Standards for Knowledge Domain Representation

• Knowledge domain ontologies
  – Existing ontologies for bodies of knowledge?
    • e.g., computer science, library and information science, …
  – SKOS (Simple Knowledge Organization System)?
    • View from information scientists, ontologists, …
  – Trends? Technologies?
    • OWL, triple stores

• Educational ontologies
  – Single courses?
  – Course sequences?
  – Degree programs?
  – Institutions?
  – Industry competency models?
An enumeration indicates the status of an assignment - see AssignmentType, above.

- Graded
- Ungraded
- Optional
Geographic Information Science & Technology
Body of Knowledge (GIS&T BoK)

• Developed by University Consortium for Geographic Information Science (UCGIS)
  ~ 2000 - 2006
• Influence on GIS&T education globally
  – U.S.
  – Europe, Latin America, China
• “GIS&T BoK2: Foundational Research”
  – NSF funded for Fall 2010 – Spring 2013
  – BoK1: top-down construction (experts only)
  – BoK2: bottom-up construction (knowledge corpus, community)
  – components:
    • BoKOnto – Hunter College
    • BoKVCE – New Mexico State U.
    • BoKVis – SDSU
    • BoKWiki – BYU
Visualizing the BoK

- [http://geography.sdsu.edu/Research/Projects/BoKVis/](http://geography.sdsu.edu/Research/Projects/BoKVis/)

- **Plan:**
  - **Base map creation from:**
    1. Current BoK hierarchy
    2. Current BoK content
    3. GIS&T knowledge corpus
  - **Overlays of:**
    - Text queries
    - Personal Competencies
    - CV
    - Courses, curricula, institutions
    - → semantic Web based representations
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<tr>
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<tbody>
<tr>
<td>CV2: Data consideration</td>
<td>DA: Design Aspects</td>
<td>GC: Geocomputation</td>
<td>CI: Organizational and Institutional Aspects</td>
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<td>CV4: Geographic represent technique</td>
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<td>CV3: Principles of map design</td>
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<td>CV5: Map production</td>
<td>DM: Data Modeling</td>
<td>GD: Geospatial Data</td>
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<td>*CV6: Map use and evaluation</td>
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CV1: History and trends

* CV2: Data considerations

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<tr>
<th>CV3-1: Map design fundamentals</th>
<th>CV3-2: Basic concepts of symbolization</th>
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<td>Principles of map design</td>
<td>CV3-4: Typography for cartography and visualization</td>
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| CV3-3: Color for cartography and visualization |
| CV3-4: Typography for cartography and visualization |

CV4: Graphic representation techniques

CV5: Map production

* CV6: Map use and evaluation
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<tr>
<td>CV3-3.1: List the range of factors that should be considered in selecting colors for cartography and visualization.</td>
<td>CV3-4.1: Typography for cartography and visualization</td>
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<tr>
<td>CV3-3.2: Describe color decisions made for various production workflows.</td>
<td>CV3-4.2: Describe the common color models used in mapping.</td>
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<td>CV3-3.3: Describe how cultural differences with respect to color.</td>
<td>CV3-4.3: Determine the CMYK (cyan, magenta, yellow, and black) primary colors.</td>
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<td>CV3-3.4: Explain how real-world connotations (e.g., blue=water, white=snow) can be used to select colors in visual communication.</td>
<td>CV3-4.4: Discuss the role of gamut in choosing colors that can be printed.</td>
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<td>CV3-3.5: Plan color proofing suited for checking a map publication.</td>
<td>CV3-4.5: Exemplify colors for different forms of harmony, concordance, and balance.</td>
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<td>CV3-3.6: Select colors appropriate for map readers with color limitations.</td>
<td>CV3-4.6: Estimate RGB (red, green, blue) primary amounts in a selection of colors.</td>
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<tr>
<td>CV3-3.7: Select a color scheme (e.g., qualitative, sequential, diverging).</td>
<td>CV3-4.7: Specify a set of colors in device-independent Commission.</td>
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</tbody>
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Color for cartography and visualization

