Training Course on GIS for Public Safety and Emergency Dispatch

Professional Development Training Course Outline

Category	GIS	**Duration**	10 Days
Base Fee	$3,000 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Geographic Information Systems (GIS) have become an indispensable tool for modern public safety and emergency dispatch operations, transforming how agencies **visualize, analyze, and respond** to critical incidents. Training Course on GIS for Public Safety and Emergency Dispatch delves into the cutting-edge applications of GIS, equipping professionals with the essential spatial intelligence to optimize **situational awareness, resource allocation, and real-time decision-making** in high-pressure environments. By harnessing the power of location data, public safety personnel can improve response times, enhance officer safety, and ultimately save lives.

This specialized program focuses on leveraging **geospatial technology** for **disaster preparedness, emergency response, and post-incident recovery**. Participants will gain hands-on experience with industry-leading GIS software and data management techniques, enabling them to create dynamic maps, perform advanced spatial analysis, and integrate diverse data sources. The curriculum emphasizes practical application through real-world **case studies and simulations**, ensuring participants develop the critical skills needed to implement robust GIS solutions for their respective organizations and contribute to building more resilient communities.

Programme Curriculum

Training Course on GIS for Public Safety and Emergency Dispatch

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Course Duration

10 days

Course Objectives

1. Develop expertise in collecting, organizing, and maintaining high-quality spatial data for **public safety workflows**.
2. Utilize GIS to create **real-time operational dashboards** and common operating pictures for incident management.
3. Apply **location intelligence** for efficient call routing, unit tracking, and closest unit dispatch.
4. Conduct **hotspot analysis, network analysis, and vulnerability assessments** to identify critical areas.
5. Build GIS-based models for **hazard identification, risk mitigation, and disaster planning**.
6. Leverage GIS for **dynamic resource deployment**, tracking, and management during emergencies.
7. Understand the role of GIS in supporting **NG911 systems and data standards**.
8. Connect GIS with live data sources like **CCTV, IoT sensors, and social media** for enhanced intelligence.
9. Deploy and manage **field-based mobile GIS solutions** for data collection and situational updates.
10. Apply spatial statistics and **predictive analytics** to understand crime trends and emergency service demands.
11. Design clear, concise, and **actionable maps for inter-agency collaboration** and public information.
12. Use GIS for **damage assessment, infrastructure repair planning, and long-term resilience strategies**.
13. Implement best practices for **geospatial data security** and adherence to privacy regulations in public safety.

Organizational Benefits

- Reduced dispatch times and optimized routes lead to quicker arrival at incident scenes.
- Data-driven insights improve tactical and strategic decisions during emergencies.
- Efficient allocation and tracking of personnel and equipment.
- Better understanding of incident locations, hazards, and surrounding environments.
- Identification of high-risk areas and development of preventative strategies.
- A common operational picture facilitates coordinated response efforts.
- Optimized operations and reduced inefficiencies in emergency management.
- Better preparedness and more effective recovery efforts post-disaster.
- Preparedness for NG911 and other geospatial data requirements.

Target Audience

1. Emergency Dispatchers and Call Takers
2. Police Officers and Law Enforcement Personnel
3. Firefighters and Fire Department Command Staff
4. Emergency Medical Services (EMS) Personnel
5. Emergency Managers and Disaster Coordinators
6. Urban Planners and City Planners (with a focus on public safety)
7. Public Works and Infrastructure Management Staff
8. GIS Analysts and Specialists working in public sector agencies

Course Outline

Module 1: Introduction to GIS in Public Safety

- Understanding the fundamental concepts of GIS and its unique value in emergency services.
- Exploring the evolution of GIS applications from traditional mapping to advanced spatial analytics.
- Overview of key GIS components: hardware, software, data, people, and methods.
- Discussion on the data types crucial for public safety: street networks, addresses, points of interest, demographic data.
- *Case Study: The role of GIS in mapping and understanding crime patterns in a major metropolitan area, leading to targeted policing initiatives.*

Module 2: Geospatial Data Acquisition and Management

- Sources of geospatial data for public safety: CAD/RMS, GPS, aerial imagery, lidar, open data portals.
- Data formats and standards (shapefiles, geodatabases, KML/KMZ) and their interoperability.
- Techniques for data collection, digitization, and attribute table population.
- Data quality control, validation, and maintenance for accuracy and reliability.
- *Case Study: Establishing a robust address point geodatabase for enhanced 911 dispatch accuracy across a county.*

Module 3: Core GIS Functionality for Emergency Dispatch

- Introduction to GIS software interfaces (e.g., ArcGIS Pro, QGIS) and basic navigation.
- Creating, symbolizing, and labeling layers for clear and informative maps.
- Performing spatial queries
- Basic geocoding and reverse geocoding for accurate location identification.
- *Case Study: Implementing real-time vehicle tracking on a GIS map for improved dispatch and situational awareness of patrol units.*

Module 4: Enhancing Situational Awareness with GIS

- Developing dynamic dashboards and web maps for real-time incident visualization.
- Integrating live data feeds from CAD/RMS, AVL systems, and weather services.
- Creating a common operational picture for multiple agencies during complex incidents.
- Visualizing incident progression and resource deployment on interactive maps.
- *Case Study: A city's emergency operations center using a GIS dashboard to monitor hurricane progression, evacuation routes, and shelter locations.*

Module 5: Spatial Analysis for Public Safety Decision Making

- Fundamentals of spatial analysis: buffering, overlay, proximity analysis.
- Identifying hotspots and coldspots for crime, accidents, or service calls.
- Analyzing demographic and socio-economic data to understand community vulnerabilities.
- Using spatial statistics to reveal hidden patterns and relationships in incident data.
- *Case Study: Analyzing 911 call density to optimize ambulance staging areas and reduce response times in urban environments.*

