

Oakar Services

Training Course Catalogue 2011/2012

Practical Training for GIS & RS Professionals

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About Oakar Services

Oakar Services is Eastern Africa's leading GIS & Remote Sensing (RS) consulting firm helping to deliver spatial solutions that enable our clients to become high-performing businesses. Our mission is:

- To provide the most suitable GIS & Remote Sensing software tools;
- To teach the effective and efficient use of these tools using a variety of methods and materials, customized to the needs of the client;
- To support the growth of the GIS & RS industry by offering a wide range of technical services for the development of spatial databases and integrated applications.

Training Solutions

At Oakar Services we recognize that education and training are vital to the successful implementation of GIS & Remote Sensing (RS) Technology. In appreciating the challenge that organizations face in recruiting and retaining GIS employees from diverse academic backgrounds and learning styles, we offer a variety of training courses covering topics related to GIS technology, GIS applications and Geographic Information Science. These scalable and flexible solutions are designed to fit different learning styles and budgets.

Our training courses are offered as instructor-led courses and are available onsite at our training center or offsite at a client's site. The Instructor-led courses explain GIS concepts, explore GIS applications, and teach customers how to use software and related technologies. Courses combine hands-on experience, and class participation, giving customers ample time to practice their skills and apply what they have learnt. Customer benefits include individual attention, direct peer interaction, professional networking, and the ability to get answers to questions immediately.

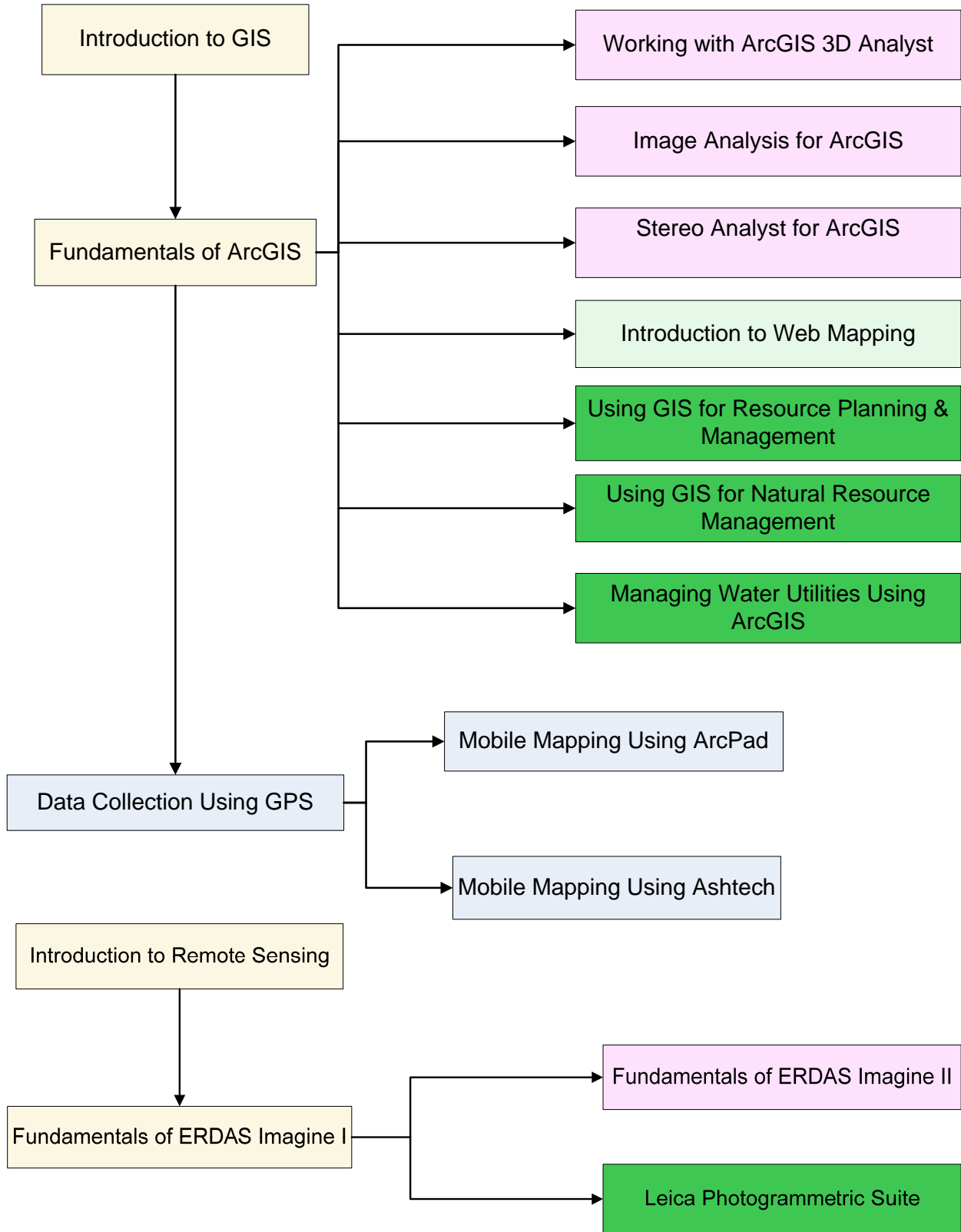
Our scalable and flexible educational solutions are offered as either Partner Training Programs or as Customized Courses. Partner training programs offer training on software from ERDAS, AED-SICAD, Cellular Expert, ESRI, Ashtech and AED SICAD. ERDAS training courses cover basic concepts of remote sensing and GIS. Users of ERDAS software are guided to achieve skills for extracting information from imagery.

Our training center can accommodate up-to 16 students at a time. Each student is provided with his/her own computer. The training centre includes a cafeteria where refreshments and lunch are served.

