

Geography 370 – 006 Introduction to Geographic Information

Fall 2024 (Monday-Wednesday, 2:30pm-3:45pm)

Instructor: *Prof. Javier A. Arce-Nazario*

Office Hours: Mondays from 4:00-5:30pm at Carolina Hall 326 and by Zoom appointment on Tuesdays from 4:00-5:00pm.

Geographic data is everywhere, and it is used across a variety of research areas and business endeavors. This course will introduce you to the tools and methods needed to obtain, manage, interpret and display spatial data.

LEARNING OBJECTIVES

At the end of this class, you will not only know how to create digital geographic information, but you will also know how to look critically at maps and remotely sensed imagery and to evaluate the sources of data and the assumptions that were used to make them. Your goals should be to:

- understand how geographic data is represented, and be comfortable with the different data models and coordinate systems
- develop a skillset allowing you to design maps and carry out simple spatial analyses
- become proficient in basic operations with GIS/Remote Sensing software tools

RECOMMENDED READING

See the course website: <https://gisunc.github.io/GEOG370Fall2024/>

PREREQUISITES

This is an introductory course, so there are no prerequisites. Being patient and open-minded towards computers and technology will make your experience more pleasant.

COURSE WEBSITE

Course information and materials, as well as announcements from the instructors, will be distributed via the UNC Canvas site and the course [Github page](#). These materials will be updated frequently. *You are also expected to check your UNC e-mail and the Canvas Announcements regularly.*

COURSE PLAN

You will be required to read course material and watch videos related to theory and methods. The course webpage has the links to the Canvas resources with the data used in the videos. You need to be able to replicate what is done in the video, otherwise you will not understand how to complete the homework or the tests. The benefit of learning techniques with these step-by-step videos is that you can do them at your own pace and repeat them as many times as you want until you feel comfortable doing the exercise. If you do not practice the videos, do not expect to be able to do the homework or the practical tests. The professor and the TA are always happy to help during recitation/office hours; however, you should demonstrate that you have attempted the videos before you ask for help with the technical aspects of a homework or test.

CLASSROOM ETIQUETTE

Be respectful: please be silent while the professor or another student is speaking. When discussing in small groups, be prepared to quickly return your attention to the professor.

Communicate: Your instructor has a strong Boricua accent, so please feel free to ask him to repeat something if you do not understand him. He will not be offended; it is part of his identity.

Be timely: Please do not arrive late to class, and if you are late, take your seat without disturbing others (arriving more than 15 minutes late is equivalent to missing a session).

Carefully follow the UNC Covid standards.

REQUIREMENTS & GRADE BREAKDOWN

Practical quizzes (20%)

Students will take four tests during the scheduled lecture time covering the practical methods used to address questions in geographic information. Students' comprehension of applied techniques will be evaluated through exercises that require them to create a particular type of map or geographic data analysis, using the techniques presented in class. There will be no makeup quizzes: if for any reason you miss a quiz, you will get 0 on that quiz. The lowest grade from the four quizzes will be dropped.

Midterm theory exam (10%)

Students will take one midterm during the scheduled lecture time covering the theory discussed in class and in readings. The theory will be assessed using a combination of multiple choice and short-answer questions. There will be no make-up midterm exam.

Final exam (15%)

During the official final exam time, students will be tested on all the theory (10%) and applied techniques discussed in class (5%).

Homework and presentations (45%)

Most of the student's comprehension of the material will be assessed through homework which will be shared and presented to the rest of the class. Students will create unique maps or analyses that they will share with other students. This is a very valuable part of the class, as other students learn about data and resources from other students, and the professor learns the interests of the students and can give direct feedback. The instruction and the deadlines for [the 10 homework exercises](#) can be found on the [course webpage](#). Late homework will not be accepted. It is important that you verify that you sent (via Canvas) the correct data, and that if you send a link to a homework assignment, that the resources in the link are public and that all the information can be accessed from the web. You are allowed to miss one homework without penalty, with the exception of HW10 and HW7. If you complete all homework, the lowest grade from all the homeworks (with the exception of HW7 and HW10) will be dropped.

