GNSS Applications Training Course

Professional Development Training Course Outline

Category	Construction Institute	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

GNSS Applications Training Course is designed to develop advanced skills in Global Navigation Satellite Systems (GNSS), satellite positioning, geospatial intelligence, precision navigation, and location-based technologies. With the rapid growth of smart cities, autonomous systems, precision agriculture, climate monitoring, Internet of Things (IoT), and digital transformation, GNSS has become a critical technology for accurate positioning, navigation, and timing (PNT) solutions. This course provides practical knowledge of GPS, GLONASS, Galileo, BeiDou, RTK GNSS, Precise Point Positioning (PPP), geospatial analytics, and GNSS data processing workflows for modern industry applications.

The program combines theoretical concepts, hands-on practical exercises, real-world datasets, and industry case studies to help participants understand GNSS infrastructure, satellite signals, error correction techniques, field data collection, and advanced applications. Participants will gain expertise in high-precision positioning, surveying automation, drone mapping, marine navigation, disaster management, environmental monitoring, and smart mobility solutions, preparing them for emerging opportunities in the global geospatial technology ecosystem

Programme Curriculum

GNSS Applications Training Course

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Course Duration

5 days

Training Course Objectives

1. Understand the fundamentals of GNSS technology, satellite constellations, and positioning systems.
2. Develop expertise in GPS, Galileo, GLONASS, BeiDou, and multi-GNSS integration.
3. Learn advanced GNSS data acquisition, processing, and quality control techniques.
4. Apply RTK GNSS and Network RTK solutions for centimeter-level positioning.
5. Master Precise Point Positioning (PPP) and correction services.
6. Analyze GNSS errors including ionospheric, atmospheric, multipath, and signal interference effects.
7. Apply GNSS solutions in smart cities and intelligent transportation systems.
8. Implement GNSS technologies for precision agriculture and autonomous farming.
9. Explore drone-based mapping and UAV GNSS applications.
10. Integrate GNSS with GIS, remote sensing, IoT, and digital twin platforms.
11. Develop skills in real-time positioning, navigation, and timing applications.
12. Understand emerging trends in autonomous vehicles, robotics, and AI-powered geospatial solutions.
13. Build practical expertise for industry-ready GNSS application development and innovation.

Target Audience

1. Surveyors and geomatics professionals.
2. GIS specialists and geospatial analysts.
3. Civil engineering and construction professionals.
4. Remote sensing and drone mapping specialists.
5. Transportation and smart mobility professionals.
6. Agriculture technology and precision farming experts.
7. Environmental monitoring and disaster management professionals.
8. Researchers, students, and technology professionals interested in GNSS innovation.

Course Modules

Module 1: Fundamentals of GNSS Technology

- Evolution and architecture of **Global Navigation Satellite Systems**.
- GNSS satellite constellations-GPS, Galileo, GLONASS, and BeiDou.
- Satellite signals, frequencies, and positioning principles.
- Coordinate systems, datums, and reference frameworks.
- GNSS receivers, antennas, and field equipment.
- **Case Study: Global GNSS Infrastructure Deployment**

Module 2: GNSS Positioning Techniques and Accuracy Enhancement

- Absolute positioning and differential positioning methods.
- Differential GNSS (DGNSS) concepts.
- Real-Time Kinematic (RTK) positioning workflows.
- Network RTK and correction services.
- High-precision centimeter-level positioning applications.
- **Case Study: Construction Monitoring Using RTK GNSS**

Module 3: GNSS Data Processing and Error Management

- GNSS observation data formats and processing workflows.
- Satellite geometry and accuracy indicators.
- Error sources and mitigation strategies.
- Atmospheric correction models.
- GNSS quality assessment techniques.
- **Case Study: Precision Surveying Project**

Module 4: GNSS Applications in Surveying and Mapping

- Modern GNSS surveying workflows.
- Cadastral mapping and land administration.
- Engineering surveys and infrastructure projects.
- Topographic mapping applications.
- Integration of GNSS with GIS platforms.
- **Case Study: Smart Land Management System**

Module 5: GNSS Applications in Agriculture and Environmental Monitoring

- Precision agriculture concepts.
- GNSS-guided agricultural machinery.
- Crop monitoring and field mapping.
- Environmental data collection using GNSS.
- Climate and ecosystem monitoring applications.
- **Case Study: Smart Farming Initiative**

Module 6: GNSS for Drones, Autonomous Systems, and Robotics

- UAV navigation and GNSS integration.
- Drone mapping and photogrammetry workflows.
- Autonomous vehicle positioning.
- Robotics navigation systems.
- Artificial Intelligence (AI) and GNSS integration.
- **Case Study: Autonomous Delivery Systems**

Module 7: GNSS Applications in Transportation and Smart Cities

- Intelligent Transportation Systems (ITS).
- Vehicle tracking and fleet management.
- Smart mobility solutions.
- GNSS-based traffic monitoring.
- Connected and autonomous vehicle technologies.
- **Case Study: Smart City Mobility Platform**

Module 8: Advanced GNSS Trends and Future Technologies

- GNSS integration with Artificial Intelligence and Machine Learning.
- Digital twins and geospatial intelligence.
- Internet of Things (IoT) positioning applications.
- GNSS cybersecurity and signal reliability.
- Future trends in autonomous navigation and PNT technologies.
- **Case Study: Next-Generation Navigation Systems**

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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