Class Information

Courses are scheduled in advance and a current course schedule can be obtained from our website or by sending a request to training@osl.co.ke. Certain courses are not scheduled and are taught upon request. The minimum number of students per class is 4. Scheduled classes may be cancelled if the number of registrations does not meet this requirement. In such instances, the affected students will be contacted in advance and transferred to a future class. The classes begin at 9.00 am and end at 5.00 pm with tea and lunch breaks in between.

Learning Paths



Introduction to GIS

Overview

This 2 day course provides the foundation for understanding what GIS is. You will learn the basic concepts, functions and application of a GIS; the properties of digital maps; why geographic data is different from other data; and why a GIS database is powerful. You will also learn about coordinate systems and map projections and why they are important. The course also introduces concepts of spatial analysis, map creation, Spatial Data Infrastructure (SDI) and metadata.

Audience

This course is designed for those who are new to GIS and who would like to acquire skills for future applications. This is a basic level course for Managers and Top Level Management who would like to know more about GIS. This course offers practical introduction to professionals looking forward to developing skills in GIS.

Prerequisites and Recommendations

No prerequisites are required for this class. Participants to this course are however encouraged to undertake a follow up class on the Fundamentals of ArcGIS course.

Goals

- Understand clearly the basic GIS concepts and applications;
- Understand GIS data, data models and structures;

- Acquire the knowledge of GIS data management;
- Acquaint themselves with the concepts of spatial analysis, spatial data infrastructure (SDI) and Metadata.

Topics Covered

- **Introduction to GIS:** Definitions; Objectives; Components; and Applications of GIS.
- **Nature of GIS Data:** Data types and models; Feature representation; Data structures; Data sources; and Data capture and editing.
- **Data Management:** Historical review of data management i.e. flat files, spreadsheets, hierarchical files and relational files; Benefits of DBMS; Object oriented databases; Storage requirements and Database security.
- **Spatial Analysis:** Spatial relationships; Characteristics of spatial analysis; and Basic concepts of spatial analysis
- **Spatial Data Infrastructure (SDI):** Definition; Purpose of SDI; Requirements for SDI; Components of SDI; Applications and types of SDI;
- **Metadata:** Context and rationale; Benefits of metadata; Levels of metadata; Metadata standards; Software for metadata creation; and applications of metadata.

Fundamentals of ArcGIS

Overview

ArcGIS Desktop software is an integrated system that includes all the tools needed to get the most out of a GIS. This 5 day course provides understanding of a range of functionality and tools available in the ArcGIS software for visualizing, creating, managing geographic data, and performing geoprocessing analysis. You will learn how to perform common GIS tasks and workflows such as creating and managing geographic data, displaying data on maps in different ways, and combining and analyzing data to discover patterns and relationships. By the end of the course, you will be ready to start working with the software on your own.

Audience

This course is designed for those with a background in GIS who would like to acquire skills in the ArcGIS software.

Prerequisites and Recommendations

This course assumes knowledge of basic GIS concepts. Participants should know how to use windowing software. Completion of the Introduction to GIS course is recommended for those with no prior introduction to GIS.

Goals

- Understand ArcGIS Desktop application and GIS data storage.
- Understand the coordinate system and map projection.
- Learn how to display data layers in ArcMap.
- Query GIS data.
- Create geodatabase and feature classes.
- Edit feature and attribute data.
- Edit and validate feature geometry using geodatabase topology.
- Working with tables

- Classify and symbolize qualitative and quantitative data in ArcMap.
- Label map features and introduce annotation.
- Create quality maps.
- Analyzing GIS data using geoprocessing tools and model builder.

Topics Covered

- **Explore geographic data:** How geographic data is stored; Vector and raster data; Geodatabase basics and advantages; Shapefiles; Coverages; CAD data; Managing data in ArcCatalog; Displaying data in ArcMap; ArcMap basics; Data, layers and data frames.
- **Coordinate systems and map projections:** What is a coordinate system?; Geographic coordinate systems; Datums; Projected coordinate systems; Map projections; Feature classes and coordinate systems; Data frames and coordinate systems; Geographic transformations; Working with an unknown coordinate system; Projecting data; Defining a projection; Projection distortions.
- **Managing map layers:** Zooming to layers; Bookmarks; Create definition query; Display windows; Scale ranges; Group layers; Selection layers; Layer files; Creating hyperlinks.
- **Querying GIS data:** Add map tips; Selection method; Identifying data; Find feature; Take measurements. Select by location; Select by attribute; Create selection layer;
- **Creating geodatabases and feature classes:** Geodatabase organization; Feature class organization; Feature class properties and attributes; Create a new geodatabase and load data; Creating a new feature class;

Viewing and editing metadata; Importing and exporting metadata; Create a geodatabase topology;

- **Editing features and attributes:** Reasons to edit data; Working with the Editor toolbar; Edit sketches; Common editing tools; Edit tasks; Snapping to features while editing; Creating new features; Adding x,y data; Editing attributes; Calculating values for geometry fields; Working with coincident geometry in a map topology; Edit using geodatabase topology; Spatial adjustment.
- **Working with tables:** Table structure; Layer attribute tables; Non-spatial tables; Getting information from tables; Field properties; Table appearance; Creating graphs and reports; Cardinality, Connecting tables using joins and relates;
- **Symbolizing qualitative data:** Symbology; Choosing symbology; Types of symbols (marker, line, fill); Creating symbols.
- **Symbolizing quantitative data:** Symbology options (graduated colors, graduated symbols, proportional symbols, dot density, charts); Classification methods (Natural Breaks, Equal Interval, Quantile, Manual); Excluding data from a classification.
- **Creating labels and annotation:** Label features; Label placement for different feature types (points, lines, polygons); Label symbology; Controlling label display using scale range and; Create label classes using SQL; Label expressions; Label ranks and weights; Geodatabase annotation; Map annotation;
- **Create a map:** Working in layout view; Tools for arranging map elements; Data frame properties for layouts; Adding legends, scale bars, and other map elements; Exporting maps; Working with map templates.
- **Spatial analysis and geoprocessing:** GIS analysis basics; Typical analysis workflow; Common analysis operations (attribute and spatial queries, Clipping data from layers, Buffering features, Overlaying features; Overview of geoprocessing; Model builder.