At least 50% of your grade will be deducted from your homework if you do not show up to the corresponding presentation session. During the presentation session, be ready to explain how you did your homework and to discuss the decisions that you made when designing the map.

Participation, leadership and collaboration (10%)

It is expected that students will actively and respectfully participate in the class discussion, recitations, and presentations.

Your projects and assignments will be turned in electronically via Canvas. We will not accept homework or assignments submitted by email.

If for some reason your health or any other circumstances affect your ability to actively participate, please let the professor know about the situation as soon as possible.

Artificial Intelligence (AI) tools (such as chatGPT) are useful tools that can help in learning how to manage geographic information. However, AI is prohibited as an aid during testing and during completing your homework. If the professor or TA suspects that you have used an AI in any form to complete your homework, quiz or exam, you will receive a 0 on that assignment. You will be required to meet with the professor or TA during office hours and be evaluated on the subject in question. If the professor or TA suspects that you used AI during the final exam, you will receive an Incomplete for your grade and will be requested to take an oral examination with the professor, possibly during the following semester. If the TA and professor has clear evidence that you used AI, you will get an F in the class.

Students taking this course agree to abide by the provisions of the University of North Carolina at Chapel Hill Honor Code.

Final grades will be assigned using the UNC plus/minus letter grade system:

A (93-100) A-(90-92.9) B+(87-89.9) B(83-86.9) B- (80-82.9) C+ (77-79.9) C (73-76.9) C- (70-72.9) D+ (67-69.9) D (60-66.9) F (<60)

Schedule: Check the [website](https://gisunc.github.io/GEOG370Fall2024/) for details on each section and deadlines.

<https://gisunc.github.io/GEOG370Fall2024/>

Day	Activity
Mon Aug 19 2024	Introduction to class
Wed Aug 21 2024	Introduction to data types and how we model the world
Mon Aug 26 2024	Work with HW1 and GPS
Wed Aug 28 2024	GPS
Mon Sep 02 2024	No Classes
Wed Sep 04 2024	Practical Quiz 1
Mon Sep 09 2024	Projections
Wed Sep 11 2024	Projections part 2
Mon Sep 16 2024	Georeferencing

Wed Sep 18 2024	Tables
Mon Sep 23 2024	No Classes
Wed Sep 25 2024	Choropleths
Mon Sep 30 2024	Practical Quiz 2
Wed Oct 02 2024	Classification Schemes and Ratios
Mon Oct 07 2024	Midterm
Wed Oct 09 2024	Apply classification and ratios to your data
Mon Oct 14 2024	Vector Spatial Analysis
Wed Oct 16 2024	Introduction to Rasters and to GEE
Mon Oct 21 2024	Practical Quiz 3
Wed Oct 23 2024	Cartography / Vector Spatial Analysis Practice
Mon Oct 28 2024	Color Theory
Wed Oct 30 2024	Present your maps HW7 & HW8
Mon Nov 04 2024	Intro to remote sensing part 1
Wed Nov 06 2024	Intro to remote sensing part 2
Mon Nov 11 2024	Practical Quiz 4
Wed Nov 13 2024	Work on remote sensing presentation
Mon Nov 18 2024	Remote Sensing Presentation
Wed Nov 20 2024	Remote Sensing Presentation
Mon Nov 25 2024	Remote Sensing Recap
Wed Nov 27 2024	No Classes
Mon Dec 02 2024	Topography and elevation models
Wed Dec 04 2024	RECAP
Check official calendar	Final Exam

Homework Schedule

Homework	Deadline
Homework 1: Make your first map	Wed Aug 28 2024 at 11:55 pm
Homework 2: GPS Data	Fri Sep 06 2024 at 4:55 pm
Homework 3: Projections	Fri Sep 13 2024 at 4:55 pm
Homework 4: Georeference a historical image	Fri Sep 27 2024 at 4:55 pm
Homework 5: Choropleth using Census data	Fri Oct 04 2024 at 4:55 pm
Homework 6: Ratios and classification schemes	Fri Oct 11 2024 at 4:55 pm
Homework 7: Choropleth or proportional symbol map	Fri Oct 25 2024 at 4:55 pm
Homework 8: Vector spatial analysis	Fri Nov 01 2024 at 4:55 pm
Homework 9: GEE Intro to raster analysis	Fri Nov 08 2024 at 4:55 pm

Syllabus Changes

The professor reserves the right to make changes to the syllabus including project due dates and test dates. These changes will be announced as early as possible.

