

## Geographic Field Methods, Fall 2023-2024

GEOG 3712/5712, 3/4 credits

(Lec: 7684/7691, Lab: 7685/7692)

MW 3:05-5:00<sup>†</sup>, Tupper 201

<sup>†</sup>Activities will occasionally require some work outside of scheduled class time

Instructor: Dr. Jim Dyer

Office: N266 Lindley

Office Hours: M & W 10:45-12:45, or by appt. (*in person or on Teams*)

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*This course utilizes Blackboard*

Provides practical experience in designing and implementing a field-based research project. The focus is on physical geography, including vegetations sampling, hydrologic analysis, and fine-scale mapping, but methods extend to other field-based applications. Assignments emphasize fundamental principles of research design, basic surveying, and data analysis. Students learn to use standard equipment, methods, and techniques of field-based data collection, as well as the processing and analysis of samples. Students are able to answer research questions by integrating their field-based observations with their knowledge of natural systems.

### Learning Objectives

1. Students will be able to apply the basic tools, techniques, and methods used for field data collection in physical geographic inquiry.
2. Students will be able to transfer field-based methods and knowledge gained from field-based research to a variety of research questions based in physical geography, environmental science, and other allied fields.
3. Students will be able to describe the advantages and limitations of gathering their own data.
4. Students will be able to collect, organize, and analyze data to summarize and interpret results.
5. Students will be able to integrate their academic knowledge of natural systems with direct observations in the field.
6. Students will be able to utilize data collection principles across several field-based applications and apply these to research questions in various disciplines, including biogeography, plant biology, hydrology, ecology, environmental science, geomorphology, and anthropology.
7. Students will be able to analyze and synthesize raw field data to solve a research question, and communicate their findings in a summary report of the activity using a format and language that enhances meaning.
8. Students will be able to demonstrate a developing sense of self as learner, reflecting on how to improve field collection methods and communication of research results in future research projects.

Additional for GEOG 5712:

9. Students will be able to design a field-based study and integrate scientific literature.
10. Students will be able to develop a specific research question with testable hypotheses.

### **General Education**

GEOG 3712 satisfies the BRICKS Bridge: Learning and Doing. Additionally, GEOG 3712 fulfills the geospatial technique requirement for Geography majors (except GISc and Meteorology), and satisfies requirements for the Geography minor. GEOG 5712 satisfies the Method/Technique requirement for the Geography M.A. and M.S., and the Research Methods requirement for MSES.

### Textbook and supplies

There is no required textbook for the course; readings will be made available on Blackboard. Some assignments and materials will be available either as class handouts, or on Blackboard to print out and bring to class. A small three-ring binder is required for compiling the "book" that will develop over the semester; it also will provide a hard surface for writing in the field. You can insert blank paper in the three-ring binder for taking notes, or you may prefer to use an additional field notebook. Wear appropriate dress for working outdoors, taking the weather into consideration.

## Grading

Your course grade will be based on the percentage of points you earn on the following activities. Each is explained in greater detail below. In addition to differences in course requirements, graduate students will be held to a higher standard in their class work.

<u>Assignments (150 points)</u>	<u>Points:</u>	<u>Miscellaneous (5-10 points)</u>	
Methods Critique	25	Data analysis preparatory exercises, in-class activities (e.g., use of air photos in field research, basics of soil analysis, drone activity)	
Biogeography Exercise	50		
Hydrology Exercise	25	<u>Graduate Student Project</u>	<u>Points:</u>
Surveying Exercise	50	Research Question	5
		Narrative	25
		Timeline and Budget	10
<u>Exams (100 points)</u>		Abstract	20
Exam #1	50	Final Revised Proposal	40
Exam #2	50		

### Grading scale:

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
≥93%	90-92	87-89	83-86	80-82	77-79	73-76	70-72	67-69	63-66	60-62	≤59

**All assignments must be completed to pass the course.** Active class participation in the collection of field data (that serve as the basis for the exercises) is considered to be part of the assignments. Since this class relies heavily on group-compiled data, the expectation of punctuality, attendance for the entire period, and quality work holds for all students. Unless other arrangements have been made in advance, final course grades will decrease by 3% for each absence after the first two. If for any reason you have to miss a class, please let me know as soon as possible so that we can plan accordingly. Throughout the semester I will need to communicate to the class about assignments; there is an expectation that you monitor your email and respond appropriately.

**Exams** will cover lecture material and will include use of instruments and procedures treated in class. Whereas the **exercises** focus on calculations and interpretation, the exams are designed to test your comprehension of both the theory and practice of field methods, including the use of equipment. *Note: you can practice with the field equipment outside of class time.* The **graduate project** is discussed on a separate handout.

It is a good practice to save all of your graded and returned assignments until you receive your grade for the course. If you suspect that you may need an accommodation based on the impact of a disability, contact me privately to discuss your specific needs. Please provide written documentation from the Office of Student Accessibility Services about the accommodation that you will need. If you are not yet registered as a student with a disability, please contact the Office of Student Accessibility Services.

### A word on the exercises ...

An effective field-based project includes not only the proper data-collection technique, but analysis of data, and clear presentation of results. To this end, assignments that you turn in must report your findings neatly (ideally typed), and clearly (with questions presented in numerical order, with work and relevant data plainly shown). Do NOT turn in loose pages of raw data or spreadsheet pages, or questions out of sequence – i.e., do not turn in a “draft” of the report. Papers that do not meet these criteria will be returned ungraded, and a late penalty will accrue until a proper report is turned in.

It is expected that students will work together to understand the material and to complete some of the tasks. However, assignments turned in for credit should reflect the individual student’s knowledge, comprehension, and abilities. Simply copying material from another student is considered plagiarism. Any form of academic dishonesty will result in a “0” for that assignment, and may be reported to the Office of Community Standards and Student Responsibility for further action.

## SCHEDULE OF COURSE ACTIVITIES

Be aware that we are subject to the vagaries associated with any field-based research (including the weather!); this schedule is a “best guess” for the semester, but subject to change.

- I. Introduction to course and field methods
- II. Vegetation analysis: sampling (quadrats, point-centered quarter method), vegetation data analysis; tree-ring analysis. **READINGS (on Bb): *Basic Principles of Sampling; Vegetation Attributes; Density***  
  
**Exam #1** (focusing on vegetation analysis) – *mid- to late October, but exact date to be announced in class*
- III. Hydrologic sampling (determination of velocity, cross-sectional area, discharge)
- IV. Surveying: use of compass, pacing and chaining distances, determining height and slope, using a level, GPS
- V. Other activities in support of field methods: including soil analysis (determination of soil texture), basics of air photos. Some of these activities may be interspersed throughout the semester as “rainy day” activities.

**Exam #2** (covering material since Exam #1) during scheduled Final Exam period:  
**Wednesday December 13<sup>th</sup> @ 12:20 pm, held in our classroom**