Working with ArcGIS 3D Analyst

Overview

ArcGIS 3D Analyst software provides advanced tools for three dimensional modeling and analysis. This 2 day course teaches what a surface model is and shows how to create both raster and vector surfaces. Working mostly with models of terrain, students display surfaces in three-dimensional perspective, symbolize them, and set three-dimensional properties. Students also create realistic models by draping aerial photographs over surfaces and displaying two-dimensional features in three dimensions.

Audience

This course is designed for those who want to apply three-dimensional visualization and analysis techniques to their spatial data such as Urban Planners, Architects, Archeologists and Telecommunication Specialists.

Prerequisites and Recommendations

Students should have completed the Fundamentals of ArcGIS course.

Goals

- Understand the structure of 3D data types, such as TINs, rasters, and 3D features.
- Use ArcCatalog to preview and manage 3D data.
- View and navigate data in 3D perspective using ArcCatalog, ArcMap, ArcScene, and ArcGlobe.

- Explore 3D analysis techniques such as finding steepest paths, calculating surface volume, and determining visibility between points.
- Set 3D viewing properties for 2D data.
- Create 3D surface models and 3D features.
- Convert 3D data from one format to another.
- Derive and display analytical surfaces such as slope, aspect, and view-shed from elevation models.

Topics Covered

- **Introduction to ArcGIS 3D Analyst:** Components of ArcGIS 3D Analyst; 3D data; Navigation.
- **Displaying 3D Data:** Scene properties; Layer properties, Symbolizing and Analyzing Data: Surface
- **Symbology:** 3D symbols; 3D analysis.
- **Creating and Converting 3D Data:** Creating TINs; Creating 3D features; Converting data; Introducing terrains.
- **Calculating Raster Surfaces:** Calculating surfaces; Calculating surfaces with observers.
- **Interpolating Raster Surfaces:** Introduction to interpolation; Interpolation methods
- **Introduction to ArcGlobe:** Globe view and the globe; Globe enhancements.

Managing Water Utilities Using ArcGIS

Overview

Geometric networks are used to model linear features, such as pipelines and electricity transmission lines, as well as the point features they connect to, such as valves and junction boxes. This 3 day course teaches the fundamental concepts of geometric networks with a focus on water utilities. You will learn the components of a geometric network as well as the workflows for creating one. In the course exercises, you will work with real utility data, edit and update databases, create and edit geometric networks and perform geometric network analysis.

Audience

This course is designed for experienced ArcGIS users who want to model and manage utilities data using geometric networks. Spatial data managers and GIS technicians who work in the water/wastewater industries and who need to design, build, and edit geometric networks will find the course of particular benefit.

Prerequisites

Students should have completed Fundamentals of ArcGIS. Completion of the Building Geodatabases is recommended.

Goals

- Understand the structure of a water utility geodatabase;
- Understand the MS Access;
- Edit geodatabase features and attributes;
- Query GIS data;
- Create Geometric Networks and perform network trace function; and
- Create quality maps.

Contents

- **Exploring a Geodatabase:** View feature classes in ArcCatalog, Examine feature layers in ArcMap, Identify relationships between geographic features, Associated Descriptive information with a layer, Identify specific features, Set map tips, Label data in ArcMap and Create and use hyperlinks.
- **Formulating and implementing queries:** Select features based on certain conditions, Create a join to label features, Create a Geodatabase and populate it with data: Create a file geodatabase and add a feature dataset and export feature classes to the geodatabase.
- **Exploring the Customer Database:** Explore MS Access Database, Add and save a new record in the database, Find a record, Update a record, Create a query, Export records to Microsoft Excel, Creating a report from an existing table and Creating a report from a query and update the customer database.
- **Geodatabase:** Add new customers to the database; create land parcel, Subdivide an existing plot and digitize new pipes and meters.
- **Geometric Network:** Define the components of a geometric network, Build Geometric Network, Check network connectivity, and Perform network Analysis.

Introduction to Web Mapping

Overview

Web mapping is the process of designing, implementing, generating and delivering maps on the World Wide Web. This 3 day course provides the foundation for understanding this technology as well as the art of sharing maps on the web. This course provides a broad introduction to web mapping technology, participants learn how to create and publish maps and services as well as how to create out-of-the-box web mapping applications. This course also introduces Mappetizer, a map publishing add on for ArcGIS.

Audience

This course is designed for GIS users who want to share their GIS content in a web environment.

Prerequisites and Recommendations

Students should have completed the Fundamentals of ArcGIS course.

Goals

By the end of this course the participant will be able to:

- Author and publish maps and map services
- Create web mapping applications;
- Use web mapping application to access the map data;
- Use interactive web mapping application tools to search, find, identify map features;

- Navigate a web mapping application using Zoom in/out and Magnifying tools
- Set layer visibility, use HTML popup windows and web links on the Web Mapping Application.
- Complete the Web Mapping Workflow required putting your data on the internet using ArcGIS Server and Mappetizer for ArcGIS.

Topics Covered

- Introduction to web mapping technology
- Web mapping workflows: Author maps; publish maps to a GIS Server as a service; and use map services
- Create and use a web mapping application.
- Basics of web mapping with Mappetizer for ArcGIS:
- Export maps using Mappetizer, add attribute tables, hyperlinks, coordinate read-out, query builders and graphs to web project.
- Character conversions, scale symbols, and data frame configuration.
- Geoprocessing and Batch processing.
- Publishing maps/projects on the web using mappetizer

GIS for Natural Resource Management

Overview

This 3 day course focuses on enhancing the knowledge and skills of the participants through practical examples with a view of developing a clear understanding and subsequent use of GIS and RS techniques for sustainable management of natural resources. An integrated approach combining Remote Sensing and GIS creates a more reliable, precise and efficient natural resource management. These technologies give a visual impression of the landscape that helps to make informed decisions.

