

Transportation Economics

Code CE 870	Credit Hours 3-0
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Course Description

The transportation economics recognizes the high stakes involved in transportation decision making at policy and planning aspect. At policy level, the decision making is the evaluation of transportation projects and programs in the context of available funding. For this reason, the principles and procedures of project evaluation and programming are of interest to transportation engineers and planners, policymakers and legislators, transportation agency administrators, facility managers and service providers, environmental groups, and the general public. Governments, around the world, invested several billions and trillions of dollars in transportation facilities to enhance transportation system mobility, security, and safety. The aim is to generate economic development without compromising adverse effects and keeping in view of integration concept in transportation systems.

Text Book:

1. Transportation Economics, Theory and Practice; A case study Approach, Patrick S. McCarthy, Blackwell Publishers Inc. 2001.
2. Transportation Economics, D. Levinson, D. Gillen, M. Iacono. Wikibooks, 2011
3. Class notes, presentations, and any additional material provided.

Reference Book:

1. Transportation Decision Making – Principles of Project Evaluation and Programming by Sinha and Labi, John Wiley and Sons, 2007
2. Essays in Transportation Economics and Policy: A Handbook in Honor of John R. Meyer, Gomez-Ibanez, J., William B. T., and Winston C., 1999.
3. Fundamentals of Transportation Systems Analysis, Volume 1: Basic

Prerequisites

Nil

ASSESSMENT SYSTEM FOR THEORY

Quizzes	10-15%
Assignments	5-10%
Mid Terms	25%
ESE	40-50%
Term Project	10%

Teaching Plan

Week No	Topics	Learning Outcomes
1	Introduction to Transportation Economics	Overview of transportation economics Importance and scope in the context of transportation systems Fundamental economic principles applied to transportation

2	National, Regional, and Local Transport Policy	<p>Overview of transport policies at different levels</p> <p>Role and influence of government in shaping transport policies</p> <p>Frameworks and case studies of national, regional, and local transport policies</p>
3-4	Spatial Planning, and Local Transportation Plans	<p>Introduction to spatial planning concepts</p> <p>Integration of transportation planning with spatial planning</p> <p>Impact of spatial planning on transportation systems</p> <p>Process of developing local transportation plans</p> <p>Delivery mechanisms and stakeholders involved</p> <p>Financial aspects and budgeting for transportation plans</p>
5-6	Demand Estimation and Models	<p>Methods for estimating transportation demand</p> <p>Overview of demand estimation models</p> <p>Applications of demand estimation in transportation planning</p>
7	Transportation Costs	<p>Types of transportation costs: fixed, variable, marginal, and average costs</p> <p>Methods for calculating and analyzing costs</p> <p>Impact of costs on transportation decisions</p>
8	Evaluation of Impacts: Travel Time	<p>Understanding travel time impacts</p> <p>Methods for measuring and evaluating travel time</p> <p>Strategies for reducing travel time</p>
9	MID SEMESTER EXAM	
10	Evaluation of Impacts: Safety	<p>Importance of safety in transportation</p> <p>Methods for evaluating safety impacts</p> <p>Case studies on improving transportation safety</p>
11	Evaluation of Impacts: Vehicle Operating Costs	<p>Factors affecting vehicle operating costs</p> <p>Methods for calculating and reducing operating costs</p> <p>Impact on transportation decisions and policies</p>
12-13	Economic Efficiency in Transportation	<p>Concepts of economic efficiency, interest</p> <p>Concept of cash flow diagram</p> <p>Measuring and evaluating economic efficiency</p> <p>Applications in transportation projects</p>

14	<p>Economics Based on Revenue, Revenue Sources, Direct User Charges, Subsidy</p> <p>Financing Programs, Taxes, and Toll Aspects</p>	<p>Understanding transportation revenue sources</p> <p>Direct user charges and subsidies</p> <p>Financial sustainability of transportation systems</p> <p>Financing transportation programs</p> <p>Role of taxes and tolls in funding transportation</p>
15	<p>Externalities in Transportation</p>	<p>Understanding externalities: congestion, energy, environmental impacts</p> <p>Methods for evaluating and addressing externalities</p> <p>Causes and impacts of congestion</p> <p>Methods for measuring and managing congestion</p> <p>Policy implications and strategies</p>
16	<p>Land Use Impacts of Transportation</p> <p>Transport Policy Impacts and the Role of Government</p>	<p>Relationship between transportation and land use</p> <p>Methods for evaluating land use impacts</p> <p>Impact of transport policies on society and economy</p> <p>Role of government in transportation planning and policy-making</p> <p>Consultation and stakeholder engagement processes</p>
17	<p>Term Project and Presentations</p>	<p>Development of a comprehensive project on transportation economics</p> <p>Application of course concepts to real-world scenarios</p> <p>Group presentations and peer review</p>
18	<p>END SEMESTER EXAM</p>	