

Transforming Urban Mobility through Public Transportation Systems

(2 Weeks Training Course under ITEC Programme)

2nd December – 15th December 2026

COURSE RATIONALE

The global population is rapidly urbanising, and cities are becoming the focal points of economic and social activity. With this growth, cities are facing significant challenges related to mobility, congestion, pollution, and accessibility. Effective public transportation systems, especially metros, play a crucial role in transforming urban mobility by providing efficient, sustainable, and equitable solutions. These systems not only improve mobility within cities but also contribute to environmental sustainability, economic growth, and enhanced quality of life.

ROLE OF PUBLIC TRANSPORTATION IN URBAN MOBILITY:

Public transportation, including buses, trains, trams, and metros, is integral to the smooth functioning of urban environments. Metro systems, as part of an integrated public transport network, are particularly crucial due to their ability to transport large volumes of passengers quickly, efficiently, and sustainably. These systems reduce road congestion, lower traffic-related emissions, and provide equitable access to urban resources, ensuring mobility for all segments of society.

Metro systems, in particular, are becoming an essential component of modern urban mobility. They help alleviate congestion in densely populated cities, decrease reliance on private cars, and reduce air pollution. By offering a reliable alternative to private transport, metros also improve the overall urban landscape by promoting more sustainable, liveable and pedestrian-friendly cities.

For effective public transport systems, SDG 11: Sustainable Cities and Communities, Target 11.2: mentioned about transforming urban mobility: Provide access to safe, affordable, accessible, and sustainable transport systems for all, improving road safety, notably by expanding public transportation, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities, and older persons. Public Transportation's Role: Expanding and enhancing public transport options directly supports this goal, offering equitable mobility for all social groups and contributing to social inclusion.

Technological Innovations in Metro/Bus Systems

The rapid advancement of technology has significantly impacted on the design and operation of metro systems. Modern metro networks are incorporating a variety of innovative technologies to improve operational efficiency, enhance passenger experience, and promote sustainability. These innovations include:

- **Smart Ticketing and Fare Collection:** Contactless payment systems, mobile ticketing, and smart cards simplify fare collection, reduce queue times, and ensure a seamless experience for passengers.
- **Real-time Data Analytics:** Real-time monitoring of trains and stations through data analytics helps optimise routes, predict delays, and improve overall system performance.
- **Automation and Artificial Intelligence (AI):** Autonomous trains and AI-based systems improve operational efficiency, reduce human error, and enable better decision-making for managing capacity, scheduling, and crowd control.
- **Sustainable Infrastructure:** Energy-efficient trains, regenerative braking systems, and the integration of renewable energy sources like solar panels help reduce the environmental footprint of metro systems.

Challenges and Opportunities

While metro/Bus systems offer a range of benefits, they also face several challenges. High initial capital investment, long planning and construction timelines, and the need for extensive urban infrastructure integration are common hurdles. However, with the right policies, investments, and public-private partnerships, these challenges can be overcome.

Additionally, emerging trends such as shared mobility services, autonomous vehicles, and the growing focus on urban sustainability present new opportunities for integrating metro systems into broader mobility ecosystems. Cities can leverage these advancements to create more adaptive, flexible, and user-centric transportation solutions.

PROPOSED DATES AND LOCATION

The course is proposed to be conducted from **2nd December to 15th December 2026** at **HUDCO's Human Settlement Management Institute, Khelgaon, New Delhi.**

AIM OF THE COURSE

In today's rapidly urbanising world, cities are facing unprecedented mobility challenges. To effectively manage these challenges and ensure sustainable growth, cities must adopt Integrated and Efficient Public Transportation Systems. The Training Programme is designed to equip Engineers, Architects, Town Planners, Urban Designers, Community Development Professionals, Land Managers, GIS technologists and Urban and Environmental Managers working with national, provincial or urban local governments and other relevant institutions from ITEC partner countries with the tools, knowledge, and strategies needed to create and manage modern sustainable public transportation networks. The course specifically emphasises the importance and functionality of Mass Rapid Transit Systems (Rail-based public transport systems- METRO) and (Road-based public transport systems- BRT) as a key solution to the growing urban mobility challenges, aiming to enhance efficiency, sustainability, and accessibility in modern cities.

