

Spatial Concepts Curriculum for GIS and Design

“Integration issues at a large university”

AAG Panel

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Some general thoughts on design and GI science

1. Spatial thinking underlies both geography and design.

Both disciplines deal with the flows and interactions of people, goods, information, and ideas and envision them in two- and three-dimensional space.

2. The two fields differ in the uses to which they put this spatial thinking.

Geography, like science and social science in general, focus on what is or what has been. It tracks interactions and flows largely to understand how and why things happen in the present and in the past.



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3. Designers in professions like landscape architecture, urban design, and planning draw heavily from geography and the other sciences and social sciences for their knowledge about what is and has been, but they use that information to develop scenarios about what doesn't yet exist, but that might be.

Geographers think spatially about the past and present, and designers, about our spatial future.



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Both fields not only use inductive and deductive reasoning – working from particulars to draw general conclusions and working from general hypotheses to particular evidence –

but also a third form of reasoning that the philosopher of science, Charles Sanders Peirce called abduction. As Peirce observed, “Deduction proves that something must be; Induction shows that something actually is operative; Abduction ... suggests that something may be.”



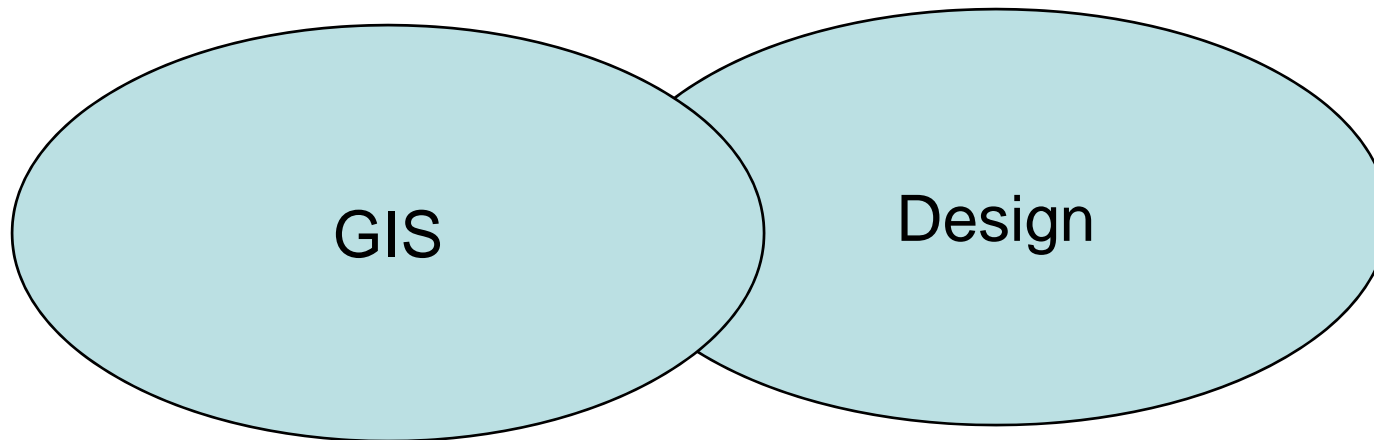
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Possible and partial curriculum integration?

Undergraduate, graduate or both?

Start with the possibility of a design studio



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“Design” at the U of M (U of M School of Design)

The College of Design encompasses the full range of design disciplines from graphic design, apparel design, and interior design to architecture, landscape architecture, and **urban design**. The college also includes programs in housing studies and retail merchandising.

The faculty and students in the college seek to advance the quality and value of the natural, designed, and social environments, with a focus on the interaction of people and their world.

GIS at the U of M

Mostly housed in geography (e.g., the MGIS program), but taught throughout campus (Natural Resources, Engineering, planning, biostatistics...)

Tied together through the interdisciplinary undergraduate GIS minor and the MGIS program.



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“Design” at the U of M (U of M School of Design)

Environmental Design B.E.D.

ARCH 1281 - Design Fundamentals I

(4.0 cr; A-F only, spring, every year)

Introduction to design thinking in architecture through project-based learning. Lectures, films, field trips. Four design projects, including an off-campus service learning.

ARCH 1701 - The Designed Environment

(3.0 cr; A-F only, fall, every year)

Examination of seminal issues in the designed environment, including relationships between place and space, and realms of the ideal and real, public and private. Survey of how the fields of architecture, landscape architecture, and urban design have explored those issues.

ARCH 2281 - Design Fundamentals II

(4.0 cr; Prereq-[1301 or 2301], arch major; A-F only, spring, every year)

Foundation architectural design studio. Design principles, technical drawing, material manipulation.



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Curricular Integration issues (pedagogical and logistical)

1. The need to integrate **Spatial Thinking** and **Design Thinking** into one course.

Geography teaches spatial thinking in GEOG 1502: Mapping Our World (formerly the Language of Maps)

- scale, distance, direction, pattern, measurement, shape, classification, error, navigation, also map use and analysis

Design teaches design thinking in ARCH 128, Design Fundamentals

2. Differences in culture, epistemology and method

Geography more theory-based; design more practically based



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Curricular Integration issues (pedagogical and logistical)

3. Blending long-established curricula
4. Differences between undergraduate and graduate classes
Easier integration at the graduate level
5. Budget models and tuition attribution
6. Minimal room in the curricula for new courses



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