



## **Example Syllabus: Capstone in Geospatial Technology – GST 108**

Authors: Phillip Davis

Last Update: September 26, 2019

### **COURSE DESCRIPTION:**

The capstone is a learning experience resulting in a consolidation of a student's educational experience and certifies mastery of entry level workplace geospatial competencies. The capstone experience should occur during the last semester of the student's educational program. Methods of providing a capstone experience include:

1. A final learning experience that allows a student to apply broad knowledge of the discipline.
2. A comprehensive examination prepared by the faculty of the geospatial education program and administered at the conclusion of the program.
3. A course involving simulation of the workplace, case studies, portfolios, and employment scenarios.
4. A summative project involving the integration of various teams of students performing activities to simulate the situations which may occur in the workplace. Students will learn how to compile, analyze, and present geospatial data while emphasizing the value of visual communication.

**PREREQUISITES:** Successful completion of sufficient geospatial technology courses or permission from the program chairman, director, or instructor.

### **STUDENT LEARNING OUTCOMES (SLOs):**

1. Apply critical-thinking skills to solve problems by generating, evaluating, and implementing geospatial solutions.
2. Demonstrates knowledge of professional code of ethics, such as the GISCI GISP or ASPRS.
3. Demonstrate knowledge of standard professional practices and organizations (URISA, ASPRS, GITA, USGIF, resumes).
4. Develop, manage, complete, and evaluate a comprehensive geospatial project.
5. Demonstrate ability to work collaboratively in a team setting.
6. Present data and project results in a meaningful format (i.e., digital, written, verbal, graphical).

### **COURSE OUTLINE AND RESOURCES:**

Specific material/exercises/data/exams are at the discretion of the developer and are offered as samples; not mandatory components in the course. Our objective is to provide as complete a model course outline as possible without being too prescriptive on the precise course content.

It is expected faculty that adopt these outlines will modify the material to meet their own local industry needs.

Units	Unit Objectives
<b>1. Project management</b>	Students will learn to describe a project and the difference between a project, program and a product. They will describe the constraints of projects and the framework within which project management works with stakeholders, knowledge areas, tools/techniques and portfolios.
<b>2. Project life cycle</b>	Students will describe organizational systems, structures, boundaries, and the roles of users, sponsors and stakeholders within and outside of the organization in relationship with a project. They will describe the procurement process, using the Statements of Work and Requests for Proposals.
<b>3. Project scope</b>	Students will describe how strategic planning should influence projects undertaken by an organization. They will describe the importance, use, and design of a project charter.
<b>4. Communication</b>	Students will describe communication planning, and the best use of communication skills, tools, and technology for documenting the project.
<b>5. Time management</b>	Students will describe the use of workflow planning and the tracking of project tasks.
<b>6. Cost management</b>	Students will describe the basic principles and concepts of cost management and the relationship between cost management and project resources.
<b>7. Quality planning &amp; assurance</b>	Students will describe benchmarking as a tool for quality assurance, quality control, and management.
<b>8. Qualitative risk analysis</b>	Students will describe strategies to respond to risk including avoidance, acceptance, transference, and mitigation.
<b>9. Project integration</b>	Students will describe what a project plan is and how it is developed.
<b>10. Project planning</b>	Students will describe how the system view of an organization and integrated change control processes are important to geospatial projects.

#### **METHODS OF EVALUATION:**

A student's grade will be based on multiple measures of performance unless the course requires no grade. Multiple measures may include, but are not limited to, the following:

- I. Project scope document
- II. Statement of Work (SOW) document
- III. Peer assessment of written and presentation communication skills
- IV. Final project report or electronic portfolio

## **METHODS OF INSTRUCTION:**

Methods of instruction may include, but are not limited to, the following:

- \* Hands-on experience
- \* Learning Modules
- \* Collaborative Learning
- \* Peer-mentoring

## **RECOMMENDED TEXTS AND SUPPLIES:**

1. Materials may include, but are not limited to:
  - a. TEXT: *Managing Geographic Information Systems*, 2<sup>nd</sup> Edition, ISBN: 978-1593856359
  - b. *Portfolio Projects for Soft Skills*, ISBN: 978-1-111-58155-8
  - c. *Illustrated Course Guides: Written Communication - Soft Skills for a Digital Workplace*, 2nd Edition, ISBN: 978-1-133-18761-5
  - d. SOFTWARE: There are no requirements to use a particular software package in this course. As you work on your course projects, you may choose to use *Microsoft Project* software or similar project management software to document your project. Microsoft offers templates for project management documents in *Microsoft Word*, *Excel*, *PowerPoint* and *Project* formats.



Funded by National Science Foundation Advanced Technological Education program [DUE #0801893]. Author's opinions are not necessarily shared by NSF