Geography (GEOG) 3319: Geographic Field Techniques
Fall 2020
Time: TR 12:15 pm- 1:30 pm
Location: Burdick Hall 313

Instructor: Yaqian He, PhD
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Office Hours: MW 12:30- 2:20 pm

**Course Contributions**

Several people helped me to develop this course by providing advice, data, or materials. Specifically, I would like to acknowledge the contributions of Dr. Aaron Maxwell from WVU and staffs from National Geospatial Technology Center of Excellence. I am also grateful to MITOPENCOURSEWARE, ESRI online source, and Stanford University for sharing open course source.

**Course Description**

Global Navigation Satellite Systems (GNSS) has well advanced people's life. This course is designed to introduce fundamental concepts and theory of GNSS, using a variety of GNSS receivers for positioning, navigating, tracking, and data logging in the filed, and integrating field data into GIS software. This course also explores several online mapping methods for visualizing and analysis.

**Course Outcomes**

After completing this course, a student will be able to:

1. understand GNSS principles and concepts
2. collect spatial data using GPS and cell phone through Esri Collector and Suvey123
3. implement field data into GIS software (Esri ArcGIS)
4. produce maps using ArcGIS online mapping technique
5. address a spatial problem using collected data

**Course Framework**

This course will use a combination of lectures, demonstrations, lab exercises, and field work. The instructor firmly believe that students learn via engagement and doing. As a result, large portions of the class time will be set for lad exercises and field work. It is important that you engage yourself during this class. The instructor will do her best to help you learn, however, it is imperative that you take ownership of your own education.

**Recommended Text**

1. *Understanding GPS: Principles and Applications* edited by Elliott D. Kaplan and Christopher J. Hegarty (ISBN-10: 1580538940; ISBN-13: 9781580538947)

**Required software**

1: ArcGIS Pro 2.5, provided by Geography department
2: ArcGIS online account, provided by Geography department

**Grading**

Grading for this course will consist of 6 lab exercises, a homework, and a project. The detailed showed in the Table 1 and Table 2.

It is important that all lab exercises and assignments be completed in a timely manner. Some bonus exercises maybe provided. Labs and assignments that are not turned in by the due date can be turned in up to 2 days late with a 20% penalty. Labs will not be accepted after this 2-day period.

**Table 1 Grade distribution**

| Item | Points | Description |
|---|---|---|
| Lab exercises | 50 points each, 300 points total | 6 lab exercises. Each will be provided with guidelines. |
| Homework | 50 points | 1 homework |
| Project | 50 points | Project topic |
| | 50 points | Project outline |
| | 150 points | Project data collection |
| | 100 points | Project Presentation, peer-reviewed |
| | 200 points | Project Report |
| Total | 900 Points | |

**Table 2 Grade Scale**

| | | |
|---|---|---|
| 90%- 100% | A | > 810 points |
| 80%- 90% | B | > 720 Points |
| 70%- 80% | C | > 630 Points |
| 60%- 70% | D | > 540 Points |
| 0%- 60% | F | < 540 Points |

This course does not have exams. It requires a finale project. Your project will include:

**Project topic**: A (tentative) title of project should be submitted by the due date posted.
**One-page outline**: Include title, motivation, objectives, and expected results of project.
**Project data collection**: Use GPS/cell phone and Survey123/Collector collect your project data.

**Project presentation**: You will give a 10-minute (2-3 minutes for Q&A) presentation of your project to the class

**Project report**: A final report may not exceed 10 pages without references, and with a 12 font of Time New Roman and line spacing 1.5 lines.

Your project report will be graded by the following criteria:

**Table 3 Criteria**

| **Structure** | **Contents** |
|---|---|
| **Title (& your affiliation)** | Describe interestingly and succinctly the contents of the paper |
| **Introduction** | State motivation and objectives of the study. Include literature reviews if possible. |
| **Study area** | Describe your study area |
| **Data & Methods** | Describe how do you collect your data and how do you visualize and analysis your data |
| **Results** | Explain the major findings from the data analysis |
| **Conclusions** | Summarize major content and draw common themes |
| **Reference** | List cited papers/web sources/textbooks by the reference format in the sample paper* |

* See the sample peer-reviewed scientific journal, Sample paper_He et al (2020), in the Blackboard.

**Attendance Policy**

1. Attendance is mandatory
2. Class will begin promptly, so please show up on time. If you are more than 10 minutes late for an exam or final, it will not be completed and you will receive a grade of zero on the examination.
3. Consistent with University of Central Arkansas guidelines, excessive absences (up to 3 times) may jeopardize students' grades and the instructor reserves the right to remove you from the class permanently.

**Feedback Response Time**

The instructor generally replies to email within 48 hours, except during holidays. Often the instructor replies much more quickly, but you should not count on a same-day reply. Please plan accordingly so that you don't miss deadlines.

**Classroom Etiquette**

1. Switch cell phones off and place them out of view. Do not use phones during class. Resist the impulse!
2. Computers are permitted for note-taking only.
3. Do not sleep in class or leave once a lecture has started
4. Do not pack up and prepare to leave until the instructor has indicated that class is over
5. No eCigarettes permitted in the classroom.
6. You are encouraged to think critically and ask stimulating questions, but always respect your fellow students and your instructor.

**COVID-19 adaptation**
According to the guidance of the University of Central Arkansas responding to COVID-19, all in-person instruction must be before November 24, 2020. The class schedule has followed this guidance. However, the schedule maybe changed and we will transfer to virtual format if face-to-face delivery is interrupted. All students are expected to comply with the University policy regarding face coverings (see https://uca.edu/coronavirus/students/).

