Cultivating Spatial Intelligence in Bite-Sized Chunks

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Geography → spatial transition

- Guiding principles
  - Spatial is cross-cutting (spatial literacy)
  - Geographic information science
  - Geospatial technologies
  - Scientific discovery (cross-disciplinary collaboration)
  - The spatial sciences combine fundamental science and enabling technologies (like statistics?)

- Need for a three-pronged approach
  - Administration
  - Faculty
  - Students

Spatial @ USC

- Four new undergraduate courses
- Ten new graduate courses
- New Minor in Spatial Studies
- New B.S. in GeoDesign
- New Online M.S. & Graduate Certificate Programs in Geographic Information Science & Technology
- New Ph.D. in Population, Health & Place?
- Enhanced support for spatially enabled research & teaching across the university

Early Opportunities ...

- Creating a Spatial GE Requirement
  - Lofty goal
  - Related opportunities – quantitative reasoning, other avenues?
- Creating "Spatial" GE Classes
  - SSCI 265 – The Water Planet
  - GEOG 101 – World Regional Geography
  - Others?
- Creating Exciting "Spatial" Electives
  - SSCI 101 – Workshops in Spatial Analysis (10 weeks / 2 units)
  - Tailored to student interests

The Power of Web Maps

The Class of 2017

Spatial Pathways for Undergraduate Students

- Bite-sized chunks
- Multiple entry & exit points
- Multiple pathways
**Tailored to Specific Audiences**

- **New 2 unit courses**
  - "Workshops in Spatial Analysis"
    - GIS for Business
    - GIS for Design
    - GIS for Environment
    - GIS for...

- **New 4 unit courses**
  - The Water Planet
  - Maps & Spatial Reasoning
  - Principles of Geographic Information Science
  - Spatial Sciences Practicum

**GIS help desk**

**Continuously build fresh go-to-market strategies**

- What is going on in this trade area?
- What are the general retail trends in this area?
- Where are the competitors?
- Who are those competitors?
- Where is business being generated?
- Where are the highest traffic volumes?
- Where are people living?
- Where are they going to work?
- How are they traveling to work?

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**Spatial Pathways for Graduate Students**

- Core geographic information science foundation
- Enabling geospatial technologies
- Multiple applications

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**GIST @ USC ...**

- **Core courses**
  - Concepts for Spatial Thinking
  - Spatial Databases
  - Geospatial Data Acquisition

- **Electives**
  - Spatial Analysis
  - Spatial Modeling
  - Geospatial Technology Project Management
  - GIS Programming & Customization
  - Remote Sensing for GIS
  - Cartography & Visualization
  - Web GIS
  - Mobile GIS
  - Geospatial Data Integration

- **Master’s Thesis**

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**The GIST success story ...**

- Partnership with Embanet-Compass Knowledge Group
- Relies on asynchronous learning model
- Uses virtual desktops & servers for "hands-on" components

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**One-Stop Solutions / Building DEMs**

- **TIN**
- **IDW**
- **Thin Plate Spline**
- **Topo* tal*-aster" (GRASS)

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**LiDAR / Spatial Filtering**

- **Light Detection And Ranging**
  - Measures distance to, or other properties of a target, by illuminating target with light, using pulses from a laser
  - Three components
    - Airborne scanning laser rangefinder
    - Differential GPS
    - Internal Navigation System
  - Generates millions of points at relatively low cost ...
Geographic information infrastructure

• Contains knowledge describing natural and human environments on Earth
• Includes multiple components
  o Data
  o Data models that provide structure to the data
  o Models and analytic tools that show predictions or suitability
  o Geospatial workflows
  o Web maps | Storytelling
  o Metadata, which describes the aforementioned components, and is key to sharing, discovery and access
• Relies on web & mobile environments to make these ways of thinking about the world more accessible

Questions ...

Project for Public Spaces

Placemaking plans
City-wide strategic plans
Capacity building and cultural change

Placemaking 101
Lighter
Quicker
Cheaper
http://www.pps.org/

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