Audience

This course is intended for planners and managers who need to acquire knowledge on spatial tools and techniques for effective planning and management of natural resources.

Prerequisites

The participants should have gone through Fundamentals of ArcGIS as well as Fundamentals of ERDAS Imagine I & II.

Goal

By completing this course, the student will:

- Have a clear understanding of GIS concepts, tools and techniques using ArcGIS;
- Have an understanding of spatial data, analysis & management of simple and complex data and their integration;
- Have a clear understanding of the principles of remote sensing, image processing and analysis;
- Have theoretical and practical skills in working with satellite data and

classification algorithms within the ERDAS Imagine environment.

- Application of RS/GIS for natural resource management, land development, forest, agriculture, environmental management and disaster management highlighting prospects & constraints;
- Provide an opportunity for the participants to share experiences of their specific work and to use RS/GIS for more productive and systematic approach in information management;
- Integration of GIS and remote sensing for evaluation, estimation and monitoring of natural resources

Course Content

- **Resource Mapping:** demonstration on the application of multi-source data for resource inventory;
- **Resource Assessment:** demonstration of technology's application in Land Use - Land Cover assessment;
- **Change Detection:** resource change mapping using RS and GIS
- **Suitability Analysis:** decision support system and planning using different parameters e.g. location of a new tourism facility within an National Park
- **Scenario Study:** spatial modeling, resource modeling and hydrological modeling
- **Impact Assessment:** demonstration on use of GIS & RS for monitoring and evaluation of the environment;
- **Early Warning:** demonstration on the application of GIS in disaster management (drought/famine, landslides, wildlife-human conflict);

Using GIS for Resource Planning and Management

Overview

Various technologies have been developed to aid in the planning and management of resources particularly in the education, health and business sector. GIS is one such technology that has proven to be an effective tool for decision makers to plan effectively. This 3 day course examines various modeling techniques used in spatial analysis. The course covers the processes and tools that can be used to perform a variety of GIS tasks that aid in solving various planning scenario in the educational and health sectors. The course includes project-based exercises drawn from a range of interesting real-world GIS applications.

Audience

This course will enable one to acquire knowledge on spatial tools and techniques for effective planning of resources. This course is intended for planners, managers and decision makers in the education, health and business sectors. The course is also designed for experienced ArcGIS users who want to learn about the advanced features of ArcGIS software for use in analysis.

Prerequisites

Participants should have gone through the Fundamentals of ArcGIS course.

Goals

The general aim of this course is to give the student practical as well as theoretical knowledge of the GIS techniques and tools in

the educational, health or business sectors. By completing the course, the student will:

- Be able to understand data formats, and organize and build geo-databases
- Create models and document workflows with ModelBuilder.
- Perform various analyses including, Hot Spot Mapping, Buffering Techniques, Time Series Analysis, and Thiessen Polygon
- Query and analyze GIS data.
- Develop skills in visualization.

Contents

- **Review of GIS Analysis and Resource Planning:** Resource planning in education, health and business/retail sector; Review of spatial analysis; Common issues in analysis; and documenting workflows.
- **Data management in a geodatabase environment:** Managing Tables; Feature and attribute editing; Geodatabase and Feature Class;
- **Solving spatial problems with query and analysis:** Feature extraction; Proximity analysis; Frequency and summary statistics and Using Model Builder.
- **Planning scenario analysis:** Time series analysis; Density mapping; Hot Spot Mapping; analyzing patterns and measuring geographic distributions; and Site analysis.
- **Analysis Project:** Site Suitability Analysis.

Data Collection Using GPS

Overview

This 2 day course serves as a general introduction to Global Positioning System (GPS) as well as on the workflows involved in using GPS to collect data in the field and how to get the data into a Geographic Information System (GIS). The course covers how the GPS works, the equipment used, the GPS workflow, and how to incorporate GPS data collection in your project or organization.

Audience

This course is intended for GIS users who are involved in field data collection using GPS receivers and GIS data managers who wish to integrate GPS data into their organizations. Survey and Resource scientists would find this course of particular interest.

Prerequisite

Knowledge of windows-based software for basic file management and browsing is required. Basic GIS/GPS skills would be desired.

Goals

- Understand how GPS works
- Learn GPS workflows and operation skills
- Understand coordinate systems in GPS
- Learn how to integrate GPS data into GIS

- Learn how to post-process GPS data to improve accuracy

Topics Covered

- **Introduction to the GPS:** Overview of GPS, Types of GPS, Autonomous GPS, Differential GPS (DGPS), Real-time DGPS, Post-processed DGPS and Applications of GPS
- **Introduction to Coordinate Systems:** Overview of Coordinate Systems.
- **User needs assessment:** Accuracy, Attributes, Photographs
- **Mobile GIS Software:** Proprietary e.g. Ashtech's MobileMapping Field software, Trimble's TerraSync, which work only on the Manufacturer's mobile devices. Open e.g. ESRI's ArcPad which can work on any supported mobile device
- **Workflows for basic GPS receivers:** Study area identification, Configuring GPS receivers, Data collection, Data download, Export to GIS format, Integrate with GIS and Equipment maintenance
- **Workflows for Mobile GPS receivers:** Data dictionary creation, Integration with GIS Database, Study area identification, Configuring GPS receivers, Data collection, Data download and Post-processing, GIS database update and Equipment maintenance.

Mobile Mapping Using ArcPad

Overview

Mobile GIS is the expansion of a Geographic Information System (GIS) from the office into the field. ArcPad, ESRI's mobile GIS software is used to capture, display, analyze and edit geographic information in the field. It provides stand-alone GIS technology, including database access and global positioning system integration to field users via mobile devices. This 2 day course covers the complete Mobile GIS workflow and participants learn the basic skills that will prepare them for using ArcPad in their daily work. The course teaches how to use ArcMap for the preparation of data and maps for field work, how to capture and edit data in the field using ArcPad, and how to transfer field edits to an existing GIS database using ArcMap.

