Program Level Learning Outcome Assessment

MS in GeoInformatics

PLO6: Students will be able to represent and communicate geospatial information and images with various media following cartographic and web design principles.

Learning Outcome	Does Not Meet Expectations	Approaches Expectations	Meets Expectations	Masters
Students will be able to apply cartographic principles to create static and dynamic maps that accurately represent data distributions while minimizing distortions.	Maps lack visual hierarchy, use inappropriate color schemes, or contain symbology that misrepresents the data; projection distortions are ignored.	Applies some cartographic principles but inconsistently; color ramps may be poorly chosen (e.g., rainbow for continuous data); limited attention to map balance or projection choice.	Produces well-designed static and dynamic maps that apply visual hierarchy, appropriate color theory, and symbology; projection is suitable for the spatial extent and purpose.	Creates publication-quality maps demonstrating mastery of cartographic design; consciously selects projections to minimize relevant distortions; maps are accessible (colorblind-safe) and audience-appropriate.
Students will be able to design representations for complex spatial data using spatial analysis.	Cannot move beyond raw data display; representations show no evidence of spatial analysis or abstraction.	Applies basic spatial analysis (e.g., choropleth from counts) but does not normalize data or account for classification method effects on visual perception.	Designs effective representations of complex spatial patterns using appropriate analysis techniques (e.g., kernel density, spatial autocorrelation, hotspot maps) with correct classification methods.	Integrates multiple layers of spatial analysis into a coherent, multi-scale representation; critically evaluates how classification choices affect interpretation and communicates uncertainty visually.
Students will be able to develop interactive geospatial interfaces (Web GIS), allowing non-expert users to explore, filter, and query spatial datasets effectively.	Cannot build a functional web map; interface is non-functional, inaccessible, or requires expert GIS knowledge to operate.	Builds a basic web map with limited interactivity (e.g., zoom/pan only); UI is functional but not designed for non-expert users; poor responsiveness or accessibility.	Develops a functional Web GIS application with interactive layers, filtering, and querying capabilities; UI follows basic UX principles and is navigable by non-expert users.	Delivers a polished, accessible Web GIS application with intuitive UX design, responsive layout, dynamic data filtering, and guided user flows; tested with representative users and iterated based on feedback.
Students will be able to synthesize maps, imagery, and multimedia (text, video, and audio) into a cohesive spatial narrative to communicate policy recommendations, research findings, or environmental	Presents data as disconnected elements with no narrative arc; audience-specific communication is absent; multimedia is used decoratively rather than analytically.	Assembles maps and some multimedia but lacks a coherent narrative structure; the connection between spatial evidence and conclusions is implicit or unclear.	Constructs a coherent spatial narrative that integrates maps, imagery, and multimedia to clearly support a policy or research conclusion for a defined audience.	Produces a compelling, audience-calibrated spatial story that seamlessly integrates diverse media; narrative demonstrates awareness of audience values, prior knowledge, and communication goals; clearly

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impacts to diverse stakeholders.				distinguishes evidence from interpretation.
Students will be able to evaluate the ethical implications of map projections, classification methods, and data generalizations, articulating how specific design choices can inadvertently introduce bias or misrepresent marginalized populations.	Shows no awareness of ethical dimensions of cartographic decisions; treats map design as purely technical.	Acknowledges that maps can be biased but cannot identify specific design decisions that cause misrepresentation or articulate their real-world consequences.	Identifies specific ethical risks in projection choice, classification methods, and data generalization; articulates how these choices may misrepresent populations or geographies.	Critically evaluates a cartographic product for embedded biases; proposes and implements alternative design choices that reduce misrepresentation; situates analysis within broader data justice and equity frameworks.