Cave Archaeology

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Course Description: The Cave Archaeology course is an opportunity for graduate students, undergraduate students, and interested cavers to explore and learn about the multifaceted use of caves by people in prehistory and during historical times. Over the course of the week-long class, eight field trips are taken to various sites above and below ground. Five of these trips are to remote or deep cave locations and three of the trips are to cave entrances and rockshelters, linking the underground world to the environment above. Students learn about the many cave resources that were used by people in the past, such as chert, gypsum, mineral salts, and nitrates, and the technology of cave mineral mining. Caves are discussed as both natural features of the environment utilized by people in the past and as features with cosmological significance that were incorporated into native belief systems, including human burial sites, rock art, and other ritual uses.

Course Objectives:

- To introduce students to the prehistory of Mammoth Cave National Park and surrounding areas with special emphasis on aboriginal and early historic use of caves and rockshelters.
- To learn about the unique contribution of cave sites to our understanding of eastern North American prehistory from preservation issues to geological formation processes.
- Gain an appreciation for conditions in caves that affect the application of archaeological methods and techniques and have an opportunity to apply those techniques in a cave setting.

Required Text:

- Manual of course material, reports, and articles covered in class to be provided by WKU at the start of the course.

Recommended Text: Much of the pertinent background material will be included in the WKU manual. Additional readings that you may find useful (prior to course, as reference during course, and for assistance with field project after course):

1. Watson, P.J. (editor), 1997, *Archaeology of the Mammoth Cave Area*. Dayton, Ohio: Cave Books. (http://www.cavebooks.com)

2. Watson, P.J., 1969, *The Prehistory of Salts Cave, Kentucky.* Illinois State Museum Report of Investigations No. 16, Springfield. (http://www.cavebooks.com/)
3. De Paepe, D. 1985, *Gunpowder from Mammoth Cave: The Saga of Saltpetre Mining before and during the War of 1812.* Cave Pearl Press, Hays, Kansas. (Available as a 2013 reprint from Cave Books).

Equipment and Supply List:
Note, to avoid potential transmission of white-nose syndrome to bats in the cave, the Park Service requires that clothes and equipment used in one part of Mammoth Cave be thoroughly cleaned before being used in another part. Our schedule changes from Mammoth during the first 3 days to Flint Ridge during the last 3 days. A disinfectant will be available to treat helmets and equipment, but for cave clothes it is easier to change to fresh items kept in a separate sealed plastic bag. White-nose syndrome has been identified in Mammoth Cave National Park, but it is still necessary to follow these precautions. WNS, caused by a fungus, is fatal to hibernating bats but does not affect humans. For details, visit www.caves.org and click on WNS.

1. **Helmet** (for caving trips) with non-elastic chin strap, quick-release buckle, and three- or four-point suspension. The helmet should stay on during a fall but be easily released if it should become wedged. The helmet will also be the mounting point for your primary light source, so any accommodation for attaching a headlamp is a plus.
2. **Two (2) lights that can be helmet mounted**. REI or other outdoor outfitters carry suitable lights for caving. Bring extra batteries.
3. **Flashlight** with extra batteries and extra bulb (ex. Mini-Maglite)
4. **Sturdy boots with non-skid soles** (comfortable, hiking, water resistant is good).
5. **Caving coveralls are ideal, but a suitable alternative is rugged clothing** that can withstand outdoor activity. These include comfortable pants or jeans that you can afford to get dirty. To keep you warm in the 56° F, almost 100% humidity, underground environment you'll need to dress in layers. It is strongly advised that you have a thermal layer top (polypro or equivalent) and a bottom. If you are not using coveralls, then a long-sleeve shirt is strongly recommended. You will be underground most days, so be prepared with some clean changes of clothes. There will not be enough time to do laundry each day.
6. **Gloves** (garden type is ok, to protect hands and for gripping)
7. **Knee pads** (These are very helpful in protecting your knees). Basketball or other athletic-type knee pads are good.
8. **Small to moderate size day-pack** to hold batteries, jacket, clothing, supplies. A large backpack will be too bulky for narrow cave passages.
9. **Water Bottle** (fill before going on trips, to keep hydrated)
10. **Snack foods suitable for long underground hiking trips–** such as granola-type bars, small cans of fruit, dried fruit, trail mixes, beef or other jerky – similar to what you would take on a long day hike on the surface.
11. **Rain Gear** (layers of clothing for severe weather, umbrella, rain jacket, etc.)
12. **Food** if you are staying at Hamilton Valley Facility, which has a fully equipped kitchen, showers and restrooms.

