UBDC Training Programme: Short Courses (August 2015)

Introduction to Geographic Information Systems (GIS) Using ArcGIS

Course Instructor: Dr. David McArthur, University of Glasgow

Course duration: 2 days (Wednesday, 19th – Thursday 20th August 2015, 9:30am – 4:30pm each day, lunch break included)

Course location: Lab A (912A), Adam Smith Building, University of Glasgow

Audience: Social scientists, students, practitioners

Pre-requisite knowledge: No prior knowledge of GIS necessary

Course Summary:

The importance of understanding the spatial dimension of data has long been understood, despite that fact that this dimension is often ignored. However, recent years have seen a massive expansion in the quantity of data available. At the same time, new methods and software have opened up new opportunities for analysing spatial data. In this short course, participants will be introduced to Geographic Information Systems (GIS), a powerful tool for analysing spatial data. The purpose of this course is to familiarise participants with what a geographic information system is and the potential for it to be used for informed decision-making.

Outcomes:

Participants will learn how to:

- Describe the key features of a GIS and the sorts of data which can be used in such a system
- Import data into a GIS to visualise it as a map
Apply a variety of geoprocessing operations
Explore data to gain insights into its structure
Perform basic data analysis techniques which exploit the powerful features of a GIS

Course content:

Day 1:

- Representing the world with spatial data: raster and vector data.
- A primer on coordinate systems
- Important sources of mapping data: Ordinance Survey, Edina and Digimap.
- An introduction to some popular GIS software with a focus on the ArcGIS suite of products.
- Getting data into ArcGIS.
- Popular online data sources: census, SHS, BHPS etc.
- Merging data in ArcMap and displaying it
- Simple geoprocessing tasks: selecting, clipping

Day 2:

- Interpolation methods for point data
- Formally defining spatial structure: the spatial weights matrix
- Measures of spatial autocorrelation
- Cluster/hotspot analysis