GISC 1311 >> GST101/MiniProjects/ESRI ArcMap/ArcGIS Desktop & On Line Basics.

Description:

This course will assist the student to understand what a geographic information system (GIS) is and why organizations around the world rely on GIS technology. The student will be introduced to the basic components of a GIS and some fundamental concepts that underlie the use of a GIS. Student will learn how GIS maps are different from other types of paper and digital maps, what makes the data used in a GIS unique, and how to use GIS software to obtain information and create meaningful maps. The student will practice working with GIS maps and geographic data, you will learn how a GIS helps people visualize and create information that can be used to make decisions and solve problems. The student by completing the course exercises and activities will work with ArcGIS software and see how a GIS supports problem solving in many different contexts.

The student will accurately represent the location of features found on the earth's three-dimensional surface on a two-dimensional piece of paper or computer screen. The student will learn the fundamental concepts of geographic coordinate systems, projected coordinate systems and some of the history behind their development. The student will be introduced to the improvements in technology that have affected the accuracy of GIS maps and measurements made from them.

The student will learn and demonstrate efficient map production techniques. The student will create basic presentation-quality map. The student will produce static, dynamic and web enabled map layouts, with properly added elements such as geographic data, titles, scale bars, and company logos. Students will learn how to: identify map element properties and defaults, how to modify elements while maintaining proper cartographic design principles, and how to add elements to layouts to create custom ArcMap templates. The student will demonstrate how to use on line map services, base maps and other map resources.

Student Objectives and Outcomes:

Set up and administer their student:

- ESRI Global Account.
- ESRI Virtual Campus Account.
- ArcGIS On Line Account.
- Install ArcGIS Explorer Desktop.
- Link ArcGIS Explorer On Line.
- Understands what ArcGIS Online subscription accounts are.
- Understands and can demonstrate how to administer content, users, and groups.
- Can demonstrate how to host servicers, maps, layers and apps on line

ArcMap Desktop installation & authorization:

- Manage user licenses and download files from the ESRI Customer Care site.
- Install and authorize ArcGIS Desktop 10 (recent versions)
- Implement best practices during deployment.
- Access more information using online resources
- Complete ArcGIS 10 Deployment Quick Tour
- Be aware of the ESRI Customer Care Site: Software Management
- Be aware of the Customer Care EDN Esri Developer Network
- Explain and perform the ArcGIS 10 Download Management operation
- Know and explain the ArcGIS 10 Deployment Best Practices

The student will display an understanding of the topics covered: define and explain the basic principles, guidelines, terminology and science of Geographic Information Science or Systems (GIS)

Demonstrate the knowledge and application of ArcGIS tools, functions and operations to perform basic geoprocessing and map layout production; following industry accepted digital mapping and GIS practices, rules and guidelines.

- Experience with Windows-based software for basic file management and browsing is required. Use online resources to quickly create a GIS map.
- Describe two common data models used to represent real-world objects and phenomena in a GIS.
- Evaluate geographic data for use in a GIS mapping project.
- Explore a GIS map and access information about map features.
- Visually analyze feature relationships and patterns on a GIS map.
- Create queries to find and select features that meet specific criteria.
- Prepare a GIS map to share information and present analysis results.
- Individuals with no GIS background or experience who want to learn the basic features of a GIS and a geographic approach to solving problems
- Display data on a GIS map.
- Query a GIS database to gain information and locate features on a map.
- Understand different types of spatial relationships among real-world features.
- Use analysis tools to create new data.

- Apply a standard approach to solving geographic problems.
- Explain the Six questions about GIS; GIS maps (The GIS Process – Geographic Questions)
- Understand and explain the use of Geographic Data: GIS data; Map meets database; Thematic mapping
- Demostare the ability to properly prepare, acquire, geoprocess, and analyze geographic data: query; analysis;
- Describe why the shape used to model the earth is important for GIS mapping and analysis.
- Understand how the system of latitude-longitude locates features on the earth's surface.
- Convert latitude-longitude units to decimal degrees.
- Explain how the choice of geographic coordinate system affects feature locations and measurements on a GIS map. (example: The shape of the earth)

Sub Steps

- Define GIS.
- Explain how a GIS works.
- Define GIS data. (spatial and nonspatial)
- Define vector geometries and vector information.
- Define and explain Raster basics.
- Explain GIS data storage and data directory management.
- Define GIS Metadata.
- Define and explain the use of multiple data types and extensions.
- Define and explain your choose of data models.
- Using ArcGIS On Line Services explain and demonstrate how to author, share and use data layers and maps.
- Navigate a GIS map.
- Explain and use data set layers.
- Define Scale.
- Explain and demonstrate data and layout view.
- Demonstrate the use of the Standard Tool Bar Tools and Menu Finding information.
- Explain and apply info tools, tables and attributes.
- Explain and demonstrate attribute query basics (Create queries).
- Explain and demonstrate location query basics (Create queries).
- Define and display earth's shape as an ellipsoid and spheroid.
- Explain why we need different spheroids and when to use spheroids.
- Define and recognize major spheroids.

- Explain and establishing location (relative and absolute).
- Create a map graticule.
- Locate features from north to south and east to west.
- Define and recognize longitude and latitude, grid system
- Define and convert decimal degrees to DMS.
- Demonstrate the ability to add inset maps, extent indicators to your map and use dynamic text.
- Insert and edit graphics in your map using the Draw toolbar.
- Add, modify, and align your map elements.
- Deliver map layouts as multiple products (PDFs, mxd, mpk, web enabled maps)