Audience

This course is designed for those who are interested in deploying Mobile GIS solutions in their organization. Utility workers, maintenance crews, law enforcement officers, census workers, biologists, researchers and others who collect and update spatial data in the field will find the course of particular interest.

Prerequisites and Recommendations

Prospective students having experience with windows mobile devices, GIS and GPS use will have an added advantage. Knowledge of coordinate systems, datums, projections and ArcGIS is highly recommended.

Goals

Participants completing this course will be able to effectively collect, update, analyze, and process spatial data using ESRI's ArcGIS and ArcPad software with the use of GPS receivers, and other supported devices.

Topics Covered

- **GPS fundamentals:** Introduction to GPS technology; Overview of GPS receivers; configuring your GPS; Understanding errors and accuracy.
- **Displaying data in ArcPad:** Introduction to the ArcPad interface; Working with maps; Adding layers; Drawing order and labeling; Changing map units; Making measurements; Changing symbology; Finding features based on attributes and location.
- **Editing and updating data:** Updating attributes and geometry; Adding new features using drawing tools and GPS streaming; Deleting features.
- **ArcPad and ArcGIS integration:** Data preparation in ArcMap; Comparison between geodatabases and Shapefiles; Overview of the ArcPad toolbar; Understanding projections; Check out data for ArcPad; Check in data from ArcPad; Using Microsoft ActiveSync.

Mobile Mapping Using MobileMapper Field Software

Overview

In this course, MobileMapper Field software is used to prepare field data to be uploaded to the Mobile GIS device before the actual field work is performed while MobileMapper Field Software enables the communication between desktop computer and the handheld GPS equipment. This 2 day course covers the complete Mobile GIS workflow and participants learn the basic skills that will prepare them for using Mobile Mapping Software in field data collection. The course teaches how to use MobileMapper Field Software for the preparation of data and maps for field work, how to capture and edit data in the field using Mobile Mapping Field Software, and how to download field data from Mobile GIS device.

Audience

This course covers the complete mobile GIS workflow. Participants learn how to use MobileMapper Field Software for the preparation of Jobs and Feature Libraries for field work, how to capture and edit data in the field using MobileMapper Field Software, and how to transfer field edits to a GIS environment.

Utility workers, maintenance crews, law enforcement officers, census workers, biologists, researchers and others who collect and update spatial data in the field will find the course of particular interest.

Prerequisites and Recommendations

Prospective students having experience with windows mobile devices, GIS and GPS use will have an added advantage. Knowledge of coordinate systems, datums and projections is highly recommended.

Goals

Participants completing this course will be able to effectively collect, update, analyze, and process spatial data using MobileMapper Field Software and MobileMapper Office software with the use of GPS receivers, and other supported devices.

Topics Covered

- **Installing MobileMapper Field Software:** Installing MobileMapper Field Software , Creating a New Job & feature library, Importing GIS Data.
- **Preparing Data Using MobileMapper Field Software:** Uploading a Job to the Handheld, Creating background Maps, Uploading Jobs and Waypoints.
- **Field Work:** Logging New GPS/GIS Data, Pausing a Feature, Closing the Job.
- **Office Work:** Download Procedures, via USB, or SD card, Exporting Data to a GIS.

Introduction to Remote Sensing

Overview

This 2 day course provides an introduction to remote sensing. This course covers remote sensing concepts, remote sensing data, image interpretation and processing techniques. This course also cover the concepts and foundations of aerial photography; satellite imagery; visual interpretations; characteristics of various sensing systems; and digital image processing techniques.

Audience

This introductory course on remote sensing technology and applications is designed primarily for those who are new to the field of Remote Sensing.

Prerequisites and Recommendations

There are no prerequisites to this course. As a follow-up we recommend the Fundamentals of ERDAS Imagine I course.

Goals

The primary goal of this course is for the participant to develop basic knowledge in Remote Sensing; what are its applications; what they need to know to interpret and use data/information acquired by satellite, air and

ground sensors. The participant will gain understanding of:

- Remote Sensing concepts and applications;
- Sensors and sensor platforms;
- Image analysis concepts; and
- Basic photogrammetry concepts and applications.

Topics Covered

- **Remote sensing foundation:** Concepts and definitions of Remote Sensing; and the Electromagnetic spectrum.
- **Aerial photography and photogrammetry:** Basic concepts and types of aerial photographs.
- **Sensors and platforms:** Types of sensors and platforms, Image resolution and image distortions.
- **Image Analysis:** Visual Image Interpretation; digital image processing; pre-processing; enhancement; image transformations and Image classification.
- **Remote Sensing applications:** Agriculture; Forestry; Geology; Hydrology; Land cover; Mapping; Oceans and coastal; and Environmental

Fundamentals of ERDAS IMAGINE I

Overview

This 4 day course offers an introduction to the latest ERDAS Imagine Essentials and ERDAS Imagine Advantage software. Instructors will present some basic concepts of Remote Sensing and GIS, providing a foundation in image processing and GIS. Classification, orthorectification, and image mosaicking are also presented.

Audience

This course is designed for those who are new to concepts of Remote Sensing and GIS.

Prerequisites and Recommendations

This course is for participants who are familiar with the use of windows-based applications. The course also provides participants with the fundamental knowledge and experience needed to enroll in Fundamentals of ERDAS Imagine II course.

