

Course Syllabus

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Summary

Course Title	Web-Based GIS Mapping
Course No.	GEOG16462
CRN	22619
Start/End Dates	March 16, 2021 - May 10, 2021
Term/Module	Spring 2021

Delivery Method	Number of Face-to-Face Meetings
Online	0

Course Description

This course is designed as an introduction to web GIS, exposing students to the programming concepts underlying web-based mapping applications. This course will focus on the basics of web GIS architecture, web technologies, web services, and web mapping Application Programming Interfaces (API's). This course is designed to increase students' understanding of developing web applications from start to finish. The course will focus on the most widely used web mapping API's and cloud-based mapping platforms at the time.

Instructor

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Name	Chris Pollard
Email	pollardc@rowan.edu

Virtual Office Hours	Post questions and comments for the instructor to the Office Hours board (in Discussions Area). The instructor will respond within approximately 48 hours. For faster or more private correspondence, use email or phone.
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Objectives

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Students will complete this course with knowledge of the following concepts:

- Implementation strategies for cloud-based mapping technologies.
- Implementation strategies for client-side web mapping APIs.
- Practical experience with current web mapping frameworks.
- Understanding of cloud computing technologies and how GIS can operate on those platforms.
- Understanding basic programming knowledge and web design concepts.

Prerequisites

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- Students should bring familiarity with geospatial data and have completed GEOG 16160, Introduction to Mapping and Geographic Information Science. Fundamentals of Geographic Information Systems (GEOG 16260) is recommended.

Materials and Texts

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- Rowan Cloud <http://rowan.edu/cloud>

All lectures, lab assignments and any other course materials will be posted to Canvas.

Other materials, GIS data and services will be provided electronically. Web-based GIS formats are rapidly evolving and, while there are no mandatory texts books for this course, students are encouraged to review the documentation for the major cloud-based web mapping software platforms used in the course as well as review and visit these blogs or websites that frequently cover web mapping technologies:

- ArcGIS Blog - <https://www.esri.com/arcgis-blog/>
- CARTO - <https://carto.com/blog/>
- Mapbox - <https://blog.mapbox.com/>
- Geohipster - <http://geohipster.com/>
- National Geographic - <https://www.nationalgeographic.com/>

References

- ArcGIS Online - <https://www.arcgis.com/home/index.html>
- CARTO - <https://carto.com>
 - *Location Intelligence for Dummies* ebook: <https://carto.com/location-intelligence/>
- Mapbox - <https://www.mapbox.com>
- Leaflet - <https://leafletjs.com>
- Codecademy - <https://www.codecademy.com>
- GitHub - <https://github.com>

Schedule

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The following schedule is tentative and may be changed with prior notification from the instructor.

Week	Start Date	Readings, Activities & Assignments
1	3/16/21	<p>Topics:</p> <ul style="list-style-type: none"> ● Introduction to Web Mapping ● Overview of the Course Tools <p>Lectures:</p> <ul style="list-style-type: none"> ● Lecture 1 - <i>Introduction to Web Mapping</i> ● Lecture 2 - <i>Overview of the Course Tools</i> <p>Discussions:</p> <ul style="list-style-type: none"> ● DQ 1 - Why put maps on the Web? <p>Assignments:</p> <ul style="list-style-type: none"> ● Assignment 1: <ul style="list-style-type: none"> ○ Sign up for Rowan University's ArcGIS Online Organization ○ Sign up for Mapbox ○ Sign up for GitHub and GitHub Student Pack/CARTO ○ Optional: Complete HTML, CSS and JavaScript course on Codecademy (if needed)
2	3/23/21	<p>Topics:</p> <ul style="list-style-type: none"> ● Web GIS Data Formats ● Introduction to ArcGIS Online (AGO) <p>Lectures:</p> <ul style="list-style-type: none"> ● Lecture 3 - <i>Web GIS Data Formats</i> ● Lecture 4 - <i>Introduction to ArcGIS Online (AGO)</i> <p>Videos:</p> <ul style="list-style-type: none"> ● GEOG16462 - Assignment 2 Demo Parts 1-3

