

# Course Syllabus: *Web GIS for Community Engagement*

Winter Quarter, 2022 **Hybrid Offering**

MPA Program at The Evergreen State College

(Syllabus Pre-Class Version, Nov 15, 2021 - SUBJECT TO CHANGE)

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## **Intensive Weekend Schedule:**

- January 14 Friday 6-9 pm
- January 15 Saturday 9 to 5 pm (with one hour lunch break)
- January 16 Sunday 9 to 3 pm (with half hour lunch break)

**Location:** This class will be taught in the Computer Application Lab (CAL) in Lab 2 Building on the Olympia campus. In this hybrid class offering, vaccinated students may take the course sessions by attending in-person on the CAL.

There will also be a parallel Zoom session that will allow students to elect to take this course from home.

One module will be taught using a specific Windows computing technology. Students who do not have a Windows personal computer, or are unable to load Esri software on their own machine should plan to come to campus to take that module <sup>(Note 1)</sup>.

**Credits:** 2

**Textbook:** There is no book for this class. Exercise documents will be provided through Canvas.

## **Eligibility and Prerequisites**

This class is open to TESC graduate students. There are no prerequisites for this course <sup>(Note 2)</sup>.

## **Program Description**

The purpose of this class is to teach students practical skills for management and exploitation of spatial data for the production of insightful and informative maps. Upon successful completion of this course, successful students will be able to find and integrate many types of publicly available spatial data in order to create their own maps and infographic exhibits concerning places of interest in their research and work. In addition, students will be introduced to the basic skills for creation and publication of web maps and apps using Esri ArcGIS Online software, and for making maps within an Excel worksheet using *Esri Maps for Office* <sup>(Note 3)</sup>.

The course is structured around intensive hands-on exercises that teach map-making skills and tools, while exploiting public sources of spatial and demographic data through methods of spatial analysis and map creation.

## Access to GIS Software

Students can access most software functions taught in this class through the use of a modern web browser such as Firefox or Chrome or Edge (not Safari).

Students will be granted a software license to use the latest *ArcGIS Online* software, produced by Esri, Inc (<https://www.esri.com/en-us/home>). The student license will be sent to all students just prior to the start of the course. Each student will be granted their own personal “named user” license for their exclusive use. Students must create and remember their login credentials (ID and password) and use this assigned login account for every module of this course. The software license will remain available after the course, for as long as the student is actively learning at Evergreen.

Students may be familiar with the technology of Geographic Information Systems (GIS). In this class Students will use the Esri ArcGIS platform to access vast compilations of spatial data including demographic and business content. Esri software is used for mapping by professionals and decision makers in almost every agency of state, local, and federal governments, in almost every nation, and by thousands of companies and NGO’s worldwide.

ArcGIS Online is a system of software-as-a-service (SaaS) which allows users to create maps through a web browser. Students will be invited to join the Evergreen organizational subscription to ArcGIS Online which is available to any current student (at no cost) for the duration of their studies at TESC.

The web interface enables the capabilities for map creation, data access spatial analysis, and publication which are taught during this course. Students may elect (optionally) to install Esri Maps for Office on their personal computers. This software is an add-in from Esri to enable map creation in Excel.

## Computing Hardware and Internet Bandwidth

Because this course is mainly web-based, almost any modern computer should be able to use Chrome or Firefox or Edge browser software to access the course content. (Do not rely on Safari).

You will need to take every module of this course from a computer, not a cellphone! Because this course is intensely demanding of large-screen display graphics (there are lots and lots of maps!) all students will need to have **two computer monitors**. It will be very difficult to take this course fully online with only one monitor. If you cannot obtain a second monitor at home for the duration of this course, please plan to take the course in person, in the CAL, using the double-monitor computers available for students on campus.

Students should assess whether they have broadband internet connectivity to take this course from home. If you are in doubt about the strength of your internet connectivity, please run a speedtest from your home computer using [www.speedtest.net](http://www.speedtest.net). This free speedtest will provide measure the internet bandwidth available to your home computer. If you see that your ping rate is higher than 30 ms, OR if your download speed is less than 25 Mbps, OR if your upload speed is less than 5 Mbps, then you do not have broadband internet. Students with low bandwidth should plan to take this course from the CAL using a campus computer with reliable broadband.

The speedtest results look similar to the graphic below, though your numbers will be different. Notice the Ping, Download, and Upload results in the screenshot below (Upload is around 12.14 Mbps, but the test is shown as still ‘in-progress’ in the screenshot.). The test takes less than a minute and is free.



Some other caveats apply for students planning to take this course from home <sup>(Note 3)</sup>.

## Microsoft Office Software

All Evergreen students have a free license to Microsoft Office. To take this course from home, you must have a local copy of the current MS Office running on your home computer. You can obtain and download the Microsoft license from your my.evergreen account. Click on “Microsoft Home Use Program” to follow the installation process.

