UAV Surveying Training Course

Professional Development Training Course Outline

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

Course Introduction

UAV Surveying Training Course is designed to equip professionals with advanced skills in drone technology, aerial mapping, geospatial intelligence, photogrammetry, GIS integration, and precision surveying. With the rapid adoption of Unmanned Aerial Vehicles (UAVs), Artificial Intelligence (AI), LiDAR technology, and digital transformation across construction, mining, agriculture, infrastructure, environmental monitoring, and land management sectors, UAV-based surveying has become a critical solution for achieving high-accuracy data acquisition, cost-effective mapping, and real-time decision-making. This training provides hands-on experience in drone flight planning, survey-grade data collection, 3D modeling, orthomosaic generation, point cloud processing, and spatial analysis using modern industry tools.

The course focuses on developing practical expertise in smart surveying solutions, remote sensing applications, drone photogrammetry workflows, terrain modeling, and geospatial analytics. Participants will learn international best practices for UAV operations, regulatory compliance, data processing, accuracy assessment, and professional reporting through real-world projects and case studies. By combining theoretical knowledge with field-based applications, this program prepares learners to implement next-generation UAV surveying technologies for improved productivity, safety, and innovation in modern geospatial industries.

Programme Curriculum

UAV Surveying Training Course

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Course Objectives

By completing this UAV Surveying Training Course, participants will be able to:

1. Understand the fundamentals of UAV technology, drone platforms, and aerial surveying principles.
2. Develop professional skills in drone mission planning and autonomous flight operations.
3. Master high-resolution aerial data acquisition and precision surveying techniques.
4. Apply photogrammetry workflows for accurate mapping and 3D reconstruction.
5. Generate professional orthomosaic maps, digital elevation models (DEM), and digital terrain models (DTM).
6. Process and analyze UAV survey data using advanced GIS and remote sensing software.
7. Understand LiDAR-based UAV surveying and point cloud processing techniques.
8. Perform topographic surveys, volumetric calculations, and infrastructure inspections.
9. Apply UAV technology for construction monitoring, mining surveys, and land development projects.
10. Improve decision-making through geospatial intelligence and data visualization.
11. Understand UAV safety standards, aviation regulations, and operational risk management.
12. Develop skills in AI-powered drone analytics and automated surveying workflows.
13. Prepare professional UAV survey reports using industry-standard mapping and visualization techniques.

Target Audience

1. Land Surveyors and Geomatics Professionals
2. Civil Engineers and Construction Managers
3. GIS Specialists and Remote Sensing Analysts
4. Drone Pilots and UAV Operators
5. Mining and Quarrying Professionals
6. Agriculture and Environmental Management Specialists
7. Infrastructure Inspection Professionals
8. Students and Researchers in Geospatial Technologies

Course Modules

Module 1: Introduction to UAV Technology and Surveying Applications

- Fundamentals of **Unmanned Aerial Vehicle (UAV) systems**
- Types of drones: **multirotor, fixed-wing, and hybrid UAV platforms**

- Components of professional survey drones
- UAV applications in **construction, mining, agriculture, and infrastructure**
- Industry trends in **smart surveying and drone automation**
- **Case Study:** Drone-based mapping application for a large construction site to improve progress monitoring and reduce manual surveying time.

Module 2: UAV Flight Planning and Mission Management

- Understanding **drone mission planning workflows**
- Selecting flight parameters for survey accuracy
- Ground control points (GCPs) and checkpoints
- Weather assessment and operational safety planning
- Automated flight execution using professional software
- **Case Study:** UAV flight planning for a highway development project requiring accurate terrain mapping.

Module 3: UAV Data Acquisition and Field Survey Techniques

- Professional UAV surveying procedures
- Camera calibration and image capture techniques
- RTK/PPK drone surveying concepts
- Field data quality control methods
- Survey accuracy assessment and validation
- **Case Study:** RTK-enabled UAV survey for a mining site to calculate stockpile volumes and production measurements.

Module 4: Drone Photogrammetry and Image Processing

- Principles of **aerial photogrammetry**
- Image alignment and point cloud generation
- Creating orthomosaic maps
- 3D surface reconstruction workflows
- Photogrammetric accuracy optimization
- **Case Study:** Photogrammetry-based 3D modeling of a heritage structure for digital preservation.

Module 5: GIS Integration and Geospatial Data Analysis

- Importing UAV data into GIS platforms
- Spatial analysis and map production
- Coordinate systems and projections
- Combining UAV data with existing geospatial databases
- Creating professional survey maps and reports
- **Case Study:** Integration of drone mapping data with GIS for urban planning and land management.

Module 6: LiDAR UAV Surveying and Advanced Mapping

- Fundamentals of **UAV LiDAR technology**
- Point cloud classification and processing
- Digital elevation model generation
- Vegetation penetration and terrain analysis
- Advanced 3D mapping applications
- **Case Study:** LiDAR drone survey for forest inventory and terrain modeling in a challenging landscape.

Module 7: UAV Applications in Industry and Smart Infrastructure

- UAV surveying for construction monitoring
- Mining exploration and volume calculations
- Agricultural monitoring using multispectral drones
- Infrastructure inspection using aerial imaging
- Environmental assessment and disaster mapping
- **Case Study:** Drone inspection of bridges and transmission lines to improve safety and reduce inspection costs.

Module 8: UAV Regulations, Safety, and Professional Project Implementation

- UAV aviation regulations and compliance
- Risk assessment and operational safety
- Data security and ethical drone operations
- Developing complete UAV survey workflows
- Professional reporting and client deliverables
- **Case Study:** Implementation of a commercial UAV surveying project following aviation and safety standards.

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

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

Ready to enroll or request a customized program? Book online or contact us:

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