

INTERNET GIS

Urban Planning 794 | Monday's 5:30 - 8:10pm | SARUP 190

Schedule

Class/Lab - Mondays
2:30pm - 5:10pm

Office Hours - By Appointment

Mid-Term - 11/18/2024

Final - 12/10/2024

Instructor

Paul Vepraskas, GISP
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Lab Instructor

Kurt Meingast
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Prerequisites

None - even though this class will expose you to a lot of programming it is done with the understanding that students entering this class have zero programming experience & help is always available & encouraged



Course Overview

This course focuses on emerging technology in geographic information systems (GIS): Specifically Internet Based GIS. Internet GIS is a network-centric GIS technology that uses the Internet and the World Wide Web as a primary means of providing access to the functionality (i.e., analysis tools, mapping capability) of GIS and to the spatial data and other data needed for various GIS applications. It provides users capability to work interactively with maps and conduct spatial analysis on the Web.

There are two goals of the course. The first is to give you a background in Internet GIS models, procedure, and vocabulary so that you will have a better understanding of the concepts of Internet



Class Structure & What to Expect?

- Class will start with a Internet GIS site or two of the week
- A weekly code debug session will help you understand how to read HTML/JavaScript
- Captivating lectures will get you excited to dig into that weeks Lab activities
- Fun Labs will build off of one another guiding you through the process of developing a GIS website, along the way teaching proper data setup, UI Planning & Layout, and Programming
- Assignments will help enforce the labs and lectures are due before the next class starts

Software Recommendations

- ArcGIS Pro
- Aptana, Visual Studio or Sublime Text
- Adobe Photoshop*
- Chrome
- Fiddler

*Cost Involved

GIS, and the technology/languages currently used in the industry. The second is to expose you to internet GIS software and procedure through hands-on experience so that you can gain necessary skills to work with Internet GIS programs and develop Internet GIS Applications.

We will explore what is currently possible when GIS leverages the internet by working with the most current software and development standards used by professionals. Through hands on training you will be exposed to the procedures and languages needed to utilize the web. This training will include setting up data for the web, publishing options, security, target platforms, web site design, and basically everything Web GIS! We will cover the basic techniques in HTML, CSS, JavaScript, ArcGIS Server, ArcGIS Online, and a variety of other technologies.

Final Grade Breakdown

- 10% Assignments
Handed out in Labs & Lectures
- 5% Code Assignments
Handed out in Labs & Lectures
- 5% Project Design Framework Presentation
Short 5-10 Min Presentation of Project Ideas with time for questions
- 30 % Midterm Exam
ESRI JavaScript API Site created with the JavaScript Builder (No Customization)
- 50 % Final Project and Presentation
Evolution of the Midterm Site with measured levels of customization and sound UI

UWM Syllabus General Policies

<https://uwm.edu/secu/wp-content/uploads/sites/122/2016/12/Syllabus-Links.pdf>



SCHEDULE

SEMESTER QUICK LOOK

Weeks	Title	Lab	Code Assignment	Presentation
1	Intro to Pro & Online	[Blue Block]		
2	Intro to HTML			
3	Map Viewer Deep Dive			
4	Map Templates & CSS			
5	Instant App vs Experience Builder			
6	Feature Layer Rules & Enhancement			
7	Editing/Field Maps & Intro to javascript			
8	Dashboards			
9	Survey123			
10	Story Maps & Hub Pages			
11	Mid Term Presentations			[Blue Block]
12	ESRI Javascript API	[Blue Block]		
13	Open Source GIS			
14	Final Presentations			[Blue Block]

Week 1 - Introductions & ArcGIS Pro/Online

Introductions

Course Overview

Mid-Term Expectations

Final Expectations

GIS in the Modern Era - Origins, Evolution, Concepts, & Applications

Lab - Develop Data, Build MXD, & Publish Data to ArcGIS Server

Code Assignment - ESRI JavaScript Code Dissection

Week 2 - Intro to HTML

Tech/Internet GIS Basics

How to organize Data for the Web

SDE Basics for Internet GIS (Just what you NEED to know)

Introduction to ArcGIS Server - Functionality & Features

Lab - Intro to HTML/JavaScript

Code Assignment - Create a "Hello World" HTML Site

Week 3 - Map Viewer Deep Dive

Get more in-depth into Server Functionality

- Feature Services

- Utility Services

- GeoData Services

- Cache

Plan For Security - What to Share and What to Restrict, how do Tokens fit in?

