COURSE OUTLINE

This online course builds on the delegates existing knowledge of QGIS. It comprises a series of presentations, demos and computer practical sessions using FREE open source GIS software. The example datasets are taken from a variety of fields.

Delegates are introduced to advanced analysis techniques using both raster and vector data. The course includes a basic introduction to the PostgreSQL/PostGIS enterprise database as well as the Python programming language. The course is designed for existing users of QGIS that want to expand their knowledge and carry out higher-level analysis.

This course is intended for those who have either completed our Introduction to QGIS course or have equivalent knowledge and experience.

ANTICIPATED COURSE OUTCOMES / ACHIEVEMENTS

Aims and objectives

- To develop delegates understanding of the fundamental concepts of GIS including its strengths and limitations.
- To expand on the concept of Open Source software.
- To introduce the more advanced functionality of QGIS software package.
- To teach the advanced skills needed to obtain, import, manipulate, analyse, interpret, manage and output spatial data in order to investigate topics in the delegate’s area of interest.
- To demonstrate real-world uses of GIS.

Learning outcomes - by the end of the course, delegates will have a knowledge and understanding of:

- Working with spatial databases including importing existing data sets.
- Manipulating coordinate systems in QGIS.
- Advanced field calculations.
- Working with topologies.
- Vector processing including tools such as union.
- Raster processing and how to use the raster calculator.
- Graphical Modeller.
- PostGIS databases.
## Advanced QGIS Classroom based

<table>
<thead>
<tr>
<th>Session</th>
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| **Session 1: Group training** 9:30 – 4:30 | 1 – Spatial databases  
Recap on GIS data types  
SpatiaLite databases  
PostgreSQL / PostGIS  
ESRI file geodatabases  
Shapefiles & GeoPacks  
Creating drop down menus (Value Map)  
Exercise 1a – SpatiaLite databases  
Exercise 1b – PostGIS databases | 2 – Manipulating coordinate systems in QGIS  
Fundamentals of coordinate systems  
Datums  
Parameters in QGIS  
What system is best?  
Exercise 2 – Manipulating coordinate systems | 3 – Introduction to Python  
Python as a language  
Python in QGIS  
Python Console  
Syntax  
Pitfalls  
Exercise 3 – Introduction to python in QGIS | 4 – Advanced Field Calculations, Expressions and Actions  
Field calculator refresher  
Advanced Field calculations  
Functions  
Expressions  
Actions  
Exercise 4 – Field calculation | 5 – Advanced Editing  
Editing recap  
Snapping  
Feature topology  
Topology checker  
Reshaping features  
Splitting features  
Advanced digitising (CAD style)  
Forms and Field widgets  
Exercise 5 – Advanced digitising |
| **Session 2: Group training** 9:30-4:30 | 6 – Advanced Symbologies, Labelling and Presentation of data  
Labelling using expressions  
Data defined labelling  
Matching label colour to features  
Setting label properties  
Label engine  
Label priority  
Creating an Atlas and dynamic maps  
Exercise 6a – Advanced symbologies and Presentation of data  
Exercise 6b – Creating an Atlas | 7 – Vector processing in QGIS  
Processing framework  
Bath processing  
Geoprocessing tools  
Exercise 7 – Spatial analysis case study | 8 – Raster processing in QGIS  
Raster menu  
Raster calculator  
Interpolation Using GRASS  
Exercise 8 – Interpolation and raster algebra | 9 – Graphical Modeller  
What is Graphical Modeller?  
Defining inputs  
Algorithms  
Saving and loading a model  
Editing a model  
Documenting a model  
Exercise 9 – Graphical modeller | 10 – Consultancy exercise |