WEB MAPPING AND VISUALIZATION

URP 6278

3 CREDITS

SUMMER C/2022

CLASS IS AVAILABLE ONLINE THROUGH E-LEARNING @ UF

INSTRUCTOR: *Erik Finlay*
131 Architecture Building,
erik3621@ufl.edu

OFFICE HOURS: By appointment.

COURSE WEBSITE: http://elearning.ufl.edu/

COURSE COMMUNICATIONS:

All communication with course faculty will take place within Canvas. All emails will be sent and received within Canvas. You should NOT be emailing the course instructor outside of the system. The instructor is also available for phone calls or live chat by appointment. Please contact the instructor by email to arrange a call or chat.

RECOMMENDED TEXT:

Getting to Know Web GIS, Fourth Edition by Pinde Fu

COURSE DESCRIPTION:

Web Mapping and Visualization is intended to introduce graduate students in Urban and Regional Planning to the realities of sharing and displaying geographic information on the web. The course presents the concepts and principles of what makes communication on the web possible, the function and importance of web services, and provides practical experience creating web maps using a variety of web mapping solutions. Free and Open Source web mapping technologies are discussed and contrasted with proprietary options, however because this course is geared towards non-programmers mainly commercial web mapping applications will be used for hands on experience. By the end of the course a student should be able to identify the components necessary to create a web application for various use case scenarios dependent on real world constraints such as budget, audience, and scalability. They should also be able to create attractive, feature rich, web maps and applications that work on any device including desktops, mobile phones or tablets.

PREREQUISITE KNOWLEDGE AND SKILLS:

Completion of URP 6270, Introduction to Planning Information Systems.

PURPOSE OF COURSE:

The purpose of this course is to introduce students to the concepts, software, and skills needed to share and display geographic information on the web.

COURSE GOALS AND/OR OBJECTIVES:

Upon successful completion of the course, students will be able to:

- Name and describe the hardware, software, and protocols that make web communication possible.
- Distinguish the differences between open and proprietary web services and describe their functions and capabilities.
- Identify the basic elements of a web map.
- Prepare GIS data and map services for web map optimization.
- Symbolize and share geographic data on the Web.
- Design and create simple web maps and mashups using a variety of web mapping solutions.
- Create mobile GIS applications for field data collection and editing.
- Build web applications for the display of spatial temporal data.

HOW THIS COURSE RELATES TO THE STUDENT LEARNING OUTCOMES IN THE URBAN AND REGIONAL PLANNING ONLINE MASTER'S PROGRAM:

Students taking this course will: through lectures, reading assignments, homework, class participation, and a final project develop practical quantitative skills necessary for support of research and professional practice. Students are also required to think critically about Geographic Information Systems tools and techniques. Each student's work will be reviewed based upon the department's student learning outcomes as those relate to displaying urban spatial analysis on the internet.

TEACHING PHILOSOPHY:

I expect all graduate students should be able to accomplish the basic requirements for the course and attain a minimum "B" grade). I will not hesitate to mark lower when a student does not meet that expectation and adequately display an understanding of the materials presented. Attaining an "A" grade requires performance that displays quality work, depth of knowledge, and the ability to synthesize ideas into actions or solutions.

I will be happy to meet individually with any student during office hours or by appointment for additional discussion on concepts, techniques, or methodology presented in this course.

INSTRUCTIONAL METHODS:

The concepts and techniques will be covered in lectures, videos, and hands-on class exercises. Student will learn the concepts, software, and skills needed to share and display geographic information on the web.

COURSE POLICIES:

ATTENDANCE POLICY:

Students are responsible for satisfying all academic objectives as defined by the instructor. Absences count from the first class meeting. In general, acceptable reasons for absence from or failure to participate in class include illness, serious family emergencies, special curricular requirements (e.g., judging trips, field trips, and professional conferences), military obligation, severe weather conditions, religious holidays, and participation in official university activities such as music performances, athletic competition or debate. Absences from class for court-imposed legal obligations (e.g., jury duty or subpoena) must be excused. Other reasons also may be approved.

Students shall be permitted a reasonable amount of time to make up the material or activities covered in their absence.

Students cannot participate in classes unless they are registered officially or approved to audit with evidence of having paid audit fees. The Office of the University Registrar provides official class rolls to instructors.

