

School of Planning and Architecture, Vijayawada

Department of Planning

STUDIO BRIEF - MTP III Semester II Year

(JUL 2024 to DEC 2024)

SUBJECT NAME: TRASPOT INFRASTRUCTURE STUDIO (MTP211)

Integrated Public Transport Plan for Visakhapatnam City, Andhra Pradesh, India

Studio Faculty:

Mr. J M Bhagwat (Assistant Professor)

Dr. M.N.V Pavan Kumar (Assistant Professor)

Dept of Planning, SPA Vijayawada.

Introduction to Transport Infrastructure Planning Studio

The Transport Infrastructure Planning Studio aims to enhance students' abilities in conducting feasibility studies and planning transport infrastructure for interurban, regional, and special areas. It focuses on teaching analytical techniques, recent advancements in transport models, and the use of statistical and planning software. A key component is the Detailed Project Report study, where students collect and analyse field and secondary data for a specific case study. They will identify issues and develop and evaluate improvement strategies based on cost-benefit analyses. The studio provides practical experience in planning, designing, and managing transport infrastructure projects.

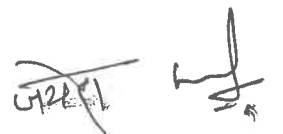
Need for Integrated Public Transport Planning in Indian Cities

Developing integrated public transport planning in Indian cities is critical due to rapid urbanisation and the subsequent growth in demand for efficient and sustainable transportation alternatives. Currently, public transit accounts for only approximately 18% of urban journeys in Indian cities, compared to 50% in cities such as London and Singapore. Indian cities have considerable issues, including traffic congestion, which costs an estimated \$22 billion per year, and pollution levels, with 14 of the world's 20 most polluted cities being in India. Furthermore, the public transit infrastructure is poor, with many cities having less than one bus per 1,000 residents. The goal of integrated public transport planning is to develop a cohesive system that seamlessly integrates multiple means of travel, increasing user accessibility and convenience. It promotes the use of public transit over private automobiles, which maximises resource utilisation, minimises trip time, and reduces environmental effect. Furthermore, integrated planning promotes economic growth by boosting connectedness, lowering commuting costs, and raising productivity. By addressing these important challenges, integrated public transport planning has the potential to greatly improve the quality of life in Indian cities while also paving the path for sustainable urban development.

Case Study: Visakhapatnam, AP

Visakhapatnam is a port city on the southeast coast of India and often called "The Jewel of the East Coast". With a population of 17.28 lakhs as per 2011 Census and occupying an area of

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643 sq.km, it is the largest city in the state of Andhra Pradesh and the third largest city on the east coast of India after Chennai and Kolkata. Visakhapatnam is the 8th largest city by GDP in India with \$48 billion. Fishing industry, road-rail connectivity, many heavy industries like Visakhapatnam Steel, GAIL, Hindustan Shipyard, Visakhapatnam Steel Plant etc., are the factors that transforms the city into an industrial hub, from a small hamlet. Tourism also plays an important role in generating revenue, with numerous tourist destinations in and around the city. The city is also well connected with most parts of the state and the country through roadways, railways, airways and waterways. The city's transport network includes private vehicles, non-motorized options like bicycles and walking, and public transport systems such as buses and auto-rickshaws.



Public transport in Visakhapatnam is primarily comprised of buses operated by the Andhra Pradesh State Road Transport Corporation (APSRTC), auto-rickshaws, and limited suburban rail services. The city is also exploring the development of a metro rail system to enhance urban mobility. However, the existing public transport system in Visakhapatnam faces several issues. The coverage is inadequate, especially in growing suburbs and newly developed areas, limiting access for many residents. Buses often suffer from delays and irregular schedules, reducing their reliability. Overcrowding during peak hours makes travel uncomfortable and sometimes unsafe. There is a lack of seamless integration between different modes of transport, leading to longer and less convenient travel times. Financial constraints result in outdated vehicles and infrastructure and inadequate maintenance. Safety concerns, particularly for women and elderly passengers, deter usage, especially at night. Additionally, many buses and auto-rickshaws still rely on diesel or petrol, contributing to urban air pollution and greenhouse gas

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emissions. To address these issues and enhance the efficiency, accessibility, and sustainability of public transport in Visakhapatnam, an integrated public transport plan is essential. An integrated public transport plan will not only improve the quality of life for Visakhapatnam's residents but also support the city's growth and development by providing a more efficient, reliable, and sustainable transport network.

