Training Course on Drone Photography for Surveying and Mapping

Professional Development Training Course Outline

Category	Drone Technology	**Duration**	5 Days
Base Fee	$3,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Training Course on Drone Photography for Surveying and Mapping is meticulously designed to equip professionals with the essential skills and knowledge to leverage the power of **drone technology** for accurate and efficient **surveying and mapping**. Participants will gain hands-on experience in capturing high-resolution **aerial imagery**, processing data using industry-standard **photogrammetry software**, and generating valuable outputs such as **orthomosaics**, **digital elevation models (DEMs)**, and **3D models**. By mastering these techniques, individuals and organizations can significantly enhance their **geospatial data acquisition** capabilities, leading to improved decision-making and operational efficiency. This course emphasizes practical application through real-world **case studies** and a robust **training methodology**, ensuring participants can confidently integrate **drone-based mapping** into their existing workflows.

The curriculum delves into critical aspects of **drone operations**, including flight planning for optimal data capture, understanding **camera calibration** and **georeferencing**, and adhering to relevant **regulatory compliance**. Furthermore, the course explores advanced techniques in **data analysis** and interpretation, enabling participants to extract meaningful insights from their drone-acquired data. Through a blend of theoretical instruction and practical exercises, this training empowers professionals to become proficient in utilizing **unmanned aerial vehicles (UAVs)** as powerful tools for modern **land surveying** and **geographic information systems (GIS)** applications.

Programme Curriculum

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Course Duration

5 days

Course Objectives

This training course aims to enable participants to:

1. Understand the fundamental principles of **drone photogrammetry** for surveying and mapping applications.
2. Comply with current **drone regulations** and safety protocols for commercial operations.
3. Plan and execute effective **flight missions** for optimal data acquisition.
4. Master the operation of various **drone platforms** and their sensor payloads.
5. Perform accurate **camera calibration** and understand its impact on data quality.
6. Implement effective **ground control point (GCP)** strategies for precise georeferencing.
7. Process **aerial imagery** using industry-standard **photogrammetry software**.
8. Generate accurate **orthomosaics** and **digital elevation models (DEMs)**.
9. Create detailed **3D models** from drone-captured data.
10. Analyze and interpret **geospatial data** derived from drone imagery.
11. Integrate **drone-based mapping** data with existing **GIS workflows**.
12. Apply drone photography techniques to real-world **surveying projects**.
13. Troubleshoot common issues encountered in **drone surveying and mapping**.

Organizational Benefits

- Faster data acquisition compared to traditional methods.
- Lower labor and equipment expenses for data collection.
- High-resolution imagery and precise georeferencing capabilities.
- Ability to survey hazardous or difficult-to-access areas remotely.
- Efficiently capture large areas in a single flight.
- Rapid data processing and analysis for quicker insights.
- Access to up-to-date and detailed geospatial information.

- Adoption of cutting-edge technology for enhanced service offerings.

Target Audience

1. Land Surveyors
2. Civil Engineers
3. Construction Managers
4. Environmental Consultants
5. Agricultural Professionals
6. Mining Engineers
7. Archaeologists
8. GIS Specialists

Course Outline

Module 1: Introduction to Drone Technology for Surveying and Mapping

- Overview of Unmanned Aerial Vehicles (UAVs) and their applications in surveying and mapping.
- Different types of drones and their suitability for various mapping tasks.
- Understanding sensor payloads: RGB cameras, multispectral, and LiDAR.
- Introduction to the principles of photogrammetry and remote sensing.
- Case Study: Using drones for rapid damage assessment after a natural disaster.

Module 2: Regulatory Framework and Safe Drone Operations

- Overview of international and local **drone regulations** (e.g., CASA, FAA, EASA, KCAA).
- Understanding airspace classifications and flight restrictions.
- Pre-flight checks, risk assessment, and emergency procedures.
- Best practices for safe drone operation and maintenance.
- Case Study: Implementing a safety management system for commercial drone operations.

Module 3: Flight Planning and Data Acquisition Strategies

- Principles of effective flight planning for optimal data capture.
- Determining flight parameters: altitude, overlap, and ground speed.
- Utilizing flight planning software and mobile applications.
- Considerations for different terrain and project requirements.
- Case Study: Planning a drone survey for a large-scale infrastructure project.

Module 4: Camera Calibration and Georeferencing Techniques

- Understanding camera parameters and their impact on data accuracy.
- Methods for performing camera calibration (laboratory and in-field).
- The importance of ground control points (GCPs) for accurate georeferencing.
- Techniques for GCP placement, measurement, and verification.
- Case Study: Achieving high accuracy in a topographic survey using strategically placed GCPs.

Module 5: Introduction to Photogrammetry Software and Data Processing

- Overview of popular photogrammetry software packages (e.g., Agisoft Metashape, Pix4Dmapper).
- Importing and aligning drone imagery.

- Dense cloud generation and quality assessment.
- Creating orthomosaics and digital elevation models (DEMs).
- Case Study: Generating a high-resolution orthomosaic for urban planning.

Module 6: Generating and Analyzing Geospatial Data Products

- Advanced techniques for orthomosaic generation and accuracy improvement.
- Creating different types of DEMs: DSM, DTM, and their applications.
- Generating contour lines, profiles, and volumetric measurements.
- Integrating drone-derived data with GIS software for analysis and visualization.
- Case Study: Using drone-derived DEMs for flood risk assessment.

Module 7: 3D Modeling and Advanced Applications

- Techniques for creating detailed 3D models from drone imagery.
- Applications of 3D models in various industries (e.g., construction, archaeology).
- Introduction to point cloud processing and analysis.
- Using drones for infrastructure inspection and asset management.
- Case Study: Creating a 3D model for a historical site for preservation purposes.

Module 8: Integrating Drone Data into GIS Workflows and Reporting

- Data formats and interoperability between photogrammetry and GIS software.
- Georeferencing and projecting drone-derived data in a GIS environment.
- Creating informative maps and reports from drone survey data.
- Best practices for data management and archiving.
- Case Study: Integrating drone survey data into a city-wide GIS database for urban management.

Training Methodology

This course employs a blended learning approach that combines:

- **Interactive Lectures:** Covering theoretical concepts and principles.
- **Practical Demonstrations:** Showing step-by-step procedures using software and hardware.
- **Hands-on Exercises:** Allowing participants to apply learned skills using provided datasets.
- **Real-World Case Studies:** Analyzing and discussing practical applications of drone technology.
- **Group Discussions:** Facilitating knowledge sharing and problem-solving.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org **or call** *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

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