University of Salahaddin
College of Engineering/ Department of Architecture
Higher Diploma Studies

Course Book

Urban Mobility System

Lecturer: Hadeel Alsabbagh

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PART 1 (Theoretical)

1- Definitions and Concepts.

2- Components of urban mobility.

3- A multimodal perspective on transportation planning.

4- Patterns of Mobility System (according to modes).

5- A Taxonomy of Urban Mobilities (according to movement).

6- Transportation from a systems perspective.

7- Transportation System Impacts.

8- Urban Mobility system and the city.

9- Sustainable Mobility system. (Smart Urban Mobility system)

9-1: Spatial organization & mobility system.

9-2: Environment & mobility system.

9-3: Economy & mobility system.

9-4: Social & mobility system.

10- Car dependency in the city. (The Middle East)

11- Transportation Strategies & Potential Solutions.

PART 2 (Mathematical)

1- Theory of transportation system.

2- Transportation Planning Models.

3- Mathematical Approach of Urban Mobility.

4- Transportation Capacity Analysis.

5- The level of service concept (LOS).

6- Traffic Flow Parameters (TFP).

7- Spatial Analysis of the urban network.

7-1: Connectivity.

7-2: Control.

7-3: Accessibility and Gravity.

7-4: Centrality (Shimbel matrix of centrality).

PART 3 (Empirical)

Main Scope:

1- (Smart mobility within cities: benefits and challenges).

2- Journeys' Analysis (JA)- (Trip attributes).

3- Performance of Urban Mobility (PUM)- Transportation studies (Mode attributes).

4- Environmental and Economic aspects of urban Mobility System.

Goals

The idea behind the concept of smart mobility is to limit the use, or replace altogether, privately owned gas-powered vehicles by providing easily accessible, cheap, and sustainable alternatives, as well as using technology and digitalization, specifically Intelligent Transportation Systems (ITS), to collect, process and spread information in order to manage mobility more efficiently. **The main objectives of mobility system are to reduce traffic congestion and air and noise pollution, increase safety, improve transfer speed, and reduce transfer costs between different modes of transportation.**

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1- D.Meyer, Michael & J.Miller Eric, " **Urban Transportation Planning**", McGraw-Hill series in Transportation, 2nd edition, USA, 2001.

2- Papacosta C.S. & Prevedouros P.D. "**Transportation Engineering & Planning**", prentice hall.USA, third edition 2001.

3- A.Hoel Lester &J.Garber Nicholas "**Transportation Infrastructure Engineering**",Chris Carson.USA.2008.

4- TRB, "**Highway Capacity Manual**", special report 209. Transportation Research Board, Washington, District of Columbia, USA 1985.

5- Banister, David, " **The sustainable mobility paradigm**", transport Studies Unit, Oxford University Centre for the Environment, Oxford, UK,2007.

6- Newman, Peter, Kenworthy, J. R., **''Cities and automobile dependence: a sourcebook**", Aldershot, Gower, (1989).