Haward Technology Middle East

COURSE OVERVIEW GE0550
Introduction to GIS
(E-Learning Module)

Course Title
Introduction to GIS (E-Learning Module)

Course Reference
GE0550

Course Format & Compatibility
SCORM 1.2. Compatible with IE11, MS-Edge, Google Chrome, Windows, Linux, Unix, Android, IOS, iPadOS, macOS, iPhone, iPad & HarmonyOS (Huawei)

Course Duration
30 online contact hours
(3.0 CEUs/30 PDHs)

Course Description

This E-Learning course is designed to provide participants with an introductory knowledge of GIS. It covers the geographic information technologies, GI systems, science and studies; the geographic information systems (GIS) and an inelegant definition for GIS; the intuitive description of geographic information system and the difference of GIS from related systems; the major areas of GIS application, GIS system architecture and components; the purpose and implementation of the GIS data model, spatial and attribute data; the representation of data with raster and vector models; and the concept of vector and raster.

During this course, participants will learn the projection, scale, accuracy and resolution overlay based on common geographic location; the ESRI ArcGIS system, future generic GIS internet enterprise, map quantities and map densities; the map change, combination of data sets, creation of maps and viewing of data in ArcCatalog; the GIS, data representation and common GIS data format; the coordination of systems; the ESRI ArcGIS for server, geodatabase (ArcSDE) and ESRI ArcGIS for desktop; the geographical information system, raster, vector and their advantages and disadvantages; the GIS data types, raster limitations, vector data, lines, polygons and multiparts; and the topology, policy-based topology rules, different GIS models, OpenStreetMap and OSM data primitives.

Course Objectives
Upon the successful completion of this course, participants will be able to:-

- Apply and gain a basic knowledge on GIS

- Recognize the geographic information technologies including GI systems, science and studies

- Define geographic information systems (GIS) as well as discuss how GIS differs from related systems

- Identify the major areas of GIS application, GIS system architecture and components

- Describe the purpose and implementation of GIS data model as well as review spatial and attribute data

- Represent data with raster and vector models and explain the concept of vector and raster

- Review projection, scale, accuracy and resolution overlay based on common geographic location

- Recognize ESRI ArcGIS System, future generic GIS internet enterprise, map quantities and map densities

- Illustrate map change, combining of data sets, creating maps and viewing data in ArcCatalog

- Discuss data representation, common GIS data format and coordinate systems

- Identify ESRI ArcGIS for server, geodatabase (ArcSDE) and ESRI ArcGIS for desktop

- Differentiate raster versus vector and identify their advantages and disadvantages

- Recognize the GIS data types, raster limitations, vector data, lines, polygons and multiparts

- Discuss topology including the policy-based topology rules, different GIS models, OpenStreetMap and OSM data primitives

Who Should Attend
This course provides a broad overview of GIS, the geospatial industry and related technologies. It is ideally suited for those that are new to the technology, need an updated understanding of the industry, or those that will be managing GIS professionals. Further, the course also beneficial to GIS support – junior staff from electricity planning department.

Course Certificate(s)
Internationally recognized certificates will be issued to all participants of the course.

Certificate Accreditations

Certificates are accredited by the following international accreditation organizations: -

- USA International Association for Continuing Education and Training (IACET)

Haward Technology is an Authorized Training Provider by the International Association for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 1-2013 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 1-2013 Standard**.

Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Association for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

Haward Technology Middle East will award **3.0 CEUs** (Continuing Education Units) or **30 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.

- British Accreditation Council (BAC)

Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

Course Fee

As per proposal

Training Methodology

This Trainee-centered course includes the following training methodologies:-

- Talking presentation Slides (ppt with audio)
- Simulation & Animation
- Exercises
- Videos
- Case Studies
- Gamification (learning through games)
- Quizzes, Pre-test & Post-test

Every section/module of the course ends up with a Quiz which must be passed by the trainee in order to move to the next section/module. A Post-test at the end of the course must be passed in order to get the online accredited certificate.

Course Contents

- Personal Nuts and Bolts
- Course Nuts and Bolts
- GIS--What is it?
- Geographic Information Technologies
- GI Systems, Science and Studies
- Defining Geographic Information Systems (GIS)
- An Inelegant Definition for GIS
- Geographic Information System: intuitive description
- How GIS differs from Related Systems
- Why Study GIS?
- The major areas of GIS application
- Examples of Applied GIS
- What GIS Applications Do
- GIS System Architecture and Components
- Knowledge Base for GIS
- The GIS Data Model: Purpose
- A layer-cake of information
- The GIS Data Model: Implementation
- The GIS Model: example

- Spatial and Attribute Data

- Representing Data with Raster and Vector Models

- Concept of Vector and Raster

- Dumb Images & Smart GIS Data

- Projection, Scale, Accuracy and Resolution

- Examples

- Layers

- Overlay based on Common Geographic Location

- Analysis

- Vector Layers

- Hands-on Projects

- Appendix

- Software for GIS: The Main Players

- Software for GIS: other players

- ESRI Product Line-up: ArcGIS client products (Fall 2007)

