



## **Karst Hazards and Disaster Planning**

GEOG 475, GEOL 475, GEOS 510

Summer 2022

### **For Academic Credit Participants**

**Instructors:** Dr. Jason S. Polk

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#### **Course Description:**

Hazards in karst environments include sinkholes, flooding, hazardous chemical spills and contamination events, radon emissions, development threats to caves, and other urban and human impacts, which are exacerbated by increasing development and existential threats like climate change. Participants will learn various methods and techniques for identifying and studying karst hazards, mitigation and remediation methods, and emergency response planning using applied case studies. Topics covered will include data collection and equipment/instrumentation use in conducting research and/or collecting data regarding karst hazards and for response planning, including the development and use of GIS web applications and real-time data collection methods. The course will include everything from planning for high-resolution monitoring to how to coordinate a response plan with first responders and community leaders using FEMA ICS protocols. Case studies will include the National Corvette Museum sinkhole, gasoline and hazardous chemical spills in aquifers, pollution prevention and monitoring in springs and injection wells, mapping and evaluating recurring urban flooding from karst features, and geophysical methods for development and building practices. Safety planning, communication exercises, and training best practices for managers, first responders, consultants, and researchers will be covered, including proper use of PPE and monitoring equipment (i.e. multigas meters, automated water samplers, radon meters, water quality sondes, etc.). Participants will visit existing research sites and ongoing investigation sites to work with instrumentation, safety equipment, and interact with community leaders and emergency managers for mock hazard response training and planning exercises in cave and karst settings.

**Required Text:**

- No text required- handouts, PDFs, and articles will be provided on a flash drive.

**Grading:** This course may be taken as a non-credit workshop, or for graduate or undergraduate academic credit. Continuing Education Credits may also be awarded for this course. For-credit participants will also be required to submit their field books to the course instructors at the end of the course for review. Field books will be mailed to participants after the instructor review.

**Grading:**

Participation - 25%

Field Book - 50%

Hazard Response Project - 25%

Grades – your grade will be based on the following ranges:

A= >90%

B = 80-89%

C = 70-79%

D=60-69%

F= <59%

**Make-Up/Attendance Policy**

Due to the short time period of the course students are expected to participate in every exercise, rain or shine. Students should make accommodations to be as comfortable as possible in any type of weather.

Regular and prompt attendance is absolutely necessary in this class! You should keep in mind the following:

- Work missed because of an unexcused absence cannot be made up and it will not be accepted.
- The only absences that are excused are those that can be validated by an official, such as a note from a doctor, funeral home director, or parent, etc...

Participants are expected to fully participate in all field and lab work. Each student will be required to take notes and observations in a field notebook. A camera is also recommended. If a student is unable to participate in any field activities, he/she must

notify the instructor as much in advance as possible. The instructor will determine if the student can successfully complete the course.

Waiver for field work: 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. KFS we will provide a blanket waiver form covering all trips even if they are short in distance or duration throughout the semester that all enrolled student must sign.

**Other Requirements/Information:**

Students are required to have basic field equipment, including sturdy boots, a field notebook, rain gear, gloves, kneepads, and water. Students are encouraged to bring their own personal cave gear; however, proper White Nose Syndrome decontamination procedures are required of all gear - do not bring dirty gear.

\*\* Cell phones should be turned off during class! \*\* Please treat your colleagues and their desire to learn with appropriate respect.

**Tentative Class Schedule/Agenda:** May be Subject to Change

This is a comprehensive hands-on course in applied research. The course will consist of brief morning lectures followed by visits to field sites, lab work, or other exercises related to the course. We may also have additional lectures as needed throughout the day, including evening exercises.