OBJECTIVES OF THE COURSE

- Provide an understanding of the concept of Urban Mobility and the challenges associated with it, like traffic congestion, limited and outdated mobility networks, pollution, lack of integration, affordability and accessibility, safety & security, behaviour change, funding and financial sustainability.
- Promote the development of efficient and sustainable urban transport solutions to reduce congestion, lower emissions, and improve accessibility, like in Metro/Bus.
- Acquaint the participants with the need to have integrated and multi-modal transport for providing seamless connectivity.
- Develop an understanding of the need to integrate land use with transportation planning: TOD
- Explore the possibility of leveraging technologies and data for enhancing the effectiveness and convenience of urban mobility.
- Introduce the participants to financial models like asset monetization etc.

EXPECTED OUTCOMES

- Understanding the criticality of urban mobility challenges
- Able to take an informed decision about the mode and types of public transport system needed, depending on the demographic and spatial profile of cities

- Introduce technology in the existing public transport system network to improve accessibility and efficacy of existing transport systems.
- Introduce Multi-model and Integrated transport for seamless travel.
- Develop an understanding of innovative funding models for public transport system networks.

These outcomes will equip participants with the knowledge and tools needed to shape more sustainable, efficient, and user-friendly Public transportation systems, promoting a cleaner and more equitable urban environment.

TARGET GROUPS

This programme is primarily designed for Engineers, Architects, Planners, Urban Designers, Community Development Professionals, Land Managers, GIS technologists, Urban & Environmental Managers working with national, provincial or urban local governments and other relevant institutions from ITEC partner countries.

ELIGIBILITY

Participants should have at least a bachelor's degree or diploma or any other relevant qualification in the mentioned disciplines with at least 3-4 years of relevant experience.

Age group: 25-50 years

Language proficiency: Should be proficient in the English language.

LANGUAGE OF THE COURSE

The course will be conducted in English.

FELOWSHIPS

As per the Government of India's regulations, indicated to the participant by the respective Indian Mission/Embassy under ITEC.

NEW DELHI WEATHER

The winter season starts around the first week of December and lasts till mid-February. It could be very cold in December. The participants are advised to carry clothes suitable for the weather.

COURSE CONTENTS

Module 1: Introduction: Impact of Urbanisation on Urban Mobility: PTS

- Urbanisation Cities and Urban Mobility
- Urban Mobility Challenges and innovations
- Importance and need of public transportation systems (PTS) and its role in sustainable urban Mobility
- Introduction to survey methodologies for assessing demand and modes of PTS

Module 2: Public Transport Systems: Rail-Based

- Overview and Importance of Different Public Transport- Rail Based Systems with special focus on RRTS in Transforming Urban Mobility
- Improving Regional Connectivity: The Role of RRTS in Urban Mobility Networks
- Efficiency of Metro Systems in Improving Urban Mobility
- Last mile connectivity – Unlocking Metro Rail's potential and Use of modern technology in Transforming Metro

- Role of Asset Monetisation and Financial Viability of Mass Rapid Transit Systems (Metro)

Module 3: Public Transport Systems: Road-Based

- Overview & Importance of Different Modes of Road-Based Public Transport Systems
- BRTS in Transforming Urban Mobility - Indore/ Amritsar Experience
- Smart Technologies in road-based systems for ease of access
- Role of Asset Monetisation and Financial Viability of Road Rail systems (BRTs)

Module 4: Transit-Oriented Development (TOD) for Sustainable Cities: Addressing GHG Emissions related to the transport sector

- Transit-Oriented Development (TOD) for Sustainable Development.
- Non-Motorised Transport System- Public Bicycle Sharing Systems: A Key Component of Efficient and Green Urban Mobility
- Impact of Transportation on the Environment
- Comparative analysis of MRTS (Metro) & BRTS (Bus) and Safety aspects in Rail and Road-based PTS

CONCLUSION

Effective public transportation systems, particularly metro networks, are essential for addressing the growing demands of urban mobility. These systems transform cities by reducing congestion, improving air quality, and fostering inclusive economic development. As technology evolves, the future of metro systems holds even more promise, with innovations in automation, sustainability, and connectivity helping to shape smarter, more resilient urban transport networks. For cities to thrive in the face of rapid urbanisation, developing efficient, sustainable, and inclusive metro systems is no longer an option but a necessity.