Goals

- Navigate around the Imagine Essentials and Imagine Advantage interfaces
- Import digital data into the Imagine Environment
- Use the Imagine Viewer to display imagery, vector files and other data sets
- Create, edit and integrate ESRI Shape files
- Perform spatial and spectral enhancements on multispectral imagery
- Process multiple files using Batch Wizards
- Create image libraries and catalogs

- Assign geographical coordinates to an image to create geometrically corrected and orthorectified imagery
- Mosaic several images to produce one seamless output
- Drape images in a 3D perspective viewer
- Perform a basic land cover classification using a multispectral image
- Improve a classification using the ERDAS Imagine Knowledge Classifier
- Perform simple raster GIS functions
- Create print-ready maps with the Map Composer

Topics Covered

- **The ERDAS Imagine Viewer:** Understanding Imagery; Importing and Rectification; Viewing other data types; Examining Raster and Vector attributes
- **Visualizing Your Data:** Displaying and examining a specific area; Processing multiple Files; Viewing in 3 dimensions
- **Creating Image Maps:** Orthorectification; Stitching images together; Color correction in the Mosaic Tool; Creating a Map composition
- **Feature Extraction:** Subsetting an Image; Using Spectral Characteristics; Band rationing; Editing a Personal Geodatabase; Identifying and Extracting Changes
- **GIS Analysis:** introduction to image classification and unsupervised classification

Fundamentals of ERDAS IMAGINE II

Overview

This 3 day course builds upon the knowledge gained in the Fundamentals of ERDAS Imagine I course to provide a more extensive foundation in image processing, GIS and the functionality of Imagine Professional. Additional concepts of spatial modeling, image classification, radar image processing, topographic analysis and using some of the functionality of the GLT are presented.

Audience

This course is designed for those who have background knowledge in Remote Sensing, GIS and Image Processing.

Prerequisites and Recommendations

It is recommended that participants undertaking this course should have gone through Fundamentals of ERDAS Imagine I course.

Goals

- Navigate around the Imagine Professional interface
- Create training signatures for a supervised classification
- Evaluate the training signatures prior to classification
- Apply a classification decision rule to the training data
- Create basic Spatial Models to manipulate vector and raster datasets
- Perform GIS analysis with the Spatial Modeler

- Generate Contour, Slope and Aspect files from DEM's
- Produce a Shaded Relief and Painted Relief image from elevation data
- Create and use a 'Snail Trail' in analysis
- Count objects and save information using the Feature Counter Tool
- Convert X,Y ASCII files to ArcInfo Point Vector Layers
- Improve decision making by using the ERDAS Imagine Knowledge Classifier
- Use and integrate radar data into a project

Topics Covered

- **Supervised Classification:** Generic binary import; Collecting and evaluating spectral signatures; Classifying Images
- **Spatial Modeler:** Multiple Functions in the Modeler; Using Matrix and Criteria Functions.
- **Topographic Analysis:** Contour, Slope and Aspect; Topographic Relief; View shed Analysis.
- **Feature Collection and Conversion:** Creating a Snail Trail; Using a Feature Counter Tool; Converting ASCII to Point Vector Layer; Converting Vector to Raster.
- **Knowledge Engineer:** Learning to use the Knowledge Engineer; Spatial Models in the Knowledge Engineer; Testing Knowledge Bases.

Image Analysis for ArcGIS

Overview

This 2 day intermediate course will teach students how to process and prepare satellite images and air photographs so they can be used to update, enhance, and expand your vector GIS. Students will be introduced to the tools that will enable them to extract information from the imagery, and then display and analyze this information.

Audience

This course is designed for users of ESRI's ArcGIS software and those who wish to incorporate imagery into their GIS.

Prerequisites and Recommendations

It is recommended that participants undertaking this course should have gone through the Fundamentals of ArcGIS course.

Goals

- Understand, display and enhance raster imagery within ArcMap;
- Import satellite data using ArcToolbox;
- Reproject imagery and create Orthorectified images;

- Mosaic images to create a single seamless image;
- Subset imagery to create smaller files;
- perform Unsupervised and Supervised classification of satellite imagery;
- Identify and extract changes through change detection;
- Update and manipulate vector and raster attributes.

Topics Covered

- **Understanding Imagery:** Viewing images; Projection Types; Importing Data
- **Creating Image Maps:** Orthorectification; creating a mosaic
- **Feature Extraction:** Subsetting image; Using Spectral signatures; Using Band Algebra
- **Image Classification:** Unsupervised Classification; Post Classification Processing
- **Identifying and Extracting Change:** Visual Change Detection; Image Difference; Thematic Change

Stereo Analyst for ArcGIS

Overview

This 2 day intermediate course will teach students how to use Stereo Analyst for ArcGIS and the tools provided in ArcMap for the purposes of collecting new and revising existing feature datasets in 3D. Since imagery is playing a more vital role in creating and sustaining a reliable GIS, Stereo Analyst for ArcGIS provides a direct ‘image to GIS’ approach in order to obtain reliable feature data from imagery.

Audience

This course is designed for users of ESRI’s ArcGIS software and those who wish to incorporate imagery into their GIS.

Prerequisites and Recommendations

It is recommended that participants undertaking this course should have gone through the Fundamentals of ArcGIS course.

Goals

- Import/View imagery in Stereo Analyst
- Set up a Stereo Analyst Project
- Use existing Photogrammetric Data

- Extract height measurements, measure true distances, slope and area
- Transform 2D datasets to 3D datasets and update
- Update vector data in 3D
- Create new 3D vector data
- Extract 3D features to create, edit or update 3D shapefiles and GIS layers
- Use semi-automated tools to assist in feature collection and attribution
- Keyboard shortcuts to access common functions

Topics Covered

- **Understanding Imagery:** Using Stereo Analyst for ArcGIS; the Stereo Analyst Interface; Viewing the Project in ArcCatalog
- **Updating Existing Data:** Transform to 3D Feature Layer; Updating Data in 3D; Vertical Datums
- **Collecting New Data:** Capturing New Data; Using the Terrain Feature Extraction; Updating the Coverage

Introduction to Leica Photogrammetry Suite (LPS)

Overview

In this 4 day intermediate, application-oriented course, students will learn the tools and functionality necessary to complete a desktop mapping project, using Leica Photogrammetry Suite (LPS). Instructors will explain how to triangulate a block of images, extract elevation data, and create orthorectified imagery. Data sources used include conventional aerial photographic frames and high resolution imagery.

