Master of Technology

Transportation Engineering

Economic Evaluation of Transportation Projects

01TR0110

(PEC)

Objective of the Course:

- To introduce concept of economic evaluation of transportation projects.
- To understand various methods for economic evaluation of transportation projects.
- To impart the knowledge of various financing and funding tools for transportation projects.

Credit Earned: 3

Students learning outcomes:

After successful completion of the course it is expected that student will be able to,

1. identify and evaluate the demand and utility for transport project
2. analyze future cash flows considering all the consequences and how it can be brought under a common time datum without extending period
3. To evaluate the project economics strength using different methods for economic evaluation.
4. To examine the viability of transportation project through economic and financial analysis of transportation.

Teaching and Examination Scheme

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE (E)	IA (M)	CSE (I)	Viva (V)	Term Work (TW)	
03	0	0	03	50	30	20	25	25	150

Detailed Syllabus

Sr No.	Title of the unit	Number of hours
1	**Introduction and Overview**	**04**
	Economic development and urban development, transport as economic activity, demand and supply issues in transport sector, cost and pricing of transport, demand supply equilibrium, elements of engineering economics	
2	**Transportation demand and congestion**	**10**
	Demand forecasting methods, factors influencing demand, direct and cross price elasticity of demand, main causes of traffic congestion, congestion pricing, road space rationing, capacity expansion	
3	**Transport cost and pricing**	**10**

	Direct and external cost of transport, concept of generalized cost, joint and common costs of infrastructure, average and marginal cost principle, road user cost and its components, pricing principles, marginal cost pricing rule, efficient pricing, price discrimination	
4	**Appraisal and Evaluation of Transportation projects**	**10**
	Feasibility and evaluation, impacts and performance levels, evaluation of alternatives, analysis techniques, cost benefit analysis, Internal Rate of return method for economic and financial viability, measures of land value and consumer benefits from transportation projects, prioritization of projects, multi criteria decision assessment	
5	**Funding and Financing of Transportation Projects**	**08**
	Methods for raising fund for maintenance, improvement and expansion of transportation network, taxation and user fee, financing through loans, PPPs and concession	
		42

Suggested Theory Distribution

The suggested theory distribution as per Bloom's taxonomy is as per follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember	Understand	Apply	Analyze	Evaluate	Create
5%	5%	20%	25%	25%	20%

Instructional Method and Pedagogy:

1. Use of Learning Management system like canvas
2. Demonstration through presentations on power point and videos and lectures
3. Brainstorming and group discussion sessions
4. Collaborative learning

Recommended Study Material:

Reference Book:

1. A Policy on Geometric Design of Highways and Streets. AASHTO.
2. Indo HCM, CRRI,
3. Highway Engineering by Rogers, M., Blackwell Publishing.
4. Highway Engineering by Wright, P.H., John Wiley & Sons.
5. Transport Planning and Traffic Engineering by O'Flaherty, C. A., Taylor & Francis Group.
6. IRC 73- 1980: Geometric Design Standards for Rural (Non-urban) Highways. Indian Roads Congress, India.
7. IRC 86-1983: Geometric Design Standards for Urban Roads in Plain. Indian Roads Congress, India.
8. D. M. Mithani, Economic Analysis – (Himalaya)
9. IRC– SP -30, Manual on Economic Evaluation of Highways in India