Fundamentals of GIS

For beginners

milsat

Table of contents

Overview

In this basic training on Geographic Information System(GIS), you'll learn what a GIS is, how to install and get started with some GIS software, how things we find in the real world can be represented on a map, how we record locations using coordinates, how to capture coordinates with a GPS device and how we can create and embellish maps.

In the training project, you will learn to create your own GIS data by tracing geographic features from a satellite image for a location using a theme of your choice or collecting the data on the field using a GPS device. This course will give you a solid foundation as well as the understanding needed to upskill in the field of GIS.

Objectives

The objectives of this training are to:

1. Familiarize you with the world of GIS
2. Set up and install a GIS software on your computer
3. Complete a project from ideation to presentation

Required Materials

You will need a mouse and a computer, to install QGIS or ArcMap and a willing mind to learn!

Assignment and Grading

The assignment structure for this course would be to;

1. Test your knowledge on the understanding of GIS;
2. Help you understand how it can be applied to solve a problem in your preferred field.

Program Schedule

Section	Lessons	Description	Goals	Tasks
1	Introduction to GIS	• Overview of Geographical Information System (GIS) • Historical evolution of GIS • Components of GIS • GIS data Types • GIS data formats • Real-life Applications of GIS • Career Opportunities in GIS	Build a solid understanding of GIS and location intelligence	An essay on your understanding of GIS and how it can be applied to your present field.
2	Setting Up your GIS software	• Introduction to Geospatial softwares • Overview of Open Sources (Qgis) and Commercial Software (Arcmap/ArcGIS Pro) • Navigating through software Interfaces • Setting up a project workspace	Successful installation of all GIS softwares	A video recording or step by step guide on how to install your preferred GIS software.
3	Coordinate system and Georeferencing in GIS	• Coordinate system essentials • Understanding projections • Importance of Coordinate Systems in Locational Data Collection Georeferencing • Definition of Georeferencing • Assignment	Proficiency in collecting and converting GIS data from different sources	Utilize a GPS-enabled handheld device to gather 10 Points of Interest (POIs), document their attributes, and extract the data for visualization in a spreadsheet.

4	Basic Geoprocessing tools	• Definition and importance of Geoprocessing tools
		• Overview of geoprocessing tools
		  ◦ Clip
		  ◦ Merge
		  ◦ Dissolve
		• Assignment
			Successful application of these tools in practical situationsl installation of all GIS softwares	Execute the operations following the instructions in the manual using the basic geoprocessing tools.

5	Querying in GIS	• Understanding querying in GIS and its relevance
		• Types of Queries in GIS
		  ◦ Attribute Queries
		  ◦ Spatial Queries
		• Applications of spatial Queries
		• Assignment
			Master the skill of swiftly understanding data through efficient and straightforward queries	Perform simple basic queries as stipulated in the exercise and record your observations.

6	Cartography and map design	• Concept of cartography
		• Role and types of Maps:
		  ○ Physical Maps
		  ○ Political Maps
		  ○ Thematic Maps
		• Introduction to Cartographic elements
		  ○ Data Styling
		  ○ Colouration technique
		  ○ Classification methods
		• Crafting your first map
		• Assignment
			Ability to create maps that can be easily shared by organizing and transforming raw data.	Using the data provided, create and embellish your first map.

Instructor

- A member of the Milsat Technologies staff.

Training Methodology

- Audiovisual content
- Document
- Assessment tasks

Note: The exercises in this training are continuous,the output of one is the input of another. Therefore it is important to pay proper attention to detail and follow through diligently.