UF UNIVERSITY of FLORIDA

Survey Computations
GIS 3072c - FALL 2016

School of Forest Resources and Conservation
Gulf Coast Research and Education Center
Plant City Education center

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Geographic Information Systems- GIS 3072c

1 Overview

This course introduces geographic information systems to Geomatics and natural resources students. The course aims at providing both theoretical background and diversified practical skills needed in many applications. Students learn basic GIS data modeling and managing 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: blended (Adobe Connect* live teaching with recording)
- 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.
- Adobe Connect virtual classroom* – Lecture: MW period 6 (12:50–1:40p) & Lab: F period 3 (9:35-10:25a) – Classes are recorded for Distance Students – Recording link will be posted within 24hrs of class offering.

Textbook(s) and/or readings:

Required TextBook (lab exercises):

Gorr, Wilpen L. and Kristen S. Kurland, "GIS Tutorial 1", ESRI Press, ISBN: 978-1-58948-335-4. A new book is required as it includes a 180 day trial license for the ArcGIS 10.1 software. You can use the software to do the exercises on your PC.

recommended Textbook

Paul Bolstad (2008). GIS Fundamentals (4th edition). Eider Press. ISBN: 978-0-9717647-3-6. Note: The third edition version of the book will work too.

Additional Materials:

- Reading and multimedia material will be provided along 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.

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*Adobe Connect is a software program used to conduct virtual meetings. Link will be sent to the class earlier in the semester. See "**Using Adobe Connect Software**" section in this syllabus.

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▪ Apply vector and raster data analysis and solve spatial problems using vector analysis tools
▪ Implement ArcGIS software in analyzing GIS data

3 Course Logistics

The lectures and labs in this course will be delivered using the Adobe Connect virtual classroom software. (Please see 'Using Adobe Connect Software' section.) Students can log on to the system from any computer by clicking on the Adobe Connect link posted in the course website (Canvas). All lectures and labs are recorded. Recording links will be posted after the class. Students registered in the distance sections are recommended to watch the recordings and take notes promptly after the class.

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

During the lab sessions, software related aspects will be discussed and the students are expected to start the step-by-step activities in the 'GIS Tutorial 1' book. The data needed to perform the tutorials (ArcGIS 10.1) are on the CDs that come with the text book. If you will be using the ArcGIS software installed on CALS Virtual Desktop, we already provided copy of the data on the shared drive accessed through CALS Virtual Desktop (Please See the ArcGIS Software Access Section for more details).

Technology Requirements:

• A computer or mobile device with high-speed internet connection.
• A headset and/or microphone and speakers; a web cam is suggested.
• Latest version of web browser. Canvas supports only the two most recent versions of any given browser. What browser am I using?
• Adobe Connect: http://ufifas.adobeconnect.com/ (See the"**Using Adobe Connect Software**" section below)

ArcGIS Software Access

The primary method of accessing the ArcGIS Desktop software will be using the College of Agricultural and Life Sciences (CALS) Virtual Desktop Lab **https://virtual.ifas.ufl.edu/** . An announcement will posted in canvas with a power point presentation attachment during the first week of the semester with information on how to access the CALS virtual desktop. When using the CLAS virtual desktop, please copy the EsriPress folder from the L:(faculty)\GIS3072C\Fall_2016_Data folder to your W:(students)\ StudentName folder. Detailed instructions on how to access the CALS Virtual Dekstop ArcGIS will be provided early in the semester.

You may also install the ArcGIS software trial version that comes with a NEW ArcGIS Tutorials 1 book. Appendix D in the book describes how to download, activate and install the software. However, we strongly discourage this option due to the technical difficulty arising from the software installation and activation process. Unless if you don't have internet connection (e.g. for deployed and overseas students), we strongly recommend using CALS Virtual Desktop.

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Using Adobe Connect Software

Office hour meetings (per request) will be conducted using Adobe Connect web conferencing software. The software is accessed by clicking a link posted by the instructor through e-Learning. The instructor will schedule the sessions and post the link to you earlier in the semester. You should click on the link each time you need to join the office hour sessions.

The following link explains how to participate in Adobe Connect meetings/sessions. Adobe Connect only requires an internet connection, a web browser, and Adobe Flash Player version 10.1 or higher. Adobe Connect supports nearly any operating system including Windows, Macintosh, Linux and Solaris, as well as the most widely used browsers including Internet Explorer, Firefox, Safari, and Chrome. A microphone is also needed to communicate with the instructors and the students attending the session.

3.1 Assignments & Deliverables

Laboratory Report Assignments

The ArcGIS Tutorials 1 book to learn the ArcGIS software. The book is divided into chapters and each chapter has a specific set of objectives and is divided into tutorials.. You are required to do 8 of these chapters along the semester according to the assignments released in the course website. **A summary lab report on each chapter that includes a list of chapter objectives, tutorial methods, snapshots of last screen in each tutorial, and snapshots of the 'Your Turn' parts in the tutorials is due on Thursday of the week following the lab activities.** For example, if activities for chapter 2 in the book is scheduled for the September 2nd Friday lab, the chapter lab report will be due on Thursday September 8th.

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 Fun-PrintScr) to capture and ctrl-v to past the snapshot. You may choose to enrich the reports with other items such as alternative methods to achieve objectives for extra points. This report should be considered as your notes for future referencing of the tutorials.

