Introduction to geographic information systems (GIS) Training program

Introduction:

This course introduces the hardware and software components of a Geographic Information Systems and reviews GIS applications. Topics include data structures and basic functions, methods of data capture and sources of data, and the nature and characteristics of spatial data and objects. Upon completion, students should be able to identify GIS hardware components, typical operations, products/applications, and differences between database models and between raster and vector systems

Course Objectives:

LEARNING OUTCOMES:

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

- Define GIS
- Use GIS to identify, explore, understand, and solve spatial problems
- Demonstrate aGIS modeling skills
- Demonstrate critical thinking skills in solving geospatial problems.
- Design and implement a GIS project
- Demonstrate competency with the ArcMap software to enhance and interpret data
- Use queries in GIS Analysis Formulate applications of GIS technology.

Course Outline:

- ❖ **Introducing GIS**

  - What is GIS
  - What GIS can do
  - Types of GIS projects
  - Remote sensing, GPS, SDSS Continental Drift.

II. ArcGIS

- Exploring ArcGIS
- Spatial Data
- Metadata
- ArcCatalog
- ArcToolbox

III. Working with ArcMap

- Map documents
- Windows and Menus
- GIS 111: Nov 2016
- Help system
- Data frames
- Layers
- Symbols and styles
- Map scales and labeling

IV. Coordinate Systems and Map Projections

a) Map projections and GIS

- Coordinate Systems
- Spheroids and datums
- Common projection systems
- Projecting data

V. Drawing and Symbolizing Features

- Types of maps
- Classifying numeric data
- Using map layers
- Editing symbols and using styles
- Displaying rasters

VI. Working with Tables

- Tables
- Joining tables
- Statistics
- Summarizing tables
- Editing and calculating tables

VII. Queries

- What are queries?
- Selecting
- Using queries in GIS analysis

VIII. Spatial Joins

- Spatial join
- Types of joins
- Setting up a spatial join

IX. Map Overlay

- Map overlay
- Other spatial analysis functions
- Coordinate systems and map units

X. Presenting Data

- Maps and Reports in ArcGIS

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- Working with map elements
- Layout toolbar
- Working with map scales
- Setting up scale bars

XI. Geocoding

- Introduction to geocoding
- Geocoding styles
- Geocoding process
- Setting up the address locater GIS 111: August 2013
- Reference data
- x-y coordinates

XII. Basic Editing in ArcMap

- Editing overview
- The Editor Toolbar
- Snapping features
- Creating adjacent polygons
- Editing features
- Editing attributes
- Saving work

XIII. Advanced Editing

- Using sketch tools
- Changing existing features
- Combining features
- Buffering features
- Topology and shared features

XIV. Working with Geodatabases

- About geodatabases
- Creating geodatabases
- Creating feature datasets
- Using default values
- Setting up domains
- Split and merge
- Subtypes