Connected Vehicles and V2X Safety Use Cases 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

The era of Connected Vehicles (CV) and Vehicle-to-Everything (V2X) communication is revolutionizing transportation, safety, and urban mobility. Leveraging advanced telematics, real-time data exchange, and AI-powered analytics, connected vehicles are shaping the future of autonomous driving and road safety ecosystems. Connected Vehicles and V2X Safety Use Cases Training Course provides professionals with the knowledge, skills, and hands-on experience to implement V2X safety solutions, optimize intelligent transportation systems (ITS), and enhance road user protection in smart cities.

Participants will explore critical use cases, including collision avoidance, emergency vehicle prioritization, and pedestrian safety management, while mastering industry standards, 5G-enabled communications, and cybersecurity protocols for vehicular networks. Through interactive case studies, simulations, and real-world scenario analysis, attendees will gain actionable insights into the deployment of connected vehicle technologies, fostering safer, more efficient, and sustainable mobility solutions.

Programme Curriculum

Connected Vehicles and V2X Safety Use Cases Training Course

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Course Objectives

1. Understand the fundamentals of Connected Vehicle (CV) technologies.
2. Analyze V2X communication protocols and standards (DSRC, C-V2X, 5G).
3. Identify key V2X safety use cases in urban and highway environments.
4. Assess collision avoidance systems using real-time sensor data.
5. Implement emergency vehicle preemption solutions for traffic safety.
6. Evaluate pedestrian and cyclist protection strategies.
7. Explore autonomous driving integration with V2X networks.
8. Design smart intersections and traffic management systems.
9. Ensure cybersecurity and data privacy in vehicular networks.
10. Apply AI and machine learning for predictive safety analytics.
11. Conduct simulation-based testing of connected vehicle systems.
12. Develop connected mobility strategies for smart cities.
13. Measure performance metrics and ROI of V2X deployments.

Target Audience

1. Automotive engineers and system designers
2. ITS and smart city planners
3. Connected vehicle software developers
4. Transportation safety analysts
5. Vehicle telematics specialists
6. Policy makers and regulators in transportation
7. Research and development professionals in autonomous vehicles
8. Network engineers focusing on 5G and V2X communications

Course Modules

Module 1: Introduction to Connected Vehicles and V2X

- Overview of CV and V2X ecosystems
- Evolution of intelligent transportation systems
- DSRC, C-V2X, 5G, and edge computing
- Global adoption trends and industry roadmap
- **Case Study:** Deployment of C-V2X in European smart highways

Module 2: V2X Communication Standards and Protocols

- DSRC and C-V2X
- 5G-enabled V2X communication
- Latency, reliability, and QoS considerations

- CAM, DENM, SPaT, MAP
- **Case Study:** 5G V2X trial in South Korea urban corridors

Module 3: Collision Avoidance and Safety Applications

- Forward collision warning systems
- Intersection movement assist and lane change assist
- Vulnerable road user detection
- Sensor fusion and decision-making algorithms
- **Case Study:** AI-driven collision avoidance in California test fleet

Module 4: Emergency Vehicle and Traffic Management

- Emergency vehicle preemption strategies
- Dynamic traffic signal optimization
- Priority routing for public transport
- Traffic congestion prediction and mitigation
- **Case Study:** Emergency response optimization in Singapore

Module 5: Pedestrian, Cyclist, and Vulnerable Road User Safety

- Pedestrian and cyclist detection mechanisms
- Crosswalk and school zone safety systems
- Smartphone-based V2X alerts
- Integration with city IoT platforms
- **Case Study:** Smart crosswalks in Amsterdam

Module 6: Cybersecurity and Privacy in Connected Vehicles

- Threat vectors in V2X networks
- Data encryption and secure messaging
- Intrusion detection and anomaly analysis
- Regulatory compliance and standards (ISO 21434, GDPR)
- **Case Study:** Cybersecurity breach prevention in US pilot fleets

Module 7: AI and Predictive Analytics for V2X Safety

- Machine learning for collision prediction
- Traffic pattern analysis using big data
- Predictive maintenance for vehicle safety systems
- Integration with cloud and edge platforms
- **Case Study:** AI-based predictive safety deployment in Germany

Module 8: Connected Mobility Deployment and Smart City Integration

- Designing scalable V2X infrastructure
- Vehicle-to-infrastructure (V2I) applications
- Smart city and IoT ecosystem integration
- ROI measurement and KPIs for connected vehicle programs
- **Case Study:** Smart city V2X deployment in Barcelona

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

Start Date	End Date	Location	Price
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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