

BC104 - Remote Sensing, Photogrammetry and Drone Mapping Course

Course Duration: 5 Days

Training Fee: KSH 42,000 | USD 420

Course Registration: [Register Here>>](#)

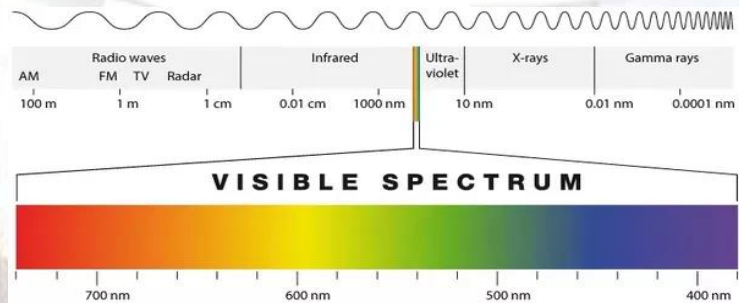
1.0. Introduction

Remote Sensing is the science and technology of acquiring images of the earth's surface without coming into contact with it, i.e., remotely. Various spacecrafts, aircrafts and drones are used in remote sensing to aid in monitoring and management of the natural and built environments. Presently, the extensive computer-based analysis techniques are then used to extract information from the recorded images in support of applications ranging over many earth and information science disciplines.



1.1. Course Overview

In this course, learners will explore the nature of imaging the earth's surface from space or from airborne vehicles. The course also introduces the fundamental nature of remote sensing, including the types of platforms and sensors used. It also provides different methods of image analysis, so as to get actionable intelligence from the captured images. Learners will also be introduced to concepts of data collection and mapping using drones, and will even get an opportunity to fly a drone, and analyze the imagery!



1.2. Course Objectives

- To understand basic remote sensing concepts
- To learn how to download satellite imagery from various platforms
- To learn how to use ArcGIS and/or ERDAS for satellite imagery analysis.
- To acquire hands on skills on data collection using drones
- To learn how to process drone imagery using Pix4D Software

1.3. Course Content/Outline

i. Introduction to Remote Sensing

- The atmosphere and its components
- Platforms used to image the Earth's surface: Landsat, Spot, Sentinel, WorldView
- How are Images of the Earth's surface recorded
- Types of resolution: Spatial, Temporal, Radiometric, Spectral

- Spectral Signatures of land cover types
- Satellite image Acquisition methods and platforms
- Introduction to Landsat Explorer web application; Downloading satellite imagery; Landsat; Sentinel.

ii. Image Analysis and Processing

- Fundamentals of image analysis
- How can images be interpreted and used
- Image enhancement: Contrast Enhancement; Spatial Enhancement
- Image Classification: Supervised and Unsupervised Classification, Accuracy Assessment

iii. Introduction to Drone/UAV Mapping

- Introduction to core concepts of drone mapping; Operating principles; Types of drones – Fixed Wing, Multi-rotor; Parts of a drone; Types of Payloads;
- The drone Selection Process; Defining goals, selecting the right UAV to use, specifications, pricing.
- Flight Planning Software; Pix4D, Drone deploy, DJI GO 4; what is provided against your needs.
- Ground Control Points; When do you need them, how do you use them; how to construct and measure them
- Flight preparations: Safety Measures, Area Inspection, flying safely and productively, choose altitude, image overlap, define relative and absolute accuracy
- Executing drone pre-flight checks, fieldwork
- Reviewing your results in the field, preparing data for post processing.
- Getting started with drone imagery processing software; Pix4D, DroneDeploy; Agisoft Metashape
- Applications of drones

1.4. Case Study: Assessing Spatial and Spectral Resolution of Satellite and Drone Image of Nairobi

1.5. Expected Outcomes

At the end of this training module, learners should;

- Understand remote sensing and drone mapping concepts
- Be able to download satellite imagery for use in their projects
- Be proficient in using ArcGIS and/or ERDAS to perform basic satellite imagery.
- Have hands on skills on data collection using drones, considering the all safety measures
- Be proficient in process drone imagery using Pix4D Software

1.6. Training Material

- DJI Phantom 4 Pro V2 drone
- Pix4D Software
- ArcGIS/ERDAS