

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
<b>Hours</b>	<b>4 weekly</b>
Courses	3 weekly
Exercises	1 weekly
<b>Number of positions</b>	

**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