

## Unit 13 - Week 11

Course outline

How does an NPTEL online course work?

Week 0 Assignment 0

Week 1

Week 2

Week 3

Week 4

Week 5

Week 6

Week 7

Week 8

Week 9

Week 10

Week 11

- Lecture 51: Urban Transport & Sustainability: Multimodal transportation (MMT) empowerment
- Lecture 52: Urban Transport & Sustainability: Multimodal Level of Service (MMLOS)
- Lecture 53: Urban Transport & Sustainability: Multimodal Level of Service (MMLOS) (contd.)
- Lecture 54: Urban Transport & Sustainability: Design of multimodal transfer facilities
- Lecture 55: Urban Transport & Sustainability: Park & Ride (P&R) Facility Planning

Week 11 Lecture material

Quiz : Week 11 Assignment 11

Week 11 Feedback Form

Week 12

Download Videos

Detail Solution

Live Interactive session

Text Transcripts

## Week 11 Assignment 11

The due date for submitting this assignment has passed. **Due on 2020-12-02, 23:59 IST**  
 As per our records you have not submitted this assignment.

1) Which of these is NOT a limitation of conventional transportation planning? 1 point

- a) tends to focus on a limited set of impacts
- b) other impacts such as, equity, indirect environmental impacts, etc. tend to be overlooked
- c) does not favor roadway capacity expansion
- d) supports automobile dependency

- a)  
 b)  
 c)  
 d)

No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 c)

2) 1 point



Fill up the missing modes indicated in the green transport hierarchy with numbers 1 to 4?

- a) 1=Bicycles, 2=Walking, 3=Public Transportation and 4= Private vehicles
- b) 1=Bicycles, 2=Walking, 3=Private vehicles and 4= Public Transportation
- c) 1=Walking, 2=Bicycles, 3=Cars and 4= Private vehicles
- d) 1=Walking, 2=Bicycles, 3=Public Transportation and 4= Private vehicles

- a)  
 b)  
 c)  
 d)

No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 d)

3) Determine the travel time ratio (TTR), Level of Service (LOS), and interconnectivity ratio (IR) for a metro system between two origin-destination pair whose riders had the following average value of travel times. The commuter undergo multiple access and egress travel in order to use the metro system (Calculate to two decimal places). 1 point

Travel time attribute	Value (in minutes)
Access time	7
Egress time	15
Transfer time	2.5
Wait time at transfer point	15
IVTT	25
Time taken when journey is done by car	35

- a) TTR=1.46; Level of Service=1.2; IR=0.55
- b) TTR=1.34; Level of Service=0.88; IR=0.47
- c) TTR=1.44; Level of Service=0.98; IR=0.33
- d) TTR=1.34; Level of Service=0.88; IR=0.55

- a)  
 b)  
 c)  
 d)

No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 b)

4) The Multi-Modal LOS (MMLOS) as proposed by HCM 2010 assess four of the following modes: 1 point

- a) Autorickshaw, Transit, Pedestrians & Bicyclists
- b) Automobiles, Transit, Motor-cycles & Bicyclists
- c) Automobiles, Transit, Pedestrians & Bicyclists
- d) None of the above

- a)  
 b)  
 c)  
 d)

No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 c)

