The **QGIS advances usage** course can be divided in modules and consists in:

- **Module 1 (from 6 h to 8 h) – QGIS and PostgreSQL / PostGIS**
  - Introduction to relational databases
  - PostgreSQL: introduction, installation and configurations
  - Data format; PostGIS extension; database structure
  - Management of DB PostgreSQL / PostGIS with QGIS
    - Connection to PostgreSQL / PostGIS; import and export data
    - Management of tables with the QGIS DB Manager plugin
      - Joins and relations between vector data and tables
      - SQL queries; ST_ functions of POSTGIS; creating views (spatial queries)
    - Editing of PostgreSQL / POSTGIS tables with QGIS, fields computation (domains and lists)
    - Introduction to SpatialLite and comparison with PostgreSQL / PostGIS
- **Module 2 (from 4 h to 8 h) – Advanced Vector Analysis and Editing**
  - Advanced geoprocessing of vector data
  - Topology check and error handling
  - Topological editing
  - Management of tables: queries, selections and filters based on attributes; table editing through expressions (Field Calculator); creation and modification of fields (widgets)
  - Examples of data entry with forms and data visualisation
  - Statistics and graphs about attributes
- **Module 3 (from 6 h to 10 h) – Advanced Raster Analysis**
  - Operations with rasters such as reprojections, conversions, clip, merge, virtual rasters; strategies to improve performance (speed and disk space); customized styles and rendering
  - The georeferencer tool of QGIS; Ground Control Points and transformation settings; error evaluation
  - Tiling of raster data
  - The mapAlgebra and the raster calculator
  - Raster reclassification
  - Geomorphological analysis (DTM); 3D spatial modeling; contour lines, slope, aspect, shading maps;
  - Interpolation tools from point data and generation of raster maps; smoothing, distance analysis, zonal statistics

- **Module 4 (from 4 h to 8 h) – QGIS and Lizmap Web Client for the publicaton on the WEB**
  - Management and publication of web services through QGIS
  - OWS geoservices (WMS, WFS and WCS) and their management in QGIS
  - QGIS Server and Lizmap Web Client
- **Module 5 (from 4 h to 6 h) – QGIS and QField**
  - QGIS project creation and data management for QField
  - The QfieldSync Plugin – data import/export
  - QField Basic usage
- **Module 6 – QGIS Advanced Case Studies**
  - Introduction to statistics and geostatistics with R using QGIS
  - Basics of hydrological analysis
  - Basics of network analysis
  - Introduction to automatic classification of remote sensing images (Semi automatic classification Plugin / Grass tools in QGIS)