

## **ArcGIS Spatial Analyst - Suitability Modeling (Sessions 999 / 1251)**

### **Goals of the workshop**

- Identify the types of problems suitability modeling addresses.
- Examine the steps for creating suitability model.
- Provide insight into the various ways to determine reclassification and weight values.
- Demonstrate how to capture nonlinear relationships for reclassification and weight values.
- Outline how Fuzzy logic can be used in suitability modeling.

### **Major topics covered**

- Highlight the workflow for creating a suitability model
  - Define goal
  - Establish measurable objectives
  - Break into sub models
  - Create the model
  - Validate the results
- Illustrate the difference between binary and weighted suitability models.
- Present the steps for creating the suitability model itself:
  - Determine significant criteria
  - Reclassify the input data
  - Weight the criteria
  - Add the criteria together
  - Analyze the results
- Examine the different numbering systems and their implications in suitability modeling
  - Ratio
  - Interval
  - Ordinal
  - Nominal.
- Identify the ArcGIS tools that are commonly used in suitability modeling.
- Explore the limitations of suitability models.
- Look deeper into the reclassification and weight values using decision support and operation research theories.
- Explain direct scaling, linear transformation, and Utility functions techniques to reclassify the data.
- Examine ranking, rating, pairwise, and trade-off analysis techniques for weighting the criteria.
- Describe simple additive weighting, group value, and ideal point techniques for combining the criteria.
- Define how sensitivity and error analysis can be used to analyze a suitability model.
- Walk through the theory behind fuzzy logic and the steps necessary to create a suitability model using fuzzy logic
  - The fuzzification process
  - The fuzzy analytical tools.
- Present a series of demonstrations to show how to create simple as well as more complex suitability models.