School of Forest, Fisheries, and Geomatics Sciences
Gulf Coast Research and Education Center
Plant City Education Center

Geographic Information Systems- GIS 3072c

1 Overview

This course introduces geographic information systems to Geomatics and natural resources students. The course aims to provide both theoretical background and diversified practical skills needed in many applications. Students learn basic GIS data modeling and management concepts, spatial references, and analysis tools. Real world case studies involving data modeling, overlay analysis, and surface modeling are presented.

- 3 Credits - Fall Semester
- Format: 100% online
- http://elearning.ufl.edu/

Course Prerequisites: none

Instructor: Dr. Amr Abd-Elrahman (Phone: 813.757.2283, Email: **aamr@ufl.edu**)
- Please use gator link email (aamr@ufl.edu) for fastest response.
- Office hours by appointment.

Instructor: Katie Britt (Phone: 813.757.2183, Email: **k.britt@ufl.edu**)
- Please use gator link email (k.britt@ufl.edu) for fastest response.
- Office hours by appointment.

Textbook(s) and/or readings:

Required Textbook (lab exercises):

Gorr, Wilpen L. and Kristen S. Kurland, "GIS Tutorial 1 for ArcGIS Pro" **for version 2.4 (blue cover)**, ESRI Press, ISBN: 978-1589484665. ****Please note that this is NOT the newest version of this textbook – be sure to get the one with the blue cover.****

Recommended Textbook

Paul Bolstad (2016). GIS Fundamentals (5th edition). Eider Press. ISBN: 978-1506695877.
Note: The fourth edition version of the book will work, too.

Additional Materials:

- Reading and multimedia material will be provided throughout the semester. Web links to GIS topics and data source material will be provided.

2 Learning Outcomes

At the end of this course, each student will be able to:

- Identify the concept of geographic information systems and data sources
- Utilize different national and international spatial reference systems and perform spatial reference transformation
- Model spatial and non-spatial data in relational and object-relational databases.
- Apply vector and raster data analysis and solve spatial problems using vector analysis tools
- Implement ArcGIS software in analyzing GIS data

3 Course Logistics

Students may access lectures, assignments, readings, and supporting materials through the course Canvas site as they become available.

Learning modules consisting of a lecture, readings, supporting material, and quizzes provided online for each topic. Learning modules build on previous modules so you should complete the learning modules in the order presented.

Technology Requirements:

- A computer or mobile device with high-speed internet connection.
- A webcam, headset and/or microphone, and speakers.
- Latest version of web browser. Canvas supports only the two most recent versions of any given browser. What browser am I using?
- Installation of proctoring software may be required and will be provided if so.

Synchronous online sessions may be recorded. By sharing your video, screen, or audio during any synchronous online class sessions, you are consenting to being recorded for the benefit of students who cannot attend live as well as for class review during the current semester. If you have special circumstances or concerns about privacy, it is your responsibility to discuss it with your instructor.

ArcGIS Software Access

The primary and recommended method of accessing the ArcGIS Pro software for most students is through **downloading the software and installing it locally on their computers**. Students whose computers are running operating systems other than Windows (e.g. Apple Mac OS), or don't want to install the software locally on their machines, will be using the software through UF APPS (https://apps.ufl.edu/vpn/index.html). Information will posted in canvas during the first week of the semester with instructions on how to download/install the software locally and how to access the software through UFAPPS. When using UFAPPS, please copy the GIST1Pro folder from the R:(C)\Courses\2020-Fall-GIS3072c_xxx\Data\GIST1Pro_Data folder to your M(StudentFileStorage):\ folder. Detailed instructions on how to access the UFAPPS folder will be provided early in the semester.

Using Zoom Software

Review and office hour meetings (per request) will be conducted using the Zoom software. The software is accessed by clicking a link posted by the instructor through e-Learning or email. The instructor will schedule the sessions and provide the link to you.

Please check https://support.zoom.us/hc/en-us/articles/201362023-System-Requirements-for-PC-Mac-and-Linux for more information about Zoom software use requirement. Zoom supports almost any operating system including Windows, Macintosh, and Linux, as well as the most widely used browsers including Internet Explorer, Firefox, Safari, and Chrome. A microphone is also needed to communicate with the instructor and the students attending the session.

In Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited.

Specifically, students may not publish recorded lectures without the written consent of the instructor. A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

3.1 Assignments & Deliverables

Laboratory Activities

The ArcGIS Tutorials 1 for ArcGIS Pro book is used in this class. The book is divided into chapters. Each chapter has a specific set of objectives and is divided into tutorials. You are required to do chapters and (tutorials) as assigned throughout the semester according to the assignments released in the course website. **A summary lab worksheet on each chapter that includes chapter objectives, snapshots of last screen in each tutorial, and snapshots of the 'Your Turn' parts in the tutorials should be submitted according to the due date specified in canvas. Collaboration on software issues is allowed, however the tutorials must be performed by each student independently.**

PLEASE MAKE SURE THAT YOUR SCREEN CAPTURES INCLUDE THE **COMPUTER DATE AND TIME** AT THE LOWER RIGHT CORNER OF THE SCREEN. The screen snapshots can be taken using any of the online freeware available for this purpose or using the ctrl-PrintScr (or Fn-PrintScr) to capture and ctrl-v to paste the snapshot.

Assignment feedback will be communicated through the canvas course website. Comments will be provided mainly using the grading portal of each assignment. Students are encouraged to review and digest the comments promptly to avoid recurring errors.

Participation

Virtual (online) discussion topics will be created in the course website (Canvas). You are strongly encouraged to read, post and interact in these discussions. Please contribute positively to the discussions by providing useful/tested technical tips as well as innovative and critical thoughts. You are also encouraged to introduce new discussion items and enrich course resources with online material. A five point participation grade will be issued based on the quantity and quality of your participation in the course online discussion.

Quizzes

Quizzes will be delivered via the Canvas course site throughout the semester. These short quizzes will assess the student's understanding of lecture material, readings, and laboratory assignments.

Projects

Three projects will be announced during the semester. The time frame for each project is 2 weeks. Project description, data source, time frame, and deliverables will be posted at the course e-learning website (Canvas) and discussed in the labs/lectures. Please feel free to suggest changes to the original project to accommodate certain ideas you have or you may suggest your own project. Since the projects are designed to assess and emphasize the skills you learned in the tutorials in addition to building your critical thinking skills, **you should expect to have less step-by-step instructions than are included in the tutorials.** The basic delivery for each project will be a Microsoft Word report illustrating, at least, project objectives, methodology, data and data preparation steps, analysis, results/discussions, and conclusions. Some projects may be chosen for in-class presentation and discussion.

Project feedback will be communicated through the canvas course website. Comments will be provided mainly using the grading portal of each assignment. Students are encouraged to review and digest the comments promptly to avoid recurring errors. Similar to the tutorials, collaboration on software issues is allowed, however projects must be performed by each student independently.

Midterm Exams

Two midterm exams will be conducted online using the course e-learning (canvas) website and proctoring software through canvas. The first midterm exam will occur approximately in Week 9 and the second midterm approximately during the last week of class. **Exams are an individual assessment and collaboration is strictly prohibited.**

3.2 Grades & Grading Scale

Grading Item	Grade Percentage	Description
Lab Activities	**25%**	This includes performing assigned tutorials from 'GIS Tutorial 1 for ArcGIS Pro' book and submitting lab worksheets. Please see the 'Laboratory Attendance and Tutorials' section for more details.
Participation	**10%**	Class participation includes class attendance and participation in online discussions. Please see the 'Class Participation' section for more details.

Quizzes	**15%**	Online quiz covering formatted assignments over lab and course material.
Midterm Exams	**30%**	Two midterms will be delivered tentatively after the second and fourth modules. Exact midterm dates will be posted on the course website (Canvas) at least one week before the exam offering date. Please check the course calendar frequently.
Projects	**20%**	Three projects will be distributed through the semester. Each project headline, time frame and deliverables will be posted at the course Canvas system website. Please see the 'projects' section for more details.

