PIUI 7005	Urban Transport Economics Planning & Mgt.	L	T	P	C
Version 2.0		3	0	0	3
Pre-requisites/Exposure	Micro-economics, Urban Policy				
Co-requisites	Basics of Accounting, Construction Mgt.				

Course Objectives

1. Providing a solid introduction to transportation demand and cost analysis.
2. Finding specific transportation mode, but will use the various modes to apply the theoretical and analytical concepts presented in the lectures and readings.
3. Key principles governing transportation planning, investment, operations and maintenance. It introduces the macroeconomic concepts central to transportation systems.
4. Topics covered include economic theories of the firm, the consumer, and the market, demand models, discrete choice analysis, cost models and production functions.
5. Application to transportation systems includes congestion pricing, technological change, resource allocation, market structure and regulation, revenue forecasting, public and private transportation finance.

Course Outcomes

On completion of this course, the students will be able to

CO1: Understanding the issues & challenges in the Transportation Sector
CO2: To develop skills required for Transport planning & formulation.
CO3: Understand optimization techniques for Transport Planning & Pricing.
CO4: Analysing the processes for Transport project execution and control.
CO5: Demonstrating contracting process as applied in Transport projects.

Catalog Description

The main objective of this course is to give broad insight into the different facets of transportation systems, while providing a solid introduction to transportation demand and cost analyses. As part of the core in the MBA UISC program, the course will not focus on a specific transportation mode but will use the various modes to apply the theoretical and analytical concepts presented in the lectures and readings. Introduces transportation systems analysis, stressing demand and economic aspects. Covers the key principles governing transportation planning, investment, operations and maintenance. Introduces the microeconomic concepts central to transportation systems. Topics covered include economic theories of the firm, the consumer, and the market, demand models, discrete choice analysis, cost models and production functions, and pricing theory. Application to transportation systems include congestion pricing, technological change, resource allocation, market structure and regulation, revenue forecasting, public and private transportation finance, and project evaluation; covering urban passenger transportation, freight, aviation and intelligent transportation systems.

Course Content

Unit I: 4.5 lecture hours

Introduction to Transport Economics, Economic Theory, Demand & Supply issues, Related policies and Management issues, Transport Elasticity

Unit II: 9 lecture hours

Trip Generation, Trip Distribution, Modal Split Analysis, Route Assignment, Transportation System Analysis

Unit III: 4.5 lecture hours

Policy initiatives by central and state Governments, JnNURM Phase 1 & 2, AMRUT, UMTA, NUTP 2006, National Transport Development Policy Committee

Unit IV: 9 Lecture hours

Direct and External costs of Transport, Congestion Cost & Pricing, External cost, Social Aspects of Transport, Peak Load Pricing, Marginal cost pricing rule, Subsidy, Price discrimination

Unit V: 9 Lecture Hours

Methods of Benchmarking performance, Feasibility and Evaluation, GIS Applications, Cost-Benefit Analysis, Contracts in Transportation, DPR preparation

Text Books and Reports

1.
2. Report on Indian Urban Infrastructure and Services.
3. The Economics of Urban Transportation by Kenneth A. Small & Erik T. Verhoef.
4. HANDBOOK ON SERVICE LEVEL BENCHMARKING
5. PPP Toolkits
6. Lectures from MIT and IITs

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

Components	Presentation/Assignment/Projects etc	ESE
Weightage (%)	50	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Programme Outcomes**
CO1	Understanding the issues & challenges in the Transportation Sector	PO 1,2, ,4,7,8,9,10, 11,12,13, 14
CO2	To develop skills required for Transport planning & formulation	PO 1,2, 3, 7,8,9,10, 11,14
CO3	Understand optimization techniques for Transport Planning & Pricing.	PO 1,2, 3, 8,9,10, 11, 12,13,14
CO4	Learn the processes for Transport project execution and control.	PO 4,5,6, 8,7, 12,13, 14

CO5	To learn the contracting process as applied in Transport projects.	PO 1,2, 3, 4,8,10, 11, 13,14

CourseOutcomes	CO 1	CO 2	CO 3	CO 4	CO5
PO 1	3	3	3	2	3
PO 2	3	3	3	2	3
PO 3	2	3	3	2	3
PO 4	3	2	2	3	3
PO 5	2	2	2	3	2
PO 6	2	2	2	3	2
PO 7	3	3	2	3	2
PO 8	3	3	3	3	3
PSO 9	3	3	3	2	2
PSO 10	3	3	3	2	3
PSO 11	3	3	3	2	3
PSO 12	3	2	3	3	2
PSO 13	3	2	3	3	2
PSO 14	2	3	3	3	2