13. **Bedding** (If staying at Hamilton Valley - sleeping bag or sheet or blanket, pillow). Hamilton Valley has 10 rooms with 4 bunks each.
14. **Toiletries and Towels** (If staying at HV -Towels, toothbrush, toothpaste, shampoo, etc).
15. **Non-caving clothing to wear while painting** (your clothes will get stained with color during the ochre painting hands-on sessions, and it doesn't wash out easily)

Attendance: Students are expected to participate in all classes and field trips, except under special conditions (e.g., health). Field trips involve easy to moderately challenging caving. In the rare circumstance that students are unable to fulfill the field requirements they will be invited to drop the course. In general the rigor of the trips are adjusted to the abilities of the class. **All participants will receive a Certificate of Participation on the last day of the class for their full participation in the class. This does not constitute the final grade for those taking the course for academic credit.**

Grading: Courses can be taken as non-credit workshops, Undergraduate and Graduate credit, or for Continuing Education Units. For those taking the course for academic credit, a report on a independent field project is required. Students will need to remain in contact with the instructor for guidance. Deadline for written reports is August 1 of year of course.

The final project report will constitute 70% of the final grade. Field exercises and class discussion constitutes the remaining 30%. A standard 10-point grading scale will be used for this course: A "F" will also be awarded if the final project is NOT submitted by the aforementioned deadline.

Percentages	90-100	80-89	70-79	60-69	0-59
Grade	**A**	**B**	**C**	**D**	**F**

General Class Conduct and Policies:
During class periods, cell phones should be turned off and smoking is not allowed. Obey all park rules especially speed limits while traveling through the park. While in cave, safety and conservation are primary concerns. Do not leave the visitor trail unless permitted to do so by the instructor. No moving or collecting artifacts at any time. We will move slowly and carefully to minimize danger and impact on the cave when traveling through undeveloped cave passage. Be especially mindful of artifacts on the cave floor that can be easily damaged by foot traffic.

Field Trips:
Note, all students are required to sign a waiver for liability purposes related to any and all work involving multiple trips to the field for study and projects. The Karst Field Studies Program provides this form on the KFS website under the Forms tab. A blanket waiver form covering all trips even if they are short in distance or duration will be provided.

1. Mammoth Cave Historic Entrance to Violet City; Carmichael Entrance to Cleaveland Ave. Developed trails, partially lit by electric lights. Will need helmet and light for unlit portion (5 hrs).
2. Salts Cave Vestibule to Mummy Valley. Undeveloped cave passage; full cave gear required (6.5 hrs, bring lunch and snack.)
3. Owl, Crumps, and Sand caves. Short surface hikes to Owl Cave, which is a karst window in Cedar Sink; to Crumps Cave, which is a large sinkhole entrance; and to Sand Cave where Floyd Collins was trapped in 1925. We'll conduct an exercise in the Crumps Cave entrance area recording surface observations, and an exercise in recording rock art (6.5 hrs including lunch and drive time. Bring lunch.)
4. Floyd Collins Crystal Cave. Developed trail, but will need helmet and light. Brief vehicle stop at Mammoth Cave Baptist Church cemetery (2 hrs).
5. Blue Spring Hollow. A long surface hike to a sandstone rockshelter and bluff line. The environment on the north side of the Green River is very different from the cave region south of the river (5 hrs including lunch and drive time. Bring lunch).
6. Mammoth Cave Saltpeter Mining Remains and Historic Tour route. Historic Tour route with a short side trip into Gothic Ave. We'll pay particular attention to the saltpeter remains and evidence of historic visitation. Developed trails with electric lights (3 hrs).
7. Lower Mammoth Cave. Historic Entrance to Ganter, Lee's Way to Black Chambers, and Wright's Rotunda. Undeveloped passage, with some climbing and crawling. Full cave gear required. (6 hrs, bring lunch and snack.)

