

Introduction to Transportation Planning

Dr. Çağdaş Kara



Introduction to Transportation Planning

- Context, Concept and Characterization of Transportation Systems
- Factors Affecting Transportation
- Sussman's 30 Key Points
- Transportation Network and LOS
- Speed-Density-Volume Relation,
- Estimation of Future Project Traffic



Introduction to Transportation Planning

- Four-step Model
- Roadway Transportation
- Railway Transportation
- Air Transportation
- Water Transportation
- Public Transportation: A Quick Overview

An aerial night photograph of a city, showing light trails from a highway on the left and illuminated buildings. A thick yellow and orange curved line is overlaid on the image, separating the title area from the list area.

Week 1 & 2

- Introduction to course
- Assignments
- Context, Concept and Characterization of Transportation Systems

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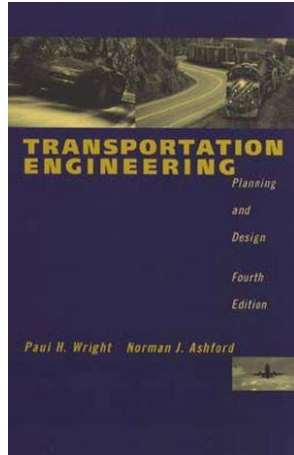
Web: <https://web.ogu.edu.tr/ckara/>



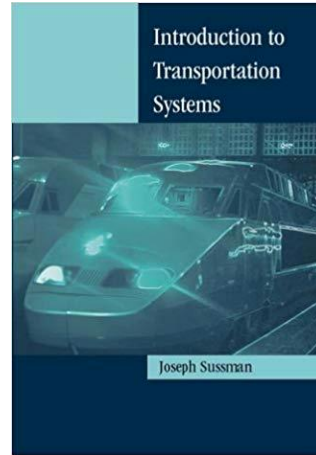
Objectives of the Course

- Introduction to transportation systems
- Transportation concept and modes
- Freight transportation
- Traveler transportation

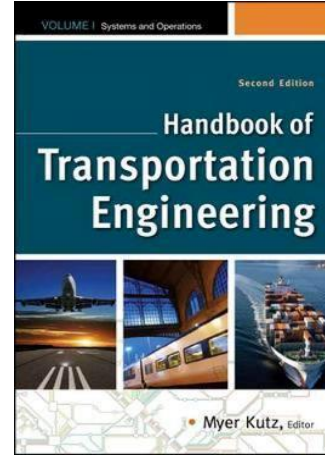
Resources



Transportation Engineering: Planning and Design
Paul H. Wright,
Norman J. Ashford,
Robert J. Stammer



Introduction to Transportation Systems
Joseph Sussman



Handbook of Transportation Engineering
Myer Kutz, Editor



Karayolu Mühendisliği
Nadir Yayla



Grading

- I. Midterm: %20
- II. Midterm: %20
- Indv./Group Assign.: %20
- Final: %40



Assignments

- **Individual Assignment:**
 - Writing an essay on a selected topic
 - 1250 – 1500 words (excluding figures, tables and references)
 - Minimum of 4 tables and figures
- **Group Assignment:**
 - 5-6 students per group (students are required to establish their own group)
 - Topics will be assigned by the instructor
 - 3000 – 4000 words

An aerial night photograph of a highway interchange, showing light trails from vehicles. A prominent yellow and orange curved graphic line is overlaid on the left side of the image. The background is a dark blue gradient.

Context, Concept and Characterization of Transportation Systems



Transportation Systems

- Transport or transportation is the movement of humans, animals and goods from one location to another.
- Primary modes of transportation system are:
 - Roadway transportation
 - Railway transportation
 - Air transportation
 - Water transportation
 - Sea transportation
 - Inland transportation
 - Pipelines



Transportation Systems

- Transportation has a broad perspective.
- Socially, politically and economically, transportation is fundamental.
 - Mobility
 - Economic growth
 - Cultural interaction
 - Environmental effects



Transportation Systems

Transportation is multidimensional:

- Technology
 - Vehicle systems, fuels, guideways (roads), traffic control systems
- Systems
 - Planning and analysis of transportation network, supply-demand concept, Origin-Destination, etc.
- Institutions
 - Government agencies, municipalities, Private sector, research, NGOs, etc.