Assignment feedback will be communicated through the canvas course website. Comments will be provided mainly using the grading portal of each assignment. Some comments may be returned using the canvas email system. This could happen if quick individual notes need to be delivered to the students while grading is undergoing. 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

Semester Projects

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Three projects will be announced during the semester. The time frame for each project is 2-3 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 learnt in the tutorials in addition to test your critical thinking skills, you would expect to have less step-by-step instructions and the freedom to inject you own flavor. The basic delivery for each project will be either a power point presentation or 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.

Projects feedback will be communicated through the canvas course website. Comments will be provided mainly using the grading portal of each assignment. Some comments may be returned using the canvas email system. This could happen if quick individual notes need to be delivered to the students while grading is undergoing. Students are encouraged to review and digest the comments promptly to avoid recurring errors.

Quizzes & Exams

Two midterm exams will be offered online using the course e-learning (canvas) website. The first midterm exam will be offered approximately in week 10 and the second midterm approximately in the last week of the class. Common exam reflections/comments will be discussed in the class. Comprehensive midterm exam reviews will be conducted on an individual basis using special Adobe Connect sessions when requested.

3.2 Grades & Grading Scale

Grading Item	Grade Percentage	Description
Lab Activities	30%	This includes lab participation, performing assigned tutorials from 'GIS Tutorial' book and submitting lab reports. Please see the 'Laboratory Attendance and Tutorials' section for more details.
Class Participation	5%	Class participation includes class attendance and participation in online discussions. Please see the 'Class Participation' section for more details.
Midterms	40%	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	25%	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

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

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4 Course Content

Learning Modules and Lecture Schedule#

Week 0f	Module_	Lecture Topic/Readings	Reading (GIS Fundamentals Book – based on 4th Edition)
Aug. 22	1. Introduction to GIS and Data Sources	Course outlines – GIS Introduction – GIS data formats	Ch1 pp. 1-21; Ch 2 pp. 25-52
Aug. 29		Introduction to ArcGIS software Digital Data	Ch 7 pp. 271-303
*Sept. 05		Data Sources: Global Positioning system	Ch 5 pp.183-200; 206-216
Sept. 12		Aerial and Satellite Images	Ch 6 pp. 223 – 264
Sept. 19		Data Sources…continue	
Sept. 26	2. Spatial References	Horizontal datum and map projections	Ch 3 pp. 71-95
*Oct. 03		Datum & projections…cont/ Vertical datums <<Module 3 Discussions>>	Ch3 pp. 96 - 123
Oct. 10	3. Data Modeling and Management	<<Module 1 Discussions>> Introduction to spatial data modeling and Management (conceptual)	Ch 8 pp. 307 - 325
Oct. 17		Data modeling and management (cont.) (Logical modeling)	
Oct. 24		Data modeling and management (cont.) (Physical modeling) <<Module 2 Discussions>>	Ch 8 pp. 326 –339
Oct 31	4. GIS Vector Analysis	Introduction to vector data analysis. Buffering, proximity analysis, and geo-processing tools	Ch 9 pp. 321 - 360
*Nov. 07		Vector Analysis …cont.	
Nov. 14		Using ArcGIS model builder/Network analysis	Ch 9 pp. 347 - 389
*Nov. 21	5. Surface Modeling and Raster Analysis	<<Module 4 Discussions>> - Surface modeling	
Nov. 28		Surface modeling – Geo-statistical analysis – Introduction to raster Analysis	Ch 12 pp. 473-496 Ch 10 pp.407 – 437
Dec. 05		<<Module 4 and 5 Discussion>>	

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Friday Lab Schedule#:

Date	Lab Topic
Aug. 26	Lab Instructions and Equipment Settings using Adobe Connect software Introduction to ArcGIS Software
Sep. 02	GIS Tutorials v 10.1: Chapter 1 Introduction
Sep. 09	GIS Tutorial: Chapter 2 Map Design
Sep. 16	GIS Tutorials v 10.1: Chapter 3 GIS Output
Sep. 23	Introduction to Geodatabases GIS Tutorials v 10.1: Chapter 4 Geodatabases
Sep. 30	Project 1 (Data Handling and Preparation)
Oct. 07	**NO LAB – HOMECOMING
Oct. 14	GIS Tutorials v 10.1: Chapter 5 Importing Spatial and Attribute Data
Oct. 21	GIS Tutorials v 10.1: Chapter 7 Digitizing
Oct. 28	Project 2 (Developing GIS)
Nov. 04	GIS Tutorials v 10.1: Chapter 6 Spatial Data Processing Project 3 (Urban Forest Plot Analysis)
Nov. 11	**NO LAB – HOLIDAY
Nov. 18	GIS Tutorials v 10.1: Chapter 9 Spatial Analysis
Nov. 25	**NO LAB – THANKSGIVING**
Dec. 02	*Discussion of project 3 – Final Project Representation*

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

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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 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. One week late will result in a 25% reduction in points. Two weeks late will result in a 50% reduction. 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   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 UF with feedback on the quality of instruction in this course using a standard set of university and college criteria (UF Faculty Evaluations). These evaluations are conducted online at https://evaluations.ufl.edu. Evaluations are typically open for students to complete during the last two or three weeks of the semester; students will be notified of the specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results.

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5.3 Netiquette: Communication Courtesy

All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats. Failure to do so may result in loss of participation points and/or referral to the Dean of Students' Office. http://teach.ufl.edu/docs/NetiquetteGuideforOnlineCourses.pdf

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 University Policy on Accommodating Students with Disabilities:

Students requesting accommodation for disabilities must first register with the Dean of Students Office (http://www.dso.ufl.edu/drc/). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting assignments or taking the quizzes or exams. Accommodations are not retroactive, therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations.

5.6 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.

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6 Getting Help

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

- 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