



Caddie Geographic Information System (GIS) Application Online Course

Prerequisites for Completing the GIS Course

Before undertaking the GIS course, you should:

- Have access to Caddie software, a recent version, (licenced or evaluation) and an internet connection.
 - Be computer literate and knowledge of using the Windows Operating System.
 - Successfully completed the Getting Started with Caddie Online training course, Caddie Basic classroom course or the equivalent self-taught experience.
 - Have a reasonable understanding of the principles and terminology of different types of data formats, data management, analysis and spatial datasets.
- Install some third party tools that Caddie uses in the background.*

*As these tools are constantly being enhanced, they are not installed as standard as part of Caddie so you will also need the suite of tools known as OSGeo4W.

Downloading and opening a Caddie Course Exercise

You will become familiar with the structure of the course including the practical exercises requiring you to download and open an example drawing in Caddie and the associated questions linked to them.

- Where to find the course exercises
- How to download the Caddie .DWG course files

1. The Essentials of Geographic Information System (GIS)

- History of Geography and Mapping
 - Recording geographic information
 - The shape of Earth
 - History of latitude and longitude
 - Age of exploration
 - Navigation
 - Meridians and Parallels
 - Remembering Latitude and longitude
 - Coordinates
- What is a Geographic Information System and Caddies GIS and how it is used
 - GIS History
 - How CAD and GIS come together
 - Interoperability
 - Caddie's Geographic Information System (GIS)
 - Reporting & Analysis of Information and Data (RAID)

2. Pre-requisites for Using the Full Features of Caddie GIS

- How to download and install OSGeo4W
 - Downloading and installing OSGeo4W
 - Configuring the correct path to OSGeo4W in Caddie's Environment Set
- Hosting your own data source
 - Downloading and installing MySQL
 - Downloading and installing PostgreSQL and then PostGIS extensions

3. The Coordinate Reference Systems

- Understanding Map Projections
 - Distortion - Perception and Reality
 - Projection types
 - Projections properties - shape, area (size), distance and direction
 - Popular Projection and datum
 - Coordinate and coordinate reference systems
 - National and global projections
- Setting a location and Coordinate Reference System
 - Selecting a location on a map
 - Typing in the latitude and longitude
 - Picking your Country, Province/County and City/Town from a list
 - Selecting your current location
 - Searching a database of known locations

4. Data Sources

- Data and Data Types
 - Data capture
 - Types of Geographic data
 - Databases
 - Data field types
 - GIS data sources
 - GIS File formats
 - Georeferencing
- Introduction to Data Sources
 - The types of data sources that can be used in Caddie GIS
- Adding and Using Data Sources
 - ArcGIS Image Service data source
 - Bing Satellite Map data source
 - ArcGIS Map / Feature Service data source
 - Shape file
 - Overlaying multiple data sources
 - MySQL data source
 - OpenStreetMap Vector data source
- Managing Data Sources
 - Showing and hiding data sources
 - Deleting a data source
 - Moving data sources to the front and back plane
 - Show the properties of a data source
 - Exporting and importing data sources
 - Show or hide the layer
 - Changing the graphical representation of the data sources
 - Deleting the data source layer from the current drawing
 - Refreshing the visible area of a data source
 - Refreshing the entire data source
 - Running a query against a data source

5. Converting Between Coordinate Reference Systems

- Comparing and overlaying information from different Coordinate Reference System (CRS)
 - Repositioning a drawing
 - Importing objects into two drawings in different Coordinate Reference System (CRS)
 - Re-projecting a drawing

- Utilising Caddie's GIS and Survey tools in one drawing
- Creating a site from Surveyor General information
- Setting the correct Coordinate Reference System (CRS) for the site location
- Repositioning the site
- Checking the points using Survey commands
- Re-projecting from a Transverse Mercator to Pseudo Mercator projection
- Adding satellite imagery
- Re-projecting from a Pseudo Mercator to Transverse Mercator projection
- Comparing the results of the different measure commands

6. GIS Properties

- Writing properties to individual objects in the drawing
 - Writing properties of individual objects on the drawing
 - Writing properties of multiple objects on the drawing
- How to run a query
 - The data source types that can be queried
 - Accessing the query tools
 - Displaying properties with the 'Info' command
 - Performing a standard query (search)
 - Filtering objects with multiple queries
 - Performing custom queries
- Editing existing fields
 - The types of data source that can have data edited
 - Entering 'Edit Mode'
 - GIS property data types
 - Editing fields and saving the changes
 - Hiding and showing fields
 - Deleting records from the data source
 - Replace or update the geometry for a data source record
 - Adding additional geometries to the data source
- Adding additional fields
 - Field types for different databases
 - Adding GIS data fields
 - Choosing data types

7. Measuring and Querying

- Measuring
 - Comparing measurements using Caddie's normal measure tools and the GIS measure tools
 - Understanding when you should use each of the different measure tools
 - The GIS measure dialogue
- Querying a point
 - Determining whether the query point command will output to command line, dialogue, or write the value on the screen
 - The different formats that the latitude and longitude can be shown in
 - Showing the latitude and longitude on mouse move
 - Additional options that are available when using the query point command

8. Creating your Own Data Sources

- Creating and managing your own data sources
 - Creating a data source by making a new table in an existing database
 - Identifying the different object types that can be stored in a database table
 - Adding geometry to the database from previously drawn objects (polylines or points)

- Creating a database from a shapefile
 - The type of files that can be converted to a database
 - Importing the shapefile into the data source
 - The different refresh options when using a file and a database
- Creating a shapefile from a GeoTIF File
 - Accessing and downloading a Georeferenced LiDAR TIFF file
 - Converting the georeferenced .TIFF File to a shapefile
 - Importing the shapefile as a data source
- Creating Shapefiles from a Drawing
 - The files that will be created when you export a drawing to shapefiles
 - The object types that will be exported to the shapefiles
 - Choosing the CRS for the shapefiles
 - Naming the shapefiles
- Creating a database using GPS
 - Importing coordinates from a spreadsheet
 - Adding the data to a database using geometry
 - Exporting and importing data to store or share
- Updating a database from a spreadsheet
 - Updating a database from a spreadsheet
 - Importing data from a spreadsheet
 - Adding a URL link to a data source
 - Adding live data from smart technology sensors

During the 8 Modules of the course, you will complete 25 lessons and associated questions including 11 exercises.

The course can be completed in one or multiple sessions and is equivalent to a half day classroom course. The duration will vary as individuals may take longer depending on their availability to study as well as their knowledge and skill level before starting the course. On average learners have completed the course within 36 hours of study with the maximum time taken of 75 hours.

You will have access to the course for 12 weeks from your enrolment date in which to complete the course. Once you have successfully completed and received a certificate for the course you will have unlimited access to revisit the course.

Accreditation for SACAP registered professionals



Caddie Geographic Information System (GIS) course has been assessed and evaluated by the South African Institute of Architectural Technologists (SAIAT), a South African Council for the Architectural Profession (SACAP) recognised voluntary organisation, as a Category 1 Continuing Professional Development (CPD) event for SACAP registered professionals.

SACAP registered professionals can earn 2.5 credits towards their CPD with a Certificate of Achievement for Caddie Geographic Information System (GIS) course.