Transportation Eras

Infrastructure Era

Transportation
Systems Era

The Transportation
as CLIOS
Systems Era

- Development of eras in transportation has a very direct relation with countries':
 - Development level
 - Economical power
 - Infrastructure
 - Education level



Transportation Eras

- Infrastructure Era (Altyapı dönemi):
 - Build what “they” want
 - More focus on physical activities
 - Focus on mobility
 - Focus on economic growth
 - Largely a modal perspective



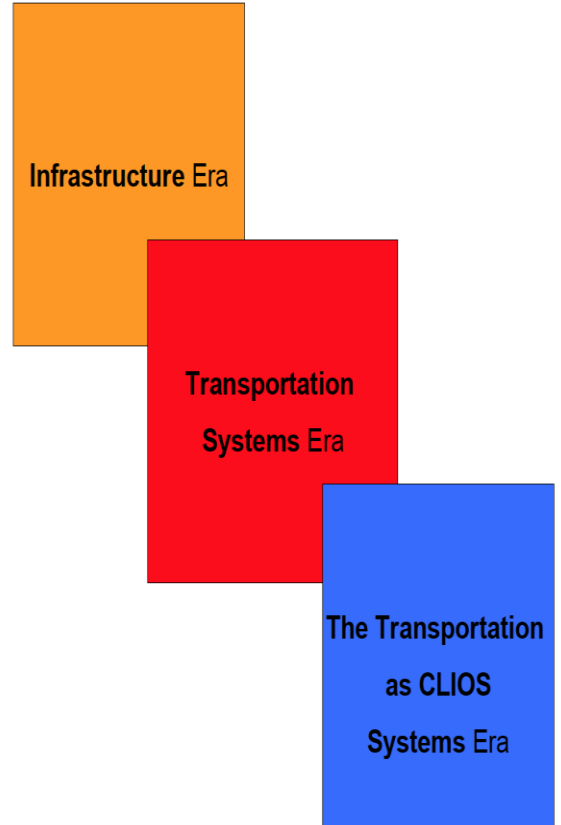
Transportation Eras

- Transportation Systems Era:
 - Economics-based framework
 - Supply-demand
 - Equilibrium
 - Networks
 - Focus on economic development and environmental concerns.
 - Focus on both mobility and accessibility
 - Recognition of unpriced externalities
 - Congestion, air quality, resources, etc.
 - Intermodal perspective (freight & passenger)

Transportation Eras

CLIOS System

- Complex
- Large-scale
- Interconnected – Diğer sistemler ile bağlantılı
- Open – Dış etkilere açık (S,P,E)
- Socio-technical





Transportation Eras – CLIOS

CLIOS System is characterized by:

- Advanced technology and mathematics
- Institutional change – Adaptation to new management and communication methods
- Transportation connected to other sociotechnical systems
- Expanded role for stakeholders and concept of Interested Stakeholders
- “Macro-Design” performance evaluation



Transportation Eras – CLIOS

- Advanced technology and mathematics
 - A Rich Information Environment – Big data
 - A Higher and More Effective Level of Intermodalism Extending into Supply Chain Management
 - Large-scale Optimization
 - Real-time Network Control and Traveler Information
 - Vehicle Automation and a Crash-Avoidance Safety Perspective
 - Sophisticated Pricing
 - Pricing of Externalities
 - Regionally-scaled Transportation Operations and Management
 - Operations Focus
 - Tailored Customer Service



Transportation Eras – CLIOS

- Institutional change – Adaptation to new management and communication methods
 - Public Sector Change—among and within levels of government
 - Private Sector Change –with new business models and players beyond the traditional ones
 - Public/ Private Relationships/ Partnerships
 - An International/Global Perspective
 - The Relationship of Logistics and Supply Chain Management to Regional Strategic Transportation Planning



Transportation Eras – CLIOS

- Transportation connected to other sociotechnical systems
 - Environment
 - Energy
 - Economic
 - Global Climate Change
 - National Defense/ Geopolitics
 - Telecommunications



Transportation Eras – CLIOS

- Expanded role for stakeholders and concept of Interested Stakeholders
 - In system definition and representation
 - In developing performance metrics
 - In developing strategic alternatives
 - In considering implementation strategies
 - In decision-making

- **“Macro-Design” performance evaluation**

(in addition to traditional micro-design considerations such as cost, level-of service (LOS) variables such as price, travel time, service reliability, service frequency, safety....)

- Flexibility
- Adaptability – adapte olabilme kabiliyeti
- Robustness – saglamlilik
- Resilience – uzun omurluluk
- Scalability – olculebilme / degerlendirilebilme
- Stability
- Sustainability – surdurulebilirlik