Training Course on Global Navigation Satellite Systems (GNSS) Technologies

Professional Development Training Course Outline

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

Course Introduction

Global Navigation Satellite Systems (GNSS) play an integral role in providing high-precision location data, facilitating critical applications across various industries. This Training Course on GNSS Technologies for Precise Applications is designed to offer a comprehensive understanding of GNSS technology and its practical uses in fields requiring highly accurate positioning and navigation. As GNSS is central to everything from agriculture and transportation to urban planning and scientific research, professionals in these industries can significantly benefit from mastering GNSS systems.

In this course, participants will learn about the core principles of GNSS, including how satellite constellations work, the intricacies of signal processing, and techniques for achieving precise location measurements. The course covers a wide range of GNSS systems such as GPS, GLONASS, Galileo, and BeiDou, and dives into the importance of system integration and real-time data applications. Through both theoretical insights and practical training, participants will gain the skills needed to harness GNSS technologies to their fullest potential.

Programme Curriculum

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Course Duration

5 Days

Course Objectives

1. Understand the fundamentals of GNSS technology and its components.
2. Learn the differences between various GNSS systems (e.g., GPS, Galileo, GLONASS, BeiDou).
3. Gain hands-on experience with GNSS receiver equipment.
4. Understand signal processing and correction techniques for precise positioning.
5. Learn about error sources in GNSS data and methods for minimizing them.
6. Gain the ability to integrate GNSS technology into different applications.
7. Explore real-time GNSS data analysis and interpretation.
8. Develop skills in geospatial data collection and mapping using GNSS systems.
9. Understand GNSS integration with other technologies (e.g., GIS, IoT).
10. Apply GNSS for high-precision applications such as surveying, mapping, and navigation.

Organizational Benefits

1. Improved accuracy and reliability in geospatial data collection.
2. Enhanced decision-making through precise location and navigation data.
3. Streamlined operations in fields such as surveying, transportation, and agriculture.
4. Ability to integrate GNSS with other technologies like GIS and IoT.
5. Increased productivity and operational efficiency by utilizing real-time GNSS data.
6. Reduction in errors and inaccuracies in data collection and analysis.
7. Strengthened ability to meet regulatory requirements for high-precision applications.
8. Competitive advantage through the use of cutting-edge GNSS technology.
9. Enhanced project management in industries reliant on location-based services.
10. Capacity for future-proofing the organization with advanced GNSS applications.

Target Participants

- Surveyors and geomatics professionals.
- Engineers working in transportation, infrastructure, and construction.
- Environmental scientists and researchers who use location-based data.
- GIS professionals integrating GNSS data into mapping and analysis.
- Agriculture and forestry experts utilizing precision farming technologies.
- IT specialists in charge of GNSS system integration and maintenance.
- Urban planners using GNSS for mapping and infrastructure projects.
- Military and defense personnel working with GPS and other GNSS systems.
- Logistics and fleet management teams utilizing GNSS for tracking.
- Students and professionals interested in GNSS technologies and their applications

Course Outline

Module 1: Introduction to GNSS Technology

1. Overview of GNSS systems: GPS, GLONASS, Galileo, and BeiDou.
2. Components of GNSS: Satellites, receivers, and ground control systems.
3. GNSS signal structure and propagation.
4. GNSS-based navigation and timing principles.
5. Case Study: The role of GNSS in global navigation systems.

Module 2: GNSS System Components and Operation

1. Understanding GNSS satellite constellations.
2. Signal transmission and reception techniques.
3. Satellite positioning and clock synchronization.
4. GNSS receiver functionality and processing.
5. Case Study: GNSS signal processing for precise navigation in autonomous vehicles.

Module 3: Precision and Accuracy in GNSS

1. Factors affecting GNSS accuracy: Multipath, ionospheric and atmospheric delays.
2. Techniques for improving GNSS accuracy: Differential GNSS (DGPS), Real-Time Kinematics (RTK).
3. Error correction and data smoothing methods.
4. Post-processing GNSS data for accuracy improvement.
5. Case Study: Using RTK for high-precision surveying.

Module 4: GNSS Data Collection and Interpretation

1. Data collection methodologies using GNSS receivers.
2. Integrating GNSS data with GIS systems.
3. Geospatial data storage and management.
4. Interpreting and analyzing GNSS-based location data.
5. Case Study: GNSS data collection for environmental impact assessments.

Module 5: GNSS Applications in Real-Time Systems

1. Real-time GNSS applications in mapping and navigation.
2. GNSS for asset tracking and fleet management.
3. Integrating GNSS with Internet of Things (IoT) for smart systems.
4. GNSS-based geospatial solutions in agriculture and forestry.
5. Case Study: GNSS for real-time navigation in logistics and delivery services.

Module 6: Emerging Trends and Future of GNSS

1. The evolution of GNSS systems and upcoming technologies.
2. GNSS augmentation systems for higher accuracy.
3. GNSS in autonomous vehicles and drones.
4. Future trends in GNSS and space-based technologies.
5. Case Study: The future of GNSS in smart city planning.

Training Methodology

The instructor led trainings are delivered using a blended learning approach and comprises of presentations, guided sessions of practical exercise, web-based tutorials and group work. Our facilitators are seasoned industry experts with years of experience, working as professional and trainers in these fields.

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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