 6 & 8	*Ash Lawn project due- Wed., Dec. 6*
	Fri., Dec. 8, *TALKS + PARTY = Learning² + FUN*

Grading

Field Notes & Maps	20%	500 Acre Tract project	15%	Maple Flats project*	15%
Attitude/participation	5%	Fall Zone project	15%	Highland project*	15%
Rock Garden write-up	5%	College Woods project	15%	Research talk	5%
Reading quizzes (3)	5%				

* you'll complete ***either*** the Maple Flat or the Highland project

Readings

There is no textbook for this course; however there will be a number of reading assignments. Reading assignments will be posted to Blackboard. Assignments should be read for *comprehension* and before the trips in which the material will be discussed.

Required Supplies

field book	mechanical pencils	belt
ruler	colored pencils (12 pk)	field pack
protractor	small pencil sharpener	sturdy walking shoes
10x hand lens	raingear	field safety kit

Other Very Helpful Equipment

rock hammer

Our Class Community: I welcome the broad range of backgrounds that W&M students bring to campus. It's our individual and collective responsibility to create a respectful, cooperative, and inclusive classroom/field environment for everybody, regardless of race, ethnicity, nationality, culture, religion, political beliefs, gender, gender identity / expression, sexual orientation, age, disability, or marital, parental or veteran status.