Birla Institute of Technology & Science, Pilani
Hyderabad Campus

ACADEMIC – GRADUATE STUDIES AND RESEARCH DIVISION
BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI-HYDERABAD CAMPUS
FIRST SEMESTER 2021-2022
Course Handout Part II

Date: 12/08/2021

In addition to part-I (General Handout for all courses appended to the timetable), this portion gives further specific details regarding the course.

Course No. **: CE G569**
Course Title **: Transportation Economics**
Instructor-in-charge **: Bandhan Bandhu Majumdar**
(majumdar@hyderabad.bits-pilani.ac.in**)**

Description : Introduction to engineering economics. Transportation Demand and Supply. Transportation Cost concept. Conceptual aspects of Elasticity, Demand forecasting methods, factors influencing transport demand, direct and cross-price elasticities of demand, factors that cause shifts in demand function. Investment and financing of transport: Revenue sources; expenditure sources; traditional project delivery methods and innovation in financing. Congestion pricing. Transport project evaluation: economic appraisal; discount rate and time value of money; net present value; cost-benefit analysis and life cycle cost analysis as per IRC:SP:30. Road User Cost Study (RUCS). Feasibility and evaluation, cost, evaluation of alternatives, analysis techniques, measures of land value and consumer benefits from transportation projects, prioritization of projects.

1. Scope & Objective of the course:

The course will provide exposure to the students on the basics of economics and finance necessary for evaluating transportation infrastructure projects and developing cost models for transportation projects and services. It will also provide pricing, financing, regulatory and subsidy policies for urban transit systems. Different models prevalent for public private partnership will also be included. Efforts will be made to discuss the topics with examples and case studies. The students also are expected to come up with case studies available in the literature for discussion in the class.

Course Outcomes

CO1. Understand and apply the concepts of Transportation Demand and Supply in planning context

CO2. Learn and apply different methods of economic evaluation of transport infrastructure projects

CO3. Understand the concepts of subsidy, Public transport Financing and Public-Private Partnership options in transport infrastructure projects.
CO4: Learn how to evaluate a transportation infrastructure improvement

2. Text Book:

T1. Frankena Mark W; 1979; *Urban Transportation Economics*; Butterworths, Canada.

Reference Books:

R1 Khisty Jotin C. and Lall Kent. B. *Transportation Engineering: An Introduction*, PHI learning private limited. 2019

R2. IRC; SP-30 2010; *Manual on Economic Evaluation of Highway Projects in India*, Indian Roads Congress, New Delhi.

3. Course Plan:

Lecture No.	Learning Objectives	Topics to be covered	Reference
1-4	Understand the relevance of economics and finance in infrastructure projects.	Definition of transport economics; Importance of transport economics and finance in infrastructure projects; Economic and Financial analysis	Chapter 1, T1
5-18	Gain basic understanding of Transportation Demand and Supply	Transportation Demand; Transportation Supply; Sensitivity of Travel Demand; Price and Income Elasticities; Direct and Cross Elasticities; Consumer Surplus; Cost concepts	Chapter 2, R1
19-25	Understand how the cost is calculated when the project is implemented over a period of time and the impact of inflation and discount rates on it.	Concepts of Future costs and present values, discount rate; Present worth factors, uniform series of compound growth; Problems and use of charts on present worth factors; Treatment of inflation, difference between discount rate and inflation	Chapter 3, T1, R2
26-30	Understand and apply the process of decision making for selecting the best possible alternative using economic analysis.	Basic concepts of economic analysis: National view point; Determination of benefits, types of traffic receiving benefits, benefits from improvements; Factors affecting road user costs, Vehicle operating cost, travel time saving, congestion effect; Techniques of Economic evaluation; Methods of economic evaluation; Stages involved in economic evaluation	R2
31-33	Understand how to determine costs for congestion, parking and others	Marginal social cost pricing for congestion; Pollution, road maintenance charges; Policies on parking transit fares, petrol price,	Chapter 4, T1
34-36	Understand how subsidy to transit organizations is calculated.	Public transport subsidy; Techniques of Subsidy implementation; Indian case studies on subsidies; Public Private Partnerships	Chapter 5, T1
37-39	Learn the options to regulate traffic without imposing tolls or other charges.	Rationing road use without tolls; Regulation of urban trucking and to conserve energy	Chapter 5, T1

40-42	Learn how to evaluate the impact of transportation infrastructure improvement projects	Evaluation process; Feasibility Issues; Economic and Financial Concepts; Analysis techniques; Reporting results	Chapter 15, R1

4. Evaluation Scheme

S. No.	Evaluation Component	Duration (min)	Weightage (%)	Date & Time	Remarks
1	Mid-semester	90	30	Will be announced	OB
2	Quiz	30	10	Will be announced	OB
3	Research Seminar	-	5	Continuous evaluation	OB
4	Term Paper	-	5	Continuous evaluation	OB
5	Assignments (L+P)	-	10	Continuous evaluation	OB
6	Compre. Exam	120	40	21/12 FN	OB

5. **Chamber Consultation Hour:** Email for any doubt/clarifications for fixing a google meet.

6. **Notices:** Notices concerning this course will be displayed on CMS and Department Notice Board. If Google Classroom is followed, it shall be informed in advance accordingly.

7. **Make-up Policy:** Prior permission for all make ups are a must. For medical emergencies, requests have to be forwarded by the Chief Warden to the satisfaction of IC.

8. **Academic Honesty and Integrity Policy:** Academic honesty and integrity are to be maintained by all the students throughout the semester and no type of academic dishonesty is acceptable.

Instructor-In-Charge
CE G569