Students will need to use Excel software from the Microsoft Office suite. Microsoft Office is available (for free) from the TESC technology center web page. One exercise is planned which requires download of a free Excel-mapping software from Esri. This software runs only on Windows computers and is available to any student on campus Windows machines in the Computer Applications Lab (CAL). Students who have a Windows computer may choose to download and install the Esri software on their own computer (at no cost).

Students who cannot install Microsoft Office should plan to take the course from the CAL using a supported TESC campus computer.

## Readings

There is no assigned textbook for this class. Readings may be assigned from short PDF’s as provided by the faculty through the Canvas content management system. This class is heavy on hands-on skills building and light on reading and theory. A light orientation to mapping theory will be provided in the context of skills-development exercises.

## Canvas for Content Management

Class content is managed through Evergreen’s implementation of the Canvas online system, for distributing class modules and required data and reading files, uploading assignment results, taking quizzes, participating in discussion boards, and performing evaluations.

## **Discussion and Questions**

Students are encouraged to work collaboratively. Please ask questions through the Canvas Discussion threads. Faculty will monitor the Discussion threads and provide answers and guidance. Experience shows that if one student has a question or problem, so do other students.

Since this is an “intensive weekend” format, there are no plans to offer supplementary office hours.

## **Awarding of Credit**

Class credit will be awarded based on attendance and in-class participation, and completion of the assigned exercises, as shown through submission of assignments into Canvas. Students are required to write a self-evaluation and a faculty evaluation upon completion of the course. Partial credit will not be awarded.

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## **Course Modules – Intensive Weekend “Hybrid” Sessions**

Zoom URL will be provided through Canvas.

### **Pre-Class Module 0 (Self-Paced)**

#### **To Do Before Attending First Scheduled Class**

Introductory Survey of Student Interests in GIS

Read-Ahead: Mapping the Nation (PDF Provided in Canvas)

Optional: Improve Your Excel Skills – Covering the Basics of Excel

### **Module 1 (Friday Evening)**

#### **Introduction to Web Mapping and ArcGIS Online**

Presentation: Welcome to ArcGIS for Web Mapping

Practicum: Create First Map and an Interactive App

Lab 1: Using Layers, Symbology, Filters, Extents, Labels, Bookmarks. Publish a Web-App

Stretch Exercise: Create a Simple Story Map

### **Module 2 (Saturday Morning)**

#### **Spatial Data in Community Analyst Software**

Presentation: Essentials of Coordinate Systems

Practicum: Establishing Sites for Community Analysis, Integrating External Data Sources

Lab 2: Evaluate Potential Sites for a Local Community Center

Stretch Exercise: Demographic Charts from Excel

## **Module 3 (Saturday Afternoon)**

### **Maps for Office – Making Maps in Excel**

Presentation: Geocoding and Address Locations

Practicum: Tips and Tricks for Managing Spatial Data in Tables

Lab 3: Create and Share a Map Using Esri *Maps for Office*

Stretch Exercise: Analysis for a Disaster Event

## **Module 4 (Sunday Morning)**

### **Community Analysis Infographics**

Presentation: US Census Public Data Resources

Practicum: Generating Infographics and Excel Reports

Lab 4: Maps from Community Indexes

Stretch Exercise: Customized Infographics

## **Module 5 (Sunday Afternoon)**

### **Interactive Public Presentation Methods**

Presentation: Dashboards

Practicum: Story Mapping from Community Analyst

Lab 5: Generate Public Outreach Interactive App

## **Evaluations (To Be Scheduled)**

Students are required to write Self-Eval and Faculty-Evaluation documents. Evaluation meetings will be scheduled with the instructor, of ~20 minutes duration, at Campus or on Zoom or by telephone, according to individual student preferences and availability.

## **Notes**

*Note 1: Windows computers are required to take one of the course modules. The campus CAL computers have all required (Windows) software installed. Some students may wish to install the Esri Maps for Office software on their own Windows operating system (at no cost). Students with Apple computers have a few choices. 1. Come to the CAL and take the module on a supported campus machine. 2. Install “Basecamp” or “Parallels” on your Mac, so that you can boot your Apple machine into Windows and install the Maps for Office software. 3. Request a Remote Desktop Protocol (RDP) grant to login to a CAL computer over the internet.*

*Note 2: Though not a formal pre-requisite, a working familiarity with the use of Excel spreadsheets is important for many aspects of GIS practice, mainly around data management. In Module 0, students can take advantage of an optional Excel basics exercise. Students who are new to Excel software (or who wish to learn some new skills in Excel) should plan to take this optional pre-class module in order to be ready for the Excel-based portions of the course.*

*Note 3: To take this course from home, you need good broadband internet and a modern browser (not Safari). You need two computer monitors, and it really helps to have a three-button mouse, ideally. For Zoom you need a microphone and a web camera. You will need to be able to take screenshots and often you may want to annotate the screenshots. Download "Sharex" for free ([getsharex.com](http://getsharex.com)). Other helpful software, available for free, includes 7-Zip ([www.7zip.com](http://www.7zip.com)) for managing archive files in "zip" format.*