ARCGIS COURSE, ADVANCED LEVEL ONLINE TRAINING

TG5-F

Arc GIS
ESRI

TYC GIS
Training

GIS Course.com
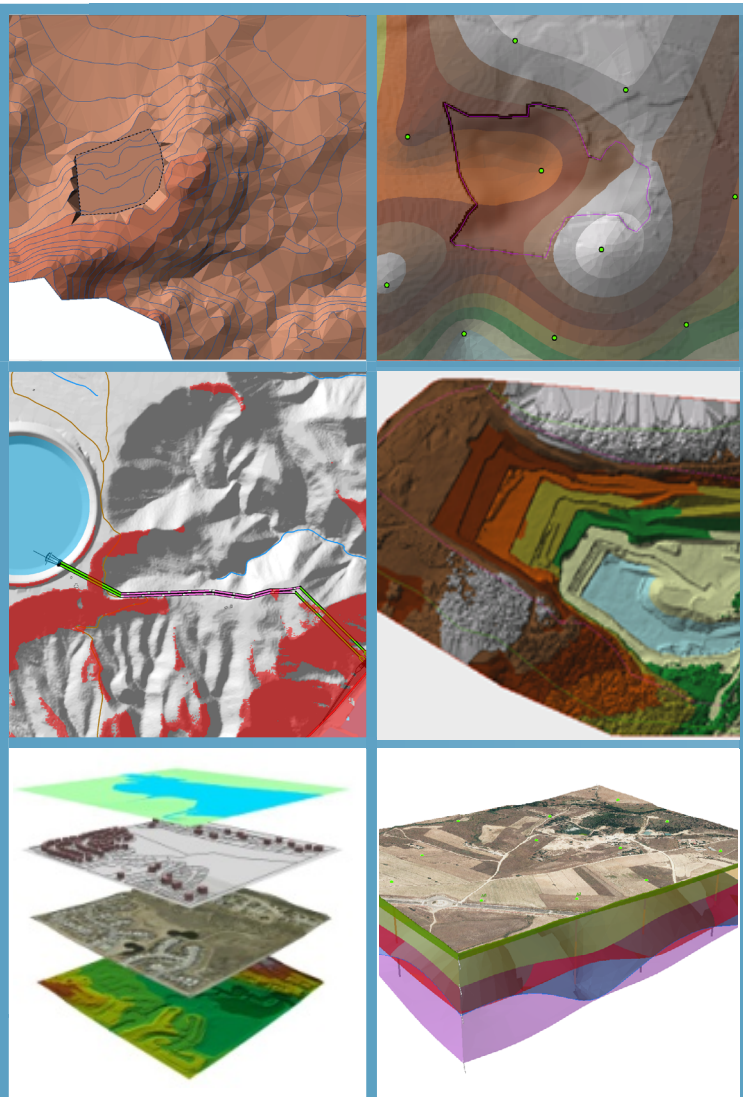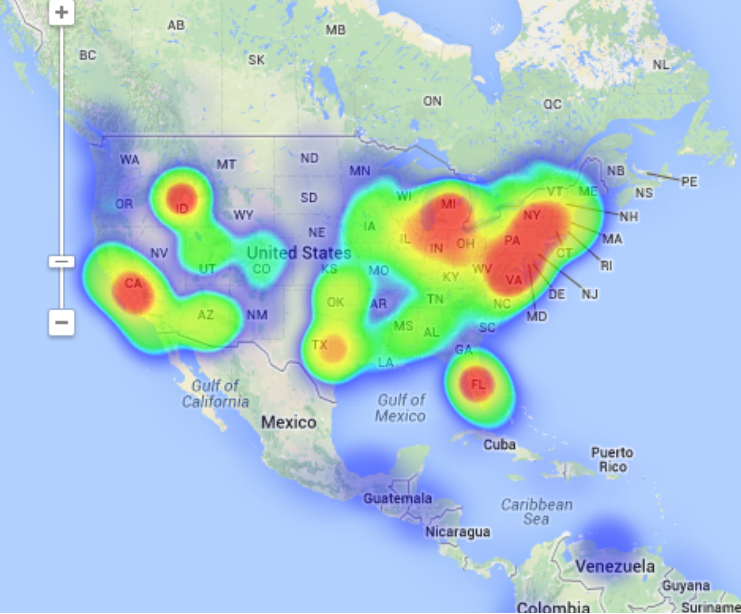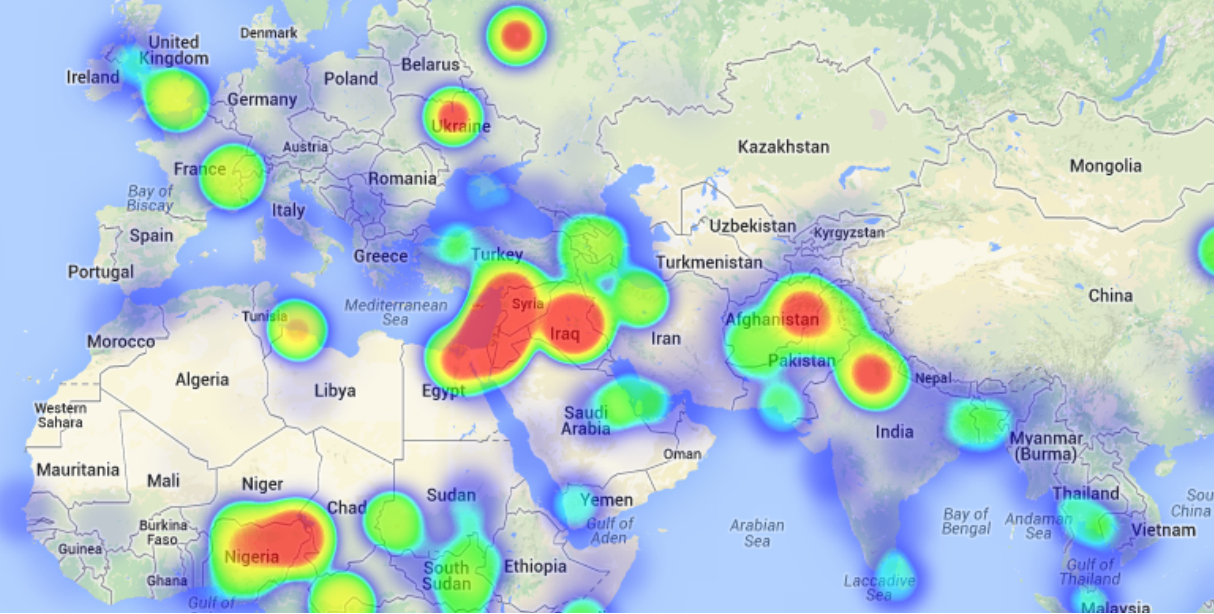
TRAINING OVERVIEW