If a student does not participate in at least one of the first two class meetings of a course or laboratory in which they are registered, and he or she has not contacted the department to indicate his or her intent, the student can be dropped from the course. Students must not assume that they will be dropped, however. The department will notify students if they have been dropped from a course or laboratory.

The university recognizes the right of the individual professor to make attendance mandatory. After due warning, professors can prohibit further attendance and subsequently assign a failing grade for excessive absences.

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

QUIZ/EXAM POLICY:

Quizzes will be given to test student knowledge on course material.

MAKE-UP POLICY:

Students shall be permitted a reasonable amount of time to make up the material or activities covered in their absence, if the absence is due to the one of accepted reasons listed in the Attendance Policy.

If you are unable to turn in an assignment on time, please contact me before the due date to discuss your options. A grade reduction of 5% per day will occur unless there is an acceptable excuse for the late submittal.

Computer problems that arise during submission will not be accepted as an excuse for late work. In the event that you have technical difficulties with e-Learning, please contact the UF Help Desk. If technical difficulties cause you to miss a due date, you MUST report the problem to Help Desk. Include the ticket number and an explanation of the issue based on consult with Help Desk in an e-mail to the instructor to explain the late assignment/exam. The course faculty reserves the right to accept or decline tickets from the UF Help Desk based on individual circumstances.

ASSIGNMENT POLICY:

Homework assignments, exercises, discussions, and quizzes are typically due on Monday (by 11:55pm) of each week. Please refer to the course schedule in Canvas for exact dates and deadlines for individual assignments.

COURSE EVALUATIONS:

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/.

COURSE TECHNOLOGY:

This course will be using ArcGIS Online, ArcGIS Pro, and QGIS Desktop software. You can choose to download and run ArcGIS Pro on your personal computer or via UFApps.

Acquiring Desktop software license for ArcGIS

Students can acquire the latest version of ArcGIS software and a student license from the GeoPlan Center. It may take up to 24 hours to receive your software license. http://geoplan.ufl.edu/software/software.shtml

Accessing ArcGIS via UFApps

The ArcGIS software is available on UFApps (http://info.apps.ufl.edu/). UFApps provides access to software applications from any computing device--laptops, tablets, desktops, and smartphones--from any location, at any time.

In order to access UFApps and ArcGIS you will need to install Citrix Receiver, which is available from the UFApps website.

- Open your browser and navigate to http://info.apps.ufl.edu/.

- Scroll down to the First Time Use Questions section and

    o Click on Access UFApps from a PC if you are using a PC,

    o Click on Access UFApps from a Mac if using a Mac.

- The instructions will guide you through installing Citrix Receiver and logging in to UFApps.

Acquiring QGIS Desktop Software

Students can download QGIS Desktop software through the QGIS download website. https://www.qgis.org/en/site/forusers/download.html

COMPUTER REQUIREMENTS:

Students will need a computer that meets or exceeds the specifications below.

Components	Supported and recommended Specifications
CPU	Minimum: 2 cores, hyperthreaded Recommended: 4 cores Optimal: 10 cores
Platform	x64

Memory/Ram	Minimum: 8 GB Recommended: 16 GB Optimal: 32 GB or more
Display Properties	24 bit color depth
Screen Resolution	1024 x 768 recommended or higher at normal size
Visualization cache	The temporary visualization cache for ArcGIS Pro can consume up to 32 GB of space, if available, in the user-selected location. By default, the visualization cache is written to the user profile.
Storage	Minimum: 32 GB of free space Recommended: 32 GB or more of free space on a solid-state drive (SSD)
DirectX	DirectX 11, feature level 11.0, Shader Model 5.0
OpenGL	Minimum: OpenGL 4.3 with the ARB_clip_control and EXT_texture_compression_s3tc extensions Recommended: OpenGL 4.5 with the ARB_clip_control, ARB_shader_draw_parameters, EXT_swap_control, EXT_texture_compression_s3tc, and EXT_texture_filter_anisotropic extensions
Dedicated (not shared) graphics memory	4 GB or more

More information on supported platforms is available at:
https://pro.arcgis.com/en/pro-app/latest/get-started/arcgis-pro-system-requirements.htm

UF POLICIES:

UNIVERSITY POLICY ON ACCOMMODATING STUDENTS WITH DISABILITIES: Students requesting accommodation for disabilities must first register with the Dean of Students Office (https://disability.ufl.edu/). 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.

