GEOGRAPHY (GEOG) 1890:
EXPLORING OUR WORLD THROUGH GEOSPATIAL TECHNOLOGY
FALL SEMESTER 2019

Meeting Time:	TO BE DETERMINED
Location	TO BE DETERMINED
Instructor:	Eric C. Ewert, Ph.D. Department of Geography
Phone #:	(801) 626-6197
Office:	SL 507M
Communication:	**WSUOnline – Canvas messaging system (preferred)** eewert@weber.edu (alternate)
Office Hours:	TO BE DETERMINED OR by appointment

REQUIRED MATERIALS

- **Texts**
  Three open-source and free textbooks will be used:

  1) DiBiase, David: "The Nature of Geographic Information"
     This book can be accessed directly online at:
     https://www.e-education.psu.edu/natureofgeoinfo/
  2) Schmandt, Michael: "Introduction to GIS"
     This book can be accessed directly online at:
     http://giscommons.org
  3) Fundamentals of Remote Sensing
     This book can be accessed directly online at:
     http://www.nrcan.gc.ca/earth-sciences/geomatics/satellite-imagery-air-photos/satellite-imagery-products/educational-resources/9309

- **Software**
  Access to the latest ArcGIS software.
- **Other Items**

ADDITIONAL MATERIAL

There will be additional readings provided through Canvas throughout the semester.

COURSE DESCRIPTION & OBJECTIVES

- This all-online, face-to-face, or hybrid exploratory course introduces you to the fundamental concepts of Geospatial Science and how Geospatial Technology (GST) is used to measure, imagine, study, and discover our complex and ever-changing human and natural world. You will learn the basic techniques of cartography (mapping), GPS (global positioning systems), GIS (Geographic

Information Systems), spatial analysis, and remote sensing. Geospatial Science incorporates powerful tools and techniques that allow users to view, explore, interpret, visualize, and analyze temporal and spatial relationships. GST is used for many different applications: scientific investigations, natural resource management, asset administration, environmental impact assessment, urban planning, map making, criminology, natural hazards, business marketing, package delivery, and the logistics of location. All that is needed is a spatial or location component (such as an address) and GST serves as the tool for sophisticated problem solving. For example, GST might allow emergency planners to easily calculate first response times in the event of a natural disaster, or assist politicians as they predict voter patterns. GST might help locate wetlands that need protection from pollution, or help track the spread of a disease, or be used by a company to site a new business in a previously underserved market. Likewise, GST may simply tell you which restaurants are close to your hotel in an unfamiliar city. Ultimately, GST helps answer questions, solve problems, and predict the future. As you might imagine, people with GST skills are in high demand.

- *The specific objective of the course is to:*
    - Thoroughly introduce students to the breadth, depth, and myriad applications of Geospatial Technologies.

STUDENT LEARNING OUTCOMES (SLOS)

By the end of the course, students are expected to:

- Describe the fundamental components and applications of geographic information science and technology.
- Describe and explain the principles of mapping and spatial data modeling.
- Describe different sources of spatial data and demonstrate how to acquire spatial data, including the Global Navigation Satellite Systems (GNSS) such as GPS.
- Discuss the fundamental principles of remote sensing and image analysis.
- Identify remote sensing platforms and their respective functions.
- Discuss and debate the future of geospatial technologies, ethical questions related to the field, and societal implications.

PREREQUISITES AND/OR COREQUISITES

- None

LAB FEES

- None

COURSE POLICIES

Methods of Evaluation: Students will be assessed through a combination of **Exams, Assignments, Online Exercises, and Video Discussion Board Activities**. Grades are based on overall student performance, compared to their peers in this and similar classes. This course will use the standard +/- grade scale in accordance with university policy. Final grades will be awarded using the following percentage scale that is based on the total number of points earned divided by the total number of available points.

A	93.0+%	B-	79.0-81.9%	D+	66.0-68.9%
A-	89.0-92.9%	C+	76.0-78.9%	D	63.0-65.9%
B+	86.0-88.9%	C	72.0-75.9%	D-	60.0-62.9%
B	82.0-85.9%	C-	69.0-71.9%	E	<60.0%

Exams (40% of grade)
Labs (35% of grade)
Final Project (25%)

Methods of Instruction:

- Lecture Discussion
- Learning Modules
- Audio-Visual
- Collaborative Learning
- Lecture-Lab Format
- Computer Assisted Instruction
- Lab/Class Exercises

COURSE OUTLINE

Week	Date	UNITS	SLOs (number)	Labs Due
1		UNIT 1 **What is Geographic Information Science and Technology (GIST)?**		
		Lab 1:		
2		UNIT 2 **What Can Be Done With GIST? Google Maps and Beyond**		
		Lab 2:		Lab 1
3		UNIT 3 **Cartography and Map Making**		
		Lab 3:		Lab 2
4		UNIT 4 **Remote Sensing: From Satellites to Smart Phones**		
		No Lab		Lab 3
5		UNIT 5 **Geographic Information Systems: Data by Location**		
		Lab 4:		---
6		***EXAM 1***		
		Lab 5:		Lab 4
7		UNIT 6 **Spatial Data and GPS**		
		No Lab		Lab 5

8		UNIT 7 **Data Collection and Management and Drones**		
		Lab 6:		---
9		UNIT 8 **Data Queries, Objectives, and Analysis**		
		No Lab		Lab 6
10		UNIT 9 **Data Visualization: How to Look Geographically**		
		Lab 7:		---
11		***EXAM 2***		
		Lab 8:		Lab 7
12		UNIT 10 **Geospatial Outputs: Maps, Photos, Charts, Diagrams, Tables, etc.**		
		Lab 9:		Lab 8
13		UNIT 11 **Geospatial Case Studies: from Marketplaces to Social Spaces**		
		Lab 10:		Lab 9
14		UNIT 12 **Geospatial Careers and Applications: Uses and Users**		
		No Lab		---
15		**The Future of GIST: Limitless**		
				Lab 10
		EXAM 3		

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