C O U R S E   S Y L L A B U S

University of North Florida
Dept of Economics and Geography
GEO 4956: Spatial Dynamics of the Camino de Santiago,
Summer C 2019
Meeting Times Location: TBA

Instructor(s):	Prof. Chris W. Baynard
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Office Hours:	**(TBA)**

Course Description

Geospatial applications are one of the most interesting and fastest growing technologies today. They allow us to examine, analyze, model and better understand the Earth, its changes and the associated human-environmental interactions. These include urbanization, industrialization, habitat change and conservation planning, economic development, transportation and historical landscape change.

Comprised of 3 tiers, see below, applications are found throughout the social and natural sciences, humanities, business, computing and engineering. The 3 tiers are:

1. GIS: Geographic Information Systems—a system of hardware and software used to analyze spatial data and provide visual communications and actionable information in the form of maps.

2. GPS: Global Positioning System—based on a system of satellites that allow us to locate specific activities and places, track movement and record and find locations throughout the planet.
3. RS: Remote Sensing—the analysis and interpretation of satellite imagery, aerial photography and more recently drone imagery and LIDAR.

Prerequisites and/or Co-requisites:	None

Course Overview

This class will introduce students to geospatial technologies centered around a key theme: pilgrimage, travel and land-use change. Beginning at UNF, students will learn how to use GIS to add, modify edit and create their own datasets. This will include using ArcGIS desktop and online software. The next step will introduce students to GPS technologies and show them how to gather field data and bring it into a GIS using their mobile phones. The final phase will introduce students to Remote Sensing through aerial photography, where they will acquire imagery using kite and balloon aerial photography, as well as lower-elevation pole aerial photography.

Once in Spain, students will be able to utilize their knowledge and skills to gather field data along the Camino de Santiago as a way to record current conditions, and begin a spatial inventory that can be built upon in subsequent visits, providing UNF a unique spatial archive.

Through these activities students will engage in problem based and community based learning.

Course Learning Objectives

Students will:
1. Know how to use ArcGIS software to analyze spatial data and create maps for communicating findings.
2. Gather their own GPS data and use it for analysis and map-making.
3. Fly kites and balloons and learn how to attach camera equipment to them for aerial photography.
4. Acquire their own low-elevation high-resolution aerial photography using kites and balloons, and lower elevation imagery through pole aerial photography.
5. Process acquired imagery utilizing trial versions of high-end imagery software.
6. Create a final project that addresses a particular location or topic related to the Camino de Santiago utilizing the geospatial technologies used in the class.

Required Texts / Readings

Textbook

- Geospatial training lab assignments provided by Professor Baynard

- Essential earth imaging for GIS. By Lawrence Fox III. 2015. ISBN: 9781589483453

NOTE: Essential earth imaging book may be used, or rented

Other Readings

GPS
1. How GPS works, pp. 1-3.
   https://dpipwe.tas.gov.au/Documents/Worksheet%201%20-%20How%20GPS%20Works.pdf
2. What is GPS? https://www.gps.gov/systems/gps/
3. GPS: Space segment https://www.gps.gov/systems/gps/space/
4. GPS: Control segment https://www.gps.gov/systems/gps/control/
5. GPS: Applications https://www.gps.gov/applications/

Aerial Photography
6. Not our drones: https://mashable.com/2015/03/29/kite-aerial-photography/#F7wxYylSKgqy
7. UNMANNED SMALL-FORMAT AERIAL PHOTOGRAPHY FROM KITES FOR ACQUIRING LARGE-SCALE, HIGH-RESOLUTION, MULTIVIEW-ANGLE IMAGERY http://www.isprs.org/proceedings/XXXIV/part1/Paper/00098.pdf
8. The challenges of processing kite aerial photography imagery with modern photogrammetric techniques https://commons.erau.edu/cgi/viewcontent.cgi?article=1210&context=ijaaa
9. High spatial resolution data acquisition for the geosciences: kite aerial photography https://onlinelibrary.wiley.com/doi/pdf/10.1002/esp.1702
10. Kite Aerial Photography for Low-Cost, Ultra-high Spatial Resolution Multi-Spectral Mapping of Intertidal Landscapes https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0073550&type=printable

Other equipment / material requirements (optional)

- Through our educational partnership with ESRI, students signed up for this course will receive a site license to install ArcGIS software on 1 personal computer.
- Students may need to reserve time to visit the Educational Technology Lab (Bldg 57, Room 1420—Contacts: Dr. Nicholas Eastham: nicholas.eastham@unf.edu and Dr. Terry Cavanaugh tcavanau@unf.edu
  to complete 3D printed projects

Students may need to purchase mobile phone apps for use with this class, such as a GPS app.

