**CE 2710 Quiz 1 Study Guide**

**Fall 2020**

**Evolution of Transportation**

1. Understand the definition of transportation as being about access not mobility
2. Know the main milestone and approximate dates in the history of USA transportation (for freight, intercity travel and urban travel)

**Transportation Today**

1. Understand the differences between transportation infrastructure and transportation policy
2. Know how specific transportation policies might affect peoples use of transportation
3. Know the typical modes of freight transportation
4. Know the typical modes of intercity transportation
5. Know the factors that influence the choice of intercity mode
6. Know the factors contributing to higher train use for intercity travel in Europe versus America

**Urban Transportation**

1. Understand the role of transportation and transportation technology in the evolution of the urban form (The '30-minute' commute)
2. Know the typical types of modes of urban transportation
3. Understand why walking is considered the most important mode of transportation in a city
4. Understand the advantages of a multimodal transportation system and the complications involved in providing such a system
5. Understand the factors affecting mode choice
6. Understand the differences between the different types of urban rail systems – including differences in location of tracks and in typical operating conditions
7. Know the definition of bus rapid transit; Understand why BRT was developed; The pros and cons of BRT; The features that are used to make BRT more competitive with rail
8. Know in general terms the characteristics of a good transportation system

**Transportation and Land Use**

1. Understand the nature of the two-way interaction between transportation and land use; Understand in general terms how this interaction affects transportation planning
2. Know the specific features of transportation that affect land use and the general nature of this relationship
3. Know the specific land use factors that affect transportation use and the general nature of this relationship
4. Understand the meaning of the term Transit Oriented Development
5. Understand the transportation and landuse factors that affect the walkability of an urban area

**Transportation Planning**

1. Know the main principles of a comprehensive transportation planning effort as compared to traffic based planning
2. Know the different geographic and temporal scale over which transportation planning is undertaken
3. Understand the concept of induced traffic
4. Understand Littman’s three levels of transportation planning impacts and how this relates to induced traffic
5. Understand the differences between ‘access’, ‘mobility’ and ‘traffic’
6. Know the difference between ‘goals’ and ‘objectives’ and why the difference is important

**Transportation Forecasting**

**Overview**

1. What is the 4-step process and what is it used for?
2. What are the steps and the purpose of each of the 4 steps?

**Trip Generation**

1. What is the purpose of trip generation?
2. Know the format of the cross-classification TG model
3. Know in very general terms the procedure used to get a TG model?
4. Know what land use and socio-economic factors are generally considered?
5. Know why is it necessary to consider land use and socio-economic factors?
6. Know how to use the cross-classification TG model to calculate number of trips from a TAZ
7. Understand the potential sources of error in the TG process

**Trip Distribution**

1. What is it?
2. Describe gravity model - the parameters and the meaning of the parameters
3. Know how to use gravity model to get trip interchange
4. Know the limitations of the gravity model

**Modal Split**

1. What is it?
2. What is a utility function?
3. Know the parameters typically used in the utility function
4. Know how factors such as comfort and image are considered in the model
5. Know how to use the utility function and logit model to get modal split

**Equations on Quiz 1**

**Gravity Model**

*QIJ = PI (AJ\*FIJ\*KIJ)/ Σ(AJ\*FIJ\*KIJ)*

**Multinomial Logit Model**

p(k) = euk / Σ euk