



# URBAN LANDUSE AND TRANSPORTATION PLANNING

**PROF. DEBAPRATIM PANDIT**

Department of Architecture and Regional Planning  
IIT Kharagpur

**TYPE OF COURSE** : New | Core | UG/PG

**COURSE DURATION** : 12 weeks (20 Jul' 20 - 9 Oct' 20)

**EXAM DATE** : 18 Oct 2020

**PRE-REQUISITES** : Basic knowledge in Urban Planning

**INTENDED AUDIENCE** : Bachelor in Architecture, Bachelor in Planning, Bachelor in Technology (Civil Engineering), Bachelor in Social Science, Master in (Civil Engineering, City/Urban Planning, Urban Engineering, Transportation Planning, Spatial Data Science, Social science, Technology)

**INDUSTRIES APPLICABLE TO** : All Architecture, Urban Planning, Infrastructure, IT/ITeS and Consultancy Services firms providing solutions for urban and transportation planning

**COURSE OUTLINE :**

This course provides the basic concepts and skill sets to undertake urban landuse and transportation planning and to analyze the impact of various policies either related to infrastructure development, environmental regulation and urban expansion.

**ABOUT INSTRUCTOR :**

Prof. (Dr.) Debapratim Pandit is currently an Associate Professor at the Department of Architecture and Regional Planning, Indian Institute of Technology Kharagpur.

**COURSE PLAN :**

- Week 1:** Introduction and Overview of Landuse-Transportation Planning: Introduction, Important Terminologies, Overview of Transportation Planning, Implications and present transportation scenario in India
- Week 2:** Data Collection and Survey Techniques: Sampling Theory, Data-Collection Techniques, App-based Data-Collection, Stated Preference and Revealed Preference survey
- Week 3:** Existing Landuse-Transportation Models and Frameworks: Lowry Model, Four-stage Model, MePlan, UrbanSim, ILUTE, Practical applications in India and abroad
- Week 4:** Microsimulation and Population Synthesis: Demographic modeling concepts, Monte-Carlo Simulation, Iterative Proportional Fittings, Application using software
- Week 5:** Residential Location Choice and Real-estate Choice Model: Concepts, Variable Specifications, Discrete choice models, Hazard-based duration models, Application using software
- Week 6:** Accessibility and Land Price: Definitions and Attributes, Typology, Measures of Accessibility, Land Price models
- Week 7:** Trip Generation and Distribution: Definition & Notations, Influencing factors, Regression Analysis, Growth-Factor Model, Gravity Model and Applications
- Week 8:** Mode Choice: Influencing factors, Utility Maximization Principle, Probabilistic Models, Econometric Model, Computational Process Model
- Week 9:** Trip Assignment: Basic concept, Algorithms, Different Deterministic Methods, Stochastic Method, Dynamic traffic Assignment, Shared mobility and Google API
- Week 10:** Transportation Demand Modeling using software (Part 1-5)
- Week 11:** Urban Freight: Inter and Intra urban freight models, Last mile logistics
- Week 12:** Other Models: Emission and pollution modeling framework, Activity-based model, Auxiliary Model, Conclusion