Introduction to Coastal and Marine GIS

Course Outline

Delivering sustainable development in the marine environment requires a balance to be achieved between resource use and protection of our seas. Spatial data is increasingly important in such decision-making being used for marine planning, conflict management and environmental management.

This course will provide you with the background and skills necessary to utilise these powerful tools and techniques.
The course introduces GIS concepts and techniques using QGIS and is intended for those who have little to no GIS knowledge or who wish to undertake some formalized training in QGIS having been largely self-taught in the past.

ANTICIPATED COURSE OUTCOMES / ACHIEVEMENTS

Aims and objectives

- Provide introductory level GIS knowledge and the fundamental skills to use QGIS
- Focus in on coastal and marine datasets
- Discuss some of the unique challenges / pitfalls when mapping the coastal and marine zones (e.g. coordinate systems, vertical datums)

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

- What a GIS is; what spatial data is; raster and vector data models
- The core functionality of QGIS
- Visualising spatial data and producing maps / charts.
- Spatial data management and the use of Geopackages (a type of spatial database)
- Handling tables including selections and queries.
- Creating and editing spatial data.
- Greater appreciation of coastal and marine GIS data and applications.
- Basic geoprocessing

For further information please contact:
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Introduction to Coastal and Marine GIS

Day 1

1 - The What the Why the How of GIS

What is GIS?
GIS Tasks
GIS Data Types
Mapping in Layers

2 – Using QGIS

Open a project
Navigation
The Layer panel
Add / Remove data
Identify features tool
Bookmarks
Plugins

Exercise 2: Getting started

3 – Data Management

The QGIS project file
Browser panel
Metadata
Vector data formats
Accessing Web Services

Exercise 3 – Data management

4 – Visualising Data

Symbolising vector data
Thematic maps
Symbology types
Labelling

Exercise 4: Visualising data

5 - Working with Tables

Table types
The Attribute table
Field management
Field calculator
Geometry calculation
Creating points from tables
Summary statistics
Table / Attribute joins

Exercise 5: Working with Tables

Day 2

6 – Vector processing

Selections
  Interactive
  Attributes
  Spatial
The processing toolbox
Buffer tool
Merge tool
Clip tool

Exercise 6: Vector processing

7 – Temporal data

Visualising temporal data
Preparing date fields
The temporal controller

Exercise 7: Temporal data

8 – Creating and Editing Data

Vector storage
Creating new vector data
Modifying vector data
Snapping
Adding attributes
Virtual fields

Exercise 8: Creating and editing data

Day 3

9 – Producing Maps / Charts

What is a Map Layout?
Map Elements
Using Templates
Exporting and printing layouts

Exercise 9: Creating a map

10 – Raster Processing

Raster data
Raster alignment and resolution
Raster calculator

Exercise 10: Raster processing

11 – Coordinate Reference Systems

Coordinate Systems
Vertical Datums
Coordinate formats
Reprojecting spatial data

Exercise 11: Coordinate reference systems

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