Contents

OILS 515 - Introductions and Course Outline

Introductions

- Who am I?
- Who are you?
- What brought you here?

We will be working on answering these questions during the first class collaboratory from 5:00-6:15 on Wednesday

Syllabus

Outline

- Instructor
- Description & Objectives
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- Class Readings
- Evaluation & Grading
- Topics
- Communication

Instructor

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Description & Objectives

An understanding of core spatial data concepts and principles is increasingly important in the current world of collaborative, spatially enabled research and applications. We are no longer working in a vacuum as individual researchers that only need to understand and use the data that we create and use in our separate research projects. Successful research depends upon being able to integrate data generated by others with our own and by extension being able to share our data with others, both during our research projects and also for posterity (and to meet the requirements of funding agencies). This class will focus on the following aspects of spatial data management that relate to this need for effective integration, use, collaboration and sharing:

Description & Objectives

- The *Research* and *Data Lifecycles*
- Types of spatial data
- Spatial database design and management
- Working with and managing gridded data
- Spatial data documentation standards and practices
- Ethical, legal and privacy issues as they relate to spatial data
- Data management planning
- Emerging topics

Description & Objectives

Upon completion of the course students will have improved their knowledge and skills in the following areas:

- Locating and evaluating spatial data based upon knowledge of formats, content models and documentation standards
- Structuring data (both in terms of format selection and content) from a variety of sources to enable integrated research
- Evaluate data products to determine which elements of a dataset might raise ethical, legal or privacy issues if released or shared with others
- Documenting data as an ongoing process throughout the research cycle
- Producing machine- and human-readable documentation for data to support discovery, understanding, and use of data that they produce

Class Format

- Online Lecture & online collaboratory in each class week
- *Required Collaboratory* Sessions: Tuesdays 5:00-6:30 pm. 1/21, 2/11, 3/11, 4/15, 5/6
- Focus on hands-on experience with standards, technologies, and capabilities
- Exploratory and problem-based
- Cumulative

Class Readings

- The class readings are a combination of conceptual outlines and reference materials

Nikos Mamoulis (2012), Spatial Data Management. Synthesis Lectures on Data Management #21. Morgan & Claypool Publishers. DOI10.2200/S00394ED1V01Y201111DTM021. [SDM]

Michael J. Hernandez (2003). Database Design for Mere Mortals: a Hands-on Guide to Relational Database Design. 2nd ed. Addison-Wesley. [DBD]

Additional online readings will also be assigned over the course of the semester.

Evaluation and Grading

Course grades will be based on a combination of participation in live and online discussions and peer-review, the smaller assignments (listed under the "Assignment" column in the class calendar), and the semester-long class project. The grade for the class will be weighted according to the following breakdown:

- Class Participation: 20%
- Small Assignments: 40%
- Class Project: 40%

Class Topics

Over the course of the semester we will address the following topics:

- The interaction between the *research* and *data* lifecycles
- Types of spatial data - *vector*, *raster* and *geodatabase* data models
- Database design concepts, including aspects of database design specifically related to geospatially enabled databases
- Data format considerations for long-term archival access and use
- Documenting your data products - metadata content and standards
- Data management planning, both in support of your research and also to meet funding agency requirements
- Ethical, legal and privacy issues as they relate to the data you both generate and use

Tools

- Recent Windows, Mac or Linux Operating System
- GIS - Quantum GIS http://www.qgis.org/
- Spatial Database - SpatiaLite
  - http://www.kyngchaos.com/software/frameworks[Mac OS X]
  - http://www.gaia-gis.it/gaia-sins/[Windows & Source (Linux)]
- Python (possible, based upon interest)

Communication

This is the first iteration of this class, so the most productive communication model will evolve over the semester, but I commit to the following:

- I will respond to email questions within ~24 hours
- I will share responses to common questions with the rest of the class through the online discussion board

I also *strongly* encourage that questions be submitted through the discussion board so that other students can both *learn from* and *contribute to* the answers provided.