Audience

This course is designed for participants who have a good understanding of the principles of aero-triangulation and photogrammetry. Surveyors and Photogrammetrists will find this course of particular interest.

Prerequisites and Recommendations

It is recommended that participants undertaking this course should have gone through the Fundamentals of ERDAS Imagine I Course.

Goals

- Understand basic digital photogrammetric theory needed to use LPS
- Input all necessary data, create and triangulate blocks of imagery

- Use the Automatic Point Measurement tool to improve triangulation results
- Extract elevation data to produce a Digital Terrain Model using tools in LPS
- Display, edit and enhance Digital Elevation Models using standard ERDAS Imagine tools
- Orthorectify multiple images from a block using elevation data from multiple sources
- Mosaic several orthorectified images
- Visualize orthorectified imagery in a standard ERDAS Imagine Viewer and use the Image Drape tool to create perspective three-dimensional scenes

Topics Covered

- **Creating a Block:** Raw Scanned Imagery; LPS Setup wizard; Imagery Requirements; Inside the Sensor; The Sensor in Space; Take Control; Building the Relationship; Triangulation Results
- **DTM Extraction:** In search of Z; visualizing your DEM; Statistical DTM Evaluation; Verifying Results
- **Creating and working with Ortho Images:** orthorectification; Working with DigitalGlobe Data; Mosaic Images; visualizing your images
- **LPS Terrain Editor:** DTM Editing Tools; Setting a Constant Elevation.

Overview

Image Processing with ERDAS Imagine provides advanced tools and methods for digital image processing and analysis. This 3 day course takes you through image processing, image analysis, automation tools for feature extraction and GIS analysis. This course focuses on Image processing concepts including Image rectification; image projections; geometric and radiometric corrections; image enhancement and stretching with low and high pass filters; stacking and compositing; and image mosaics and sub-setting. The course also covers image algebra; principal component analysis; image classification; sub-pixel classification; knowledge classifier; classification and regression trees; training data collection; and change analysis.

Audience

This course is intended those with a focus on Image Processing and Analysis, and already have a background in remote sensing.

Pre-requisites

Students should have completed Fundamentals of ERDAS Imagine I and II.

Goals

By completing this course, the student will be able to:

- Use ERDAS imagine software to rectify images.

Image Processing with ERDAS

- Perform image analysis using various image processing techniques.
- Select appropriate image processing sequences to achieve predetermined objectives
- Understand and use ERDAS Automation tools for their Image processing and Analysis.

Topics Covered

- **Image Processing:** Image Rectification (Georeferencing and Resampling); Changing Image Projections; Atmospheric corrections; Destriping and Line-drop removal; Salt and Pepper removal; Image Stretching (Low-pass and High-pass filtering); Image Stacking and Compositing; and Building image mosaics and image Sub-setting.
- **Image Analysis:** Image Algebra; Principal Components Analysis; Image Classification: Unsupervised and Supervised methods; Sub-pixel classification; Expert Classifier i.e. Knowledge Engineer and Knowledge Classifier.
- **ERDAS Imagine Automation Tools:** Automatic Feature Extraction with Imagine Objective and Batch processing.

ArcFM UT Training

Overview

The ArcFM UT application is designed for the electricity, gas and water utilities. ArcFM UT application offers a wide range of functionality. ArcFM UT Training is offered in 3 modules: ArcFM UT View; ArcFM UT Edit and ArcFM UT Administration.

ArcFM UT View

In this 2 day course, you will be trained in the general and specific utility functions. You will learn how to handle the ArcFM UT system and how to take advantage of the flexibility offered by the software. The training will show you how to log onto the system, how to navigate through the data and how to handle network trace function. The course also introduces you to the software interface.

ArcFM UT Edit

This 3 day course will train you on the general and the specific utility functions of ArcFM UT for data editing and update. As an extension of the ArcFM UT View training you will learn the functions for graphic and attribute data editing with UT ALPHA.

ArcFM UT Administration

The ArcFM UT Administration focuses on creating a comprehensive solution for a Utility and how to take advantage of the flexibility offered by the ArcFM UT software. This 5 day course does not require any programming work. Rather, you select parameters and assign them according to your requirements. The

course focuses on the basics of ArcFM UT as well as on the parametrization of the software to create a data model for a Utility.

Audience

This course is designed for System Administrators and GIS Analysts who want to design, build and implement enterprise systems for the management of utilities such as water, electricity and gas.

Prerequisites and recommendations

It is recommended that participants undertaking this course should have gone through the Fundamentals of ArcGIS course. Knowledge of RDBMS e.g. Oracle and MS SQL would be crucial for the ArcFM UT Administration course. Knowledge of ArcSDE would be an added advantage.

Goals

After this class you will be able to use the predefined menus and screen forms and to start working effectively with the ArcFM UT applications.

Topics covered

- System Architecture: Software interface; and
General functionality;
- Utility functionality for viewing graphic and attribute data (UT ALPHA);
- Analysis/reports;
- Network Trace Functionalities;
- Map Printing;

Introduction to Cellular Expert and Implementation

Overview

The purpose of this 5-day course is to familiarize telecommunications specialists, with the theoretical and practical knowledge of the Cellular Expert software. The course covers introduction to Cellular Expert concepts, overall Cellular Expert functionality and practical "hands on" workshops. The course is composed of two parts: 3 days "Introduction to Cellular Expert basic concepts" 2 days "Project Implementation".

Audience

This course is designed for telecommunications specialists.

Prerequisites:

To enrol for this course you should have, a working knowledge of ArcGIS; working knowledge of Spatial Analyst; and knowledge of Telecommunications.

