GEOGRAPHY (GEOG) 2400/4400:
CARTOGRAPHY AND MAP DESIGN
FALL SEMESTER 2019

NOTE: Dual-listed courses: Lower-division (blue) and upper division courses (green) are color-coded to indicate unique information related to each course.

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**

  1) Slocum, McMaster, Kessler, and Howard, *Thematic Cartography and Geovisualization*, 3rd edition. Be aware that certain topics in the textbook will not be addressed

  2) *ESRI ArcNews*, http://www.esri.com/news/arcnews/index.html

  3) *ESRI ArcUser*, http://www.esri.com/news/arcuser/index.html

  Exercise Manuals

  1) GIS Tutorial, Esri Press, 4th ed., ISBN: 9781589482593 and other Esri Press Tutorials books or online e-learning courses.

  2) GeoTech Center Exercises

- **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

- Cartography and Map Design (sometimes known as Geovisualization) form the backbone for all Geospatial Science because they produce the maps (and other visual products) that anchor all research, presentation, publication, decision-

making, and output from Geospatial Technologies. This course is designed to introduce the field, topics, processes, terms, tools, and techniques of Cartography to a motivated student who has completed GEOG 1990 (Exploring Our World Through GST). While nearly anyone can read a map, by semester's end you'll be able to do so much more. Maps form the language of geography and allow us to convey, illustrate, and organize spatial information. As a cartographer you'll be able to study, understand, analyze, interpret, and especially construct good maps. With today's computer software, anyone can make a map; unfortunately, most of them are inaccurate, misleading, or inappropriate. This course will introduce the geography behind the cartography (and the cartography behind the GIS) that allows one to create good maps. We'll cover topics such as map components, projections, symbols, scale, grid systems, direction, coordinates, distance, relief, color, patterns, and many others in route to a goal of basic map literacy. You can expect to work with traditional hand-drawn cartography as well as contemporary, cutting-edge computer based systems such as a Geographic Information System (GIS). Other geographic tools and techniques – such as remote sensing, navigation, spatial analysis, and modeling – will also be discussed. These tools and techniques now form the fastest growing part of contemporary geography, and serve as the skills most sought after by employers of geographers worldwide.

- *The specific objectives of the course are:*
    - To introduce the fundamentals of Cartographic Design including topics important to the creation of cartographic visualizations using Geographic Information Systems (GIS) for digital and hardcopy maps.

STUDENT LEARNING OUTCOMES (SLOS)

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

- Apply cartographic principles appropriately.
- Describe what type of data can be visualized and how it can be presented in a map.
- Select the appropriate projections, datum and coordinate system for a given task.
- Create cartographic products and visualizations for digital and hardcopy formats.
- Answer spatial questions and produce cartographic outputs and visualizations that accurately present those results.
- Describe the importance of and demonstrate the use of color appropriately in visualizations.
- Describe different map elements and demonstrate how they can be used.
- Describe different types of maps and demonstrate how they can be used.
- Demonstrate how to use a design process workflow to create maps and visualizations for geospatial projects.

PREREQUISITES AND/OR COREQUISITES

- GEOG 2400: GEOG 1990
- GEOG 4400: GEO 3710

LAB FEES

- None

COURSE POLICIES

Methods of Evaluation: Grades are based on overall performance, measured by the scores earned from **exams, lab exercises, and a final project** assigned during the semester. 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. I reserve the right to make slight adjustments in the various cutoffs based on the total point average for the class. However, any adjustments will NEVER be upward, resulting in a lower grade.

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%)

Upper Division Course Credit Requirements

This is a dual-listed course where lower division or upper division credit is earned with successful completion of the course, earning a grade of C or better. ***Students enrolled in the upper division section of the course will have additional requirements that demonstrate a higher level of learning*** on labs (e.g., challenge problems), exams (e.g., essay questions), and the final project (i.e., different project with more comprehensive objectives).

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. **Introduction to Cartographic Design**		
		Lab 1:		
2		UNIT 2 **Data Standardization and Classification**		
		Lab 2:		Lab 1
3		UNIT 3 **Map Projections**		
		Lab 3:		Lab 2
4		UNIT 4 **Maps and Qualitative and Quantitative Symbolization**		
		No Lab		Lab 3
5		UNIT 5 **Comparison of Common Thematic Maps using Different Types of Symbols**		
		Lab 4:		---
6		***EXAM 1***		
		Lab 5:		Lab 4
7		UNIT 6 **Map Elements**		
		No Lab		Lab 5
8		UNIT 7 **Color In Cartography**		
		Lab 6:		---
9		UNIT 8 **Symbology, Typography and Labeling**		
		No Lab		Lab 6

10		UNIT 9. **Map Types and Visualization**		
		Lab 7:		---
11		***EXAM 2***		
		Lab 8:		Lab 7
12		UNIT 10 **Map Production**		
		Lab 9:		Lab 8
13		UNIT 11 **Map Design Process and Principles**		
		Lab 10:		Lab 9
14		UNIT 12 **What is Cartographic Design and Gestalt Principles of Perceptual Organization**		
		No Lab		---
15		UNIT 13 **Cartographic Design Case Study**		
				Lab 10
		EXAM 3		

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