### Degree competences to which the subject contributes

#### Specific

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>8169</td>
<td>The ability to plan, manage and operate civil engineering infrastructure.</td>
</tr>
<tr>
<td>8234</td>
<td>Knowledge of transport engineering and planning, transport types and functions, urban transport, management of public transport services, demand, costs, logistics, and financing of transport infrastructure and services.</td>
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</tbody>
</table>

### Teaching methodology

- The course consists of 3 hours per week of lectures in the classroom (large group).
- 2 hours are lectures, in which the teacher presents the basic concepts and materials.
- 1 hour is devoted to present examples and exercises with a greater interaction with students.

Support material will be provided on campus ATENEA: content, programming and evaluation, activities and relevant references.

### Learning objectives of the subject

Specialization subject in which knowledge on specific competences is intensified.

Knowledge and skills at specialization level that permit the development and application of techniques and methodologies at advanced level.
Contents of specialization at master level related to research or innovation in the field of engineering.

The course aims to train students in the planning and management of urban mobility. The focus of the course is conceptual. It gives greater importance to the concepts and ideas to the detriment of facts, statistics and other descriptive aspects. This requires a significant degree of abstraction, which is balanced by the assignments with a more practical focus.

After an introductory session, the course consists of 3 main parts. The first aims to convey the fundamental concepts of planning public transport systems, regardless of their technological support. The conceptual design of the Barcelona new bus network is presented as a paradigmatic case study.

The second section deals with paratransit systems, flexible public transportation systems not subject to routes, and with the more innovative strategies of shared vehicles.

Finally, the third section addresses the urban traffic management.

<table>
<thead>
<tr>
<th>Study load</th>
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<tbody>
<tr>
<td><strong>Total learning time:</strong> 125h</td>
</tr>
<tr>
<td>Theory classes:</td>
</tr>
<tr>
<td>Practical classes:</td>
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<tr>
<td>Laboratory classes:</td>
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<tr>
<td>Guided activities:</td>
</tr>
<tr>
<td>Self study:</td>
</tr>
<tr>
<td>Content</td>
</tr>
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<td>---------</td>
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</tbody>
</table>
| **1-Introduction to urban mobility** | Theory classes: 1h  
Practical classes: 1h  
Laboratory classes: 1h  
Self study : 4h 11m |

**Description:**

**Specific objectives:**
Present the basic concepts. Understand the data sources and mobility patterns for the city of Barcelona.

<table>
<thead>
<tr>
<th>Content</th>
<th>Learning time: 40h 48m</th>
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</table>
| **2-Collective transportation** | Theory classes: 13h  
Practical classes: 4h  
Self study : 23h 48m |

**Description:**

**Specific objectives:**
Understand the shuttle systems. Extending the model to corridors. Generalize the ideas of simple service to a service with hierarchies. Understand the two-dimensional systems. Constraints for practical implementations. Final discussion on 2D systems.
### 3-Transit network design - Barcelona case study

**Learning time:** 9h 36m  
Theory classes: 1h  
Practical classes: 3h  
Self study: 5h 36m

**Description:**  
The hybrid concept. LCF & constraints. Solution.  
Assignment 3 correction

**Specific objectives:**  
Understand in more depth the concept of the hybrid network.  
Present concepts that support the design of the new bus network in Barcelona.

### 4-Paratransit - Flexible transit and vehicle sharing strategies

**Learning time:** 21h 36m  
Theory classes: 7h  
Practical classes: 2h  
Self study: 12h 36m

**Description:**  
Benefits of flexible routes. Ways of delivering flexibility.  
Mini - Project solution

**Specific objectives:**  
Introduction to transportation systems on demand.  
Modeling taxis and dial-a-ride systems.  
Modeling shared vehicle systems.

### 5-Urban traffic management

**Learning time:** 7h 11m  
Theory classes: 2h  
Practical classes: 1h  
Self study: 4h 11m

**Description:**  
MFD - Example for the city of San Francisco (CA).

**Specific objectives:**  
Understand the regulation according to the MFD.  
Application of the method.
The grade of the course is obtained from the marks of 3 homework assignments (each one accounts for 15% of the final mark), 1 group mini-project (20% of the final mark) and a final exam (open notes, open book, 35% of the final mark).

These assignments and mini-project will be held during the course (outside class). All of them will be corrected during class hours.

The final exam will be held during the last programmed lecture for the subject.

Qualification system

Regulations for carrying out activities

If any of the evaluation activities is not handed in in the scheduled period, it will be marked with zero.

Bibliography

Basic:


