GIS MAPPING, SPATIAL ANALYSIS AND VISUALIZATION

USING QGIS AND POWER BI

COURSE OUTLINE

This 10 days comprehensive course introduces the participants to the world of GIS, a perfect tool for analyzing and display data through maps to solve problems and for effective and timely decision making.

Module 1: Introduction
Cartography and GIS, and Creating Maps in QGIS

- Gain a basic conceptual understanding of cartography, GIS, and mapping
- Gain familiarity with geographic data and information, and how it's encoded within computer files
- Gain a basic familiarity with the QGIS interface
- Gain awareness of spatial reference and projection issues
- Practice opening a variety of geographic data with QGIS and viewing their attributes within QGIS
- Perform basic map styling
- Create and export a basic map as a static image file

Module 2: Thematic Data Mapping, Geocoding and Point in Polygon Analysis

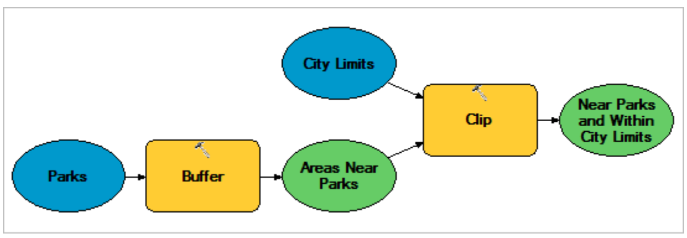
- Load shape files and CSV data into QGIS Data transformation
- Create classed choropleth map
- Adjust the legend to help the map tell a clearer story
- Load tabular CSV data into QGIS and performing a tabular join Obtaining and working with US Census data
- Understand and perform geocoding of tabular data
- Learn about some of the geocoding tools available online Understand and perform a point in polygon analysis

Module 3: Heat Maps, Creating and Editing Vector Geometries

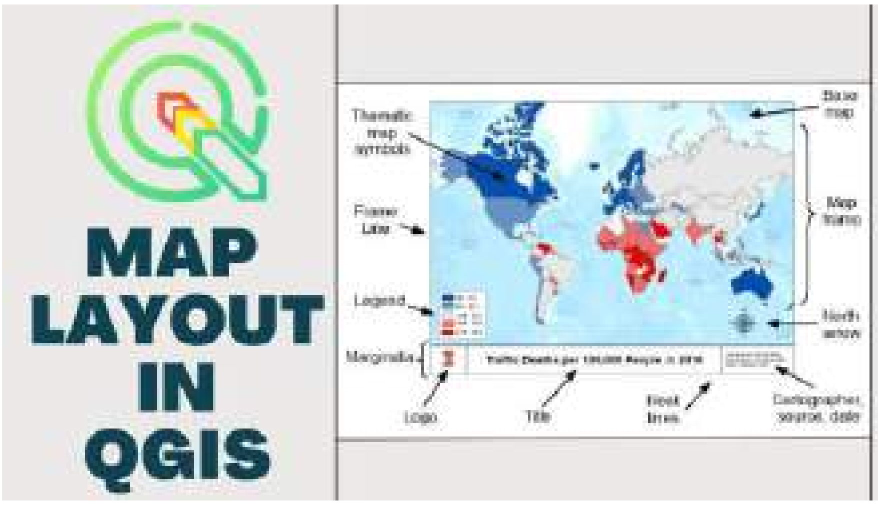
- Map point data
- Create a 'heat map' representation of the data Georeferencing
- Digitizing data
- Digitizing data with Open Street Map in QGIS Introduction to Open Street Map
- Importing OpenStreetMap data
- Importing OpenStreetMap data: Spatial Lite Database Data filtering and extraction
- Exporting layers to a local CRS

Module 4: Geoprocessing

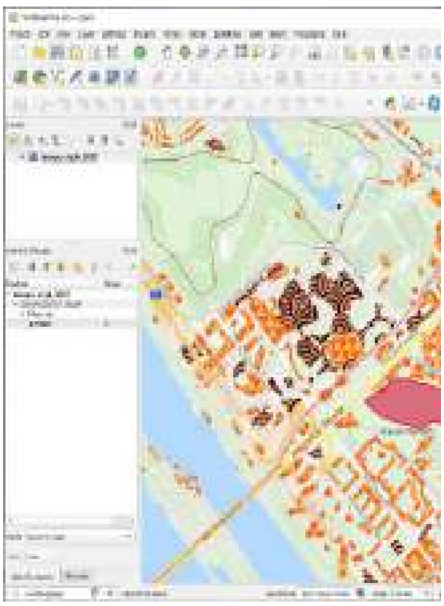
- Introduction to Geoprocessing
- Geoprocessing with a buffer analysis
- Extracting and preparing thematic OSM data
- Filtering OSM data to create desired features
- Managing CRSs in a Geoprocessing



- ❖ Geoprocessing with a buffer analysis
- ❖ Extracting and preparing thematic OSM data
- ❖ Filtering OSM data to create desired features
- ❖ Managing CRSs in a Geoprocessing
- ❖ Workflow Extracting attribute types of interest
- ❖ Creating a buffer around a Polyline feature Clipping features within a buffer
- ❖ Geoprocessing functions
- ❖ Using the Graphical Processing Modeler to automate workflows



Module 5: Intergrating QGIS with CartoDB, Advanced Mapping techniques with QGIS and CartoDB



- ❖ Creating a CartoDB account and exploring the documentation and interface Loading data into CartoDB
- ❖ Using the QGIS CartoDB plugin
- ❖ Pulling data down into QGIS for processing Pushing data backup to CartoDB
- ❖ Making a thematic map in CartoDB Using SQL in CartoDB
- ❖ Data symbolization and analysis in CartoDB
- ❖ Creating an unclassed proportional symbol map in CartoDB
- ❖ Creating shareable and interactive web maps with QGIS

Module 6: Introduction to Power BI

- ❖ Overview of Power BI and its capabilities
- ❖ Connecting to data sources
- ❖ Creating data models and relationships

Module 7: Visualization Basics with Power BI

- ❖ Introduction to Power BI
- ❖ visualizations Creating charts and tables
- ❖ Applying basic formatting and customizing visuals

Module 8: Advanced Visualizations with Power BI

- ❖ Mapping and spatial visualizations in Power BI
- ❖ Creating dashboards
- ❖ Applying filters and slicers

Module 9: Data Analysis with Power BI

- ❖ Introduction to data analysis with Power BI
- ❖ Applying statistical and mathematical functions
- ❖ Creating calculated fields and measures