Please note that we are using the + and - grading scale encouraged by UF. For more information about the new grading system, please visit http://www.isis.ufl.edu/minusgrades.html.

Be aware that the calculated canvas overall/final grade may not be accurate due to having different sections with different grading scales in the same canvas course, which does not allow implementing multiple grading schemes. Use the above grading scale combined with the individual item scores in canvas to calculate your overall grade.

Grade Scale

Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E
Corresponding Course Score	95-100	90-94	85-89	80-84	75-79	70-74	65-69	60-64	55-59	50-54	45-49	0-44
Grade Points	4	3.67	3.33	3	2.67	2.33	2	1.67	1.33	1	0.67	0

For information on current UF policies for assigning grade points, see https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx.

4 Course Content

Learning Modules, Lecture, Lab, and Project Schedule[#]

Week Of (Week #)	Module	Lecture Topic	Reading (GIS Fundamentals Book – based on 5th Edition)	Lab Topic (GIS Tutorial 1 for ArcGIS Pro Book) and Projects
Aug. 23 (1)	1. Introduction to GIS and Data Sources	Course Outlines & GIS Introduction	Ch 1 pp. 1-21	Introduction Assignment: Software & Data Access
Aug. 30 (2)		Introduction to ArcGIS Software & Digital Data Sources	Ch 2 pp. 29-53	GIS Tutorial 1 For ArcGIS Pro: Chapter 1
Sept. 6 (3)		Data Sources Continued (Global Navigation Satellite Systems)	Ch 5 pp. 203-221; Ch 7 pp. 299-327	GIS Tutorial 1 For ArcGIS Pro: Chapter 2
Sept. 13 (4)		Data Sources Continued (Aerial & Satellite Images)	Ch 6 pp. 249 – 291	GIS Tutorial 1 For ArcGIS Pro: Chapter 3
Sept. 20 (5)		Data Sources Continued (Lidar) & Spatial Reference		GIS Tutorial 1 For ArcGIS Pro: Chapter 4
Sept. 27 (6)	2. Spatial References	Horizontal Datum & Map Projections	Ch 3 pp. 85-115	Project 1: GPS Data Collection
Oct. 4 (7)		Data Modeling & Management (Conceptual and Logical)	Ch 3 pp. 116 - 137	Continue Project 1
Oct. 11 (8)	3. Data Modeling and Management	Data Modeling & Management Continued (Logical Modeling DBMS)	Ch 8 pp. 331 – 349	GIS Tutorial 1 For ArcGIS Pro: Chapters 5 & 7
Oct. 18 (9)		Midterm Review (**MIDTERM EXAM 1**: Tentatively 10/20 6-8pm)		Project 2: Developing GIS
Oct. 25 (10)		Data Modeling (Physical Implementation Demo) & Vector Analysis Introduction	Ch 8 pp. 350 –364	Continue Project 2
Nov. 1 (11)	4. GIS Vector Analysis	Vector Analysis Continued	Ch 9 pp. 373 - 419	GIS Tutorial 1 For ArcGIS Pro: Chapter 6
Nov. 8 (12)		Vector Analysis Continued	Ch 9 pp. 420 - 428	GIS Tutorial 1 For ArcGIS Pro: Chapter 9
Nov. 15 (13)		Surface Modeling	Ch 12 pp. 519-533	Project 3: Urban Forest Data Analysis
Nov. 22 (14)	5. Surface Modeling and Raster Analysis	Raster Analysis	Ch 10 pp. 443 – 473	Continue Project 3
Nov. 29 (15)		Raster Analysis Continued		
Dec. 6 (16)		Midterm Review (**MIDTERM EXAM 2**: Tentatively 12/8 6-8pm)		

[#]Schedule is tentative and subject to change due to actual course delivery circumstances

5 Policies and Requirements

This syllabus represents current plans and objectives for this course. As the semester progresses, changes may need to be made to accommodate timing, logistics, or to enhance learning. Such changes, communicated clearly, are not unusual and should be expected.

5.1 Late Submissions & Make-up Requests

It is the responsibility of the student to access on-line lectures, readings, quizzes, and exams and to maintain satisfactory progress in the course.