- ESRI ArcGIS System

- Future Generic GIS Internet Enterprise

- LAB 1: Introduction to GIS

- What is GIS

- Map Where Things Are

- Map Quantities

- Map Densities

- Find What's Inside and what's nearby

- Map Change

- Combining data sets

- Feature Types

- Features and their representation

- Attributes

- Imagery (raster)

- Creating Maps

- ArcGIS Applications Description

- Viewing Data in ArcCatalog

- Drag and Drop

- Order is Important

- The Main Toolbar
- The Attribute Table
- Useful websites
- Two Things
- Static Map Vs Web Map (Dynamic)
- Quiz
- Introduction to GIS
- What is GIS?
- Data Representation
- Data Representation (Vector)
- Common GIS Data Format
- Coordinate Systems
- ESRI ArcGIS for Server
- Geodatabase (ArcSDE)
- ESRI ArcGIS for Desktop
- 3 Takeaways
- Geographical Information System
- Objectives
- What Is GIS?
- Principle
- Functions
- Components
- Data Types
- Vector
- Raster
- Raster VS Vector
- Advantages (Vector)
- (Vector) Disadvantages
- Advantages (Raster)
- (Raster) Disadvantages
- Advantages of GIS
- Disadvantages of GIS
- GIS Data Types
- Data Types

- Coding Raster GIS Data

- Raster Limitations

- Vector Data

- Lines

- Polygons and Multiparts

- Attributes

- Multipart Features

- Enclaves and Exclaves

- LIDAR Data

- Why do we do this?

- Best Practices

- Smart Objects

- What is Topology?

- Simple Example

- Policy-based Topology Rules

- Networks

- GIS is extensible

- Different GIS Models

- OpenStreetMap

- OSM Data Primitives

- Data Primitives

- Attributes

- Extensibility

- Versioning

- Real World: Haiti

- Contributing to OSM

- A Note: NJ Land Use

- Quiz

- Introduction to GIS

- Introduction to Geographical Information System

- What Is GIS

- GIS Capabilities/ Analysis with GIS

- Example

- The Need For GIS

- Hardware
- Software
- Major GIS software
- Data
- People
- M E T H O D S
- Cross-Disciplinary Nature of GIS
- Digital Mapping
- Photogrammetry
- Surveying
- Remote Sensing
- Statistical Databases
- Creating GIS
- How to Combine Geographic Information?
- How Does GIS Works?
- Relating Information from Different Sources
- Data Capture
- Data Integration
- Projection & Registration
- Data Modeling
- GIS Spatial Data Model
- Vector Data
- Raster Data
- Information is organized into layers:
- Top Benefits of GIS
- Managing Geographically
- GIS Application
- Homicide
- Media and Press:
- Census
- Real State
- GIS in Tourism
- Quiz
- Introduction to GIS

- GIS Topology
- Definition-
- Importance in GIS
- Topology implementations
- Applications
- Data Structure
- Data Organization and Storage
- Data Analysis
- Data Advantages
- Disadvantages
- Basic Data Models
- Raster Data Models
- The Raster View of the World
- Raster Data Model
- Direct Calculations Using Raster Layers
- Comparison between Raster and Vector
- Attribute Data
- Raster Data Formats
- Creating Digital Datasets by manual input
- Georeferencing
- Data Models in GIS
- Index
- Introduction
- Components of GIS
- Data Types in GIS
- The Data Model
- Data Models in GIS
- Raster Data Model
- Cell Size of Raster Data
- Advantages of Raster
- Disadvantages of Raster
- Vector Data Model
- Point
- Line

- Polygon

- Advantages of Vector

- What is a TIN?

- Different Types of TIN Methods and Processes

- Digital Elevation Model (DEM)

- Conclusion

- Reference

- Quiz

- Introduction to GIS

- Introduction to Geographic Information Systems (GIS) with a focus on localizing the MDGs

- We Live in Two Worlds

- Context and Content

- Abstracting the Real World

- What is GIS?

- Geographic Information System

- What can you do with a GIS?

- How does a GIS work?

- GIS provides Data Integration

- Two fundamental types of data

- Data Representation

- Other features of a GIS

- Hint – having GIS software does not a cartographer make!

- GIS is (rapidly) evolving

- Spatial Data Infrastructure (SDI)

- Geographic Knowledge

- World Summit on Sustainable Development 2002

- Poverty Indicators

- Monitoring fair trade local banana farmers

- GIS for planning underdeveloped areas

- Achieving the MDGs

- Principles of GIS

- Course Introduction and Introduction to GIS

- Text

- Software

- Online Course Materials

- Topics

- Assignments

- Project Examples

- Project Dates

- Exams

- An Introduction to GIS

- What does GIS stand for?

- What is a Geographic Information System?

- What are the components of a GIS?

- The Map

- The Database

- Other Features Graphs.

- The Power of GIS

- How does a GIS answer spatial questions?

- What types of questions can be answered by a GIS?

- What types of data are used in a GIS?

- 3D –Maps (X,Y,Z)

- How is spatial data represented in a GIS?

- Applications of GIS

- GIS Before Computers

- There's Another GIS/GISc.

- Quiz