V35-1: 35-hour short course (Cost: £310)

Course Title: Geographic Information Systems in the Spatial Analysis of Animal Diseases

This course consists of two units:

1. Introduction to Geographic Data
2. Using a Geographic Information System

Aims of each unit and your learning outcomes are outlined in the following section.

Unit 1: Introduction to Geographic Data

Aims of the unit

- To familiarise you with the different types of spatial information and how that information is stored and then used by a GIS.
- To outline the different methods of projecting geographic information and how data can be converted from one projection to another.
- To give you a first 'hands-on' experience of using a GIS.

What you will learn

By the end of this unit you should be able to:

- list and describe attributes of geographic data and the types of spatial objects
- explain how spatial objects can be stored within a GIS using raster and vector data formats
- define geo-referencing and describe different types of geo-referencing systems
- describe why and how geo-references are converted from one system into another
- explain the importance of spatial autocorrelation in spatial data analysis
- outline the limitations of spatial interpolation
- briefly discuss uncertainty in geographic data.

Unit 2: Using a Geographic Information System

Aims of the unit

- To familiarize you with the use of a GIS.
- To familiarize you with basic spatial operations that be performed using a GIS.
- To familiarize you with the concept of 'loose coupling' – the process of moving information between a data management, GIS and statistics package.
- To familiarize you with a method for organizing a small-to-medium-scale GIS projects.[1]

What you will learn

By the end of this unit you should be able to:

- display a map within the GIS package ArcView
- import tabular data into a GIS project, link it to a map projection and visualize the spatial features of the data
- perform basic query operations, using a GIS
- describe the advantages and disadvantages of choropleth mapping
- perform basic GIS calculations – determine the length of boundaries, areas of polygons, create buffer zones around defined areas.

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