# Level II: Integration of GIS for Infrastructure Management and Risk Analysis (2-day)

**Goal of the workshop**: To offer hand-on training for professionals to learn how GIS can be used for assessing risk, setting priorities for maintenance and managing wide range of infrastructure (water supply, utility line, roads and bridges) using complex spatial modeling.

**Qualification:** Prior working knowledge of basic GIS or Level I Infrastructure Workshop

**Outcome:** 1) Upon completion a professional or an asset manager will be able to conduct complex spatial analysis and modeling using GIS technology to make critical decisions and explore alternate scenarios (using if-then else clauses with GIS data layers) for maintenance, upgrade or expansion of utilities, roads and bridges.

**Who should attend**: Asset Managers of utilities including gas, water, waste water, highway, rail, telecom). Professional from engineering firms focused on transportation and infrastructure projects, division of engineering and utility management and public works of municipalities, cities, counties and state, as well as personnel involved in emergency response efforts.

## Module I: Undertake effective urban management using spatial data

1. Create a zoning map of permissible activities
2. Establish land for a university's future expansion
3. Analyze a basic community profile
4. Select and summarize planning records
5. Create a spatial-temporal database for monitoring
6. Analyze the existing land use pattern and zones within a City
7. Examine population trends for future land use and zoning analysis

## Module 2: Optimizing Your Site Selection Process using spatial data

8. Site Selection for Infrastructure
    a. Preprocessing and creation of spatial data
    b. Constraint and opportunity analysis using spatial data
    c. Applying Criteria Importance Ratio (CIR)
    d. Generate final land suitability map

## Module 3: Impact Assessment

9. Environmental impact assessment for a future building
10. Spatial analysis of a community response and social identity
11. Undertake a location quotient analysis
12. Undertake a visual assessment of a proposed building development

## Module 4: Strategic Planning with Spatial Component

13. Map sustainable development indicators in a Regional Growth Management Framework
14. Use GIS to determine regional transportation and infrastructure priorities
15. Analyze public response to proposed projects
16. Impact of the new plant on the watershed's future population