GIS for Road Safety and Traffic Planning Training Course

Professional Development Training Course Outline

Category	Traffic Management & Road Safety	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Geographic Information Systems (GIS) have revolutionized urban mobility and traffic management by enabling data-driven decision-making and predictive analysis. With the rapid growth of smart cities, integrating GIS into road safety and traffic planning has become critical for minimizing accidents, optimizing traffic flow, and improving urban infrastructure. GIS for Road Safety and Traffic Planning Training Course leverages cutting-edge GIS technologies, spatial analytics, and real-time data modeling to equip professionals with the skills to enhance road safety, manage traffic congestion, and support sustainable urban mobility initiatives.

Participants will gain hands-on experience with GIS tools, advanced mapping techniques, and traffic simulation models to identify high-risk zones, analyze traffic patterns, and implement evidence-based interventions. By combining theoretical frameworks with practical case studies, this course fosters expertise in accident hotspot analysis, predictive traffic modeling, and road infrastructure optimization. Attendees will leave with actionable insights and a strategic approach to integrating GIS solutions into modern road safety and traffic planning practices.

Programme Curriculum

GIS for Road Safety and Traffic Planning Training Course

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Course Duration

5 days

Course Objectives

1. Understand the fundamentals of GIS for traffic management and road safety.
2. Analyze traffic patterns using spatial analytics and geospatial tools.
3. Identify high-risk zones and accident hotspots for proactive intervention.
4. Implement predictive modeling for accident prevention and traffic optimization.
5. Integrate real-time traffic data for dynamic road management.
6. Design GIS-based road safety audits and infrastructure planning strategies.
7. Apply advanced mapping techniques for urban mobility planning.
8. Utilize geospatial intelligence for smart city traffic solutions.
9. Conduct risk assessment and traffic flow analysis using GIS dashboards.
10. Develop evidence-based interventions for reducing road accidents.
11. Leverage satellite imagery and remote sensing for traffic monitoring.
12. Collaborate with stakeholders for GIS-driven transportation policies.
13. Enhance decision-making using AI-powered GIS analytics for road safety.

Target Audience

1. Urban planners and traffic engineers
2. Road safety analysts
3. GIS specialists and geospatial analysts
4. Transportation policy makers
5. Highway and infrastructure consultants
6. Smart city project managers
7. Public safety officers and emergency planners
8. Academic researchers in urban mobility and traffic studies

Course Modules

Module 1: Introduction to GIS for Road Safety

- Overview of GIS in traffic management
- Components of geospatial analysis
- Key GIS software tools
- Road accident data sources and standards
- Case Study: GIS mapping of urban accident hotspots

Module 2: Traffic Data Collection & Integration

- Collecting traffic counts and accident reports
- Integrating GPS and IoT traffic sensors
- Satellite imagery for road monitoring
- Open-source traffic datasets
- Case Study: Multi-source traffic data integration in a metropolitan city

Module 3: Spatial Analysis for Road Safety

- Hotspot and risk zone identification
- Kernel density estimation (KDE) for accidents
- Overlay and buffer analysis techniques
- Statistical correlation with traffic variables
- Case Study: Accident hotspot prioritization using GIS

Module 4: Predictive Traffic Modeling

- Introduction to predictive analytics in traffic
- Machine learning models for accident prediction
- Simulation of traffic scenarios
- Risk forecasting for urban planning
- Case Study: Predictive model for reducing intersection accidents

Module 5: Traffic Flow & Congestion Management

- Network analysis for traffic optimization
- Real-time traffic monitoring dashboards
- Signal timing and route optimization
- Traffic pattern analysis using GIS
- Case Study: GIS-based congestion reduction in urban corridors

Module 6: Road Safety Audits & Infrastructure Planning

- GIS-supported road audit techniques
- Safety assessment of intersections and corridors
- Infrastructure improvement planning
- Compliance with international road safety standards
- Case Study: GIS-driven road redesign to reduce accidents

Module 7: Smart City Applications & IoT Integration

- IoT-enabled traffic sensors and smart signals
- Integration of GIS with urban mobility apps
- Intelligent transportation systems (ITS) overview
- GIS in emergency response and incident management
- Case Study: Smart traffic management in a pilot city

Module 8: Decision-Making & Policy Development

- Evidence-based transportation policies
- GIS dashboards for city planners and officials
- Scenario analysis for strategic planning
- Stakeholder collaboration using geospatial data

- Case Study: Policy changes driven by GIS traffic insights

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

Start Date	End Date	Location	Price
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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