CIVIL-351  
Transportation systems engineering
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Summary
- Introduce the major elements of transportation systems and create awareness of the broader context
- Develop basic skills in applying the fundamentals of the transportation field
- Understand the key concepts and physics of the transport phenomena
- Connect with real transportation problems

Content
**Transportation Systems and Mobility:**
Mobility - Activities - Land Use, Classification-Hierarchy, Multimodality-Urban Planning

**Demand:**
Demand analysis, Travel Forecasting (4-step models)

**Modeling and Operations:**
Basic assessment tools, Traffic flow modeling, Control and capacity of transport systems

**Design of multimodal systems:**
Urban Policy, Case Studies, Intro to bus operations

Learning Outcomes
By the end of the course, the student must be able to:
- Estimate how transport users choose route and mode
- Characterize the level of service of a transport system
- Assess / Evaluate traffic signal performance
- Model traffic flow propagation
- Identify the most appropriate strategy to alleviate congestion

Transversal skills
- Plan and carry out activities in a way which makes optimal use of available time and other resources.
- Use a work methodology appropriate to the task.
- Communicate effectively, being understood, including across different languages and cultures.
- Evaluate one's own performance in the team, receive and respond appropriately to feedback.
- Identify the different roles that are involved in well-functioning teams and assume different roles, including leadership roles.
- Respect relevant legal guidelines and ethical codes for the profession.
- Continue to work through difficulties or initial failure to find optimal solutions.

Teaching methods
Ex-cathedra with assisted exercises, course group projects

Assessment methods
Midterm 30%
Final Exam 40%
Laboratories 30%

Resources
Bibliography
Lecture notes, book chapters and handouts will be distributed throughout the semester, or posted on web.

Prerequisite for
Master classes in Transportation