



DE133

Geographical Information System (GIS)

Course Introduction:

If you are a Researcher, planner or a land/resource manager, you can gain a basic working knowledge of Geographic Information Systems (GIS) and its terminology, and the spatial analysis skills needed to integrate field data with watershed-scale variables in enrolling for this GIS course. GIS is actually a spatial knowledge area that anyone dealing with determining locations and manipulating available data cannot deal without. Whether you are dealing with analysis of watersheds, relocating refugees, or community modeling- GIS comes in handy.

The course covers the range of functionality available in the software and the essential tools for visualizing, creating, managing, and analyzing geographic data.

This hands-on course exercises will focus on the primary applications included with ArcGIS Desktop software to perform common GIS tasks and work-flows. The tools for creating and managing geographic data, displaying data on maps in different ways, and combining and analyzing data to discover patterns and relationships will be brought out clearly.

Course Objectives:

Upon successful completion of this course, the delegates will be able to:

- ✓ Understand how you and your organization can benefit from a GIS
- ✓ Comprehend the key concepts in GIS map creation
- ✓ Understand data formats and how to effectively organize data in a GIS database
- ✓ Ask questions about your data and analyze the spatial relationships within your data in order to solve problems with GIS
- ✓ List common GIS tasks and identify which ArcGIS Desktop application is used for each task
- ✓ Understand what the geodatabase offers for GIS data storage
- ✓ Create and edit geodatabase features
- ✓ Control the appearance and display of data layers in ArcMap
- ✓ Classify, symbolize and analyze map data
- ✓ Change the coordinate system and map projection used to display a dataset
- ✓ Access feature information in tables and control table display properties
- ✓ Query and analyze GIS data
- ✓ Create presentation-quality maps and graphs
- ✓ Add data from different sources to a geodatabase
- ✓ Run analysis tools using dialog boxes and models

Who Should Attend?

This course is essential for aspiring and current professionals in the fields of cartography, surveying, mapping, architecture, engineering, and tourism, Professionals from disciplines dealing with geo-spatial data, Entry level, mid-career and management level professionals, GIS users needing a refreshment course, Graduate students needing to apply GIS in their research projects, Fresh graduates looking to be equipped to find a decent job in a highly competitive job market as well as Individuals wishing to expand their career in a fast growing sector.

Course Outline:

Day 1:

Introduction

- Course goals
- Using the course workbook
- Additional resources
- Installing the course data

The Big Pictures of GIS

- Modeling Spatial Phenomena
- GIS functions
- Features and layers
- Spatial Reference
- Demonstration- Scale, Resolution, and Temporal Aspect of Spatial Data
- Map scale
- Data Exploration in ArcCatalog
- Group Activities:
 - Explore GIS map basics
 - Practice using GIS maps

Day 2:

GIS power: The data behind the map

- Layer attribute table
- Categorical and quantitative data
- Identify the correct data type
- Exercise:
 - Explore the feature-attribute relationship
 - Explore benefits of the feature-attribute relationship

Creating a map layout

- Map content considerations
- Thinking about map content
- Data view and layout view
- Exercise
 - Creating a map layout
 - Making a map layout in reverse

Pinning down geographic data

- What is a coordinate system?
- Cartesian coordinate system
- Spatial reference lines
- Location system: Latitude-longitude
- Measuring latitude and longitude
- Flattening the earth with map projections
- Map projections and distortion
- Mercator
- Polar stereographic
- Exercise:
 - Using coordinate to find places
 - Make measurements on maps

Day 3:

Exploring Spatial Data

- Introduction to ArcMap
- Exercise: Exploring ArcMap
 - Explore the Table of Contents
 - Explore the Tools Toolbar
 - Explore the Layer Properties Dialog
- Demonstration: ArcMap Functionality
 - Attribute Tables
 - Table Associations
- Exercise: Exploring Tables
 - Explore the Table Window
 - Perform a Table Association
 - Perform Field Calculations

Geography meets Geometry

- Vector data: A shape-based view
- Raster data: A cell-based view
- Vector or raster?
- The geodatabase
- Exercise: Using vector and raster data in ArcMap

Data Management

- Introduction to ArcCatalog
- Data Management in ArcMap
- Obtaining Spatial Data
- Data Conversion
- Exercise:
 - Obtaining Spatial Data
- Find Data Online
- Access Data Using ArcIMS
- Data Conversion
- Metadata and Data Quality

Day 4:

Geographic data: A bird's-eye view

- Where does geographic data come from?
- Using tabular data
- Item Description
- Exercise:
 - Working with Item Description

Querying data

- Querying attributes
- Using location queries
- Exercise:
 - Querying data based on attributes and locations

Day 5:

Analyzing Spatial Relationship

- What is spatial analysis?
- Buffering features
- Overlaying features
- Exercise:

- Analyze data using Buffer and Overlay
- Open a map document

Solving problems with GIS

- GIS analysis process
- Exercise: Applying the GIS analysis process

Course Certificate:

International Center for Training & Development (ICTD) will award an internationally recognized certificate(s) for each delegate on completion of training.

Course Methodology:

A variety of methodologies will be used during the course that includes:

- (30%) Based on Case Studies
- (30%) Techniques
- (30%) Role Play
- (10%) Concepts
- Pre-test and Post-test
- Variety of Learning Methods
- Lectures
- Case Studies and Self Questionnaires
- Group Work
- Discussion
- Presentation

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Course Fees:

To be advised as per the course location. This rate includes participant's manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Course Timings:

Daily Course Timings:

08:00 - 08:20	Morning Coffee / Tea
08:20 - 10:00	First Session
10:00 - 10:20	Coffee / Tea / Snacks
10:20 - 12:20	Second Session
12:20 - 13:30	Lunch Break & Prayer Break
13:30 - 15:00	Last Session