

Course Outline Introduction to Manifold 8

The course is broken into over 20 separate lessons, covering nearly 100 individual topics. The following is an abbreviated description of the topics covered:

Introduction

- What is a GIS
- What is Manifold
- Basic Concepts of GIS
- How we represent geographic data
- What a GIS can do

Projects

- Opening a project
- Creating a new project
- Setting Options

Manifold Interface

- Basic Panes
 - Project
 - Viewbots
 - Views
 - Layers
- Basic Menus
 - File
 - Edit

Components

- Types of Components
- Local Components
- Linked Components

Drawings

- What are drawings
- How to create a new drawing
- Drawing Fundamentals
- Menus, Selections

Linked Drawings

- Regular vs. Linked Drawings
- Drawings Linked from Geometry
- Drawings Linked from Queries
- Drawings Linked from Geocoding

Formatting Drawings

- Area Formatting
- Line Formatting
- Overlapping layers

Thematic Formatting

Editing Drawings

Cut, copy, paste

Adding points, lines, and areas

Adding shapes

Instant Data

Editing Objects

Snap Features

Autocompletion

Shared Edits

Coordinate Geometry

Dissolve

Simplify

Segmentize

Transform Drawing Objects

Border Buffers

Boundaries

Bounded Areas

Buffers

Centroids (Inner)

Clip with Intersect

Convex Hull

Explode

Gabriel Network

Intersect Lines

Intersect Lines

Join Lines

Normalize Topology

Select Adjacent to

Select Contained within

Select Containing

Select Intersecting

Select Shortest Path

Spline

Split With

Images

Image Fundamentals

Creating a new image

Image menus

Importing Images

Georegistering an Image

Linked Images

- Compressed Images
 - ECWP Image Servers
 - Google, Terraserver, Yahoo!

Surfaces

- Surface Fundamentals
- Importing Surfaces
- Linked Surfaces
- Surface Menu
- Contours
- Transforms

Terrains

- Terrain Fundamentals
- Overlays
- Area Overlays
- Navigating Terrains

Maps

- Map Fundamentals
- Creating a new map
- Projections and maps

Map Layers

- Opacity
- Restrictions
- Merging layers
- Creating Images
- Drawing Menu in Maps

Spatial Overlay

- Topology Overlay
- (Identify, Intersection, Union)

Labels

- Label Fundamentals
- Creating Labels
- Formatting Labels
- Repositioning Labels

Tables

- Table Fundamentals
- Tables and Drawings
- Intrinsic Values
- Importing and Linking Tables
- View Menu
- Table Menu
- Query Tool

Editing and Querying Tables

- Query Tool
- Transform Tool
- Edit Data in Tables

Layouts

- Layout Fundamentals
- Adding Elements to Layouts

Improving Manifold Performance

- Linked Images
- Coordinate precision
- Zoom Dependencies
- Simplify drawings
- Normalize topology
- On-the-fly projections

Internet Map Server

- Overview
- Creating a web site
- Adding queries to a web site
- SQL Queries in IMS

Course Outline for Introduction to 6.0

Scenario: You will create a GIS project from start to finish by bringing in data from multiple sources (imagery, surfaces, database tables, vector drawings), geo-registering a land use interpretation, perform heads-up digitizing of the interpreted landcover, evaluate land cover change between 1968 and 1995, perform an accuracy assessment of the landcover map, quantify the landcover within a stream buffer, produce a final cartographic map and Internet Map Server application of the study area, and a 3D terrain visualization.

The course is broken into 13 separate lessons. The following is a short description of the course:

Data Preparation and Creation

Lesson 1: The User Interface

- Exploring menus: File, View, Options
- Exploring Toolbars: main, format, selection, tools, transform and query;
- Exploring panes: Project

Lesson 2: Getting Data into Manifold

- Importing and exporting drawings, tables, surfaces, images,
- Coordinate system definition, projection transformation, on-the-fly projections.

Lesson 3: Improving System Performance

Coordinate precision, orthogonize data, zoom dependencies, simplify data, project to map, normalize topology

Lesson 4: Working with Databases

Importing and linking tables, adding and relating columns, active columns, query and transform toolbar, table design, transfer rules

Lesson 5: Georegistration

Importing scanned images, adding control points, georegistration of images, viewing residual errors.

Lesson 6: Creating Data (digitizing)

Creating new drawings, discreet polygon digitizing, spaghetti digitizing, normalizing topology, creating bounded areas, editing data, altering databases, adding attributes

Data Analysis

Lesson 7: Basic Analysis Tools

Spatial Overlay; Topology Overlay; Viewbots, SQL, SQL and spatial operators

Lesson 8: Overlaying Spatial Data

Data elimination, saved selections, topology overlay, dissolving features, setting transfer rules, SQL pivot tables, change analysis, integration with Excel.

Lesson 9: Accuracy Assessment

Import GPS data, point in polygon overlay, SQL transform table, integration with Excel, computing overall accuracy.

Lesson 10: Taking Spatial Analysis Further

Importing data, Quantify % landuse, clip features, buffer geographic features, SQL analysis, quantify selected geometry within buffers.

Data Presentation

Lesson 11: Cartographic Composition

Clipping data, creating cartographic layouts and elements, coordinate grids

Lesson 12: Creating an Internet Map Server Application

Overlaying data, modifying database tables, SQL parameterized queries, exporting web pages

Lesson 13: Terrain Mapping

Import a USGS DEM, crop a DEM, create a 3D terrain, overlay 2D objects on terrain, navigate over terrain.