Scope of the studio work

Bus-based public transportation is a vital component of urban mobility, offering an affordable, flexible, and scalable means of moving people efficiently across cities. This studio work will involve comprehensive planning and management to meet the needs of the population while maintaining cost-effectiveness and reliability. The MTP students will undertake detailed studies in Eight different components/tasks related to Integrated Public Transport Planning, as below.

1. Assessment of Existing Public Transport Systems

Assess the current public transport services and infrastructure, identifying coverage, frequency, accessibility, and inefficiencies.

2. Public Transport Demand Analysis

Collecting and analysing travel demand data to identify major trip generators, peak travel times, and passenger load patterns to forecast future needs.

3. Network Design and Optimization

Designing efficient routes and schedules, integrating different transport modes, and optimizing service frequencies ensure the network meets current and projected demand.

4. Public Transport Infrastructure Planning

Planning and upgrading infrastructure like bus stops, shelters, terminals, Depots and interchanges ensure they are safe, accessible, and capable of supporting planned services.

5. Fare Structure and Revenue Management

Include creating an equitable fare structure, exploring fare collection technologies, and analysing funding mechanisms ensure financial sustainability and affordability.

6. Multimodal Integration and First & Last mile connectivity

Multimodal integration focuses on coordinating connections between buses and other transport modes like Metro, and IWT, while first and last mile connections provide services that link residential areas with transport hubs, enhancing accessibility.

7. Policy and Regulatory Framework

Include understanding and aligning with policies and regulations, engaging stakeholders, and conducting public consultations support the plan's successful implementation.

8. Preparation of DPR

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Outlines the plan, financial analysis, and implementation strategy for the planned public transportation infrastructure, ensuring that all components of the plan are practical and sustainable, and giving a road map for effective execution and long-term operations.

This studio work aims to provide a holistic approach to planning and managing bus-based public transportation systems. By focusing on demand analysis, network design, operational planning, infrastructure development, financing, integration, policy regulation, and preparation DPR. The studio will contribute to the creation of an efficient, reliable, and sustainable urban mobility solutions for Visakhapatnam City.

Learning outcomes of studio

1. The broad learning outcomes of this studio project is to sensitize the students about various tools and techniques used in preparation of Integrated Public transportation plans.
2. Learn how to examine the present situation of public transport using surveys, data analysis, and on-site evaluations.
3. Develop critical thinking abilities in order to examine complicated public transport issues and develop effective and innovative solutions.
4. Understand the policy framework surrounding public transport planning and gain experience in formulating and implementing policies to improve urban mobility.
5. Capability of carrying out feasibility of transportation projects assessing their viability and potential impact.

Week	Description
1 st Week	Introduction to Studio Problem
2 nd Week	Literature Studies: Understanding the process of preparing a Integrated Public transport plan, review of existing literature related to various aspects public transport planning such as benchmarking, network planning and design, operational planning, funding and financing, case studies etc.
3 rd -4 th Week	Baseline studies on the concerned city: Develop aim, objectives and methodology for the preparation of Integrated Public transport plan, base map preparation; Submission of Pre-field Visit Report; Preparation of survey formats; Finalisation of data checklist for secondary data; Finalising of primary survey formats
5 th – 6 th Week	Field study, Data collection
7 th – 8 th Week	Preliminary Data Analysis: Preliminary analysis of the data including socio-economic and travel characteristics of PT and non-PT users, existing public transport service and operational characteristics, funding and financing mechanisms, feeder service characteristics, Service level benchmarking (Conduct of Workshop on 4th week of September or 1st week of October)

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	Mid Semester Examination
9 th – 11 th Week	Data Analysis – Final Analysis – Public transport modelling, Identification of Issues and Potentials Envisioning for future development as per Horizon year modelling
12 th -14 th Week	Proposals & Preparation of DPR – Scenario based development strategies & Preparation of Detailed Project Report (DPR) for selected proposals
15 th – 16 th Week	Final proposals & Report
17 th Week	Internal Jury The final review shall also incorporate the report of the Integrated Public Transport Plan along with the final sheets.

Note:

1. Any other closed holidays as declared by SPAV shall supersede the above lecture plan. Holidays shown above may alter as per Notice from time to time.
2. Assessment Sessions may be re-scheduled, with prior intimation.
3. Reading lists provided is not exhaustive and is subject to addition – students are advised to follow progression of class to keep abreast of the new reading lists, if any.

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