

Quick Guide: Get NUTS3 Code from Latitude & Longitude (Python)

This guide shows how to print the **NUTS3 code** corresponding to a given latitude and longitude using GeoPandas.

1) Install dependencies

pip install geopandas shapely pyogrio

2) Download NUTS shapefile (Eurostat)

Get the file here:

<https://ec.europa.eu/eurostat/web/gisco/geodata/statistical-units/territorial-units-statistics>

Select:

- **NUTS year:** 2024
- **Format:** SHP
- **Geometry:** Polygons (RG)
- **Scale:** 01M
- **CRS:** EPSG:4326

Unzip the file and keep all extracted files in the same folder.

3) Python Script

Replace the shapefile path with your local path.

```
import geopandas as gpd
from shapely.geometry import Point

# Path to your .shp file
SHP_PATH = "path/to/NUTS_RG_01M_2024_4326.shp"

# Load shapefile and keep only NUTS3 regions
nuts = gpd.read_file(SHP_PATH)
nuts3 = nuts[nuts["LEVL_CODE"] == 3].copy()

def print_nuts3(latitude, longitude):
```

```

# IMPORTANT: Point(longitude, latitude)

point = gpd.GeoDataFrame(
    geometry=[Point(longitude, latitude)],
    crs="EPSG:4326" )

# Ensure same CRS
if nuts3.crs != point.crs:
    nuts3_proj = nuts3.to_crs(point.crs)
else:
    nuts3_proj = nuts3

# Spatial join
result = gpd.sjoin(point, nuts3_proj, how="left", predicate="within")

if result.empty or result.iloc[0]["NUTS_ID"] is None:
    print("No NUTS3 region found.")
    return None

nuts_code = result.iloc[0]["NUTS_ID"]
print(f"NUTS3 code: {nuts_code}")

return nuts_code

```

4) Example

```
print_nuts3(45.4642, 9.1900) # Milan
```

Expected output:

NUTS3 code: ITC4C

Important: Always use `Point(longitude, latitude)`, not the reverse.