

COURSE CODE: GIE-462
COURSE NAME: INTRODUCTION TO URBAN AND TRANSPORTATION PLANNING

CREDIT HOURS: Theory = 03
 Practical = 00
 Total = 03

CONTACT HOURS: Theory = 48
 Practical = 00
 Total = 48

PREREQUISITES: Nil

MODE OF TEACHING:

Instruction: Three hours of lecture per week 100%
 Practical/ Laboratory Demonstration: N/A

COURSE DESCRIPTION:

This course is designed to give the contemporary concept of urban and transportation planning. Additionally, it concerns itself with understanding and analysis, strategic thinking on critical urban issues and urban design, public participation, neighborhood planning, understanding of urban planning process, Zoning, implementation and management. This course teaches the basics of 4-step traditional transportation process.

COURSE OBJECTIVES:

This course is meant to offer profound understanding of the forces that give meaning and values to the built environment through acts of design, sustainability, construction and analysis. Moreover, it provides theoretical understanding of physical, social and economic aspects of human built environment, human settlements, land use planning, transportation planning and urban design.

RELEVANT PROGRAM LEARNING OUTCOMES (PLOs):

The course is designed so that students achieve following PLOs:

- 1 Engineering Knowledge: 7 Ethics:
- 2 Problem Analysis: 8 Individual and Collaborative Team Work:
- 3 Design/Development of Solutions: 9 Communication:
- 4 Investigation: 10 Project Management:
- 5 Tool Usage: 11 Lifelong Learning:
- 6 The Engineer and Society:

COURSE LEARNING OUTCOMES (CLOs):

Upon successful completion of the course, the student will be able to:

S.No	CLO	Domain	Taxonomy Level	PLO
1	Understanding of transportation system engineering in general as well as the basics need of transportation planning process	Cognitive	1	-

2	Learning about different planning techniques and about the requirements of basic 4-step modeling in transportation planning process and would be able to comprehend problems related to this process.	Cognitive	3	6
3	Demonstrate an understanding of town planning concepts and techniques, societal changes, urbanism and role of professionals in mitigating the negative effects of development on society and physical environment.	Cognitive	2	-
4	Illustrate urban growth and sustainable development through interpreting zoning, models of land use patterns, and transport-environment-sustainability nexus.	Cognitive	3	-

PRACTICAL APPLICATIONS:

Contemporary cities are confronted with numerous issues such as urban sprawl, emergence of katchi abadies / slums in the heart of the cities, poor service delivery etc. Contrary to this, cities are also the key component of national growth and considered as “engine for economic growth”. This course provides insight understanding of the different issues pertaining to the urban areas and enables students to apply the various tools and techniques to solve these issues in a sustainable way. Further, it helps the students to understand the transportation planning process and its application to the real world problems.

TOPICS COVERED WITH THEIR CONTRIBUTION TO PLOs:

Theory:

Lecture	Topics
1	Introduction to Transportation Systems & Transportation Planning Process 1.Introduction to Transportation Systems 2.Transportation Surveys 3.Types of Planning 4.Transportation Studies
2	Collection of Existing Travel Data (Study Area) 5.Zoning and Zone Coding 6.Defining Network
3	Origin Destination Survey Methods 7.Roadside Interview Surveys
	8.Post Card Surveys 9.Registration Number Surveys 10.Tag or Sticker Surveys 11.Home Interview Surveys 12.Parking surveys 13.Other surveys
4	Origin Destination Survey Systems 14. Census Points 15. Evaluation of Survey Accuracy 16.Representation of Data 17.Survey Data Analysis Other Data Required Interconnected Process of Model Building
5	Travel Demand Forecasting - Trip Generation 18.GA and OD 19.Regression Analysis 20.Category Analysis

6	Travel Demand Forecasting - Trip Distribution Growth Factor Methods 21.Constant Factor Method 22.Average Factor Method 23.Frater Method 24.Furness Distribution Mathematical Models 25.Gravity Model 26.Intervening Opportunity Model 27.Competing Opportunity Model
7	Travel Demand Forecasting - Modal Split 28.Approaches of Modal Split 29.Variables in Modal Split Models 30.Diverting Private Car Trips to Public Mode Trips Certain Modal Split Techniques in Models 31.Travel Time Ratio 32.Travel Cost Ratio 33.Regression Analysis 34.Discriminate Analysis Stages of Modal Split 35.Modal Split as a Part of Trip Generation 36.Modal Split between Generation and Distribution. 37.Modal Split a Part of Trip Distribution. 38.Modal Split Between Distribution and Assignment
8	Travel Demand Forecasting - Traffic Assignment 39.Desire Assignment 40.Multiple Route Assignment 41.Multi-Level Traffic Assignment 42.Capacity Restrained Traffic Assignment 43.Choice of Assignment Techniques
9	Introduction to the course- Basic Planning Concepts Definition, Aims and Scope of planning, Description of Societal Changes, New urbanism
10	Socioeconomic aspects of planning Summary of elements of urban structure - Networks, Buildings, Open spaces etc. The form of the modern city in the age of automobile - Inner city & Suburban area.
11	Approaches to Planning Overview about Industrial revolution, transition to the industrial city and paradigm shift to systems views of planning approach from comprehensive planning approaches.
12	Principles of planning and Planning Tools and Surveys An introduction to basic planning principles and tools, i.e participatory approach and related surveys, i.e., land use survey, density survey, demographic surveys etc.
13	Current State, Challenges and Issues General discussion on the current condition of cities and regions and the challenges and issues they are facing today in the form of Slums, katchi abadies issues of inner city.
14	Urban renewal, Urban regeneration Squatter settlement & slums up gradation, and re-planning the existing towns and cities.
15	Overview of Urban and Regional Planning Theories and Issues Introduction to essential planning theories such as Location Theory, Concentric Zone Theory, Multiple-Nuclei Theory, Sector Theory, Central Place Theory, Growth Pole Theory, etc.
16	Street patterns – different concepts Layouts and location of various sectors in a city i.e., residential, commercial, gird iron pattern etc.
17	Sustainable Development – concepts and dimensions Introduction to sustainable urban development, its social economic and environmental aspects and means to achieve sustainable urban development
18	The Preparation of the Plan (Master/structure Plan) Description of various stages involve in physical planning process and the relation between surveys and plan.

19	GIS application in Urban Planning Describe how urban planners typically use GIS as a tool for analysis and the display of quantitative data to solve urban planning problems.
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TEXT AND MATERIAL:

Textbook (s)

1. Brodbent. G.J.C. Anthony, Emerging Concept in Urban Space Design, Van Nostrand Reinhold Co. Ltd.
2. Snyder. J.C. Introduction to Urban Planning, Milwaukee McGraw Hill Book Co.
3. Principles and Practice of Town and Country Planning by Lewis Keeble
4. Transportation Engineering and Planning – C S Papa Costas & P D Prevedours (3rd Edition)
5. Transportation Engineering, Planning and Design - Paul Wright & Norman J Ashford

ASSESSMENT SYSTEM:

1. CLOs Assessment

Cognitive	Psychomotor	Affective
Spreadsheet	N/A	N/A

2. Relative Grading

Theoretical / Instruction		
	<i>Assignments</i>	10%
	<i>Quizzes</i>	10%
	<i>Mid Semester Exam</i>	30%
	<i>End Semester Exam</i>	50%
Total		