Please stay safe. If you feel any symptoms of COVID-19 (e.g., fever of 100.4 degree last two days, a cough, difficulty breathing, a sore throat), please contact your healthcare provider or the Student Health Clinic (https://uca.edu/coronavirus/students/).

There are no penalties for any COVID-19 related absence of class. Please also contact the instructor for labs and assignments rearrangement.

**Academic Integrity Statement**
The University of Central Arkansas affirms its commitment to academic integrity and expects all members of the university community to accept shared responsibility for maintaining academic integrity. Students in this course are subject to the provisions of the university's Academic Integrity Policy, approved by the Board of Trustees as Board Policy No. 709 on February 10, 2010, and published in the *Student Handbook*. Penalties for academic misconduct in this course may include a failing grade on an assignment, a failing grade in the course, or any other course-related sanction the instructor determines to be appropriate. Continued enrollment in this course affirms a student's acceptance of this university policy.

**Accommodations**
The University of Central Arkansas adheres to the requirements of the Americans with Disabilities Act. If you need an accommodation under this Act due to a disability, please contact the UCA Disability Resource Center, 450-3613.

**Diversity Statement**
The University of Central Arkansas is dedicated to attracting and supporting a diverse student, faculty, and staff population and enhanced multicultural learning opportunities. We value the opportunity to work, learn, and develop in a community that embraces the diversity of individuals and ideas, including race, ethnicity, religion, spiritual beliefs, national origin, age, gender, marital status, socioeconomic background, sexual orientation, physical ability, political affiliation, and intellectual perspective (https://uca.edu/diversity/institutional-diversity/).

**Title IX disclosure**
If a student discloses an act of sexual harassment, discrimination, assault, or other sexual misconduct to a faculty member (as it relates to "student-on-student" or "employee-on-student"), the faculty member cannot maintain complete confidentiality and is required to report the act and may be required to reveal the names of the parties involved. Any allegations made by a student may or may not trigger an investigation. Each situation differs, and the obligation to conduct an investigation will depend on the specific set of circumstances. The determination to conduct an investigation will be made by the Title IX Coordinator. For further information, please visit: https://uca.edu/titleix. **Disclosure of sexual misconduct by a third party who is not a student*

*and/or employee is also required if the misconduct occurs when the third party is a participant in a university-sponsored program, event, or activity*

**Evaluations**

Student evaluations of a course and its professor are a crucial element in helping faculty achieve excellence in the classroom and the institution in demonstrating that students are gaining knowledge. Students may evaluate courses they are taking starting on Monday, November 16, 2020, through Sunday, December 13, 2020 by logging in to myUCA and clicking on the Course Evaluations task.

| Week | Date | Tuesday | Thursday | Project Due Dates | Source Material |
|---|---|---|---|---|---|
| W1 | Aug. 20-21 | | Introductions, Syllabus, ArcGIS Online Accounts | | Ch 1 |
| W2 | Aug. 24-28 | Coordinate and time systems | Orbits and Signals | | Ch 2, Ch 4 |
| W3 | Aug. 31- Sep. 4 | Pseudoranges | GPS receivers | | Ch 5, Ch 7, Ch 8 |
| W4 | Sep. 7-11 | Assisted GPS | Future of GNSS | Project Topic Due by Beginning of Class Time on Thursday | Ch 9, CH 10, Ch 11, CH 12 |
| W5 | Sep. 14-18 | GNSS Applications<br>GPS mission planning | Demo<br>GPS Practice | Project Outline Due by Beginning of Class Time on Thursday | |
| W6 | Sep. 21-25 | ESRI Survey123 | Lab #1 Survy123 Design | H#1 Mission Planning | |
| W7 | Sep. 28-Oct. 2 | ESRI Collector | Lab #2 Collector Design | Lab #1 Due by Beginning of Class Time on Thursday | |
| W8 | Oct. 5- Oct. 9 | Demo<br>Field Data Collect with Survey123 | Demo<br>Field Data Collect with Survey123 | Lab #2 Due by Beginning of Class Time on Thursday | |
| W9 | Oct. 12- Oct. 16 | Demo<br>Field Data Collect with Collector | Project Data Collection | | |
| W10 | Oct. 19- Oct. 23 | Project Data Collection | Project Data Collection | | |
| W11 | Oct. 26- Oct. 30 | Web GIS<br>Lab #3 ArcGIS online Mapping 1 | Demo<br>Lab #4 ArcGIS online Mapping II | Project Data Due by Beginning of Class Time on Tuesday | |
| W12 | Nov. 2- Nov. 6 | Demo<br>Lab #5 ArcGIS online Mapping III | Demo<br>Lab #6 ArcGIS Pro mapping | Lab #3 Due by Beginning of Class Time on Thursday | |
| W13 | Nov. 9- Nov. 13 | Project Mapping | Project Mapping | Lab #4 Due by Beginning of Class Time on Thursday | |
| W14 | Nov. 16- Nov. 20 | Project Report | Project Report | Lab #5 Due by Beginning of Class Time on Thursday | |
| W15 | Nov. 23- Nov. 27 | Thanksgiving Break | Thanksgiving Break | | |
| W16 | Nov. 30- Dec. 4 | Project Presentation | Project Presentation | Lab #6 Due by Beginning of Class Time on Thursday | |
| W17 | Dec. 7- Dec. 11 | | | Project Report due by Beginning of Class Time one Tuesday | |