

Field Methods in Environmental Science

A Field Camp Experience in West Virginia

Geography 418
Fall 2017 (August 9 – 20)



Measuring stream profiles on the South Branch Potomac

Course Description

Geography 418 is an applied introduction to field methods. The class is built around a two-week field trip (mid-August) with a base camp in the headwaters of the Potomac River in the mountains of West Virginia. During the camp we cover the following topics:

- **GPS (global positioning system).** We will learn state of the art GPS use for navigation and topographic mapping, including interfaces with real-time map and GIS coverages.
- **Stream hydrology measurements.** We use surveying equipment to measure stream slope, width, velocity, etc. and then use these data for understanding stream development, mechanics and flow.
- **Vegetation classification and ordination.** Here we learn the basics of vegetation sampling for a variety of uses. We lay out sample plots along elevational and other environmental gradients and measure vegetation structure and biomass to understand how these vary.

- **Micrometeorological Measurements.** We will learn about how the most common measurements are taken, such as air temperature, wind, humidity and radiation.
- **Soils.** We will learn the basics of soil science and identification. We dig several large soil pits and will identify elements of the soil profile.
- **Water Quality.** We will use sophisticated water chemistry analyses to test for over 20 indicators of stream and lake water quality at a variety of sites.
- **Remote Sensing and GIS.** We learn about the use and validation of remotely sensed and GIS data for environmental management.
- **Local Environmental Issues.** We try to spend at least one day engaged with important environmental issues affecting our area. Past classes have visited “green” poultry farms and coal mining reclamation sites among others.
- **Geomorphology and Paleohistory.** West Virginia is famous for its striking examples of geologic landforms. We visit some major geological structures and spend time examining rock layers that often reveal a remarkable number of fossils.
- **Natural and Cultural History.** We take side trips to various sites of important natural and cultural history, such as Seneca Rocks and the Dolly Sods Wilderness.



Course Prerequisites: *Who should take this class?*

This class is appropriate for anyone considering a career or advanced education in the environmental sciences, and in general for anyone interested in how quantitative observations of the natural environment are made. Students who have taken the class in the past have greatly enjoyed the experience. Generally junior or senior standing is required (and an occasional graduate student sometimes takes the course as well). Students will get the most out of the class if they have taken at least one upper division (300) course in physical geography, environmental science, or related fields, but this will vary by student.

Please note well. This class is physically *strenuous* at times. You must be able to work long days in hot weather, walk long distances (up to 4 or 5 miles), and have no fear of climbing up and down steep (but safe) slopes. If you have any doubts please ask me first.

Course Details

Credits and Grading: This is a **Fall 2017** class for 3 credits. Grading is based on: (1) participation during the field camp and any subsequent class meetings; (2) written exercises based on the field data collected; (3) a field camp report and diary. There are no midterms and no final exam. We will meet once every 2-3 weeks during the semester.

Cost: There is a lab fee of \$300 that covers the cost of vans, gas, campground fees and field supplies. In addition, the cost of communal food averages ~ \$200/student.



Registration: Registration is by permission only. Please contact the instructor to enroll for the class. We limit the class size to no more than 18 students (though normal class size is generally less than this). Please do not register for this class unless you are absolutely certain you are going to take it.



Important!

1. The class will meet every 3 weeks or so during the semester at a collectively chosen time.
2. There is **mandatory** class meeting on Monday August 9 at a time to be arranged. All students must attend this organizational meeting.
3. The communal food fee of \$200 is due on August 13.
4. There is nominal cost of about \$40 for a field packet and binder of notes.

Field Camp Information

Dates: The field camp will take place from August 9-20. Note that the last day of Summer Session II and II-D is August 18 and the first day of classes is August 28.

Location: Big Bend Campground is located in Monongahela National Forest, West Virginia, approximately 3 hours west of College Park. The area is mountainous with elevation ranges from about 1200' at Big Bend to over 3000' on nearby ridges. There are bathrooms with sinks and running water. While in the past there have been no showers, apparently a bath house is being constructed this spring along with other campground improvements.

We generally stay at sites #36, 34 (group site), and sites #31, #32, #33 & 35. There is no phone at the campground, but there is a campground host with access to a phone. The USFS Petersburg Ranger Station may also be contacted at 302-257-4488 in the event of an emergency. Cell phones do not work in the area and the nearest services are about 1 hour away. The campground is perhaps best known for its river tubing (around the "bend" in Big Bend).

Food: We will share all food together. Depending on the size of the class, groups will be formed and each group will be responsible for preparing breakfast, lunch and dinner, as well as meal clean-up. We'll get food supplies along the way and replenish as we need. Because the nearest town is an hour away, and we can't keep perishable food for more than a few days, our choice of menus will be a bit limited.

What to Bring: You do not need any type of special equipment or clothes for the class beyond a sleeping bag, sleeping pad, a day pack, good hiking shoes (and maybe water shoes for going the river) and a raincoat. We will provide a complete packing list to you after you register for the course.

Transportation: We rent vans for the trip. Students may not bring their own vehicles. The lab fee helps defray the cost of the vans and gas.

Reminder: Enrollment is by **permission only**, so please contact the instructor if you would like to enroll in the course.

Instructor Information

Professor Ralph Dubayah, 1149 Lefrak Hall

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BIG BEND CAMPGROUND