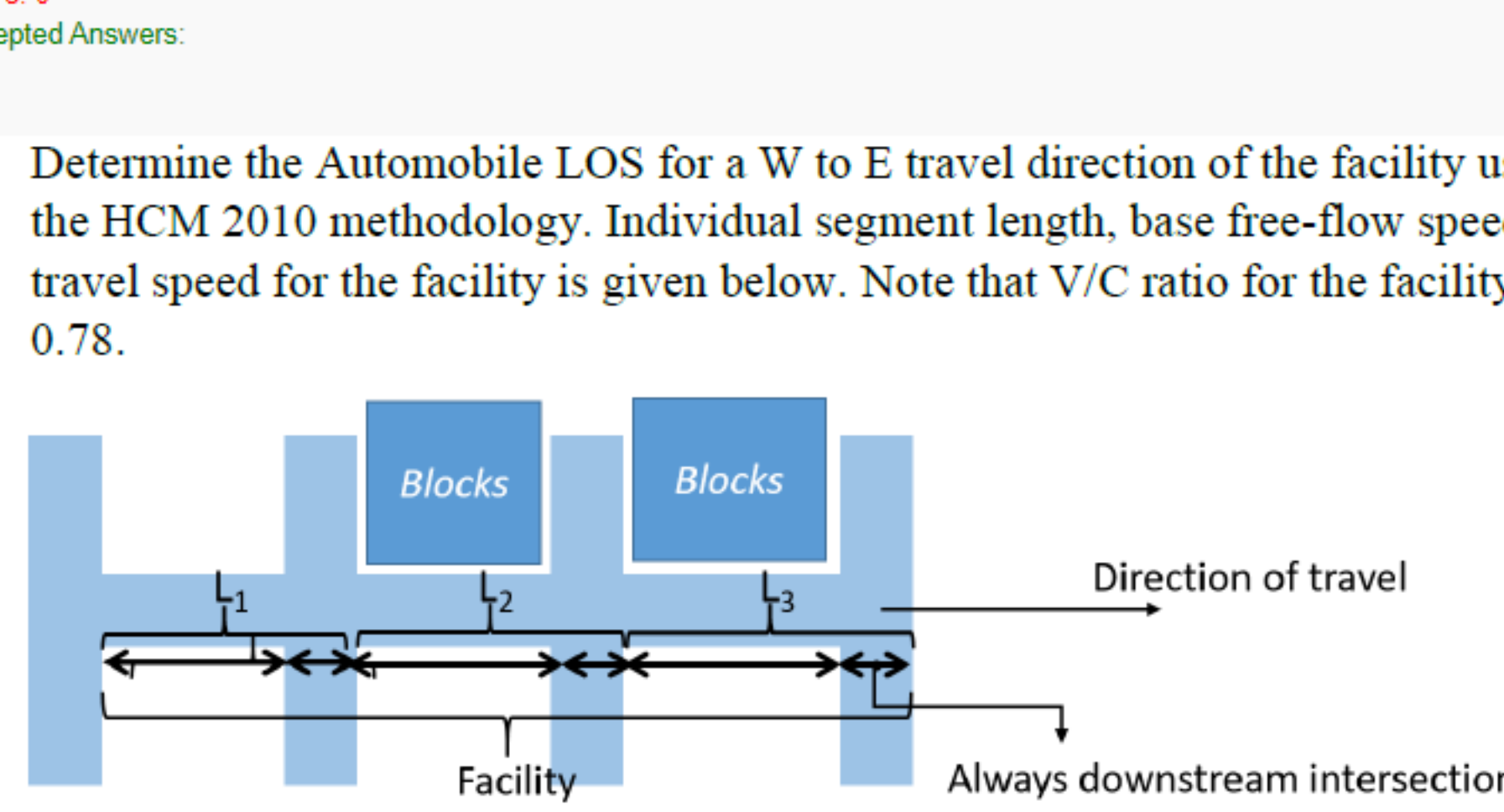
5) Interaction between modes arises due to spatial (1) \_\_\_\_\_ allocations and compete for the limited (2) \_\_\_\_\_, temporally. 1 point

- a) (1) Signal Time; (2) Right of Way (ROW)
- b) (1) Right of Way (ROW); (2) Signal Time
- c) (1) Right of Way (ROW); (2) Waiting Time
- d) (1) Volume of vehicles; (2) Signal Time

- a)  
 b)  
 c)  
 d)

No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 b)

6) Determine the Automobile LOS for a W to E travel direction of the facility using the HCM 2010 methodology. Individual segment length, base free-flow speed and travel speed for the facility is given below. Note that V/C ratio for the facility is 0.78. 1 point



Use the HCM 2010 table for reference:

Travel Speed as a Percentage of Base Free-Flow Speed (%)	LOS by Critical Volume-to-Capacity Ratio*	
	≤ 1.0	> 1.0
>85	A	F
>67-85	B	F
>50-67	C	F
>40-50	D	F
>30-40	E	F
≤30	F	F

- a) LOS A
- b) LOS C
- c) LOS E
- d) LOS F

- a)  
 b)  
 c)  
 d)

No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 d)

7) Determine the Pedestrian, Bicycle and Transit LOS for a W to E travel direction of the facility using the HCM 2010 methodology. Individual segment length, and relevant information area given below. 1 point

Segment	1	2	3
Length (L <sub>i</sub> )	1.75	0.88	1.05
Average space per ped (A <sub>sp</sub> )	23 ft <sup>2</sup> /ped	36 ft <sup>2</sup> /ped	48 ft <sup>2</sup> /ped
Segment score for Ped (I <sub>sp</sub> )	3.56	4.21	3.85
Segment score for Bicyclists (I <sub>bc</sub> )	3.69	3.54	3.78
Segment score for Transit (I <sub>trg</sub> )	4.52	4.69	3.22

Use the following HCM 2010 tables for the respective calculations.

