

## **Geography 370 – 007 Introduction to Geographic Information**

Fall 2022 (Tuesday-Thursdays, 2:00-3:15pm)

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

Recitations: sec. 701 Mondays 3:35PM - 4:25PM, and sec. 702 Wednesday 1:25PM - 2:15PM

Office Hours: Tuesdays and Thursdays 3:30-4:30pm and by appointment.

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 how 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 course website <https://gisunc.github.io/GEOG370Fall2022/>

### **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 Sakai site and the course [Github page](#). These materials will be updated frequently. *You are also expected to check your UNC e-mail and the Sakai 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 Sakai 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 ETIQUETE

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

### Tests (30%)

Students will take three tests during the scheduled lecture time covering both theory and applied techniques. The theory will be assessed using a combination of multiple choice and short-answer questions. 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.

### Final exam (15%)

During the official final exam time students will be tested on all the theory and applied techniques discussed in class.

### 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](#). Turning your homework on time is important, and so 20% will be deducted per day for late submissions. It is important that you verify that you sent (via Sakai) 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.

At least 50% of your grade will be deducted from your homework if you do not show up to the presentation session. During the presentation session, be ready to explain how you did your homework and 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 Sakai. 20% of any assignment's grade will be deducted per day when the assignment is late. If for some reason your health or any other circumstances affect your ability to actively participate, please let the professor know about the situation.

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/GEOG370Fall2022/) for details on each section and deadlines.

<https://gisunc.github.io/GEOG370Fall2022/>

Day	Activity
Tue Aug 16 2022	Introduction to class
Thu Aug 18 2022	Introduction to data types
Tue Aug 23 2022	How we model the world
Thu Aug 25 2022	Sharing our maps pt1 / Github
Tue Aug 30 2022	Sharing our maps pt2 / GPS
Thu Sep 01 2022	Projections
Tue Sep 06 2022	No Classes
Thu Sep 08 2022	Projections and Georeferencing
Tue Sep 13 2022	Exercise: georeference UNC maps and create tiles
Thu Sep 15 2022	Webmaps
<b>Tue Sep 20 2022</b>	<b>Test 1</b>
Thu Sep 22 2022	Tables
Tue Sep 27 2022	Choropleths
Thu Sep 29 2022	Classification Schemes and Ratios

Tue Oct 04 2022	Apply classification and ratios to your data
Thu Oct 06 2022	Cartography
Tue Oct 11 2022	Share your maps / RECAP
<b>Thu Oct 13 2022</b>	<b>Test 2</b>
Tue Oct 18 2022	Vector Spatial Analysis
Thu Oct 20 2022	No Classes
Tue Oct 25 2022	Vector Spatial Analysis Practical
Thu Oct 27 2022	Introduction to Rasters and to GEE
Tue Nov 01 2022	Share your maps / Answer GEE questions
Thu Nov 03 2022	Intro to remote sensing pt2
<b>Tue Nov 08 2022</b>	<b>Test 3</b>
Thu Nov 10 2022	Raster Spatial Analysis
Tue Nov 15 2022	Remote Sensing Presentation
Thu Nov 17 2022	Remote Sensing Presentation
Tue Nov 22 2022	Topography and elevation models
Thu Nov 24 2022	No Classes
Tue Nov 29 2022	Discuss Test 3 / RECAP
<b>Check official calendar</b>	<b>Final Exam</b>

### Homework Schedule

Homework	Deadline
<a href="#">Homework 1: Make your first map</a>	Wed Aug 24 2022 at 11:55 pm
<a href="#">Homework 2: Github</a>	Wed Aug 31 2022 at 11:55 pm
<a href="#">Homework 3: World projections</a>	Wed Sep 07 2022 at 11:55 pm
<a href="#">Homework 4: Georeferencing UNC</a>	Wed Sep 14 2022 at 11:55 pm
<a href="#">Homework 5: Georeference a historical image</a>	Wed Sep 21 2022 at 11:55 pm
<a href="#">Homework 6 part 1: Choropleth using Census data</a>	Wed Sep 28 2022 at 11:55 pm
<a href="#">Homework 6 part 2: Ratios and classification schemes</a>	Fri Sep 30 2022 at 11:55 pm
<a href="#">Homework 7: Choropleth or proportional symbol map</a>	Mon Oct 10 2022 at 11:55 pm
<a href="#">Homework 8: Vector spatial analysis</a>	Wed Oct 26 2022 at 11:55 pm
<a href="#">Homework 9: GEE Intro to raster analysis</a>	Wed Nov 02 2022 at 11:55 pm
<a href="#">Homework 10: GEE Short Presentation</a>	Mon Nov 14 2022 at 11:55 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](http://studentconduct.unc.edu).

### **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](mailto: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](mailto:titleixcoordinator@unc.edu)), Report and Response Coordinators in the Equal Opportunity and Compliance Office ([reportandresponse@unc.edu](mailto:reportandresponse@unc.edu)), Counseling and Psychological Services (confidential), or the Gender Violence Services Coordinators ([gvsc@unc.edu](mailto:gvsc@unc.edu); confidential) to discuss your specific needs. Additional resources are available at [safe.unc.edu](http://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](https://safe.unc.edu)) or the [Equal Opportunity and Compliance Office](#), or online to the EOC at <https://eoc.unc.edu/report-an-incident/>.

### **Diversity Statement**

I value the perspectives of individuals from all backgrounds reflecting the diversity of our students. I broadly define diversity to include race, gender identity, national origin, ethnicity, religion, social class, age, sexual orientation, political background, and physical and learning ability. 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.