General Class Conduct and Policies: During class periods, cell phones should be turned off and smoking is not allowed. While in cave, safety and conservation are primary concerns. We will move slowly and carefully to minimize danger and impact on the cave. On the surface, especially in the National Park, it is essential to drive carefully and to obey the speed limit. Beware of snakes, ticks, chiggers, and poison ivy. ** Cell phones should be turned off during class! ** Please treat your colleagues and their desire to learn with appropriate respect.

ADA Statement: Students with disabilities who require accommodations (academic adjustments and/or auxiliary aids or services) for this course must contact the Director of the Karst Field Studies Program, Dr. Leslie North at leslie.north@wku.edu or (270) 745-5982 so proper accomodations can be considered and made as necessary.

Schedule Change Policy: The Department of Earth, Environmental, and Atmospheric Sciences strictly adheres to University policies regarding schedule changes. It is the responsibility of the student to meet all admissions deadlines. Only in exceptional cases will a deadline be waived (you will be required to fill out an appeal form). The form requires a written description of the extenuating circumstances involved and the attachment of appropriate documentation. Poor academic performance, general malaise, or undocumented general stress factors are not considered as legitimate circumstances.

Tentative Class Schedule/Agenda

Subject to Change

Sunday

7:00pm-9:00pm	Class meets at Hamilton Valley Field Station. Welcome, introductions, and brief overview.

Monday

8:00am-10:00am	Lecture: Introduction to Cave Archaeology
10:00am-10:15am	Break
10:15am-12:00pm	Lecture: Archaeology of the Mammoth Cave Area
12:00pm-1:00pm	Lunch
1:00pm-6:00pm	Field Trip: Mammoth Cave Historic Entrance to Violet City and Carmichael Entrance to Cleaveland Ave. (with breaks).
6:00pm-8:00pm	Supper
8:00pm -10:00pm	Free time and informal discussion.

Tuesday

8:00am-1:30pm	Field Trip: Salts Cave Vestibule to Mummy Valley (with breaks, take lunch).
2:00pm-5:00pm	Hands-on session in rock art reproduction.
5:00pm-7:00pm	Supper
7:00pm-10:00pm	Free time and informal discussion.

Wednesday

8:00am-9:00am	Discussion: Readings and activities to date. Background information on surface archaeology.
9:00am-11:00am	Field Trip: Stop 1: Cedar Sink, Owl Cave.
11:00am-4:00pm	Stop 2: Crumps Cave Sink and Vestibule (take lunch). Exercise in field mapping and real rock art recording.
4:00pm-5:00pm	Stop 3: Sand Cave.
5:00pm-7:00pm	Supper
7:00pm-9:00pm	Field Trip: Floyd Collins Crystal Cave and Mammoth Cave Baptist Church cemetery

Thursday

8:00am-1:00am	Field Trip: Blue Spring Hollow (take lunch)
1:00pm-2:00pm	Break at Hamilton Valley
2:00pm-4:00pm	Lecture: History of Saltpeter Mining and Early Tourism
4:00pm-6:00pm	Supper
6:00pm-9:00pm	Field Trip: Mammoth Cave Historic Tour route

Friday

9:00am-10:30am	Discussion and Review
10:30am-11:00am	Break
11:00pm-5:00pm	Field Trip: Lower Mammoth (with breaks, take lunch)

5:00pm-7:00pm	Supper
7:00pm-8:00pm	Summary and class evaluation.

Saturday

Morning	Students taking course for credit: individual meetings to finalize topic for class project. Prepare public science talks; instructors will give advice and feedback on drafts.