Topics Covered

- Antenna editor module for import/edit of antenna's systems information; Nominal planning of the network;
- QuickC/I interference checking between two selected Sectors, without preliminary channel assignment;
- Channels assignment and mapping;
- Calculation of C/I matrix, total C/I, C/A layers and C/I, C/A layers for each assigned channel.
- Point-to-point analysis: Profiling Wizard;
- Point-to-point analysis: Dynamic path profiling and Visibility tool;
- Preparing geographic data for Hata Type Models;

- Predicting field coverage. Hata Type Models;
- Preparing geographic data for Line Of Sight Type Models;
- Prediction models and Line of Sight type models;
- Creation of Traffic map using statistical or actual traffic data obtained from the operating system;
- Best Servers Calculation;
- Estimating traffic load for each Sector/Cell/Site using created Traffic map;
- Statistical GIS Analysis, Map Calculator and Map Query functions for demographic data analysis, traffic estimation, demand calculation;
- Overview of Drive test data analysis;
- Prediction model calibration;
- Troubleshooting problems working with Cellular Expert.
- Database creation tasks; and
- Model calibration tasks.

Additionally specific trainings are also offered on:

Cellular Expert for WiMAX Course

- SUI type prediction model analysis and calculation;
- (S)OFDMA system parameters analysis;
- WiMax adaptive modulation, bit rate, throughput and spectral efficiency calculation.

Cellular Expert for UMTS/CDMA Course

- UMTS/CDMA system parameters definition and estimation of required network configuration;

- Traffic data classes and traffic mix categories analysis;
- UMTS/CDMA network dimensioning, nominal cell capacity and coverage planning;
- Power budget calculation for uplink and downlink
- UMTS/CDMA coverage prediction.

Cellular Expert Radio Links Training

This 2 days course is applicable to Cellular Expert Radio Links users. The introduction to Cellular Expert Radio Links course is complemented with practical "hands on" workshops, which makes users more efficient and effective at their job and provides with competitive advantage.

Topics Covered

- Introduction to Radio Links;
- Creating radio link equipment data: Antennas, channels, frequency plans, modulations,
- Creating radio links: Adding, deleting, editing;

- Performance targets: U-G.821, 826, C/I, FML;
- Predicting radio links: Link power budget, wanted signal prediction, interference analysis;
- Radio link examples: RRL, LMDS, MMDS.

Cellular Expert Advanced Course and Implementation

During this intensive 10 days training course wireless telecommunications professionals will benefit from both: 4 days Introduction to Cellular Expert and Cellular Expert Radio Links Training courses as well as from 6 days implementation project.

Implementation Topics include

- Database creation tasks;
- Model calibration tasks
- Advanced customer specific tasks;
- Software customization

Training Logistics

Hotel Accommodation

Students are responsible for making their arrangements for accommodation for the duration of the training; however they may contact training@osl.co.ke for any assistance on hotel booking and reservation.

Language

The language of instruction for all courses is English, however in certain instances translation to French or Swahili may be offered.

Transport

Transportation to the training site is the student's responsibility, for assistance they may contact training@osl.co.ke. Students need to ensure that they attend the training sessions in time.

Meals

Lunch and refreshments will be provided for training conducted at our training centre in Nairobi.

Airport Information

Jomo Kenyatta International Airport (JKIA) is located about 20 minutes drive from the office location. During peak hours (morning and evening) the drive can take as long as 1 hour. Students are requested to make their arrangements on how to travel from the airport. We can organize for a taxi pick up from the airport, to request a taxi please contact training@osl.co.ke.

Pricing

Training is charged on individual or group rate and is payable in KSh. Or US\$. The current individual rate is US\$ 100 per day and applies to training conducted at our training centre. The current group rate is US\$ 1,200 per day. The recommended size of a group is 10 to 16. Value Added Tax (VAT) currently at 16% is applicable to any training conducted in Kenya.

Registration & Payment

A completed registration form is required for each student or group. Class reservations are processed on a first-come, first-served basis once we have received full payment, 50% down-payment or an acceptable purchase order. Full training needs to be made once training has been completed.

Course Materials

All course materials consisting of a lecture, exercise book and training data used for the duration of the training will be provided.

Certification

Students completing the training course will receive a certificate.

Urban Transport

Matatus are the most common form of public transport in Nairobi. Matatus are privately owned minibuses and generally seat fourteen to twenty-four. The matatu's destination is imprinted on the side of the bus, and matatus plying specific routes have specific route numbers.

How can I register for training?

A completed registration form is required for each student, and the registration form must be signed by an authorized signatory to ensure that it is processed promptly. On receipt of the completed registration form(s), we will provide you with a quotation. Class reservations are processed on a first-come, first-served basis once we have received a 50% down-payment, or alternative payment conditions have been agreed on. Full payment needs to be made once training has been completed.

How much will the training cost?

Training is charged on an individual or group rate and payable in Ksh. or US\$. The current individual rate is KSh. 8,400 (US\$100) per day and applies to training conducted at our Training Centre located in Upper Hill, Nairobi. A group rate of US\$ 1,200 per day will be applied to groups of more than 12 participants from a single organization.

The recommended maximum size of a group is 10 – 16 persons. VAT, currently at 16%, remains payable if training is being conducted in Kenya.

Where is the training venue?

Training is conducted at our Training Centre located on the Mezzanine Floor, KUSCCO Centre, along Kilimanjaro road in Upper Hill, Nairobi, Kenya. For training that takes place at our training centre, clients are provided with refreshments and lunch. Arrangements can be made for a group that wants to be trained at a client's site.

When does the training take place?

There is a course schedule available in our offices and in our website. For more information, contact training@osl.co.ke

What is the duration of training?

Course duration ranges from 2 – 5 days. The information is available in the course descriptions in the catalogue.

Are there any prerequisites required?

The prerequisites vary from course to course. The information is available in the course descriptions in the catalogue.

Do I get a certificate?

On completion of the course, one is entitled to a certificate, course books, course data and after training support.