UNIVERSITY POLICY ON ACADEMIC MISCONDUCT: Academic honesty and integrity are fundamental values of the University community. Students should be sure that they understand the UF Student Honor Code (Links to an external site).

NETIQUETTE: COMMUNICATION COURTESY: All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats. https://teach.ufl.edu/wp-content/uploads/2020/04/NetiquetteGuideforOnlineCourses.docx

UNIVERSITY STUDENT HONOR CODE:

In adopting this Honor Code, the students of the University of Florida recognize that academic honesty and integrity are fundamental values of the University community. Students who enroll at the University commit to holding themselves and their peers to the high standard of honor required by the Honor Code. Any individual who becomes aware of a violation of the Honor Code is bound by honor to take corrective action.

Student and faculty support are crucial to the success of the Honor Code. The quality of a University of Florida education is dependent upon the community acceptance and enforcement of the Honor Code (Links to an external site).

> **The Honor 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 by abiding by the Honor Code.

On all work submitted for credit by students 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."

GETTING HELP:

For issues with technical difficulties for E-learning in Canvas, please contact the UF Help Desk at:

- Learning-support@ufl.edu

- (352) 392-HELP - select option 2

- https://lss.at.ufl.edu/help.shtml

Any requests for make-ups due to technical issues MUST be accompanied by the ticket number received from LSS 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 a make-up.

Other resources are available at http://www.distance.ufl.edu/getting-help for:

- Counseling and Wellness resources

- Disability resources

- Resources for handling student concerns and complaints

- Library Help Desk support

Should you have any complaints with your experience in this course please visit
https://distance.ufl.edu/getting-help.

GRADING POLICIES:

COURSE GRADING SUMMARY:

Component	Percent of Grade
Homework	30%
Exercises	15%
Discussions	10%
Quizzes	20%
Final Project	25%
Total	100%

GRADING SCALE:

Letter Grade	Percentage	Grade Points
A	93-100%	4.00
A-	90-92%	3.67
B+	88-89%	3.33
B	83-87%	3.00
B-	80-82%	2.67
C+	78-79%	2.33
C	73-77%	2.00
C-	70-72%	1.67
D+	68-69%	1.33
D	58-67%	1.00
D-	55-57%	0.67

E	Below 55%	0.00

For more detail, see the Grades section of the [Graduate Catalog for the University of Florida (Links to an external site.)](#). It also contains the policies and procedures, course descriptions, colleges, departments, and program information for UF.

COURSE SCHEDULE:

Week	Module	Topics Covered
1 & 2	Web GIS Concepts	Lesson 1: History of Web GIS Lesson 2: Web Communication - Clients, Servers, and Requests Lesson 3: - Part 1: OGC Web Services - Part 2: ArcGIS Web Services - Part 3: Basic Elements of a Web Map
3 & 4	Survey of Web Mapping Solutions	Lesson 1: - Part 1: Collaborative Web Mapping - Part 2: Open Source Web Mapping Solutions - Part 3: Commercial Web Mapping Solutions Lesson 2: Choosing a Web Mapping Solution
5 & 6	ArcGIS Online Part I	Lesson 1: ArcGIS Online Basics Lesson 2: Web GIS Layers, Maps, and Apps Lesson 3: Hosted Feature Layers
7 & 8	ArcGIS Online Part II	Lesson 1: Instant Apps Lesson 2: Story Maps
9 & 10	Web AppBuilder, Experience Builder, and Web Frameworks	Lesson 1: - Part 1: Web AppBuilder - Part 2: Experience Builder Lesson 2: Introduction to Web Frameworks
11 & 12	Mobile GIS and Real Time GIS	Lesson 1: Mobile GIS - ArcGIS Field Maps and Survey 123 Lesson 3: Spatial Temporal Data and Real-Time GIS - ArcGIS Dashboards
12	Final Project and Web Mapping Resources	Lesson 1: Resources for Web Mapping Final Project Consultation

Disclaimer: This syllabus represents current plans and objectives. As we go through the semester, those plans may need to change to enhance learning opportunities. Such changes will be communicated clearly, are not unusual, and should be expected.