Lab - Publish and Secure a Map & Feature Service create a Cache Scheme for the Data

Assignment - Lab Results

Code Assignment - Add two paragraphs to the previous assignment, make one red and one blue

Week 4 - Map Templates and Student Presentations

Student Final Project Idea Presentations

Now that we have our data Published What can we do with it?

What is ArcGIS Online?

Lab - Publish ArcGIS Services to ArcGIS Online, create Sites based on ArcGIS Online Templates

Assignment - Customize the ArcGIS Template for your Data (No Coding Needed)

Code Assignment - Add Hyperlinks and Images to the previous assignment

Week 5 - Instant Apps

I now have a site... What if it doesn't solve all my issues?

Introduction to Mash-Ups

Exploration of the ESRI API's

Why would I choose one instead of the Other (Licensing)

Lab - Overview of a Mash-Up API Leaflet

Assignment - Create a Mash-Up

Code Assignment - In the previous assignment center the text in the middle of the page

Week 6 - Feature layer Rules

Commercial Site Builders and Content Management when to use and when to walk away!

Lab - Introduce the JavaScript Builder in ArcGIS Online

Assignment - Use the JavaScript Builder to create a site with your Services

Code Assignment - In the previous Assignment Put a border around the Images

Week 7 - Editing/Map Rules

The User Interface & Experience is more important than your Data!

- Testing
- Simplify
- Removing Steps

Lab - Use one of the HTML5 Templates to create a good Landing Page for your site

Assignment - Have a second party test your site, and report back their comments

Code Assignment - In the previous assignment when a user clicks the image create an alert

Week 8 - Dashboards

Design with all users in Mind! Professionals are taking GIS to new heights and new places the sites that we as developers and designers need to be able to work on multiple platforms, browsers, and screen sizes

Lab - Learn to Test, Test, Test, more comprehensive look at Debugging

Assignment - Test your site on Three Browsers and Three Devices alter Site to work on all

Code Assignment - In the previous assignment create a grid of DIV's

Week 9 - Survey123

Student Demonstration - JavaScript Builder Projects

See Instructions and Deliverable Below

Week 10 - StoryMaps

Introduction to the ESRI JavaScript API

Lab - Set up one of the JavaScript Templates, and edit the defaults to work with the services you published in Week 3

Assignment - Using the site created in Lab add a secondary templates functionality to your site

Code Assignment - In the previous assignment place the image in one of the DIVs and each paragraph in its own DIV

Week 11 - Midterms

Lab - Using the site created in last weeks Lab add a secondary templates functionality to your site

Assignment - Lab Results

Code Assignment - In the Previous Assignment change the width & background color of each DIV

Week 12 - ESRI Javascript API's

Overview and exploration of the other ESRI API's, what situations are they appropriate and what are their futures?

Lab - NONE (Work on Finals)

Assignment - NONE

Code Assignment - NONE

Week 13 - Opensource GIS

Class will be dedicated to working on Final Projects!

Lab - NONE (Work on Finals)

Assignment - NONE

Code Assignment - NONE

Week 14 - Final Presentations Part I

Group One Presents

FINAL PROJECT IDEA PRESENTATION

Expectations - Week 4

5 - 10 Minute Presentation

No Media Presentation

Outline The Following for your Project

Idea - What is your Idea?

Data - What Data do you think you will need?

UI Tools - What Tools do you think users will need or want?

MID-TERM

Expectations

For the Mid-Term you will build a Site Using the JavaScript Builder in ArcGIS Online that utilizes the data for your final and demonstrates a well thought out approach to displaying that data and how the end user will experience it.

Mid-Terms will be done individually, but you can use the help of any professor, TA, or students in creating your site.

Mid-Term Measurable's

- ArcGIS Online JavaScript Builder Site
- At Least Four tools incorporated into the site
- Custom graphics and Color Scheme

FINAL PRESENTATION

Expectations

For the Final you presentation you will download the code created by the Mid-Term and install it as a stand alone website on the Universities System. You will then make changes to the HTML/JavaScript to enhance the look of the site, and its functionality. A landing page will also be created to inform users what to expect from the site and inform them of the project. The landing page will also have a help section.

At the presentation you will give a short 5 minute media presentation about the components and changes you made to the site, what tools you used, what data was consumed, & what services you created. Following the presentation you will demonstrate the GIS site and its landing page.

Final Projected will be done individually, but you can use the help of any professor, TA, or students in creating your site.

The site will be graded on creativity, level of customization, simple and easy to use UI, a pleasant UE, and approach to simplifying complex analysis.

Final Project Measurable's

- Landing Page
 - Intro to your project
 - How to or Help Guide to the Site
- HTML/JavaScript Site Installed on UWM Servers
 - Some Customization from the JavaScript Builder