

COURSE OVERVIEW GE0551
Advance GIS Skills
(E-Learning Module)

Course Title

Advance GIS Skills (E-Learning Module)

Course Reference

GE0551

Course Format & Compatibility

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

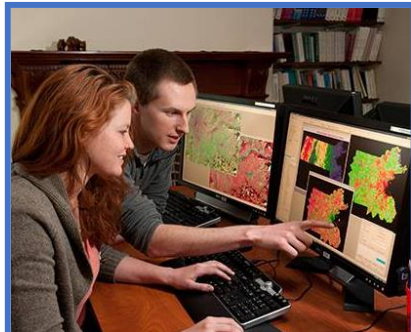


Course Duration

30 online contact hours
 (3.0 CEUs/30 PDHs)



Course Description



This E-Learning course is designed to provide participants with an advanced knowledge of GIS. It covers the geographic information system, GIS concepts, GIS process, data layers stacking and GIS areas; the major services in GIS, the components of GIS; the main functions of a GIS; the data manipulation and analysis; the use and application of GIS in multiple disciplines; and the management of natural resource and economic development.

During this course, participants will learn the synergy between spatial data and analysis; the slope stability analysis and watershed characterization and its applications; the data structure, maps and map elements, point features, line features, area features, polygons, data model and structure; the raster format, raster data and vector format; the vector and raster representation of point map features, line map features and area map features; the raster and vector formats, attribute data and spatial data; the production of digital data and the attribute component of data acquisition; and the GIS terminology, its types and elements.

Course Objectives

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

- Apply and gain an advanced knowledge and skills on GIS
- Describe geographic information system, GIS concepts, GIS process, data layers stacking and GIS areas
- Employ major services in GIS and identify the components of GIS including the main functions of a GIS
- Carryout data manipulation and analysis as well as the use and application of GIS in multiple disciplines
- Manage natural resource and employ economic development
- Explain the synergy between spatial data and analysis
- Carryout slope stability analysis and watershed characterization as well as recognize its applications
- Describe data structure, maps and map elements, point features, line features, area features, polygons, data model and structure
- Illustrate raster format, raster data and vector format
- Carryout vector and raster representation of point map features, line map features and area map features
- Compare raster and vector formats as well as review attribute data and spatial data
- Produce digital data and identify the attribute component of data acquisition
- Recognize GIS terminology, its types and elements

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.

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 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: -


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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.

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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

Course Contents

- Geographic Information System
- What is GIS?
- Geographical Information System
- GIS: A Formal Definition
- Why is GIS Unique?
- GIS Concepts
- GIS: Historical Background
- GIS Process
- GIS System
- GIS – Data Layers Stacking
- GIS Areas
- Softwares
- Major Services in GIS
- Components of GIS
- GIS
- What are the Main Functions of a GIS?
- Data Manipulation and Analysis
- Presentation/Visualization
- Application of GIS
- GIS Used in Multiple Disciplines
- Natural Resource Management
- Economic Development
- GIS: A Framework for Understanding - and Managing Our Earth
- Geography Matters
- GIS as Infrastructure
- Civil Engineering Applications
- Location-Allocation Inputs
- Synergy Between Spatial Data and Analysis
- Other Transportation Applications
- Transportation – Emergency Operations
- Watershed Characterization

- Watershed Applications
- SlopeStability Analysis
- GIS Data and Sources
- DataStructure
- Maps and MapElements
- Maps Contains Features such – Point, Line, Area and Surface
- Point Features
- Points
- Line Features
- Lines
- Area Features
- Polygons
- GIS Data Formats
- Data Model and Structure
- Raster Format
- Raster Data
- Vector Format
- tfectorData
- Vector and Raster Representation of Point Map Features
- Vector and Raster Representation of Line Map Features
- Vector and Raster Representation of Area Map Features
- Comparison of Raster and Vector - Formats
- Attribute Data
- nature of Spatial Data
- Spatial Data
- Spatial Data Criteria
- Attributes
- GIS Data Sources
- Data Sources
- Query on Database and Graphics
- Available Digital Data
- Spatial Component from Maps and Plans
- Producing Digital Data
- Data Acquisition Attribute Component

- Attribute Component
- Data Entry
- Data Quality (I)
- Spatial Accuracy
- Error Sources (I)
- Quiz
- What is GIS ?
- GIS Terminology:
- Types of GIS:
- Father of GIS – Rojar Tomlinson
- Elements of GIS:
- What GIS can do?
- What Analysis GIS can do ?
- GIS Tasks
- Why GIS ?
- Trends in GIS
- GIS Software
- Technologies that support GIS
- Free Classes
- GIS Courses Institute
- A Career in GIS
- Some Premier Employers
- Companies Providing Job Opportunities
- Applications of GIS
- Who Uses GIS?
- Decision making through GIS
- Natural Resources Management
- Natural Resources Management Applications
- Disaster Management & Mitigation
- Flood Mapping
- Tsunami – 2004
- Landslide & Earthquake - Landslide Affected Regions in India
- Managing Disasters -Why GIS?
- GIS Provides