Module 6: Network Analysis for Emergency Response

- Understanding network datasets (road networks, public transit routes) and their attributes.
- Calculating optimal routes for emergency vehicles, considering traffic and road closures.
- Performing service area analysis to determine coverage of emergency facilities.
- Solving location-allocation problems for optimal placement of new stations or resources.
- *Case Study: Fire department using network analysis to determine the quickest routes to different parts of the city, considering time-of-day traffic patterns.*

Module 7: GIS for Disaster Preparedness and Planning

- Mapping hazards (flood zones, fault lines, wildfire risk areas) and vulnerable populations.
- Developing evacuation plans and routes based on population density and infrastructure.
- Identifying critical infrastructure (hospitals, power stations, bridges) and their resilience.
- Conducting simulations of disaster scenarios to test response plans.
- *Case Study: A county emergency management agency utilizing GIS to model flood inundation and identify affected populations for pre-emptive evacuation orders.*

Module 8: GIS in Emergency Response and Operations

- Real-time incident mapping and tracking during active emergencies.
- Coordinating multi-agency response using shared GIS platforms.
- Rapid damage assessment using aerial imagery and field data collection.
- Supporting search and rescue operations with detailed terrain and infrastructure maps.
- *Case Study: The use of GIS during a large-scale wildfire to track fire perimeter, allocate firefighting resources, and manage evacuation zones.*

Module 9: Mobile GIS for Field Operations

- Introduction to mobile GIS applications for smartphones and tablets.
- Collecting data in the field using GPS-enabled devices and smart forms.
- Offline mapping capabilities for disconnected environments.
- Real-time data synchronization between field units and command centers.
- *Case Study: Patrol officers using mobile GIS to document crime scenes, collect evidence locations, and instantly update incident maps.*

Module 10: Integrating GIS with Computer-Aided Dispatch (CAD) and Records Management Systems (RMS)

- Understanding the architecture and data flow between GIS, CAD, and RMS.
- Leveraging spatial data from GIS to enrich CAD and RMS records.
- Automating data exchange and synchronization for a unified operational picture.
- Best practices for data integration and ensuring data consistency.
- *Case Study: A police department integrating their CAD system with GIS to visualize real-time call locations and deploy the closest available units.*

Module 11: Next-Generation 911 (NG911) and GIS

- Overview of NG911 architecture and its reliance on accurate geospatial data.
- The role of the GIS in providing precise caller location information (street address, ALI, z-axis).
- Data requirements and standards for NG911 implementation (e.g., NENA i3).
- Planning and transitioning to NG911-compliant GIS infrastructure.
- *Case Study: A Public Safety Answering Point (PSAP) upgrading its GIS to support z-axis location data for indoor 911 calls, improving multi-story building responses.*

Module 12: Data Visualization and Cartography for Public Safety

- Principles of effective map design for clarity and impact in emergency situations.
- Choosing appropriate symbology, color schemes, and labeling for different data types.
- Creating thematic maps (e.g., crime density maps, hazard vulnerability maps).
- Techniques for creating compelling visual narratives from spatial data.
- *Case Study: Designing an interactive web map for public dissemination of emergency information during a natural disaster, including evacuation zones and relief centers.*

Module 13: Geoprocessing and Automation in Public Safety GIS

- Introduction to geoprocessing tools for automating repetitive GIS tasks.
- Building models and scripts for complex spatial analysis workflows.
- Automating report generation and data updates.
- Leveraging Python scripting for advanced GIS operations.
- *Case Study: Automating the creation of daily crime incident maps and hot-spot reports for law enforcement analysts.*

Module 14: Legal, Ethical, and Security Considerations in Public Safety GIS

- Data privacy and confidentiality in handling sensitive public safety information.
- Legal frameworks and regulations related to geospatial data use (e.g., GDPR, local privacy laws).
- Data security best practices for protecting GIS infrastructure and data.
- Ethical implications of spatial analysis and predictive policing.
- *Case Study: Discussing the challenges and best practices for anonymizing and sharing sensitive incident data with external research organizations.*

Module 15: Future Trends and Advanced GIS Applications

- Introduction to Artificial Intelligence (AI) and Machine Learning (ML) in GIS for predictive policing and resource optimization.
- The role of drones and remote sensing in emergency response and damage assessment.
- Integrating Virtual Reality (VR) and Augmented Reality (AR) for immersive situational awareness.
- Smart City initiatives and their impact on public safety GIS.
- *Case Study: Exploring how AI-powered GIS can predict potential crime hotspots based on historical data and environmental factors.*

Training Methodology

This course adopts a **blended learning approach**, combining theoretical foundations with extensive **hands-on practical exercises** and real-world **case studies**. The methodology includes:

- **Instructor-Led Presentations:** Engaging lectures and discussions to convey core concepts.
- **Software Demonstrations:** Live demonstrations of GIS software functionalities.
- **Practical Lab Sessions:** Hands-on exercises and guided tutorials using real-world public safety datasets.
- **Case Study Analysis:** In-depth examination of successful GIS implementations in various public safety scenarios.
- **Group Activities and Discussions:** Collaborative problem-solving and knowledge sharing.
- **Real-world Project-Based Learning:** Participants will apply learned skills to solve simulated or actual public safety challenges.
- **Q&A and Interactive Troubleshooting:** Opportunities for personalized guidance and support.

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	04 Dec 2026	Online	$2,000
23 Nov 2026	04 Dec 2026	Physical	$3,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$9,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$12,000

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