Tutorial worksheets and project reports turned in after the due date will be deducted points. To receive points for a late assignment, the report must be turned in no later than two weeks past the due date. Each day the assignment is late (each day being a range from 1 minute to 24 hours) will result in a 3% late deduction in possible total points (for example, perfect work one day late would receive a 97%, and a 70% grade would receive a 67% if submitted one day late). A maximum of 42% will be deducted before the submission window closes 2 weeks after the deadline. Lab reports will not be accepted after two weeks from the deadline.

Examples for the reasons justifying missing class activities can be found in **https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx**. Please contact me if you have any unusual circumstances as soon as possible to arrange for make-up plans.

Computer or other hardware failures, except failure of the UF e-Learning system, will not excuse students for missing assignments. Any late submissions due to technical issues MUST be accompanied by the ticket number received from the Helpdesk when the problem was reported to them. The ticket number will document the time and date of the problem. You MUST e-mail your instructor within 24 hours of the technical difficulty if you wish to request consideration.

For computer, software compatibility, or access problems call the HELP DESK phone number—352-392-HELP = 352- 392-4357 (option 2).

Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at:
https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx.

5.2 Communication Courtesy and Professionalism

Just as in any professional environment, meaningful and constructive dialogue is expected in this class and requires a degree of mutual respect, willingness to listen, and tolerance of opposing points of view. **Respect for individual differences and alternative viewpoints will be maintained in this class at all times.** All members of the class are expected to follow rules of common courtesy, decency, and civility in all interactions. Failure to do so will not be tolerated and may result in loss of participation points and/or referral to the Dean of Students' Office.

5.3 Semester Evaluation Process

Student assessment of instruction is an important part of efforts to improve teaching and learning.

At approximately the mid-point of the semester, the School of Forest Resources & Conservation will request anonymous feedback on student satisfaction on various aspects of this course. These surveys will be sent out through Canvas and are not required, but encouraged. This is not the UF Faculty Evaluation!

At the end of the semester, 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 https://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, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

5.4 Academic Honesty Policy

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: *"We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity."*

You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, 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 that you will complete all work independently in each course unless them instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct or appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. 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.

5.5 Inclusive Learning Environment

This course embraces the University of Florida's Non-Discrimination Policy, which reads,

> *The University shall actively promote equal opportunity policies and practices conforming to laws against discrimination. The University is committed to non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information and veteran status as protected under the Vietnam Era Veterans' Readjustment Assistance Act.*

If you have questions or concerns about your rights and responsibilities for inclusive learning environment, please see the instructor or refer to the Office of Multicultural & Diversity Affairs website: http://multicultural.ufl.edu.

5.6 Services for Students with Disabilities

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. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation. 0001 Reid Hall, 352-392-8565, www.dso.ufl.edu/drc/.

5.7 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.

6 Campus Helping Resources

For issues with technical difficulties for e-learning in Canvas, please post your question to the Technical Help Discussion in your course, or contact the UF Help Desk at:

- Learning-support@ufl.edu | (352) 392-HELP - select option 2 | http://elearning.ufl.edu
- Library Help Desk support http://cms.uflib.ufl.edu/ask
- SFRC Academic Hub https://ufl.instructure.com/courses/303721

6.1 Student Life, Wellness, and Counseling Help

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.

- Counseling and Wellness resources http://www.counseling.ufl.edu/cwc/
- U Matter, We Care http://www.umatter.ufl.edu/
- Career Resource Center http://www.crc.ufl.edu/
- Other resources are available at http://www.distance.ufl.edu/getting-help for online students.

6.2 Student Complaint Process

The School of Forest Resources & Conservation cares about your experience and we will make every effort to address course concerns. We request that all of our online students complete a course satisfaction survey each semester, which is a time for you to voice your thoughts on how your course is being delivered.

If you have a more urgent concern, your first point of contact should be the SFRC Academic Coordinator or the Graduate/Undergraduate Coordinator for the program offering the course. You may also submit a complaint directly to UF administration:

- Students in online courses: http://www.distance.ufl.edu/student-complaint-process
- Students in face-to-face courses: https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf