GeoData Institute

Introduction to ArcGIS

COURSE OUTLINE

This course introduces the underlying principles and methods of Geographical Information Systems (GIS). It examines the processes involved in the capture, storage, manipulation, analysis, presentation and output of digital geographical data in a GIS and provides opportunities for the development of practical skills in processing data using an industry standard GIS software package.

The course comprises a series of presentations and computer-based practical sessions using ESRI's ArcGIS

software with example date sets taken from a variety of fields. The three main elements of ArcGIS (ArcMap, ArcCatalog and ArcToolbox) are introduced and topics covered include: data management; data visualisation; data quality and analysis; georeferencing; data presentation and reporting.

This course is intended for those who have little or no GIS knowledge or who wish to undertake some formalized training in ArcGIS having been largely self-taught in the past.

The course has been awarded 6 points towards the AGI continuing professional development (CPD) scheme.

Please also see Course Programme over page.

ANTICIPATED COURSE OUTCOMES / ACHIEVEMENTS

Aims and objectives

- To provide delegates with an appreciation of the fundamental concepts of GIS including its strengths and limitations.
- To introduce the core functionality of ESRI's ArcGIS software package.
- To teach the fundamental skills needed to obtain, import, manipulate, analyse, interpret, manage and output spatial data in order to investigate topics in the delegate's area of interest.
- To demonstrate real-world uses of GIS.

Learning outcomes - by the end of the course, delegates will have a knowledge and understanding of:

- what a GIS is; what spatial data is; raster and vector data models
- the core tasks involved in a GIS analysis e.g. data acquisition and input; data storage and management; data manipulation and analysis; and data presentation and output
- the core functionality of ArcMap, Arc Catalog and the embedded ArcToolbox
- importing data from GPS outputs and scanned paper maps
- handling tables including selections and queries
- georeferencing raster images
- creating and editing spatial data
- the steps required to produce paper maps from base data
- basic geoprocessing tasks e.g. buffering and clipping

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Day 1

1 - Introduction to GIS

What is GIS?
What is Spatial Data?
Types of questions a GIS can answer
GIS Tasks
GIS Data Types
Mapping in Layers
Coordinate Systems
GIS Applications

2 - Introduction to ArcView

ArcView - Some History
ArcGIS Family
What is ArcView
ArcCatalog
ArcMap
ArcToolbox
GeoDatabases
Map Documents
Help!

Exercise 2 - Getting Started

3 - Using ArcMap

ArcMap Components
Navigating around ArcMap
Spatial Bookmarks
Data Frame Properties
Feature Types
Identifying Features
Layer Tables
Layer Properties
Map Documents

Exercise 3a - ArcMap Basics
Exercise 3b - Handling Spatial Data
Exercise 3c – Introduction to OS MasterMap

4- Using ArcCatalog

Overview
Metadata (and Finding Data)
Data Management

Exercise 4 - ArcCatalog Basics

5 - Using Tables

Table Types
Creating Tables
Adding fields and records
Editing values in a table
Selecting from a table
Sorting tables records
Generating Field Statistics
Generating Table Summaries
Joining and Relating tables

Exercise 5a - Using Tables
Exercise 5b – Joining Tables

Day 2

6 - Selections and Queries

Identifying Features
Map Tips
Hyperlinks
Select Features Interactively
Selection by Criteria - Query Builder
Theme on Theme Selections

Exercise 6 - Selections and Queries

7 – Georeferencing

What is georeferencing?
Data types requiring georeferencing
The georeferencing tool bar
Aligning rasters using XY coordinates
Transforming the image
Rectifying the image

Exercise 7a & 7b – Georeferencing

8 - Creating and Editing Layers

Creating new data
Shapefiles
Geodatabases
Editor Toolbar
Adding Attributes
Editing Shapefiles
Snapping

Exercise 8 – Creating and Editing Layers

9 - Producing Maps

What is a Map layout?
Creating a Map layout
Map Elements
Graphic Elements
Modify Map Elements
Grouping Map Elements
Using Templates
Printing the Map
Reports

Exercise 9a & 9b – Creating Layouts

10 - Geoprocessing & Other Tools

Toolbars
Effects
GeoProcessing
BufferWizard
Spatial Join
Customisation and Extensions

Exercise 10a, 10b & 10c - GIS Processing and Analysis

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