Attendance Policy

University Policy: As stated in the University's [Class Attendance Policy](#), no right or privilege exists that permits a student to be absent from any class meetings, except for these University Approved Absences:

1. Authorized University activities
2. Disability/religious observance/pregnancy, as required by law and approved by [Accessibility Resources and Service](#) and/or the [Equal Opportunity and Compliance Office](#) (EOC)
3. Significant health condition and/or personal/family emergency as approved by the [Office of the Dean of Students](#), [Gender Violence Service Coordinators](#), and/or the [Equal Opportunity and Compliance Office](#) (EOC).

Class Policy: Instructors may work with students to meet attendance needs that do not fall within University approved absences. For situations when an absence is not University approved (e.g., a job interview or club activity), instructors determine their own approach to missed classes and make-up assessment and assignments.

University Approved Absence Office (UAAO): The [UAAO](#) website provides information and FAQs for students and faculty related to University Approved Absences.

Note: Instructors have the authority to make academic adjustments without official notice from the UAAO. In other words, it is not required for instructors to receive a University Approved Absence notification in order to work with a student. In fact, instructors are encouraged to work directly with students when possible.

Honor Code

All students are expected to follow the guidelines of the UNC Honor Code. In particular, students are expected to refrain from "lying, cheating, or stealing" in the academic context. If you are unsure about which actions violate the Honor Code, please see me or consult studentconduct.unc.edu.

Artificial Intelligence (AI) Use Policy

Artificial Intelligence (AI) tools (such as chatGPT) are useful tools that can help in learning how to create maps. However, AI is prohibited as an aid during testing and during completing your homework. If the professor or TA suspects that you have used an AI in any form to complete your homework, quiz or exam, you will receive a 0 on that assignment. You will be required to meet with the professor or TA during office hours and be evaluated on the subject in question. If the professor or TA suspects that you used AI during the final exam, you will receive an Incomplete for your grade and will be requested to take an oral examination with the professor,

possibly during the following semester. If the TA and professor has clear evidence that you used AI, you will get an F in the class.

Optional Mask Use Statement

UNC-Chapel Hill is committed to the well-being of our community – not just physically, but emotionally. The indoor mask requirement was lifted for most of campus on March 7, 2022. If you feel more comfortable wearing a mask, you are free to do so. There are many reasons why a person may decide to continue to wear a mask, and we respect that choice.

Acceptable Use Policy

By attending the University of North Carolina at Chapel Hill, you agree to abide by the University of North Carolina at Chapel Hill policies related to the acceptable use of IT systems and services. The Acceptable Use Policy (AUP) sets the expectation that you will use the University's technology resources responsibly, consistent with the University's mission. In the context of a class, it's quite likely you will participate in online activities that could include personal information about you or your peers, and the AUP addresses your obligations to protect the privacy of class participants. In addition, the AUP addresses matters of others' intellectual property, including copyright. These are only a couple of typical examples, so you should consult the full [Information Technology Acceptable Use Policy](#), which covers topics related to using digital resources, such as privacy, confidentiality, and intellectual property. Additionally, consult the University website "[Safe Computing at UNC](#)" for information about the data security policies, updates, and tips on keeping your identity, information, and devices safe.

Accessibility Resources and Service

The University of North Carolina at Chapel Hill facilitates the implementation of reasonable accommodations, including resources and services, for students with disabilities, including mental health disorders, chronic medical conditions, a temporary disability or pregnancy complications resulting in barriers to fully accessing University courses, programs and activities. Accommodations are determined through the Office of Accessibility Resources and Service (ARS) for individuals with documented qualifying disabilities in accordance with applicable state and federal laws. See the ARS Website for contact information: <https://ars.unc.edu> or email ars@unc.edu.

