QGIS

BASIC QGIS CURSE

INEGI

Objective

Apply the basic tools of QGIS for the treatment, editing, production, dissemination, and creation of geographic information.

Admission profile

- Notions of Geographic Information Systems
- Mapping Basics
- Skills in managing computer systems.

Graduation profile

The participant will learn:

- Basic concepts and features of the application.
- What is a spatial reference system and how to configure it in a project in QGIS.
- How to use tools for selection, editing and printing from a project.
- How to use tools for editing, printing, and generating files in PDF format to produce and distribute the maps.

Modality

Mixed (live sessions through the Microsoft TEAMS platform and the online SICAP platform of INEGI)

Materials

The materials consist of a user manual in digital format (pdf), worksheets and exercises for each of the topics that conforms the course. These materials will be provided to participants through the SICAP distance training platform of the National Institute of Geography (INEGI)

Methodology

The SICAP distance training platform will be used. This platform has all the topics of the Basic QGIS course, as well as the exercises and worksheets which

must be downloaded by the participants to work with the exercises. These practical exercises will be replicated by the instructors in the live sessions with the purpose that the participants perform them alongside the instructors to provide explanations and demonstrations of procedures to be carried out. To practice the procedures, participants will provide evidence through the worksheets that are requested for each topic of the course. These worksheets will be reviewed and given feedback by the assigned instructor. These tasks are mandatory.

The mechanism for raising doubts is through the live session or by email. The grade will be obtained from the result of a final exam. In order to gain access to the final exam the participant must upload all the worksheets on the SICAP platform. It is recommended that the participant, before enrolling in the other QGis courses offered by INEGI, first enroll in the Basic QGIS. The participant must have 80% attendance as mandatory.

Topics

1. INTRODUCTION

Objective: The participant will identify the main data representation tools and geographic files to become familiar with the QGIS interface.

Subtopics:

1.2 Types of Data (geodata)
1.2.1 Shape format (.shp)
1.3 Graphic interface (GUI)
1.3.1 Navigation options
1.4 Open a Project in QGIS
1.5 Graphic scale
1.6 Spatial markers (canvas navigation)
1.7 Geodata attribute table
1.7.1 Add fields to the Attribute Table
1.7.2 Inspect attributes by graphic element
1.8 SQL
1.8.1 Select municipalities using SQL
1.9 Export to Shape

2. REFERENCE COORDINATE SYSTEMS (SRC)

Objective: The participant will know what a spatial reference system and how to configure it in a project in QGIS.

Subtopics:

2.1 Map projection in detail
2.1.1 Types of Cartographic Projections
2.2 General concepts
2.3 Cartographic projections
2.3.1 Define projection.
2.3.2 Instant Reprojection

3. MODIFY GEODATA IN QGIS

Objective: The participant will learn how to use the selection, editing, creation and modification tools, starting from a new project with geodata in QGIS, also will understand the need to use Web Map Services (WMS).

Subtopics:

3.1 Establish Spatial Coordinate System
3.2 Data download upload
3.3 Layer format and symbology
3.4 INEGI Web Map Services
    3.4.1 Web Map Tile Service
3.5 Web Map Service using Plugin.
3.6 Generate a new shapefile.
3.6.1 Add data to the new Geodata.
3.6.2 Data entry templates
3.7 Geometry of polygons
3.7.1 Create an area shp
3.7.2 Digitization Tools: Split
3.7.3 Geometry calculation

4. Union of Database and Geodata

Objective: The participant will learn to use the necessary tools to unite tabular data with geographic information using stratification methods, to create thematic-statistical maps.

Subtopics:

4.1 Database and Geodata Loading
4.1.1 Union
4.2 Thematic map
4.2.1 Add tags
4.3 Classification Methods

5. GEOPACKAGE (SQLite database)

Objective: The participant will know what a Geopackage is, which allows to store vector features and a set of image mosaic arrays within an SQLite database. Its advantages, how to add layers to the project, as well as introduce the DB Manager plugin to work with the SQL window through which the participant will learn to perform queries. Once the query has been made, the participant will verify the result of the SQL in QGIS.

Subtopics:

5.1 Advantages of using Geopackage
5.2 Valid metadata
5.2.1 Add layers to the project

- Exercise 1: Growth of Urban Localities
- Exercise 2: Primaries in the town of Peñuelas
- DB Manager plugin
- Working with the SQL window
- Verifying with QGIS

6. GEOPROCESSING

Objetive: The participant will use the basic functions of QGIS for vector data processing, to obtain and analyze new geographic information.

Subtopics:

6.A Using Geopackage

- Geopackage definition
- Create Geopackage Layer
- QGIS connection with Geopackage
- Import Vector Layers into Geopackage
- Import the layers
- Create New Layer in Geopackage
- Edit layer within Geopackage
- Delete layer in Geopackage

6.B Geometric intersection

6.C Add contiguous areas with characteristic equality (Dissolve)

- Use Dissolve
- Assing a color definition (symbology) from a qml file (QGIS Layer Style)

6.D Geometric extraction function (Clip)

6.E Use of tables with XY point coordinates in the WGS84 spatial reference system

6.F Show images in QGIS when clicking on an element (actions)

6.G Merging one or more geodata into one (Merge)

6.H How to perform a Spatial Join

1. MAP PRODUCTION

Objective: The participant will know how to use the tools for editing, printing, and generating PDF files to produce and distribute the maps.

Subtopics:

7.1 Print designer

7.1.1 Page size

7.1.2 Insert layers to Print Layout

7.1.3 Grid

7.1.4 Qualification

7.1.5 Symbology

7.1.6 Numerical scale

7.1.7 Orientation (North)
7.1.8 Data source
7.1.9 Save and export map

Diploma

Once the platform exam is passed, recognition will be issued by the National Institute of Statistics and Geography (INEGI)

Duration 25 hours

An effective workshop time of 25 hours has been considered. 10 sessions of 2.5 hours are recommended.

Maximum group capacity

- 25 people.

Schedule:

- Group 1: from 8:30 to 11:00, Mexico time.
- Group 2: from 12:00 to 2:30 p.m., Mexico time.
- July 1 to 15, 2024, July 8 non-working day
- Last day for registration March 29,2024.

Technical requirements

To attend this workshop, it is necessary that each participant have a computer with internet access, and the following minimum characteristics:

RAM memory	8Gb
Processor	Intel i5 processor or equivalent
HDD	20GB free hard drive
Browser	Browser Latest versions of Chrome and Mozilla Firefox
Accessories	Headband with microphone, camera not necessary

Preinstalled software

- QGIS version 3.28.6 LTR
- Microsoft TEAMS

Contact:

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