**INTRODUCTION TO PRINCIPLES OF GEOGRAPHICAL INFORMATION SYSTEMS (GIS)**

**Duration**: Four weeks

**Venue**: - WEBBS INSTITUTE

**Recommended knowledge**: Basic Computer skills

**INTRODUCTION TO PRINCIPLES AND APPLICATION of GIS**

**(ArcGIS Software)**

**The main objective**.

This training is to ensure that a strong training package is delivered to the participants and equip them with in depth knowledge of GIS and use them while conducting their daily activities. More specifically, this course will introduce participants to the basic concepts of map making, presentation of spatial data (maps), processing of GPS data and analysis of data related to their activities. The course will provide substantial hands on practical exercises using ArcGIS software and will give participants an opportunity to work on a real practice.

**COURSE ORGANIZATION**

The course is organized into four parts. Part one, will cover the basic concepts of Geographical Information Systems (GIS) and spatial data management. Part two will focus mainly on GIS data input techniques, data processing and analysis and part three will focus on spatial data output/visualization and practical exercises whereby participants will work on a series of exercises using ArcGIS software. In addition, part three will include a case studies whereby participants will apply GIS techniques they have acquired to address a real-world problem related to their daily activities.

**COURSE CONTENTS**

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| **Week** | **Topic** | **Content** |
| Week one | * Introduction to GIS and spatial data management | • Introduction to the concepts of GIS and Spatial data management.  • Introduction to spatial data types  • GIS spatial data models (Raster and Vector data structures)  • Map projections, Coordinates systems and Map data sources  • Introduction to ArcGIS software |
| Week two | * GIS data input techniques, data processing and analysis | • Spatial data input techniques (Scanning, Table and on-screen Digitization)  • Spatial data editing and data management  • Introduction to hand held GPS related data collection and processing.  • Introduction to basic GIS data analysis techniques (measurement, overlay operations, neighbourhood operations, network connectivity)  • Mapping  • Performing spatial queries |
| Week three | * Spatial Data Output/Visualization and case studies | • GIS and Maps: Topographic and thematic maps  • Map elements and Cosmetics (Cartographic symbols and their implementation in different GIS software packages)  • Qualitative, Quantitative and time series data mapping techniques  • Map and Layouts Design  • Applying GIS techniques to address a real-world problem related to participant’s daily activities. |
| Week four | * Practical / exercise |  |

**MODE OF TEACHING**

The mode of teaching will be lectures using Power Point Presentation and hands on computer practical exercises using ArcGIS Software. This will also be coupled with a number of group discussions and participant presentations. Course Participants are encouraged to come with their own data pertaining to their day-to-day activities for the case study. However, CICT has a spatial database having datasets from different parts of Tanzania. This data will be made available for use during the course.

**LEARNING OUTCOME**

The participants will be able to describe main concepts of GIS, perform GIS data input, management, analysis and visualization using ArcGIS software. Furthermore, participants were able to get in-depth skills in using ArcGIS software to solve real world problems related to their daily activities including geo-referencing an image map and extracting information from the Google Earth.

**AWARD**

Upon completion of the course participants will be awarded a Certificate of attendance of WEBBS Training Institute on Introduction to Principles and Applications of GIS (ArcGIS Software).

**CONTACTS**

For more information and enquiries please contact us through Email: *sambulikevin@gmail.com*, Phone: *0729759023*,