Corso di Laurea Magistrale Interateneo in Geografia e Scienze Territoriali (LM-80)

Advanced GIS

List of possible topics for the oral exam

1. Definitions and main characteristics of:
   1. Geomatics and its disciplines
   2. Topography
   3. Photogrammetry
   4. Remote sensing
   5. GIS
   6. Digital twin
   7. Spatial Data Infrastructure
   8. Volunteered Geographic Information
   9. Vector data
   10. Raster data
       1. Raster vs. image
       2. Raster attribute column(s)
   11. Geodatabase
       1. ESRI geodatabase types
       2. Geopackage
   12. Metadata
   13. Map types
2. Coordinate reference systems:
   1. History of measuring Earth shape
   2. The geoid and its properties
   3. The ellipsoid and its properties
   4. The datum and its properties
   5. Geographic coordinate reference systems
   6. Projected coordinate reference systems
   7. Map projection types
3. Precision, accuracy and nominal map scale:
   1. Surveying instruments and methods
      1. GNSS, how the system works and main sources of positioning errors
      2. Total station
      3. Laser scanner
      4. RPAS
   2. Definition of precision
   3. Definition of accuracy
   4. Definition of nominal map scale
   5. How to improve GNSS positional accuracy
4. Methods for discovering and sharing geospatial data:
   1. The INSPIRE directive
   2. ISO standards
   3. OGC services
   4. Data catalogues
   5. OpenStreetMap
   6. Copernicus services
5. ESRI GIS software (ArcGIS Pro):
   1. Main characteristics and improvements
   2. Building geoprocessing models
6. ESRI Geodatabase datasets:
   1. Feature class
   2. Feature dataset
   3. Subtype
   4. Attribute domains
   5. Relationship class and main differences with join and relates
   6. Network dataset:
      1. main analysis types
      2. Main spatial elements: edges, junctions and turns
      3. Managing connectivity
      4. Managing elevation
      5. Managing attributes and related evaluators
      6. Modelling turns
      7. Usage of public transit data
   7. Mosaic dataset
   8. Hints on Trace network, Utility network, Address locator, Topology, Terrain dataset, Linear referencing, Parcel fabric
7. Prediction and suitability models:
   1. Suitability analysis
8. Story maps