Course Description

Nearly every topic imaginable associated with natural resource management has some spatial or geographic context. This course aims to develop spatial thinking through the use of geographic information system (GIS) tools. Understanding how the elements of geography, mapping, and database management connect to the physical world is key to answering questions related to “where” and “what”. The relative location of features (where) and their properties or attributes (what) can be overlain, combined, and analyzed to tell a richer story beyond simple facts.

Topics Covered will include: Map and compass use, introductory aerial photograph interpretation, Public Land Survey System of the US, map projections and coordinate systems, geospatial data sources and data collection, use of Global Positioning System (GPS) for data collection and navigation, basic database design, spatial and tabular data analysis, basic cartographic techniques and map layout, and examples of GIS use in the natural and physical sciences.

Wednesday Lectures are pre-recorded. There may be a short Zoom session for questions, review activities, and to maintain student contact.

Thursday Field Lab – no Zoom session, complete the activity on your own schedule.

Friday GIS Lab sessions will be broadcast live at the above times and recorded for later posting in Canvas. You should plan to attend the Zoom session whenever possible.

The times listed above provide a framework of the minimum amount of time you should set aside to be successful in this course.
Course Essential Questions

- What are the building blocks of a geographic information system?
- How can different types of data be collected and displayed in a GIS to represent natural or human-built systems?
- How can GIS be used in natural resource management to ask questions and solve problems?

Course Objectives

Upon completing the course, students will be able to:

- Read maps and use a compass for field navigation;
- Understand the Public Land Survey System and use it to describe land parcels;
- Recognize map projections and their geodetic implications;
- Discover and use aerial and satellite imagery and other digital data sources;
- Create spatial data sets and organize them in a geodatabase;
- Practice basic vector and raster geospatial analyses;
- Create maps using appropriate cartographic standards.

Cornerstone Tasks

- **GIS Map and Summary Reports:** Written lab reports containing a map of activity results, a summary of activities, and answers to questions will be required. Assessment will be based on a report grading rubric.
- **Field Lab Activities:** Field lab activities will have graded assignments. Assessment will be based on a grading rubric.

Teaching Methods

- **Lectures:** Narrated PowerPoint lectures or live demonstrations will focus on presenting new information as well as that summarized from the assigned readings.
- **Assigned Readings:** Each week various book chapters, articles, and videos will be posted online prior to lecture. It is to your advantage to read these articles and view the videos as they will often reinforce information given in lecture, aid in field study, or contain information appearing on exams.
- **Field Lab Activities:** Lab activities and assignments may happen in the virtual classroom or at a place near to you. Lab exercises are designed to provide students with hands-on experience with field methods, to reinforce lecture material, to observe a demonstration, or to hear from experts during guest lecture periods. Some sort of activity will be completed based on the subject matter and instructions given in an assignment.
- **GIS Activities:** Students will be supplied with step-by-step tutorials designed to demonstrate spatial information theory and familiarize them with ArcGIS software. Students will individually complete a summary report each week that includes a map, an activities summary, and answers to assigned questions. Prepare the reports to serve as personal tutorial notes for future reference.
• **Quizzes:** Exams or quizzes will be administered covering lecture material, assigned readings, videos, and lab subjects. Feedback will be provided explaining answer insufficiencies.

• **Group Study:** Students will work in assigned groups to complete certain tasks or assignments. Students are encouraged to form small *ad hoc* study groups outside of normal meeting times to reinforce concepts and to informally quiz each other on the course material presented.

• **Individual Study:** Each student will be expected to complete assigned readings, produce required lab reports, and spend individual time reviewing materials in advance of exams.

**Grading**

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<tr>
<th>Undergrad</th>
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<tbody>
<tr>
<td><strong>Quizzes (6):</strong></td>
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<tr>
<td><strong>GIS Lab Reports:</strong></td>
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<tr>
<td><strong>Field Lab Activities:</strong></td>
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<tr>
<td><strong>Class Participation:</strong></td>
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</table>

• **Quizzes:** Timed comprehensive quizzes will be given at the end of each week. Students will complete the quiz through the eLearning site Canvas. From the time you start the quiz you will have a specified time frame to complete it. Quizzes are open book, notes, and lecture materials, however, you are under UF’s Honor Code and must complete the exam on your own with no help from others.

• **GIS Computer Labs:** GIS lab sessions will be conducted live and broadcast via Zoom Conferences on Fridays from 9:30a to 12:15p as well as be recorded for later viewing. These sessions will typically include a short lecture plus time to complete the exercise and receive in-class guidance. Students will be supplied with step-by-step tutorials designed to acquaint them with the features and functions of ArcGIS desktop software. We will use UF Apps to access ArcGIS software and all tutorial data. A laptop will be required to do the exercises in class.

Students will individually complete and submit a summary report each week that includes a map, an activities summary, and answers to assigned questions. Prepared reports can serve as personal tutorial notes for future reference. Evening help sessions will be arranged by appointment through Canvas Conferences.

• **Field Lab Activities:** Each lab module posted in Canvas will contain the lab topic, instructions, and deliverables specific to that lab session.

