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COURSE BROCHURE

Advanced Intelligent Transportation Systems Training Course

jupiterprime.uk

info@jupiterprime.uk

Registered in the United Kingdom and Saudi Arabia

Advanced Intelligent Transportation Systems Training Course

Intelligent Transportation Systems is a 2-week advanced training course for transport authority engineers, traffic managers and smart mobility planners who design, operate and justify road and transit technology, and who leave with an ITS Deployment Business Case for one corridor or network. Congestion, safety targets and the arrival of connected vehicles are pushing road agencies to manage traffic through data rather than concrete alone. Jupiter Prime Training delivers this course on Intelligent Transportation Systems.

Why Intelligent Transportation Systems Matters Now

Three forces shape intelligent transportation systems today: city populations and freight volumes that outgrow road capacity, vehicles that now broadcast position and speed data, and travellers who expect live journey information on their phones. An agency that integrates detection, signal control and traveller information can cut delay and collisions without building new lanes; one that buys isolated devices ends up with dashboards that do not talk to each other and maintenance contracts it cannot manage. The course rests on recognised ITS reference architecture practice, which links user services, physical subsystems and information flows, and on systems engineering life cycle methods used to procure and verify transport technology.

Who Gains Most from Intelligent Transportation Systems

- Traffic engineers responsible for signal timing, detection and incident response on arterial and motorway networks
- Control room supervisors who run traffic management centres around the clock
- Mobility planners who shape public transport priority, parking and demand measures
- Technology specialists who specify sensors, communications and central software
- Investment and programme specialists who appraise and phase ITS projects

A road or transit authority that sends its traffic engineering, operations and planning specialists together gains most, because ITS decisions cut across all three functions.

Intelligent Transportation Systems Capabilities

Participants learn to connect field devices, communications and central systems into services that travellers and operators can feel.

- Design an ITS architecture that links user services to field and central subsystems — network operators
- Specify adaptive signal control and detection for congested corridors — traffic engineers
- Assess connected and cooperative vehicle services for safety and flow benefits — road safety boards
- Build data fusion rules that turn sensor feeds into reliable travel time estimates — control room supervisors
- Weigh tolling and road user charging options against equity and revenue aims — transport authorities
- Calculate benefit-cost ratios for ITS investments — funding committees

Key Intelligent Transportation Systems Terms

- Traffic management centre — the control room where operators monitor roads, manage incidents and change signals, signs and lane controls in real time.
- Adaptive signal control — traffic signals that adjust green times continuously from live detector data rather than fixed timing plans.
- Cooperative ITS — services in which vehicles and roadside units exchange messages about hazards, signal phases and speeds.
- Data fusion — combining several sources, such as loops, cameras and probe vehicles, into one more reliable picture of traffic conditions.
- Road user charging — pricing road use by distance, time or location to manage demand and raise revenue.
- Automatic vehicle location — satellite or network positioning of buses and fleet vehicles, used for real-time passenger information and dispatch.

Intelligent Transportation Systems Day by Day

Day 1: Mobility Pressures and the ITS Response

- Congestion and Safety Diagnostics — Locating Network Bottlenecks and Crash Clusters
- Traveller Expectation Trends — Live Information and Multimodal Journeys
- Connected and Automated Vehicle Outlook — Roadside Readiness Questions
- ITS Service Catalogue — Matching Services to Network Problems
- Stakeholder Map for Road Technology — Agencies, Police and Operators

Day 2: ITS Architecture and Systems Engineering

- ITS Reference Architecture Views — Services, Subsystems and Information Flows
- Regional Architecture Development — Agreeing Interfaces Between Agencies
- Systems Engineering V Model — Requirements Through Verification
- Concept of Operations Writing — Who Does What and When
- Interface Control Documents — Data Formats Between Field and Centre

Day 3: Sensing, Detection and Data Fusion

- Detector Technology Selection — Loops, Radar, Video and Bluetooth
- Probe Vehicle and Floating Car Data — Coverage and Privacy Limits
- Data Fusion Algorithms — Weighting Sources for Travel Time Accuracy
- Data Quality Monitoring — Detecting Faulty or Drifting Sensors
- Traffic Data Warehouse Design — Archiving for Planning and Reporting