Course requirements and Grading standards

Attendance and Participation: 10%
Regular attendance to class meetings and participation—answering questions, contributing to class discussion.

Readings, Classwork, Homework and Lab Assignments: 40%
The bulk of the class assignments will involve:
- Reading and completing GIS lab assignments
- Creating and testing 3D printed models (using the STEP lab at the College of Education)

- Attending and participating in field activities: flying kites and balloons, learning to attach camera gear and capture imagery
- Processing acquired imagery into useful and actionable data
- Applying all the above during the Study Abroad field visits

Quizzes: 25%
Quizzes will assess students' knowledge of terms and concepts, as well as application skills using GIS software

Final Project: 25%
Create a final presentation that utilizes the geospatial data and techniques learned during the class to examine and present a part of the Camino focused on landscape change, eco-tourism, historical landscapes or a similar topic agreed to in advance with the Instructor.

NOTE: See Course Outline in Canvas for dates and additional information

Attendance Policy/ Late and missed work

Attendance is expected at each class meeting and students will be marked for attending and participating. Late and missed work will not be accepted unless a valid documented excuse is provided (i.e. doctor's note). In such a case, work may be made up or not counted against the student, a decision the instructor will make.

Accommodations for Religious Observances will be followed. See: http://www.interfaith-calendar.org/ as wells as for Student Athletes. See http://www.unf.edu/catalog/policies/student_attendance/

Additional resources

Students requiring additional help are encouraged to work together after class, meet with the Instructor during office hours or make an appointment, and visit the Tutoring Center: https://www.unf.edu/ugstudies/SASS/

Continuity of Instruction Plan

"In the event of disruption of normal classroom activities due to an emergency such as hurricane, pandemic or other unforeseen event or combination of events, the format of this course may be modified in order to enable completion of the course requirements. In that event, you will be provided an addendum to this syllabus that will supersede this version. It is your responsibility as a student participant to be proactive during any emergency to find instructions that I will post on Canvas which you should check daily."

ADA Statement

Students with disabilities who seek reasonable accommodations in the classroom or other aspects of performing their coursework must first register with the UNF Disability Resource Center (DRC) located in Building 57, Room 1500. DRC staff members work with students to obtain required documentation of disability and to identify appropriate accommodations as required by applicable disability laws including

the Americans with Disabilities Act (ADA). After receiving all necessary documentation, the DRC staff determines whether a student qualifies for services with the DRC and if so, the accommodations the student requires will be provided. DRC staff then prepares a letter for the student to provide faculty advising them of approved accommodations. For further information, contact the DRC by phone (904) 620-2769, email (drc@unf.edu), or visit the DRC website (http://www.unf.edu/drc/).

Military and veteran students who return from combat exposure may be utilizing the post 9/11 GI bill to continue postsecondary education goals and may need both physical and academic accommodations. Contact the Military and Veterans' Resource Center by phone (904) 620-5131 or email mvrc@unf.edu.

Student Health and Wellbeing

The UNF counseling center can help students who are having difficulties managing stress, adjusting to college, or who are feeling sad and hopeless. You can reach the UNF counseling center at http://www.unf.edu/counseling-center/ or by calling (904)-620-2602 during and after business hours for routine appointments or if you or someone you know is in crisis. Walk-in hours are 10-2 PM Monday-Friday. Crisis appointments available.

The Victim Advocacy Program provides confidential crisis intervention services to anyone in the UNF community impacted by crime or victimization. Services offered range from emotional support to assistance navigating the criminal justice system. The Victim Advocacy Program is located in Founders Hall, Building 2, Suite 2100. Students may contact the 24-hour Crisis Helpline at (904) 620-1010. For more information visit http://www.unf.edu/womens-center/Victim_Advocacy.aspx

Technical Support

If you experience any problems with your UNF account you may send an email to: helpdesk@unf.edu or call the UNF Computer Helpdesk at 904-620-4357.

Academic Integrity

Please review the University policy on academic integrity:
Academic Misconduct Policy at UNF: https://www.unf.edu/president/policies_regulations/02-AcademicAffairs/EnrollmentServices/2_0640P.aspx
 (Include specific statements regarding academic integrity that might be relevant to the course.)