List the range of factors that should be considered in selecting colors

Describe color decisions made for various production workflows

Describe how cultural differences with respect to color associations impact map design

Describe the common color models used in mapping

Determine the CMYK (cyan, magenta, yellow, and black) primary amounts in a selection of colors

Discuss the role of gamut in choosing colors that can be reproduced on various devices and media

Explain how real-world connotations (e.g., blue = water, white = snow) can be used to determine color selections on maps

Exemplify colors for different forms of harmony, concordance, and balance

Estimate RGB (red, green, blue) primary amounts in a selection of colors

Plan color proofing suited for checking a map publication job

Select a color scheme (e.g., qualitative, sequential, diverging, spectral) that is appropriate for a given map purpose and variable

Select colors appropriate for map readers with color limitations

Specify a set of colors in device-independent Commission Internationale de l'Eclairage (CIE) specifications

Typography for cartography and visualization

Graphic representation techniques
Geographic Information Science and Technology Body of Knowledge

+ Analytical Methods
+ Conceptual Foundations

+ Cartography and Visualization
+ Design Aspects

+ Data Modeling
+ Data Manipulation
+ Geocomputation
+ Geospatial Data

+ GIS and T and Society

+ Organizational and Institutional Aspects
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University Consortium for Geographic Information Science
Geographic Information Science & Technology
Body of Knowledge 2006
Self Assessment Tool

Please fill out this form by rating the level of competence of a particular object (yourself, a course, a job, etc.) using the following scale:

- 0 = unfamiliar: You may have heard of this topic, but know nothing about it
- 1 = familiar: You can define the basic concepts, and may have used it before, but you would need significant assistance to use this topic (i.e., you can accomplish 1-2 of the learning objectives)
- 2 = competent: You can carry out common tasks without assistance, and are able to utilize support resources to solve novel problems (i.e., you can accomplish several of the learning objectives)
- 3 = expert: You know as much as anyone about this topic, and are able to teach, train, and support others (i.e., you can accomplish all of the learning objectives)
- 4 = research: You regularly do academic research or professional development on this topic, developing new knowledge, tools, and techniques

Notice: Undefined index: button in /web/bolpprint/entry.php on line 87 Notice: Undefined index: button in /web/bolpprint/entry.php on line 105
Submit Assessment: It can still be edited later
Object Code: Notice: Undefined array
Password: Notice: Undefined var
if this is a new record, just make something up, but it needs to be unique
Location: (not set)
Location: (not set)
Program: (not set)
Program: (not set)
Courses Taken: Notice: Undefined variable: values in /web/Comma-separated
Courses Taken: Notice: Undefined variable: values in /web/Comma-separated
How long has it taken you to complete this assessment? Notice: Hours

Click on any knowledge area, unit, or topic to see an explanation of its objectives.

Knowledge Area AM: Analytical Methods

Unit AM1: Academic and analytical origins
- Notice: Topic 1: Academic foundations
- Notice: Topic 2: Analytical approaches

Unit AM2: Query operations and query languages
- Notice: Topic 1: Set theory
- Notice: Topic 2: Structured Query Language (SQL) and attribute queries
- Notice: Topic 3: Spatial queries

Unit AM3: Geometric measures
- Notice: Topic 1: Distance and length

Unit AM7: Spatial statistics
- Notice: Topic 1: Graphical methods
- Notice: Topic 2: Stochastic processes
- Notice: Topic 3: The spatial weights matrix
- Notice: Topic 4: Global measures of spatial association
- Notice: Topic 5: Local measures of spatial association
- Notice: Topic 6: Outliers
- Notice: Topic 7: Bayesian methods

Unit AM8: Geostatistics
Geographic Information Science and Technology Body of Knowledge

- Analytical Methods

- Conceptual Foundations

- Cartography and Visualization

- Design Aspects

- Data Modeling

- Data Manipulation

- Geocomputation

- Geospatial Data

- GIS and T and Society

- Organizational and Institutional Aspects