- Common Objectives
- Military / Defence Applications
- Forestry
- Forest Cover in India in 1972-75
- Forest Cover in India in 1980-82
- Agriculture
- Business GIS
- Urban Planning & Development
- Cadastral Level Mapping
- ARVI Village have li Tahsil (Pune District)
- Pune City
- Pune University Campus
- Transportation
- Road & Railway Network of Pune City
- Transportation Map of PMC
- Conclusions
- Quiz
- Land Use/ Land Cover Analysis
- Built-up Area of Pune City from Toposheets
- Satellite Image (Pune City) 32.5m Resolution
- Land use/Land cover Map of Pune City (1992)
- Satellite Image (Pune City) 23.5m Resolution
- Land use/Land cover Map of Pune City (2008)
- Site Suitability Analysis
- Overlay Built-Up area of Pune City
- Emergency Response Planning
- Hospitals of Pune City
- Blood Banks of Pune City
- Urban Utility Services management
- Utility Management
- Solid Waste Management
- Major Issue
- SWM: household Level Collection (%)
- Future Generation Demand and Strategies

- GIS & Internet GIS
- Conclusions
- Quiz
- Data Spatial Analysis
- Geo-Spatial Analysis
- Introduction
- Basic Applications
- Operations
- Measuring and Integrating the Parts
- GIS Integrates All the Parts to see the whole
- Thematic Overlay
- Query and Analysis
- Application of Geospatial Analysis
- Objectives
- Study Area: Tulul al Ashaqif Highlands
- Methodology
- 8 Thematic Layers
- Weights and Ratings
- Modelling
- Results and Discussion
- Lineaments Density
- Drainage
- Topography
- Slope
- Soil
- Geomorphology
- Lithology
- Rainfall
- Groundwater Potential Model (GPM)
- Model Validation
- Sensitivity Analysis of GPM
- GPM classes
- Conclusions
- Why Use Open-Source GIS?

- Closed Source SoftwareDev
- Open-SourceDev. Model
- Who uses Open-SourceGIS?
- Why Teach Open-Source GIS?
- The Stack
- PostgreSQL + PostGIS
- GeoServer
- OpenLayers
- GRASS
- OSSIM
- Quantum GIS (QGIS)
- GDAL, OGR
- Tutorials / User Guides
- Want to Get Involved with Open-Source GIS?
- GIS Data Management
- Classifying GIS Data
- Handling Geoprocessing Tasks
- Working with Attribute Tables
- GIS Data Querying
- Working with GIS Databases
- GIS Programming Skills
- GIS Data Presentation
- Data Publishing
- GEO 465/565 Geographic Information Systems and Science
- Focus of the Class
- Arch Marine
- Some Committee Involvement
- Other Interests
- Who are You??
- Learning Styles
- Required Text for Lecture
- Required Text for Lab, 2nd half of term
- Optional and on reserve
- What Will I Learn?

- Web Site – Syllabus
- HOW Will I Learn ?
- Learning Outcomes
- Internet Access
- Labs
- Exams & Grades
- GEO 465 Grades
- GEO 565 Grades
- 465/565 Final Grades
- Questions??
- Storytime
- Moral of the Story...
- Track in Google Earth
- Quiz
- Bentley Map - Advanced GIS for the World's Infrastructure
- Presentation Overview
- What is Bentley Map?
- Where is Bentley Map Used?
- Advancing GIS for Infrastructure
- A Highly Flexible Architecture
- Your Choice of Data Stores
- Top Features
- Power of MicroStation
- Top Features
- Map Manager
- Top Features
- XML Feature Modeling (XFM)
- Top Features
- Geospatial Administrator
- Top Features
- Oracle Spatial Editing
- Interoperability with Oracle Spatial
- Top Features
- Topology Model

- Topology Maintenance
- Top Features
- Spatial Analysis and Presentation
- Top Features
- Map Generation and Print Preparation
- Top Features
- Map Projections and Coordinate Conversion
- Top Features
- Data Cleanup and Integrity Tools
- Top Features
- Interoperability
- Top Features
- GIS Development Platform
- Is Bentley Map Right for You?
- What can Bentley Map do for You?
- Bentley Map Value Proposition
- GIS in Disaster Management
- Contents
- Disaster Management
- GIS
- GIS Functions
- GIS in Disaster Management
- Literature Review
- Case Study-1
- Study Area
- Methodology
- GIS -Based Maps for Disaster Management
- Map Showing Road Connectivity
- Summary
- Case Study 2
- Data Integration
- Methodology
- Namidance Software
- Summary
- References
- Quiz