		Students will demonstrate strong conceptual knowledge and execution in soft and hard infrastructure planning, development, management, financing, regulation and governance.	Students will demonstrate effective understanding of infrastructure planning and development, utility & energy management, urban transportation including metro rail, e-vehicle with charging and other modes of urban surface transportation, water supply and sewerage, smart city planning and effective financing urban infrastructure.	Students will demonstrate analytical skills to understand issues with remedial solutions relating to urban infrastructure. of soft and hard infrastructure	Students will exhibit the ability to integrate planning, construction & development, operation & management, financing, regulation and governance of urban infrastructure projects and facilities.	Students will exhibit the ability to integrate technical, economic, social and regulatory frameworks for urban infrastructure sector planning and resource management.	Students will exhibit deployable skills pertinent to urban hard and soft infrastructure sector and smart city development and management.	Students will be able to develop and evaluate alternate managerial choices and identify optimal solutions.	Students will demonstrate effective application capabilities of their conceptual understanding to infrastructure planning, development and management.	Students will be able to exhibit effective decision-making skills, employing analytical and critical thinking ability for planning, development and management of soft and hard infrastructure.	Students will demonstrate effective oral and written communication skills in the professional context.	Students will be able to work effectively in teams and demonstrate team-working capabilities.	Students will exhibit leadership and networking skills.	Students will demonstrate sensitivity towards ethical and moral issues and have ability to address them in the context of urban planning, development and management including cost effective financing and good governance.	Students will demonstrate employability traits in line with the needs of changing hard and soft urban infrastructure sector.
Course Code	Course Title	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO9	PSO10	PSO11	PSO12	PSO13	PSO14

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1=weakly mapped
2= moderately mapped
3=strongly mapped

Model Question Paper

Name: **Enrolment No:**	

Course: (PIUI 7005) Urban Transport Economics, Planning & Mgt
Programme: MBA UISC **Semester: EVEN**
Time: 03 hrs. **Max. Marks:100**

Instructions:
Section A (each carrying 2 marks); Attempt all questions from **Section B** (each carrying 5 marks)**.** Any **Two Questions** from **Section C** (carrying 15 marks)**.** Case Study **Section D (** 30 Marks)

Section A ( )
Define the following

1	SUTP	**[2]**	**CO1**
2	PA	**[2]**	**CO1**
3	UMTA	**[2]**	**CO1**

4	NHDP	[2]	CO2
5	GIS	[2]	CO1
6	MRTS	[2]	CO1
7	MoUD	[2]	CO2
8	DMRC	[2]	CO2
9	AERA	[2]	CO1
10	BRTS	[2]	CO1
	SECTION B (Attempt all Questions**)**		
11	Write a Short note on 3 types of Interrelationship of TSA	[5]	CO4
12	What are the social costs that we take into account for calculating Cost Benefit Analysis?	[5]	CO2
13.	Explain Gross Contract for urban bus system.	[5]	CO5
	What is the difference between EIRR and FIRR ?	[5]	CO1
	SECTION C (Attempt any Two Questions)		
14.	1. Formulate the OD matrix from the following PA matrix data. Take Lamda value as .4. Zone 1 Zone 2 Zone 3 Zone 1 30 40 30 Zone 2 60 20 20 Zone 3 40 30 30	[10]	CO4

15.	Write down the guidelines for planning a Bus Rapid Transit.	[10]	CO4
16	Draw a flowchart for transport planning process and explain trip generation and Modal split.	[10]	CO3
	SECTION D (Case Study)		
	The Mayor of New York City wants to replace the elevated Gowanus Expressway in Brooklyn with a tunnel so as to enable the development of prime Brooklyn waterfront property. He is interested in using the private sector to finance, construct, and operate this project, which will require tolling of the new facility. For the sake of this problem, let us assume: • The average toll will be $4.50, and does not increase over time • There is no inflation • All parties use a discount rate of 10% • Traffic on the Expressway is the same for every day of the year • All years have 365 days • The annual traffic on the first year of operation of the new facility is uncertain, but every year thereafter will be the same as the first Let us also assume that there are two bidders for this project who have, through their own analysis, worked out the following financial packages:	[30]	CO5

	Cost to Build (Present Value)	Operation and Maintenance Costs + Expected Profits (Present Value)
Firm A	$650 Million	$160 Million
Firm B	$700 Million	$70 Million

You are advising the mayor on this project, and have commissioned a traffic forecast for use by the various private players, which has the following results:

Scenario	**Daily Traffic**
Worst Case	43,000 vehicles/day
Expected	47,000 vehicles/day
Best Case	51,000 vehicles/day

Under the traditional contract structure, the winning bidder would build the new facility and then maintain and operate it while collecting all toll revenues for 99 years. At the end of 99 years of operations, ownership transfers over to the City. For this kind of contract, the bidders only reveal to the City their Cost to Build the facility.

	Please answer the following questions: **a)** For **both firms**, calculate the **minimum daily volume of traffic** required to meet their financial goals for the project. **(12)** **b)** As part of the bidding process, all bidders had to define the bonds they would sell to finance the construction of the facility. Given the forecasts that were published, if you were a banker on this deal, **which bidder's bonds** would you insist **have a higher interest rate**? Why? **(10)** **c)** Is this type of arrangement better characterized as ***privatization*** **or** ***PPP***? Why? **(8)**		