Example Syllabus: Geospatial Web Applications

COURSE DESCRIPTION: The course introduces the design, publishing, optimization of geospatial servers, and maintenance of basic geospatial web services and applications. The course includes an introduction to browser and mobile enabled interactive application.

PREREQUISITES: Introductory Geospatial Technology course using Geographic Information Systems Software.

STUDENT LEARNING OUTCOMES (SLOs):

1. Students will configure a geospatial server
2. Students will use existing templates or content building tools to design and build basic Web-based geospatial application.
3. Students will publish geospatial resources to a web service
4. Students will perform basic maintenance of geospatial applications and services
5. Students will use and explain the use SDKs in the development of mobile mapping applications

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
1. Introduction to geospatial server system	Students will learn the basics of the Web-based geospatial technologies. They will be introduced to the benefits of Web-based geospatial applications and the platforms are available. Students will learn the basics of design, configuration, and optimization of Web-based geospatial server system. Students will identify the components and their roles in the system. (SLO 5)
2. Publish geospatial resources to Web services	Students will learn how to publish data resources to geospatial Web services. (SLO 4)
3. Customize Web applications.	Students will learn how to customize out-of-box Web-based geospatial application. They will also learn how to utilize the geospatial Web services they created in unit 2. (SLO 3)
4. Introduction to HTML5, CSS, and JavaScript	Students will learn the basics of HTML5, Cascade Style Sheet (CSS), and client side scripting language Javascript. These are essential components to any client side Web application

	development and customization. (SLO 1, 2, 3)
5. Introduction to Web API	Students will be introduced to APIs based on the server technologies they employed. They will learn the quick start of creating a basic geospatial Web application using an API. (SLO 1,2)
6. Web application development	Students will build a geospatial Web application from scratch. (SLO 1)
7. Introduction to deploy mobile applications	Students will be introduced to mobile applications and its benefits. They will learn how to deploy different existing mobile applications to mobile devices. (SLO 6)
8. Final Project	Students will employ the skills they learned in this class to prepare and publish data to Web services, and create a Web application providing various geospatial functionalities. (SLO 1, 2, 3, 4, 5)

*Refer to the GST101: Introduction to Geospatial Technology Model Course Outline for unit alignment with the Geospatial Technology Competency Model

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:

- Quizzes
- Lab Exercises
- Final Project

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

- Lecture Discussion
- Learning Modules
- Audio-Visual
- Collaborative Learning
- Lecture-Lab Combination
- Computer Assisted Instruction

REQUIRED TEXTS AND SUPPLIES:

1. Reading materials may include, but are not limited to:
   a. TEXTBOOKS:
      Ruvalcaba, Zak, Boehm, Anne.2012. Murach's HTML5 and CSS3. 1st Edition. Mike Murach and Associates, Inc.
      Harris, Ray.2009. Murach's Javascript and DOM Scripting. 1st Edition. Mike Murach and Associates, Inc.
      Noble, Joshua, etc. 2010.Flex 4 Cookbook. 1st Edition. O'Reilly.

MacDonald, Matthew. 2012. Pro Silverlight 5 in C#. 4th Edition. APress.
Hazzard, Erick. 2011. OpenLayers 2.10 Beginner's Guide.1st Edition. Packt Publishing
Brewer, Cynthia A. Designed Maps: A Sourcebook for GIS Users. ISBN: 9781589481602
Fu, Pinde and Sun, Jiulin. Web GIS Principles and Applications. Esri Press ISBN: 9781589482456

b. OTHER:
GeoTech Teaching Resources, http://www.geotechcenter.org
ESRI Resource Center: http://resources.arcgis.com/content/arcgisserver/web-apis

2. SOFTWARE: Access to industry standard geospatial software.
3. SUPPLIES: Computer with an internet connection.

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