This course will qualify students in ArcGIS Desktop 10.x and in particular in the usage of ArcMap, ArcCatalog and ArcTool Box. The training material will be focused on vector and raster data models, how to handle them and store them in a geodatabase, their relationship with geodatabases, 2D and 3D data visualization, topological corrections and on how to develop final cartographic products and maps.

Students will be trained in the creation and editing of vector and raster data, in the usage of advanced greoprocessing tools, in the management of geodatabases and their relationship with vector and raster data, in the development of high-quality mapping products.

STUDENT PROFILES

This course is aimed at students and professionals related to engineering, biology, geology and environmental sciences with basic knowledge in ArcGIS, interested in gaining an advanced level in the use of this tool.

GOALS

· Highlight the importance and utility of a Geographic Information Systems (GIS) especially in the elaboration of complex spatial analysis with applicability in engineering design, topography, geology, hydrology.

· Learn about ModelBuilder which can be used in the development of complex tools, connect different ArcToolBox tools and automate workflows.

· Find about all the advantages of a geodatabase, the possibility of massive topological error correction of vector layers, network analysis and about the capabilities of finding optimal routes, accessibility studies, etc.

· Improve your skills and gain experience in data preparation, layout development, map creation and high quality products delivery.

METHODOLOGY

Enrolled students in this online course will have access to our virtual e-learning platform (which is available 24 hours), where they will find the content of the course, practical exercises, forum discussion and additional content. One of the advantages of this online platform, is that students can benefit of real time support and assistance offered by the instructor (2 hours per week), whom they can contact via direct messages, regarding course related issues, at any moment. They can also contact the instructor via email.

INSTRUCTOR

Santiago Pardini Hernanz

With Bachelor's degree in enviromental sciences from Almeria University and master in engineering and enviromental management from escuela de organización industrial (EOI), Santiago is a professional in the GIS consultancy sector and remote sensing at TYC GIS Integral Solutions.
Santiago has diverse specialist courses in geographic information systems, remote sensing, CAD and BIM. He has more than 7 years experience in application of those technologies in enviromental consultancy, diverse engineering companies, Geomarketing, spatial plannin, etc.

Ricardo García Álvarez
With more than 15 years experience in the cartography and geographic information systems sec-tor, Ricardo holds a Bachelor´s degree in Geography from the Universidad Autonoma de Madrid and a Master in Geographic Information Systems from the Universidad Pontificia de Salamanca.
Ricardo has experience in transport networks project management, spatial accessibility studies with GIS, sustainable urban mobility plans, traffic studies (macro and micro simulation) and car-tography development (orthorectification, digital restitution and photogrammetric consulting).

1 - INTRODUCTION TO RASTER DATA MODELS

Introduction.

Definition and basic concepts.

Purposes and uses.

2 - BASIC OPERATIONS WITH RASTER DATA MODELS

File conversion

– Converting files from vector to raster, and vice versa

– Converting ASCII or html files to raster

– Converting vector files to TIN

– Converting TIN to Raster formats

– Exporting files to KML (Google Earth) and CAD

– Creating Digital Elevation Models from vector data, ASCII and TIN files.

Extracting information from raster files

– By query

– By mask or entity

Joining raster files.

Practical exercise: (convert files, create digital elevation models) and assessment.

3-2D AND 3D SPATIAL ANALYSIS

Raster files reclassification. Building Boolean layers, adding values to intervals or categories, and data conversion.

Grouping several raster layers. Algebra map, math calculations between raster layers, field statistics.

Data interpolation. Exploring different interpolation tools (IDW, Kriging, Natural neighbor).

Euclidean distances.

Surface: contour, slope calculation, hillshade, orientation and visibility.

Use in hydrology: obtaining a drainage system, flow direction, outlets, and identification of drainage basins or sub-basins.

Volume calculation.

Raster multi-criteria analysis: Basic concept and weighting.

Least-cost routes.

Practical exercise: Interpolation of radiation data, volume calculations, complex multi-criteria analysis and least-cost route calculation.

4- 3D DATA DISPLAY

Converting vector files from 2D to 3D

Vector and raster layers display in 3D

Virtual flights

Practical exercise: Visibility of fire protection towers, volume of soil extracted from a quarry and 3D representation.

5-MODEL BUILDER

Use.

Linking geoprocessing models using Model-Builder.

Creating custom tools using ArcToolBox.

Practical exercise: (creating geoprocessing models with ModelBuilder) and assessment.

6- GEOESPATIAL DATABASE. GEODATABASE

Geodatabase: advantages. Properties.

Loading data to the geodatabase.

Domains and subtypes.

Practical exercise: (creating a geodatabase and its management) and assessment.

7- TOPOLOGY

Massive correction of geospatial data errors.

Topology considerations.

Cluster tolerance.

Most common rules in topology.

Validating a topology.

Topology errors.

Management of errors.

Practical exercise: (error management and massive correction) and assessment.

8-NETWORK ANALYST

Definition

Network categories:

– Geometric networks

– Transportation networks

Network components.

– Nodes

– Axis

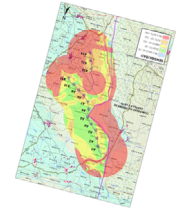– Flow

Creating network datasets

– Operators

– Optimal route

– Service areas

– Closest facility.

Origin destination (OD) cost matrix.

Practical exercise: (creating a network dataset, route calculation, buffer areas) and assessment.

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