

Caribbean Institute for Meteorology and Hydrology Husbands, St. James

GIS for Hydrological Technicians Distance Learning Course September 7 – October 2, 2015

Facilitator(s):

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AIMS AND OBJECTIVES

The **GIS for Hydrological Technicians** course provides an introduction to some of the basic workflow operations applied in ArcGIS software to support various applications within the field of Hydrology. Participants will learn how to apply ArcGIS software for specific data processing and visualization operations that prepare data as inputs for applications such as watershed analysis, flood analysis and flood hazard mapping. This course targets persons in hydrology related fields with limited GIS experience.

LEARNING OUTCOMES

At the end of the course the participant will be expected to be able to:

1. perform basic data input and output operations in ArcGIS
2. perform critical data management operations in ArcGIS associated with attribute and geometry editing, spatial interpolation, digitization and georegistration
3. compose, style and publish maps for visualisation of hydro-meteorological data
4. generate and process topographical data for input to flood and watershed analysis

COURSE DELIVERY AND CONTENT

The duration of the course is four (4) weeks. The course will be delivered through an online learning facility and will consist of synchronous and asynchronous sessions. As such, participants are encouraged to manage their time efficiently. Participants will require access to a computer with connection to the internet and ArcGIS software (version 9.3 or above). Participants will be encouraged to use the student forums and other online facilities to communicate and participate in group discussions.

- Week 1 – *Basic Operations in GIS*
- Week 2 – *Generating Rainfall Distribution Maps*
- Week 3 – *Digitizing Paper-based Maps and Generating Digital Elevation Models (DEM) and Triangulated Irregular Networks (TIN)*
- Week 4 – *Translating Computer Aided Design (CAD) data into DEM and TIN*

LEARNING HOURS

Supervised sessions

10-20 hours

ASSESSMENT

The course will be assessed through the completion of online quizzes and assignments. Participants are required to complete **ALL** assessments in order to successfully complete the course.

COURSE MODULE DESCRIPTIONS

Module	Description
Module 1 – Basic Operations in ArcGIS	This module introduces the course by briefly describing/demonstrating: 1) Coordinate systems and their relevance in ArcGIS, 2) Spatial data types used in ArcGIS, 3) Importing and symbolizing map data, 4) Creating new attribute fields, 5) Surface analysis with a Digital Elevation Model, 6) Georegistration of a satellite image, 7) Creating and editing shapefiles and 8) Map layout
Module 2 - Generating Rainfall Distribution Maps	In module 2, you will learn how to manipulate rainfall data in spreadsheet format and use spatial interpolation to represent the distribution of rainfall.
Module 3 – Digitizing Paper-Based Maps and Generating Digital Elevation Models (DEM) and Triangulated Irregular Networks (TIN)	Module 3 focuses on the process of digitization and how it can be used to convert paper based data into DEM and TIN, which are critical components in spatial analyses of flooding.
Module 4 – Translating Computer Aided Design (CAD) data into DEM and TIN.	Digitizing is often a critical operation for the pre-processing efforts that support flood analysis and mapping. However, there are times when topographical data are readily available in CAD format and can be directly applied to flood analyses. This module therefore provides an alternative workflow to the previous module.