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COURSE BROCHURE

AI in Urban Planning and Infrastructure Development Training Course

11 – 15 April 2027
Muscat

AI in Urban Planning and Infrastructure Development Training Course

Ref: 120_3029 **Date:** 11 – 15 April 2027 **Location:** Muscat **Fees:** 6500 GBP

AI in Urban Planning and Infrastructure Development is a 1-week training course for urban planners, infrastructure project managers and municipal engineers, who leave with an Infrastructure Investment Prioritisation Case for their city or asset network. Urban growth, climate pressure and ageing assets now outpace manual planning. Jupiter Prime Training delivers AI in Urban Planning and Infrastructure Development for the people who shape how cities grow.

Why AI in Urban Planning and Infrastructure Development Matters Now

Three forces meet in city and infrastructure decisions: populations growing faster than roads and utilities can expand; climate risk such as heat and flooding; and a backlog of ageing bridges, pipes and pavements competing for limited capital. Authorities that use geospatial models and digital twins well build where demand will be and repair assets before they fail; those that rely on static plans lock in congestion and costly emergency repairs. The course draws on ISO/IEC 42001 for an AI management system and the NIST AI Risk Management Framework AI RMF.

Who Gains Most from AI in Urban Planning and Infrastructure Development

- Planning leads responsible for land use and growth scenarios
- Infrastructure project managers who sequence capital works and contractor packages
- Municipal engineers who maintain road, water and energy networks
- Smart city leads who run sensor networks, platforms and urban data hubs
- Transport planners who forecast travel demand and design mobility services

City authorities that send planners and asset engineers together gain most, since growth scenarios and maintenance priorities are then argued over the same map.

AI in Urban Planning and Infrastructure Development Capabilities

Participants learn to test where a city should grow and which assets deserve investment before concrete is poured.

- Assess geospatial, satellite and sensor sources for planning use — city data officers
- Apply land use and growth models to compare development scenarios — planning committees
- Weigh traffic and mobility forecasts when choosing transit and road schemes — transport boards
- Specify a digital twin scope for a district or asset network — smart city leads
- Build predictive maintenance rankings for bridges, pipes and pavements — asset engineers
- Communicate a sustainability-weighted investment ranking — capital finance committees

Key AI in Urban Planning and Infrastructure Development Terms

- Geospatial analytics — analysing maps, imagery and sensor feeds to reveal spatial patterns.
- Land use model — a simulation of how housing and jobs spread across a city under different policies.
- Urban digital twin — a live virtual model of city assets, fed by sensors, used to test changes first.
- Travel demand forecast — an estimate of trips by mode, route and time used to size transport schemes.
- Predictive maintenance — using condition data and models to repair assets before failure rather than after.
- Scenario planning — comparing plausible futures to test how robust an investment is.

AI in Urban Planning and Infrastructure Development Day by Day

Day 1: Urban Growth Pressures and Spatial Data

- Urbanisation, Climate and Asset Ageing Trends — Framing the Planning Challenge
- Satellite Imagery and Remote Sensing — Mapping Informal Growth and Land Cover
- Sensor Networks and Urban Data Platforms — Readiness for City Analytics
- Geospatial Data Quality and Licensing — Trusting the Base Map
- ISO/IEC 42001 Scope for Public Algorithms — Accountability in City Decisions

Day 2: Land Use and Mobility Modelling

- Land Use Change Models — Testing Zoning and Density Options
- Travel Demand and Traffic Prediction Models — Sizing Roads and Transit
- Mobility Data from Ticketing and Connected Vehicles — Service Redesign
- Heat Island and Flood Exposure Mapping — Climate-Resilient Site Choices
- NIST AI RMF Map Function for Urban Models — Framing Public Impact

Day 3: Digital Twins of City Assets

- Digital Twin Architecture and Building Information Models — Scope Decisions
- Water and Energy Network Twins — Leak, Load and Outage Simulation
- Construction Progress Tracking with Computer Vision — Schedule Control
- What-If Simulation for New Developments — Infrastructure Capacity Checks
- Interoperability and Open Data Standards — Avoiding Platform Lock-In

Day 4: Asset Condition and Investment Prioritisation

- Predictive Maintenance Models for Bridges, Pipes and Pavements — Repair Timing
- Asset Condition Scoring from Drones and Inspections — Risk Ranking
- Whole-Life Cost and Carbon Comparison — Sustainable Option Selection
- Multi-Criteria Scenario Planning — Robust Capital Portfolio Choices
- Equity and Community Impact Testing — Fair Distribution of Investment

Day 5: Practising the Infrastructure Investment Prioritisation Case

- Spatial Data Inventory for the Chosen District — Applying Day 1 Sources
- Growth and Mobility Scenario Set — Applying Day 2 Models
- Digital Twin Use Case Outline — Applying Day 3 Simulations
- Asset Risk and Cost Ranking — Applying Day 4 Prioritisation
- Infrastructure Investment Prioritisation Case — Peer Challenge and Sign-Off

Applying AI in Urban Planning and Infrastructure Development After the Course

- Run a predictive maintenance ranking on one asset class and compare it with the current repair schedule.
- Build two growth scenarios for a district with land use and travel demand models.

AI in Urban Planning and Infrastructure Development Questions FAQ

What is AI in Urban Planning and Infrastructure Development and why does it matter now?

It is the use of geospatial models, digital twins and predictive analytics to plan city growth and maintain infrastructure. It matters now because urban growth, climate risk and ageing assets compete for limited capital.

Which roles gain most from AI in Urban Planning and Infrastructure Development training?

Urban planners, infrastructure project managers, municipal engineers, transport planners and smart city leads gain most, since each decides where growth goes or which assets receive investment.

How does AI in Urban Planning and Infrastructure Development differ from a general smart city technology course?

It concentrates on planning and capital decisions rather than devices. You work on land use, mobility and asset models that rank investments, not on choosing sensors.

What do you bring back from AI in Urban Planning and Infrastructure Development training?

You bring back an Infrastructure Investment Prioritisation Case with a spatial data inventory, growth scenarios, a digital twin use case and an asset risk and cost ranking.

AI in Urban Planning and Infrastructure Development: The Way Forward

The Infrastructure Investment Prioritisation Case first informs which district or asset class receives the next round of capital. Planners, engineers and finance committees use it to compare cost, carbon and community impact. After the first budget cycle, the forecasts deserve a second look against observed traffic, asset failures and growth, so that models learn from the city as it changes.