Violations of Academic Integrity
Under this heading the University of North Florida Student Handbook identifies several types of violations; these include but are not limited to: cheating; fabricating and falsifying information or citations; submitting the same work for credit in more than one course; plagiarizing; providing another student with access to one's own work to submit under this person's name or signature; destroying, stealing, or making inaccessible library or other academic resource material; and helping or attempting to help another person commit an act of academic dishonesty. The University of North Florida authorizes any instructor who finds evidence of cheating, plagiarism, or other wrongful behavior that violates the University of North Florida Academic Integrity Code to take appropriate action. Possible action includes, but is not limited to, failing the student on the work in question, failing the student for the course, notifying the appropriate academic dean or Vice President for Student Affairs, and requesting additional

action be taken. The consequences of a breach of academic integrity may result in an F, which is unforgivable, regardless of withdrawal status.

Other Policies

Provide any further guidance regarding acceptable behavior in class such as inappropriate language, discrimination, eating, use of cell phones, and students' responsibilities in the learning process. Consider the Non-discrimination Regulation: https://www.unf.edu/president/policies_regulations/01-General/1_0040R.aspx

Non-Discrimination Policy (Example):

The University of North Florida (UNF) is committed to providing an inclusive and welcoming environment for all who interact in our community. To accomplish this intent, UNF shall not commit or permit discrimination or harassment on the basis of genetic information, race, color, religion, age, sex, disability, gender identity/expression, sexual orientation, marital status, national origin or veteran status in any educational, employment, social or recreational program or activity it offers. Similarly, UNF will not commit or permit retaliation against an individual who complains of discrimination or harassment or an individual who cooperates in an investigation of an alleged violation of University Regulation. In exercising these standards, the University will not abridge either free speech or academic freedom based on its context. Accordingly, any member of the UNF community who believes that they have been subjected to discrimination, discriminatory harassment, retaliation, or sexual misconduct may seek guidance, counseling and/or file a complaint by contacting: Cheryl Gonzalez, Director, E.O.D. and Title IX Administrator, located at Building One, J.J. Daniel Hall, Suite 1201, 1 UNF Drive, Jacksonville, Florida 32224-7699, or call (904) 620-2507 or via 711 Florida Relay for persons who are deaf or hard of hearing or those with speech impairments and/or limitations.

Also consider suggestions for dealing with disruptive students: http://www.unf.edu/uploadedFiles/aa/acadaffairs/new_faculty_orientation/Dealing%20w%20Classroom%20Disruption%20Brochure.pdf

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T E N T A T I V E   S C H E D U L E

Week	Dates	Topic/Activities	Reading/Assignments
Week 1	May 8-10	Course Introduction How to use ArcMap Lab Assignment 1: Creating a basic map in ArcGIS	• Complete Lab Assignment 1 • Complete Lab Assignment 2: Working with tables and creating a population density map

Week 2	May 13-17	Review Labs 1 and 2 Begin Lab 3: Exploring Florida Panther mortality	• Complete Lab 3: Florida Panthers • Complete Lab 4: Georeferencing a historical image of Jacksonville
Week 3	May 20-24	Review Labs 3 and 4 Begin Lab 5: Digitizing in ArcMap and conversion to .kml for use in Google Earth	• Complete Lab 5: Digitizing in ArcMap… • Complete Lab 6: Digitizing in Google Earth and calculating the Chernobyl exclusion zone • Read Introduction through Chapter 2 in Essential Earth Imaging
Week 4	May 27-31	Review Labs 5 & 6 Begin Lab 7: Unsupervised image classification and change detection	• Complete Lab 7: Unsupervised image classification • Complete 8: Supervised classification • Read Chapters 3-4 in Essential Earth Imaging
Week 5	June 3-7	Field Data collection 01: Kite and Balloon Aerial Photography	• Complete Lab 9: Downloading Landsat data and working with band combinations • Complete Lab 10: Pan sharpening • Read Chapters 5-6 in Essential Earth Imaging
Week 6	June 10-14	Field Data collection 02: Kite and Balloon Aerial Photography	• Read Chapters 7-8 in Essential Earth Imaging • Watch DroneDeploy video • Watch Pix4D Getting Started with your project • Watch Pix4D Georeference video
Week 7	June 17-21	Processing acquired imagery Trip to Spain discussion	• N/A
Week 8	June 24-28	Study Abroad Spain	• Collect data
Week 9	July 1-5	Study Abroad Spain	• Collect data

Week 10	July 8-12	Study Abroad Spain	• Collect data
Week 11	July 15-19	Study Abroad Spain/ Return to UNF Field data imagery processing	• Work on processing field data
Week 12	July 22-26	Field data imagery processing and final project preparation	• Field data imagery processing and final project preparation
Week 13	July 29-Aug 2	Final Project Presentations	• N/A

NOTE: These descriptions and timelines are subject to change at the discretion of the instructor.