

DATE	LECTURE	ASSIGNMENT	DEADLINE
14/02/24 11:00 – 14:00	Introduction to G.I.S. theory and applications	Collect data and make a map of case study area	18/02/24
21/02/24 11:00 – 14:00	Spatial Data, Table joins, Spatial Joins and Spatial Queries	Collect and preprocess the data of interest of the selected area	25/02/24
28/02/24 11:00 – 14:00	Comparison between islands based on attributes and weighted combination of spatial features	Show spatially the differences between the islands on characteristics of your interest	03/03/24
06/03/24 11:00 – 14:00	Time Series of Spatial Data	Quantify land cover types and changes	10/03/24
12/03/24 11:00 – 14:00	Spatial Network Analysis II	Compile and analyze the findings of assignments 1 to 4 in a small report.	17/03/24

## ASSIGNMENTS

### 1. Collect data and make a map of case study area

Pick the islands of your interest from the given list of data.

Visualize a map of the islands and their broader area in the WGS 84 (EPSG:4326) Geographic Coordinate System. Add grid lines, scale bar, a title, and a North arrow. Export the map in PNG image format.

**Data:** If you want to use Greek islands, there is a folder on e-class named “islands” with a shapefile of Greek islands.

Open Street Map (OSM) offers polygons for the whole world in different scales and projection systems. Visit: <https://osmdata.openstreetmap.de/data/land-polygons.html> and select from the “Download” section the one with the following description: “Format: Shapefile, Projection: WGS84 (Large polygons not split)”. When you download it, you have to open it in QGIS, then select the islands of interest and export as a shapefile the selected area.

**Tutorial:** [https://www.qgistutorials.com/en/docs/3/making\\_a\\_map.html](https://www.qgistutorials.com/en/docs/3/making_a_map.html)

### 2. Collect and preprocess the data of interest of the selected area

Collect the data you want to analyze of the islands you picked.

There is a list of data available for the islands. Select the data only for the islands you chose. After data selection, insert the shapefile of the island areas (the one you used for the 1<sup>st</sup> assignment). If you want to visualize every island with a different color (which will indicate a category) and you have the information in point data, use spatial join so you can give to every island the information the point data have. If the data you downloaded are for the islands and the broader area and you need only the information for the islands, you have to crop the file using the islands area shapefile.

**Data:**

Open Street Map (Export tool) – <https://export.hotosm.org/en/v3/>

Airbnb – <http://insideairbnb.com/>

CORINE land cover data 1990-2018 (including changes) – <https://land.copernicus.eu/en/products/corine-land-cover>

Built up areas-soil sealing – <https://land.copernicus.eu/en/products/high-resolution-layer-imperviousness>

If you study Greek islands and you want to explore their data, there is an excel file on e-class named “Tourism data Aegean Islands”.

**Tutorials:**

[https://www.qgistutorials.com/en/docs/3/downloading\\_osm\\_data.html](https://www.qgistutorials.com/en/docs/3/downloading_osm_data.html)

[https://www.qgistutorials.com/en/docs/3/performing\\_spatial\\_joins.html](https://www.qgistutorials.com/en/docs/3/performing_spatial_joins.html)

**3. Show spatial differences between islands for characteristics of your interest**

You can create heatmaps or perform spatial interpolation of point data and visualize how they vary among the islands. If your data are polygons or raster layers, you can categorize them to show the differences.

**Data:**

You can use the data you used from assignment two or use a new dataset.

e.g. land cover, tourist beds

**Tutorial:** [https://www.qgistutorials.com/en/docs/3/creating\\_heatmaps.html](https://www.qgistutorials.com/en/docs/3/creating_heatmaps.html)

**4. Quantify land cover types and changes**

Download Corine land cover data for two years of your choice for the islands you study. First, you have to make an account in the platform and before downloading you have to login. It is better to download it in raster format. Insert the legend (it is included in your download) to each category.

Select some categories for the islands. Next, calculate the differences between the two years. Subtract the oldest year from the most recent e.g. "raster\_18" - "raster\_06". You can also download the raster with the changes from the platform.

**Data:**

CORINE land cover data 1990-2018 – <https://land.copernicus.eu/en/products/corine-land-cover>

**Tutorial:** Go to folder Kavroudakis-Zafeirelli GIS/ 4th Assignment

**5. Compile and analyze the findings of assignments 1 to 4 in a small report.**

Describe and analyze the findings of all the previous assignments and make a small report. Export the maps of the assignments as .png files and include them in the report.

1.500 words

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