Counseling and Psychological Services

UNC-Chapel Hill is strongly committed to addressing the mental health needs of a diverse student body. The [Heels Care Network](#) website is a place to access the many mental resources at Carolina. CAPS is the primary mental health provider for students, offering timely access to consultation and connection to clinically appropriate services. Go to their website <https://caps.unc.edu/> or visit their facilities on the third floor of the Campus Health building for an initial evaluation to learn more. Students can also call CAPS 24/7 at 919-966-3658 for immediate assistance.

Title IX Resources

Any student who is impacted by discrimination, harassment, interpersonal (relationship) violence, sexual violence, sexual exploitation, or stalking is encouraged to seek resources on campus or in the community. Reports can be made online to the EOC at <https://eoc.unc.edu/report-an-incident/>. Please contact the University's Title IX Coordinator (Elizabeth Hall, titleixcoordinator@unc.edu), Report and Response Coordinators in the Equal Opportunity and Compliance Office (reportandresponse@unc.edu), Counseling and Psychological Services (confidential), or the Gender Violence Services Coordinators (gvsc@unc.edu; confidential) to discuss your specific needs. Additional resources are available at safe.unc.edu.

Policy on Non-Discrimination

The University is committed to providing an inclusive and welcoming environment for all members of our community and to ensuring that educational and employment decisions are based on individuals' abilities and qualifications. Consistent with this principle and applicable laws, the University's [Policy Statement on Non-Discrimination](#) offers access to its educational programs and activities as well as employment terms and conditions without respect to race, color, gender, national origin, age, religion, genetic information, disability, veteran's status, sexual orientation, gender identity or gender expression. Such a policy ensures that only relevant factors are considered and that equitable and consistent standards of conduct and performance are applied.

If you are experiencing harassment or discrimination, you can seek assistance and file a report through the Report and Response Coordinators (see contact info at safe.unc.edu) or the [Equal Opportunity and Compliance Office](#), or online to the EOC at <https://eoc.unc.edu/report-an-incident/>.

Equal Opportunity and Compliance

Equal Opportunity and Compliance Accommodations Team ([Accommodations – UNC Equal Opportunity and Compliance](#)) receives requests for accommodations for disability, pregnancy and related conditions, and sincerely held religious beliefs and practices through the University's Policy on Accommodations. EOC Accommodations team determines eligibility and reasonable accommodations consistent with state and federal laws.

Pluralism Statement

I value the perspectives of individuals from all backgrounds. I strive to make this classroom an inclusive space for all students. Please let me know if there is anything I can do to improve. I appreciate suggestions.

Undergraduate Testing Center

The College of Arts and Sciences provides a secure, proctored environment in which exams can be taken. The center works with instructors to proctor exams for their undergraduate students who are not registered with ARS and who do not need testing accommodations as provided by ARS. In other words, the Center provides a proctored testing environment for students who are unable to take an exam at the normally scheduled time (with pre-arrangement by your instructor). For more information, visit <http://testingcenter.web.unc.edu/>.

Learning Center

Want to get the most out of this course or others this semester? Visit UNC's Learning Center at <http://learningcenter.unc.edu> to make an appointment or register for an event. Their free, popular programs will help you optimize your academic performance. Try academic coaching, peer tutoring, STEM support, ADHD/LD services, workshops and study camps, or review tips and tools available on the website.

Writing Center

For free feedback on any course writing projects, check out UNC's Writing Center. Writing Center coaches can assist with any writing project, including multimedia projects and application essays, at any stage of the writing process. You don't even need a draft to come visit. To schedule a 45-minute appointment, review quick tips, or request written feedback online, visit <http://writingcenter.unc.edu>.

Grade Appeal Process

If you feel you have been awarded an incorrect grade, please discuss with me. If we cannot resolve the issue, you may talk to our departmental director of undergraduate studies or appeal the grade through a formal university process based on arithmetic/clerical error, arbitrariness, discrimination, harassment, or personal malice. To learn more, go to the [Academic Advising Program](#) website.