CIVIL-351

Transportation systems engineering

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Cursus	Sem.	Type
Civil Engineering	BA5	Obl.
Urban Planning and Territorial Development minor	H	Opt.

Language of teaching	English
Credits	4
Session	Winter
Semester	Fall
Exam	During the semester
Workload	120h
Weeks	14
Hours	**4 weekly**
Lecture	3 weekly
Exercises	1 weekly
Number of positions	

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