Pedestrian LOS Score	LOS by Average Pedestrian Space (ft <sup>2</sup> /ped)					
	≤60	>60-80	>80-100	>100-125	>125-150	>150
A	A	B	C	D	E	F
B	B	B	C	D	E	F
C	C	C	D	E	F	F
D	D	D	D	E	F	F
E	E	E	E	F	F	F
F	F	F	F	F	F	F

Note: \*For very low volumes, the LOS E/F threshold is 11 ft<sup>2</sup>/ped.

LOS	LOS Score
A	≥1.00
B	>2.00-2.75
C	>2.75-3.50
D	>3.50-4.25
E	>4.25-5.00
F	≤5.00

- a) Pedestrian and Bicycle LOS= LOS C; and Transit LOS= LOS D
- b) Pedestrian, Bicycle and Transit LOS= LOS C
- c) Pedestrian, Bicycle and Transit LOS= LOS D
- d) Pedestrian, Bicycle and Transit LOS= LOS B

- a)  
 b)  
 c)  
 d)

No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 c)

8) Which four group of components influences MMLOS? 1 point

- a) facility design, facility control, transit service, volume of all modes
- b) facility design, facility control, transit service, travel time of modes
- c) facility design, facility control, cost of modes, volume of all modes
- d) None of the above

- a)  
 b)  
 c)  
 d)

No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 a)

9) The MMLOS formulation favors which modes over the others? 1 point

- a) Pedestrians and Bicyclists
- b) Transits and Automobiles
- c) Automobiles only
- d) None of the above

- a)  
 b)  
 c)  
 d)

No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 a)

10) Which one among these domains designing of transfer terminals does NOT draws from? 1 point

- (a) Transit Oriented Development
- (b) Station Area Development
- (c) Multimodal Transport Planning
- (d) Conventional Transportation Planning

- a)  
 b)  
 c)  
 d)

No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 (d)

11) A transit way infrastructure is characterized by: 1 point

- (a) two or more transit routes which make scheduled connections
- (b) have greater investment in the physical infrastructure and amenities
- (c) both (a) and (b)
- (d) None of the above

- a)  
 b)  
 c)  
 d)

No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 (c)

12) Design of multimodal transfer facilities follows the following six design principles: 1 point

- (A) \_\_\_\_\_, (B) Station circulation system hierarchy, (C) Pedestrian facilities and Bicycle parking, (D) Pedestrian and bicycle access, (E) \_\_\_\_\_, (F) Passenger waiting area with weather-proofing
- (a) (A) Timetable Scheduling; (E) Optimizing manpower
- (b) (A) Station design; (E) promoting NMT users
- (c) (A) Station location; (E) Surrounding station area development
- (d) (A) Station design; (E) Surrounding station area development

- a)  
 b)  
 c)  
 d)

No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 (d)

13) What are the different types of Park & Ride (P&R) Service? 1 point

- (a) Local, Remote & Peripheral
- (b) Local, Remote & General
- (c) Local, General & Peripheral
- (d) Local, Remote & Quota

- a)  
 b)  
 c)  
 d)

No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 (a)

14) Which of these is NOT a benefit derived from providing P&R facilities 1 point

- (a) encourage transit travel
- (b) reduce urban traffic congestion
- (c) reduce travel cost
- (d) decrease parking demand on-site

- a)  
 b)  
 c)  
 d)

No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 (c)

15) A group of experts and stakeholders are provided with a list of possible P&R facility locations (A,B and C). The transport planner decided the following six criteria for assessment- transit type (TT), passenger volume (PV) and fare structure (FS). Use AHP to help the transport planner select the best P&R facility for implementation. Also determine the most important criteria as judged by the group of experts and stakeholders for selecting the P&R facility location. 1 point

	TT	PV	FS
TT	1	4	0.2
PV	0.25	1	7
FS	5	0.14	1

	TT	PV	FS
A	1	0.33	0.50
B	3	1	3
C	2	0.33	1

	A	B	C
A	1	6	4
B	0.17	1	0.33
C	0.25	3	1

Following are the decision matrices from the group.

- (a) Preferred location: A; Most important criteria: PV
- (b) Preferred location: A; Most important criteria: FS
- (c) Preferred location: B; Most important criteria: TT
- (d) Preferred location: B; Most important criteria: PV

- a)  
 b)  
 c)  
 d)

No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 (a)