ARDHI UNIVERSITY

INTRODUCTION TO PRINCIPLES OF GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

Duration: Two weeks

Start Date: **2ⁿᵈ to 13ᵗʰ October, 2023**

Venue: ICT Computer Lab. - Ardhi University

Recommended Knowledge: Basic Computer skills

INTRODUCTION TO PRINCIPLES AND APPLICATION OF GEOGRAPHICAL INFORMATION SYSTEM (GIS)

1. Course Objective

The main objective of the training is to provide participants with knowledge and skills related to GIS and its applications in various fields, such as land management, natural resources, and revenue collection and management. More specifically, the training will introduce participants to spatial and attribute data concepts, including data collection, management, processing and presentation. Learning GIS concepts and skills will equip participants to utilize GIS and other tools like GPS in day-to-day activities. During the course, participants will have the opportunity to work with ArcGIS Pro and QGIS software through practical exercises. This will enable them to work with real data and perform practical applications.

2. Course Organisation

This course has two parts. Part One focuses on the fundamental concepts of Geographical Information Systems (GIS), such as GIS data input techniques, data management, and data processing and analysis. Part Two concentrates on spatial data visualization and presentation and includes practical exercises using ArcGIS Pro/QGIS software. In addition, Part Two will consist of a case study where participants will apply the GIS techniques, they have acquired to address a real-world problem related to their daily activities.

3. Course Content

S/N	Week	Topic	Content
1	Week One	fundamental concepts of Geographical Information Systems (GIS)	• Introduction to concepts of GIS and Spatial data. - Introduction to spatial data types - Spatial data models (Raster, Raster, TIN). • Introduction to ArcGIS Pro/ QGIS software - Software related basics and applications • GIS data input principles - GIS data sources, including data acquisition (using GPS) and input tools and techniques - Data management techniques - Coordinate systems and map projections, - Map scales and their appropriate uses in mapping - Data extraction from various sources, including Google Earth, • GIS data processing and analysis - Query/retrieval, measurement and

			distance analyses - Overlay analyses - Neighbourhood and Network analyses - Trend analyses • Spatial data visualization and presentation - Visual variables and their applications in mapping - Map elements and their relevance in mapping - Web mapping and publication of maps
3	Week Two	Practical - Case study	• In this part, participants will work on GIS applications to address real-world problems related to their daily activities (operations). They will work in groups to address practical issues related to their professions using their datasets. In cases where empirical data is not available, relevant data will be provided for practice.

Mode of Teaching

The training will be delivered through PowerPoint presentations and hands-on computer exercises using ArcGIS Pro/QGIS software. In addition, there will be group discussions and participant presentations. Participants are encouraged to bring their own data related to day-to-day activities to be used in the case study. However, the ICT Directorate has sufficient datasets for participants to use in the exercises.

Learning outcome

Upon completion of the course, participants will be able to describe the main concepts of GIS and perform GIS data input, management, analysis and visualisation using ArcGIS Pro/ QGIS software. Additionally, participants will be able to use ArcGIS Pro/ QGIS to solve real-world problems related to their daily activities.

Award

Upon successful completion of the course, participants will be awarded a Certificate of attendance from Ardhi University on Introduction to Principles and Applications of GIS.

Course fee

The course fee per participant is **TZS 750,000/=**, which covers tuition fees, stationery, tea, and refreshments.

Mode of payment

The course fee will be paid to the University account. The account details will be shared through a control number after submitting your application form and having it accepted by the University.

Contacts

For more information and enquiries, please do not hesitate to reach out to us through our contact information below.

Email: editha.temu@aru.ac.tz , ictsupport@aru.ac.tz or edithatemu.et@gmail.com

Phone: 0754-607694, 0715-607694 or 0754- 372054