Applied Karst Hydrogeology
June 11-16th, 2017

Instructors: Lee Anne Bledsoe, M.S. and Chris Groves, Ph.D.

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Course Description:

Applied Karst Hydrogeology is a field course that introduces the basics of karst hydrogeology with an emphasis on methods and techniques relevant to addressing environmental problems. Topics covered in daily presentations and discussion will include an introduction of the karst hydrogeology of the Mammoth Cave region, karst hydrology/aquifer systems, karst geochemistry, groundwater tracing and monitoring, geophysics and applications of these methods to karst groundwater problems. Field exercises will include surface and cave trips with a particular focus on 'hands-on' instruction in qualitative and quantitative dye tracing, groundwater monitoring, and geophysics. This course will be held at the Cave Research Foundation's Hamilton Valley Research Station near Mammoth Cave National Park and although fieldwork will focus in the Park area, discussion about urban karst environmental problems will include a field trip to nearby Bowling Green, Kentucky. This course is available as a workshop or for credit (undergraduate or graduate). Participants must be in good physical condition to negotiate the cave passages and surface hikes which are a major component of this course. Students who take the course for credit will develop an independent research project in consultation with the instructors during the week, which must be completed by August 31, 2017.

Attendance: Participants enrolling for academic credit will be expected to participate in all in-class and field sessions. Participants who participate in the majority of class activities will receive a Certificate of Participation.

Grading: This course may be taken as a non-credit workshop or for academic credit. Those wishing to earn academic credit will be expected to complete a karst hydrogeology related project which will be due by August 31, 2017 and will be graded according to a rubric which will be distributed in class. A standard grading system will be used in the class (90-100% = A, 80-89% = B, 70-79% = C, 60-69% = D, below 60% = F).

Course materials and equipment: There are no required textbooks for the course but participants will receive software and handouts/publications that relate to class topics. Students are required to have basic field equipment, including sturdy boots and rain gear. Necessary gear for caving trips will be provided. However, if you bring you own personal cave gear, proper White Nose Syndrome decontamination procedures, as explained in the introduction to the course, are required of all gear; please do not bring dirty gear.

Students with Disabilities: Because of the nature of the Karst Field Studies program, all participants must be in good physical condition to take these courses. However, in compliance with university policy, students with disabilities who require accommodations (academic adjustments and/or auxiliary aids or services) for this course must contact the Office for Student Disability Services in Downing University Center A-200. The OFSDS telephone number is (270)745-5004; TTY is (270)745-3030. Per university policy, please DO NOT request accommodations directly from the professor or instructor without a letter of accommodation from the Office for Student Disability Services.

Academic Integrity/Plagiarism: WKU adheres to a strict policy against plagiarism and cheating (see Scholastic Dishonesty Code in your Handbook). Academic dishonesty of any type will not be tolerated and appropriate penalties will be faced by anyone who violates this policy.

Course Logistics: The course will take place at the Cave Research Foundation Hamilton Valley Field Station located just outside of Mammoth Cave National Park. Transportation to all field trips will be provided. All meals are the responsibility of the student with the exception of the cook-out Thursday evening at Hamilton Valley. As Hamilton Valley Field Station is not close to food establishments, students should plan to prepare meals there as indicated on the schedule. A kitchen with cookware and utensils is available for food storage and meal preparation.

Students are also invited to share a short presentation, 10-15 minutes, on a karst-related topic (cave exploration, hydrology or geology projects, preliminary findings, etc.) Thursday evening following the cook-out.

Tentative Class Schedule – June 11-16, 2017

Day 1 (Sunday)
5:00-7:00 pm Welcome Mixer. Check into Hamilton Valley and class introduction.

Day 2 (Monday)

8:00	KFS and Park Introduction
8:30	Principles of Karst Hydrogeology
9:30	Hydrogeology of the Mammoth Cave region
10:30	Coffee Break
10:45	Introduction to Dye Tracing (and this week's trace)
11:30	Lunch on your own at Hamilton Valley
12:30	Field Trip: Surface Tour of Mammoth Cave Region and Dye Tracing Field Methods
5:00	Dinner at Mammoth Cave Hotel
6:00	Field Trip: Surface Tour and Field Methods Continued

Day 3 (Tuesday)

8:00	Dye Tracing Tools and Techniques
10:00	Coffee Break
10:45	Dye Tracing Applications- U.S. Case Studies
11:30	Lunch on your own at Hamilton Valley
12:30	Field Trip: Dye Injection Methods (surface and in-cave) at Mammoth Cave N.P.
5:00	Field Trip: Hidden River Cave and Museum Tour
7:00	Dinner in Horse Cave or Cave City

Day 4 (Wednesday)

8:00	Introduction to Carbonate Geochemistry
9:00	Groundwater Monitoring Techniques
9:45	Coffee Break
10:00	Karst Hazards
11:00	Introduction to Geophysics
12:00	Lunch on your own at Hamilton Valley
1:30	Field Trip: Crumps Cave - Groundwater Monitoring and Geophysics Demonstration
6:30	Dinner on your own

Day 5 (Thursday)

****CLASS WILL BE HELD ON WKU CAMPUS, BOWLING GREEN, KY**.**

7:30	Karst Driving Tour From Hamilton Valley to Bowling Green
8:30	Environmental Problems in Karst
10:00	Coffee Break
10:15	Sinkhole Collapse: The National Corvette Museum Story
11:15	Crawford Hydrology Lab Tour and Lab Methods Demonstration
12:00	Lunch in Bowling Green
1:30	Bowling Green Karst Tour: Environmental Problems and Field Methods
4:00	National Corvette Museum Sinkhole Exhibit
7:00	Cook-out at Hamilton Valley (Meal Provided)

Day 6 (Friday)

8:30	Qualitative versus Quantitative Dye Tracing
9:30	Interpretation of Dye Trace Results
10:30	Tennessee Karst Springs Initiative
11:30	Lunch on your own at Hamilton Valley
1:00	Field Trip: Scenic Route in Mammoth Cave
5:00	Class Adjourns

Day 7 (Saturday) Optional Field Trip – To Be Determined