• **Participation:** Specific discussion topics and miscellaneous activities will appear in Canvas under different weekly modules. In addition, you are encouraged to introduce new discussion topics that address issues you encountered and solutions devised, any software shortcuts you discover, relevant online content you find that helps explain a concept, or other resources you think might be helpful to course participants.
Final grading follows University standards based on the following scale

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<thead>
<tr>
<th>Letter Grade</th>
<th>Course Score</th>
<th>Grade Points</th>
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<tbody>
<tr>
<td>A</td>
<td>93.0 - 100</td>
<td>4</td>
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<tr>
<td>A-</td>
<td>90.0 - &lt;93.0</td>
<td>3.67</td>
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<tr>
<td>B+</td>
<td>87.0 - &lt;90.0</td>
<td>3.33</td>
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<tr>
<td>B</td>
<td>83.0 - &lt;87.0</td>
<td>3</td>
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<tr>
<td>B-</td>
<td>80.0 - &lt;83.0</td>
<td>2.67</td>
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<tr>
<td>C+</td>
<td>77.0 - &lt;80.0</td>
<td>2.33</td>
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<tr>
<td>C</td>
<td>73.0 - &lt;77.0</td>
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<tr>
<td>C-</td>
<td>70.0 - &lt;73.0</td>
<td>1.67</td>
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<tr>
<td>D+</td>
<td>67.0 - &lt;70.0</td>
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<td>63.0 - &lt;67.0</td>
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<td>D-</td>
<td>60.0 - &lt;63.0</td>
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<td>E</td>
<td>0 - &lt;60.0</td>
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Resources

**Required Text:**

ISBN: 978-1593995522

**Optional Workbook:**


**Note:** Getting to Know ArcGIS Desktop serves as a reference text for exercises conducted in class. 4th or 5th edition is acceptable.

**Things you will need for this class:**

1) A computer with office software for written reports.
2) High-speed internet to access the eLearning site in Canvas and UF Apps.
3) Headset/microphone and webcam for discussion and conference sessions.
4) A way to take notes.

**Additional Materials:**

Use your GatorLink credentials to log into these web sites before our first meeting to make sure you can access the resources. Some software download and installation may be necessary to access UF Apps.

**Course Delivery Software:** Canvas [http://elearning.ufl.edu](http://elearning.ufl.edu)
Additional readings, videos, and recorded lectures will be available through Canvas modules.

**GIS Software, and office software Access:** UF Apps [https://apps.ufl.edu](https://apps.ufl.edu)

**Canvas Conference Software:** [https://ufl.zoom.us/](https://ufl.zoom.us/)
GIS labs will be conducted live using Canvas web conferencing software (Zoom). Sessions will be recorded for later student review. In addition, optional live evening software help sessions may be scheduled as needed or requested. Be sure to connect early and make sure your internet connection speed is sufficient. A headset or separate earphone and microphone are required for vocal participation. Otherwise, comments and questions can be entered into the included chat box if a headset is not available.
Late Assignments and Make-Up Work

The condensed nature of this course will require you to be focused, attentive, and taking notes during every class if you wish to be successful. Do not arrive late to live sessions.

It is your responsibility to keep track of assignment due dates and times as listed in Canvas. This is not a work-at-your-own-pace course – assignments and exams have due dates and times. Most assignment due times will be 11:59pm or just before midnight. Assignments open and close based on the clock governing the Canvas server so submitting assignments at the last minute may prove troublesome for you – don’t wait! A grace period, usually one day, will be added to each assignment due date during which late work will be accepted. Any late assignment scores will be reduced by 50% of the original point value and then be graded according to the rubric. No assignments will be accepted after the assignment closes so do not email them to an instructor.

Data storage/management and computer accessibility: The availability of inexpensive computer-connected storage devices (such as thumb drives) and pervasive online storage/backup options (UF Apps, OneDrive, Google Drive, Dropbox, etc.) has made the loss of computer data nearly impossible. Use them! No excuses because of data loss! Start assignments early and have a backup plan in mind so as to avert a missed assignment disaster.

Generally, no make-up assignments or exams will be offered other than for exceptional situations such as University-sanctioned absence, death of an immediate family member (pets not included), serious illness or injury (reported to the instructor with a physician’s note within five days of the first absence), or extreme weather resulting in the closure of campus. Extra credit assignments are rarely, if ever, provided.

Class and Discussion Decorum

All course participants are expected to interact with dignity and professionalism in the classroom, in the field, or in an on-line discussion. Be professional. You are preparing for a career and should be learning to interact with your fellow classmates as you would in your future professional life. Written communication should follow standard rules for grammar and spelling and be clear, concise and intelligent.

Be respectful and open to opinions and ideas that differ from yours. The exchange of diverse thoughts, ideas and opinions are an important part of the scholarly environment. When responding to statements or posts made by others, address the ideas, not the person. Disagreement with the ideas of others is perfectly acceptable; how one disagrees should not be hurtful or offensive. Insulting remarks and name-calling are never appropriate.
Academic Honesty

In 1995 the UF student body enacted a new honor code and voluntarily committed itself to the highest standards of honesty and integrity. When students enroll at the university, they commit themselves to the standard drafted and enacted by students. The quality of a University of Florida education is dependent upon community acceptance and enforcement of the honor code.