		<p>Discussions:</p> <ul style="list-style-type: none"> • DQ 2 - Exploring GIS functionality available through the Web <p>Assignments:</p> <ul style="list-style-type: none"> • Assignment 2 - Preparing a Web Map using ArcGIS Online (AGO)
3	3/30/21	<p>Topics:</p> <ul style="list-style-type: none"> • Using GIS Services in a Web Map • Introduction to AGO's Web App Builder <p>Lectures:</p> <ul style="list-style-type: none"> • Lecture 5 - <i>Geospatial Web Services</i> • Lecture 6 - <i>WebApp Builder for ArcGIS</i> <p>Videos:</p> <ul style="list-style-type: none"> • GEOG16462 - Assignment 3 Demo <p>Discussions:</p> <ul style="list-style-type: none"> • DQ 3 - Choosing the right basemap for your project <p>Assignments:</p> <ul style="list-style-type: none"> • Assignment 3 - Build an AGO Web Mapping Application
4	4/06/21	<p>Topics:</p> <ul style="list-style-type: none"> • The Power of Story Maps <p>Lectures:</p> <ul style="list-style-type: none"> • Lecture 7 - <i>The Power of Story Maps</i> • Lecture 8 - <i>Source Code Editors</i> <p>Videos:</p> <ul style="list-style-type: none"> • GEOG16462 - Assignment 4 Demo <p>Discussions:</p> <ul style="list-style-type: none"> • DQ 4 - What is the difference between a Story Map and an AGO Web Map <p>Assignments:</p> <ul style="list-style-type: none"> • Assignment 4 - Create an AGO Story Map
5	4/13/21	<p>Topics:</p> <ul style="list-style-type: none"> • Overview of Final Web Mapping Application Project • Exploring CARTO <p>Lectures:</p>

		<ul style="list-style-type: none"> Lecture 9 - <i>Exploring CARTO</i> Lecture 10 - <i>Final Web Map Project</i> <p>Videos:</p> <ul style="list-style-type: none"> GEOG16462 - Assignment 5 Demo <p>Discussions:</p> <ul style="list-style-type: none"> DQ 5 - Location Intelligence <p>Assignments:</p> <ul style="list-style-type: none"> Assignment 5 - Building a Web Map using CARTO Builder Final Project Proposal - Web Mapping Application Project Proposal
6	4/20/21	<p>Topics:</p> <ul style="list-style-type: none"> Overview of Mapbox <p>Lectures:</p> <ul style="list-style-type: none"> Lecture 11 - <i>Overview of Mapbox</i> <p>Videos:</p> <ul style="list-style-type: none"> GEOG16462 - Assignment 6 Demo <p>Discussions:</p> <ul style="list-style-type: none"> DQ 6 - The Rise of Custom Basemaps <p>Assignments:</p> <ul style="list-style-type: none"> Assignment 6 - Design a custom basemap using Mapbox Final Project Prep - Web Mapping Application Project Data Preparation
7	4/27/21	<p>Topics:</p> <ul style="list-style-type: none"> Overview of JavaScript Mapping API's Final Web Mapping Application Project Introduction to Leaflet <p>Lectures:</p> <ul style="list-style-type: none"> Lecture 12 - <i>Introduction to Leaflet and GeoJson</i> Lecture 13 - <i>Getting Your Development Environment Started</i> <p>Videos:</p> <ul style="list-style-type: none"> GEOG16462 - Assignment 7 Demo Part 1 & 2 <p>Discussions:</p> <ul style="list-style-type: none"> DQ 7 - Web Mapping API's

		Assignments: <ul style="list-style-type: none"> • Assignment 7 - Getting started with Leaflet JS • Final Project - Web Mapping Application Project
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Assignment Outline

Assignments

Each week's assignment will consist of a technical narrative, stepping you through the technology or web mapping platform discussed that week. You will be given further instructions on how to proceed on your own to develop a web map or data creation for submission and review. You will also be asked to submit answers to any questions and provide links to your live web mapping products.

The assignments are self-paced and are written in a procedural format. The student is expected to use the class lectures, the narrative within the assignment, and online tutorials and videos to complete the assignment.

The student is encouraged to ask for assistance using the discussion forums, allowing all students enrolled to assist one another and learn from the discourse. The instructor will provide assistance through the discussion forums and alternatively via email.

Discussion Questions

A discussion topic will be posted to Canvas on Tuesday's. The student is expected to post a response to the discussion topic by the end of the day on Friday. The student is then expected to respond to at least two posts from other students before the next discussion topic is introduced the following Tuesday.

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Grading

Late work policy

If you need to miss any due date as a result of extenuating circumstances, please contact your instructor, preferably **before** the due date passes. A grace period to submit a course activity (e.g., an assignment, discussion question, map submission, etc.) may be granted, but is at the sole discretion of your instructor. Without an authorized grace period, late submissions will be penalized **1 point** for every **3 days** past the due date.

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Final Grade Breakdown

Grading Criteria/Assignment	Points/Percentage
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Assignments	50%
Discussions	20%
Final Project	30%
Total	100%

Grading Scale

A	93 and Up	C	74 – 76
A-	90 – 92	C-	70 – 73
B+	87 – 89	D+	67 – 69
B	84 – 86	D	64 – 66
B-	80 – 83	D-	60 – 63
C+	77 - 79	F	59 and Below

Rowan Online Standard Policies (addendum)

The current version of Rowan Online Standard Policies, which are an addendum to this syllabus, are found in the [Rowan Online Standard Policies Document](#).

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