Day 4: Traffic Management Centre Operations

- Control Room Layout and Staffing — Shift Patterns and Operator Workload
- Incident Detection and Verification — Cameras, Alarms and Patrol Reports
- Response Plans and Playbooks — Pre-Agreed Actions per Incident Type
- Variable Message Sign Strategy — Clear Wording and Diversion Advice
- Interagency Coordination Protocols — Police, Recovery and Emergency Services

Day 5: Adaptive Signal Control and Corridor Management

- Adaptive Signal Control Strategies — Choosing Between Centralised and Distributed Logic
- Signal Performance Measures — Arrivals on Green and Split Failures
- Transit Signal Priority — Bus Reliability Versus Cross-Street Delay
- Ramp Metering and Managed Lanes — Protecting Motorway Flow
- Integrated Corridor Management — Coordinating Parallel Routes and Modes

Day 6: Connected and Cooperative Vehicles

- Vehicle-to-Infrastructure Messages — Signal Phase and Hazard Warnings
- Communications Options — Short-Range Radio Versus Cellular Links
- Roadside Unit Deployment — Siting, Power and Backhaul
- Security Credential Management — Trusting Messages Between Vehicles
- Automated Vehicle Readiness — Lane Markings, Maps and Work Zones

Day 7: Tolling and Road User Charging

- Electronic Toll Collection Technologies — Tags, Plate Reading and Satellite Charging
- Congestion Pricing Design — Zones, Time Bands and Exemptions
- Enforcement and Back Office Systems — Violations, Billing and Disputes
- Interoperability Between Toll Operators — Clearing and Account Sharing
- Equity and Public Acceptance Testing — Impacts on Low-Income Travellers

Day 8: Public Transport Telematics and Traveller Information

- Automatic Vehicle Location — Dispatch and Headway Control
- Real-Time Passenger Information — Stop Displays and Mobile Feeds
- Account-Based Fare Systems — Contactless Payment and Fare Capping
- Open Transit Data Feeds — Supporting Third-Party Journey Planners
- Mobility as a Service Integration — Bundling Modes in One App

Day 9: Evaluating and Procuring ITS Investments

- Benefit-Cost Analysis for ITS — Time Savings, Safety and Emissions
- Before and After Evaluation Design — Control Sites and Data Periods
- Life Cycle Cost Modelling — Maintenance, Upgrades and Obsolescence
- Procurement Models — Design-Build, Performance Contracts and Partnerships
- Cyber Resilience of Field Devices — Patching and Network Segmentation

Day 10: Practising the ITS Deployment Business Case

- Corridor Problem Statement Review — Confirming Bottlenecks and Crash Data
- Architecture and Concept of Operations Sketch — Services and Interfaces Chosen
- Benefit-Cost Calculation Check — Peer Challenge on Assumptions
- Phasing and Procurement Plan — Quick Wins and Later Stages
- ITS Deployment Business Case Completion — Ready for Funding Approval

Applying Intelligent Transportation Systems After the Course

- Run signal performance measures on one congested corridor and present the three intersections with the most split failures to the operations manager.
- Draft a concept of operations for a planned incident response or traveller information upgrade and circulate it to police and recovery partners.

Intelligent Transportation Systems Questions FAQ

What are Intelligent Transportation Systems and why do they matter now?

Intelligent Transportation Systems use sensors, communications and software to manage roads and public transport in real time. They matter now because demand outgrows road capacity, vehicles share live data, and travellers expect accurate journey information.

Which roles gain most from Intelligent Transportation Systems training?

Traffic engineers, control room supervisors, mobility planners, technology specialists and ITS investment specialists gain most. Each owns part of the chain from sensor to service, and the course gives them a shared architecture and appraisal method.

How does Intelligent Transportation Systems training differ from a smart city GIS course?

Intelligent Transportation Systems training focuses on operating road and transit networks in real time. A smart city GIS course centres on spatial data and mapping; this course covers signal control, traffic management centres, connected vehicles, tolling and transit telematics.

What do you bring back from Intelligent Transportation Systems training?

You bring back a business case for deploying ITS on a corridor or network you manage, with the problem statement, architecture sketch, benefit-cost results and a phased procurement plan.

Intelligent Transportation Systems: The Way Forward

The ITS Deployment Business Case first informs whether the authority funds detection and adaptive signals on the chosen corridor or starts with traveller information. Traffic engineers and planners use it to agree interfaces with police and transit operators. After its first use, revisit the benefit-cost assumptions and connected vehicle readiness, since fleet technology and travel patterns shift quickly.