GEOSCIENCES (GEO) 2850/4850: GEOSPATIAL CAPSTONE
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:	Michael W Hernandez, Ph.D.
	Department of Geosciences
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Communication:	**WSUOnline – Canvas messaging system (preferred)**
	mhernandez@weber.edu (alternate)
Office Hours:	TO BE DETERMINED OR by appointment

REQUIRED MATERIALS

- **Free online text:** Campbell, Jonathan E., and Shin, Michael, 2012, Geographic Information System Basics / Essentials of Geographic Information Systems, v. 1.0.. Chapter 10 (GIS Project Management). Licensed under Creative Commons by-nc-sa 3.0 license. URL: **https://2012books.lardbucket.org/books/geographic-information-system-basics/index.html**
- **Microsoft Project Management Templates.** There are numerous document templates supporting project management tasks that can be found in Microsoft Word, Excel, PowerPoint, and Project. Specific document templates will be introduced to you during the course. Some of these files will be used during project management stages throughout the capstone experience.

ADDITIONAL MATERIAL
There will be additional readings assigned by the instructor throughout the semester as needed to support the capstone experience.

COURSE DESCRIPTION & OBJECTIVES

- This capstone course provides a summative learning experience that is a culmination of a student's geospatial education. You will apply your knowledge and skills to develop, implement, and evaluate a geospatial project that simulates a workplace experience, including collaboration as part of a team when appropriate. The capstone will give you invaluable experience with technical, professional, and ethical issues commonly faced by geospatial professionals in today's workforce. You, together with your fellow student team members (if applicable) and the instructor, will develop a set of measurable Capstone Learning Outcomes (CLOs) that will be used to evaluate your performance and competence to complete a geospatial project from start to finish.

- Successful completion of the course demonstrates your mastery of the competencies expected for an entry-level geospatial technician (GEO 2850) or entry-level geospatial analyst (GEO 4850).

STUDENT LEARNING OUTCOMES (SLOS)
By the end of the course, students are expected to:

1. Apply critical thinking skills in generating, analyzing, implementing, and evaluating solutions to geospatial problems.
2. Understand, apply, analyze, and evaluate project management steps and geospatial skills as part of managing and completing a comprehensive project.
3. Apply both professional and ethical behaviors in the course of performing job responsibilities.
4. Demonstrate ability to work collaboratively as a team member.
5. Understand and apply "soft skills" needed in the geospatial workplace.
6. Evaluate and present project results in an effective way (e.g., oral, written, graphical, online).

PREREQUISITE / COREQUISITE:
- To register for the course, students should have either successfully completed the geospatial courses listed below (grade of C or higher), be concurrently enrolled in the courses, or receive permission from the instructor.
- GEO 2840: GEO 1720 & GEOG 2400 (prerequisite or corequisite)
- GEO 4840: GEO 3720, GEOG 4400, and GEOG 4600 (prerequisite or corequisite)

LAB FEES
- **$50**; The fees in this course are used to purchase expendables such as printer paper and color printer cartridges used for student printing in the lab. The remaining funds are pooled with funds from other courses to help pay for nonexpendable items such as annual software license fees (e.g., ESRI ArcGIS, ENVI, Trimble) and replacement of computer workstations / other equipment.

COURSE POLICIES

Methods of Evaluation: Grades are based on overall performance, measured by the scores earned from evaluation of the **geospatial project proposal and implementation, final project presentation / final project report and e-portfolio** (formal evaluation of the measurable CLOs by the instructor)**, and peer assessment of student report and presentation**. This course will use the standard +/- 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%

Final Project Proposal and Implementation – Instructor (40% of grade)
Final Project Report / e-portfolio (40% of grade)
Peer Assessment: Final Project Report and Presentation (20%)

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 responsibilities and associated measurable CLOs that demonstrate a higher level of accomplishment*** from the capstone experience.

Methods of Instruction: Instruction will take place at the workplace and individual meetings with faculty:

- Learning Modules
- Discussion
- Hands-on Experience
- Collaborative Learning
- Peer-mentoring

COURSE REQUIREMENTS

SLO	UNITS	Description
1	**UNIT 1:** Problem Solving Experience in the Geospatial Field	Apply critical thinking skills to solve problems by generating, evaluating, and implementing geospatial solutions.
2	**UNIT 2:** Geospatial Project Components	
	Project Scope	Describe how strategic planning should influence projects undertaken by an organization.
	Project Management	Describe the difference between a project, program, and product. Describe the constraints of projects and the framework for project management.
	Time Management	Describe the use of workflow planning and the tracking of project tasks.
3	**UNIT 3:** Code of Ethics	Demonstrate knowledge of professional code of ethics, such as published by GISCI and ASPRS organizations.
	UNIT 4: Standard Professional Practices and Professional Organizations	Demonstrate knowledge of standard professional practices (e.g., geospatial fundamentals, professionalism, and integrity, organizational and institutional aspects) and organizations (e.g., URISA, ASPRS, USGIF, AAG, UGIC, etc.)

4	**UNIT 5:** Collaborative Work Experience	Demonstrate ability to work collaboratively in a team setting.
5	**UNIT 6:** Workplace "Soft Skills" Experience	Apply soft skills important in the workplace such as interpersonal skills, dependability and reliability, critical & analytical thinking, and communication (listening and speaking).
6	**UNIT 7:** Communication Project Documentation Project Results	 Describe and apply best practices of communication skills, tools, and technology for documenting the project. Present project results in an effective format (e.g., graphical, written, oral, online).