CONCEPT

Intelligent Transportation Systems: Traffic Operations, Tolling and Smart Mobility

8 – 12 March 2027
Barcelona - Eixample district four-star



Intelligent Transportation Systems: Traffic Operations, Tolling and Smart Mobility

Ref: 182_10601 **Date:** 8 – 12 March 2027 **Location:** Barcelona - Eixample district four-star **Fees:** 23500 SAR

Introduction:

Intelligent Transportation Systems are often bought device by device, leaving detectors, signals, cameras, tolling and public transport systems that do not share data, a control centre that reacts late to incidents and no measure of whether investment reduced delay. This Core Concept course gives transport authority and traffic engineering teams a working method to map ITS architecture, choose sensing and communications, run adaptive signals, incident management and traveller information, and plan tolling, public transport and connected vehicle services. Participants build an ITS Deployment Plan and Performance Scorecard for a corridor or network they manage.

Course Objectives:

- Map the ITS assets, data flows and service gaps of a road network against ITS service areas and the ARC-IT viewpoints
- Select loop, radar, video and probe data sources to monitor flow, speed and journey time on urban and interurban corridors
- Apply adaptive signal control, traffic management centre procedures and incident management practice to cut delay and secondary crashes
- Specify traveller information, electronic tolling and public transport ITS services, including AVL and smart ticketing
- Measure ITS results with travel time reliability, clearance time and analytics dashboards, and assess cybersecurity risk to field and centre systems
- Prepare an ITS project concept, procurement strategy and phased deployment plan for a corridor or network

Target Audience:

- Managers in transport authorities responsible for road network operations and traffic management centres
- Traffic engineering leads accountable for signal timing, detection and corridor performance
- Smart city and mobility programme managers who plan connected transport services
- Public transport managers responsible for fleet tracking, passenger information and fare systems
- Toll and road user charging managers overseeing collection systems and enforcement
- ITS project and procurement managers who specify, tender and oversee systems contracts

Course Outline:

Day 1: ITS Concepts, Service Areas and Current-State Assessment

- ITS Service Areas: Traffic Management, Traveller Information, Public Transport and Emergency Services
- ISO/TC 204 Scope and the ITS Standards Landscape
- Smart Mobility Drivers: Congestion, Road Safety, Emissions and Travel Reliability
- Road Network Operations Problem Mapping Using Corridor Congestion Data
- ITS Current-State Inventory Template: Field Devices, Central Systems and Data Flows

Day 2: ITS Architecture, Traffic Sensing and Communications

- ARC-IT Enterprise, Functional, Physical and Communications Viewpoints
- Inductive Loop, Radar and Video Detection Selection Matrix
- Probe Data Sources: GPS Traces, Mobile Phone Data and Bluetooth Travel Times
- Automatic Number Plate Recognition for Journey Time Measurement and Enforcement
- Field-to-Centre Communications Options: Fibre, Cellular and DSRC/IEEE 802.11p

Day 3: Traffic Operations, Incident Management and Traveller Services

- Adaptive Traffic Signal Control: Cycle, Split and Offset Optimisation
- Traffic Management Centre Functions, Operator Workflows and Escalation Procedures
- Traffic Incident Management Timeline: Detection, Response and Quick Clearance
- Advanced Traveller Information: Variable Message Signs, Journey Planners and Open Data Feeds
- Public Transport ITS: Automatic Vehicle Location, Real-Time Arrivals and Smart Ticketing

Day 4: Tolling, Connected Vehicles, Data Analytics and Cyber Risk

- Electronic Toll Collection and Road User Charging: Free-Flow Gantries and Enforcement Rules
- Connected and Automated Vehicles Overview: V2V, V2I and Cooperative ITS Services
- ITS Performance Measures: Travel Time Reliability, Incident Clearance Time and Secondary Crash Rate
- ITS Data Fusion and Corridor Performance Dashboard Design
- ITS Cybersecurity Threat Assessment for Field Devices, Centres and Communications Links

Day 5: Case Study Work and the ITS Deployment Plan

- Concept of Operations Drafting for a Selected Urban Corridor
- Procurement Strategy Exercise: Design-Build, Performance-Based and Operations and Maintenance Contracts
- Corridor Case Study: Adaptive Signal and Incident Management Upgrade Business Case
- Bus Network Case Study: AVL and Smart Ticketing Requirements Specification
- ITS Deployment Plan and Performance Scorecard Drafting and Peer Review

Skills You Will Gain:

- ITS Architecture Mapping
- Traffic Detection Design
- Adaptive Signal Operations
- Incident Response Coordination
- Traveller Information Planning
- Transport Data Analytics
- ITS Cyber Risk Assessment
- ITS Contract Strategy

Why Attend This Course:

- Return with an ITS Deployment Plan and Performance Scorecard for a corridor or network under your responsibility
- Challenge vendor proposals with a clear architecture, data flow and interface picture instead of isolated device specifications
- Show decision makers how signal, incident and traveller information investments change journey time reliability and clearance times
- Compare traffic operations practice with peers from road authorities, municipalities, toll operators and public transport organisations

Conclusion:

Intelligent Transportation Systems deliver value when sensing, control, information and payment systems share one architecture and are measured against clear operating results. The course moves from ITS service areas and the current-state inventory, through architecture, detection and communications, to signal control, control centre operations, incident management and traveller services, then to tolling, connected vehicles, analytics and cyber risk. Participants leave with an ITS Deployment Plan and Performance Scorecard ready for review by their authority or project board.