The Honor Code: We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.

On all work submitted for credit by students at the university, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.”

It is assumed all work will be completed independently unless the assignment is defined as a group project, in writing by the instructor. This policy will be vigorously upheld at all times in this course.

Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code.

Academic Resources

SFRC Academic Hub: https://ufl.instructure.com/courses/303721
UF Writing Studio: https://writing.ufl.edu/writing-studio/

Software Use

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

Campus Helping Resources

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university’s counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

University Counseling & Wellness Center
3190 Radio Road, (352) 392-1575, www.counseling.ufl.edu/cwc/
 Counseling Services
 Groups and Workshops
 Outreach and Consultation
 Self-Help Library
 Training Programs
 Community Provider Database

Office of Victim Services
1515 Museum Road, (352) 392-5648, https://police.ufl.edu/about/divisions/office-of-victim-services/

Career Resource Center
First Floor JWRU, (352) 392-1601, www.crc.ufl.edu/

Students with Disabilities
0001 Reid Hall, (352) 392-8565, https://disability.ufl.edu/
The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. **If you have registered with the Disability Resource Center and require academic accommodations, it is your responsibility to privately inform the instructor of your needs as soon as possible before the first class session.**

**UF attendance policy**

https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/

Please contact the instructor ahead of time or as soon after an absence to be considered excused.

The UF Religious Holidays Policy is available at:

https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/#religiousholidaystext

At the University of Florida, students and faculty work together to allow students the opportunity to observe the holy days of their faith. A student should inform the faculty member of the religious observances of their faith that will conflict with class attendance, with tests or examinations, or with other class activities **prior to the class or occurrence of that test or activity.**

**Online Course Evaluation Process:**

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at gatorevals.aa.ufl.edu/students/ Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals,. Summaries of course evaluation results are available to students at gatorevals.aa.ufl.edu/public-results/.
<table>
<thead>
<tr>
<th>Week / Date / Loc</th>
<th>Module Topics</th>
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<tbody>
<tr>
<td>1 July 8</td>
<td>Lecture: Class Introduction, Field Lab Procedures, Mapping history, Intro to GIS, Spatial Data Models</td>
</tr>
<tr>
<td>July 9</td>
<td>Field Lab Activity: Public Land Survey, Intro to Map Reading and Compass Use</td>
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<tr>
<td>July 10</td>
<td>GIS Computer Lab: Setting Up and Using UF APPS, Creating a Personal Work Directory, Intro to GIS Theory, Downloading and uncompressing GIS Data, Getting Started with ArcGIS/ArcMap, Creating a Map</td>
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<tr>
<td>2 July 15</td>
<td>Lecture: Intro to Coordinate Systems, Map projections</td>
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<tr>
<td>July 16</td>
<td>Field Lab Activity</td>
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<tr>
<td>July 17</td>
<td>GIS Computer Lab: Creating Spatial Data – Points, Lines, and Polygons – from Georeferenced Aerial photographs, Managing Spatial Data – ArcGIS Geodatabases</td>
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<tr>
<td>3 July 22</td>
<td>Lecture: Global Navigation Satellite Systems, Spatial Data Sources, and Spatial Data Base Design</td>
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<tr>
<td>July 23</td>
<td>Field Lab Activity: Area measurement and Capturing Coordinates with GPS for Use in GIS, Creating a Polygon from GPS Data.</td>
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<tr>
<td>July 24</td>
<td>GIS Computer Lab: Creating A Geodatabase, Creating Polygons from Field Lab GPS Data, GIS and Mission Planning for Field Lab Data Collection Using Aerial Photographs and Remotely Sensed Data</td>
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<tr>
<td>4 July 29</td>
<td>Lecture: Aerial Photographs, Remotely Sensed Data, and Air Photo Interpretation</td>
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<tr>
<td>July 30</td>
<td>Field Lab Activity</td>
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<tr>
<td>July 31</td>
<td>GIS Computer Lab: Prescribed Burn Areas Change Detection Analysis. Working with Remotely Sensed Data and Digitizing Polygons</td>
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<tr>
<td>5 August 5</td>
<td>Lecture: Digital data, Basic spatial analysis</td>
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<tr>
<td>August 6</td>
<td>Field Lab Activity: GPS Navigation (GeoCaching)</td>
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<td>August 7</td>
<td>GIS Computer Lab: Austin Cary Timber Sale and Harvest: Spatial Overlay and Analysis, Buffer, Clip, Dissolve, Union, Intersect, Identity</td>
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<tr>
<td>6 August 12</td>
<td>Lecture: Raster Analysis</td>
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<tr>
<td>August 13</td>
<td>Course wrap-up and Evaluation (9:30-10am), Graduate Project Presentation Brown Bag Lunch (10am to 1pm), Raster Analysis Demo (1pm-3:15pm)</td>
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Subject to change – watch Canvas for updates and announcements