# 250260 - HISOBPUB - History of Public Constructions

**Coordinating unit:** 250 - ETSECCPB - Barcelona School of Civil Engineering  
**Teaching unit:** 751 - DECA - Department of Civil and Environmental Engineering  
**Academic year:** 2018  
**Degree:** BACHELOR’S DEGREE IN PUBLIC WORKS ENGINEERING (Syllabus 2010). (Teaching unit Optional)  
**ECTS credits:** 4.5  
**Teaching languages:** Catalan

## Teaching staff

**Coordinator:** PERE MACIAS ARAU  
**Others:** PERE MACIAS ARAU, MIGUEL YURY MAYORGA CÁRDEAS, ROBERT VERGES FERNANDEZ

## Opening hours

**Timetable:**  
Monday 12 to 14h  
Thursday 18-19h

## Degree competences to which the subject contributes

### Specific:

- 3070. Knowledge of construction procedures, construction machinery and the techniques for organising, measuring and valuing works.

## Teaching methodology

The subject consists of three classroom hours per week. For each of the various topics that make up the modules of the subject, students will be provided with learning material that covers the main concepts and contents, as well as a recommended reading list.  
The lectures on theory (1:30-2 h) will lay the groundwork for the various topics, and the practical sessions (1 h) will introduce students to the reality on the ground and specific case studies. We will therefore use a wide variety of learning materials, especially images, technical drawings and maps.  
In laboratory sessions, we will critically assess the contents by comparing various texts and examine case studies of engineering works that have sparked public debate regarding suitability.  
We will also take a field trip to the transport hub in Martorell (Baix Llobregat).

## Learning objectives of the subject

Knowledge of civil engineering history and ability to analyze and to value public constructions

Students will be introduced to the history of public works, the evolution of public works in terms of technical and construction-related knowledge, and the important role played by public works in the transformation of the land.  
Students will come to understand that civil-engineering actions—manifested through public works—tend to characterize the way in which the different Western societies have interacted with the environment and modified the land and nature in order to establish transport systems, water use and energy optimization, and also the ways in which these societies have set up city infrastructure.  
Students will approach the history of public works as transversal knowledge that allows the assessment of regional structures created through engineering from a perspective of functional continuity over time. This dynamic approach will incorporate historical legacy into present-day reality.
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Students will learn to assess public works in terms of their artistic value, technical legacy, design, and role in landscape creation over time, all of which lends cultural meaning to public works as creations of humankind. This assessment of monumentality, which extends to linear infrastructure, gives meaning to public works as cultural heritage.

By gaining an understanding of regions and cities as products of a historical process, students will acquire a critical and thoughtful vision of engineering products—a vision which, consequently, better integrates public works and land in current planning practice. They will also learn to value and contextualize public-works heritage in actions at the regional and urban levels.

**Study load**

<table>
<thead>
<tr>
<th>Total learning time: 112h 30m</th>
<th>Theory classes: 26h 23.11%</th>
<th>Practical classes: 10h 8.89%</th>
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<tbody>
<tr>
<td>Laboratory classes: 9h 8.00%</td>
<td>Guided activities: 4h 30m 4.00%</td>
<td>Self study: 63h 56.00%</td>
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Module I.-The hidraulic public works

Content

Learning time: 36h
   Theory classes: 9h
   Practical classes: 3h
   Laboratory classes: 3h
   Self study: 21h

Description:
The use and control of water has been one of the main objectives of public works. Hydraulic works have contributed decisively to the development of cities and the planning of the territory. In the chapter devoted to hydraulic works we will take a historical tour, reviewing the main hydraulic works: water supply, irrigation, dam, navigation channels, ports and sanitation of the waste water. Great hydraulic works of Roman times: the aqueducts. "They are the waters that make the city". The water supply was the main public work of the Roman cities.

Comment activity in relation to the report

Critical activity in relation to the Panama Canal
Hygienism, a basic ideology for urban intervention. The urban revolution The role of engineers in shaping the city: supply of water and sewerage. The modern systems of sewerage. Project for the sanitation of the subsoil of Barcelona (1893). Regenerationism: "watering is governing". National hydrological plans. Hydrographic confederations. Reservoirs and transfers. Hydroelectricity History of the water supply in the city of Barcelona.

Work on water management in the city of Barcelona.
Guided visit to a large installation of water treatment.

Specific objectives:
Know the origin of the first large infrastructures in the Mediterranean civilizations and in Rome.

Practical application
Understand the historical evolution of the scope of hydraulic works
Understand the scope of major interventions in a territory.
Understand how hydraulic policy has evolved over the last two centuries and how it has influenced the growth of the city.
Relate the water supply and sanitation systems in Barcelona with the conformation of the metropolitan event.
See how it is a great installation and intuire its territorial role.
Module II. Railway, territory and cities

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**Description:**

The invention of the steam engine, its application to the factory: the industrial revolution. BERNARDO WARD AND ITS “ECONOMIC PROJECT”. The state of communications in the eighteenth century. The origin of road engineering. Roads and navigation channels. THE CHANNEL OF CASTILLA. From the railways, the steam locomotives and the outburst of the railroad. BRUNEL versus STEVHENSON The railroad and the national construction. BELGIUM AND THE UNITED STATES. The late development of the railroad in the Iberian peninsula. LA POLÍTICA DEL AMPLE DE VÍA.

The development of the railroad: the concessions and the process of concentration of the companies. EL MARQUÉS DE SALAMANCA AND LA MZA. Trains and seasons in the conformation of the new city. THE PROJECT OF EIXAMPLE CERDA PREVENTS THE NETWORK PASSANT. The train becomes urban: tram network to structure the new city. CABLE-CAR and TRAMVIES IN NEW YORK AND LA. How the city colonizes its surroundings thanks to the railway lines. BARCELONA AND THE TRAIN OF SARRIÀ.


A railway station of the city of Barcelona will be visited, explaining its historical evolution and how it has contributed to articulate urban fabrics in its environment.

**Specific objectives:**

The history of the railroad is also the history of the economic growth of society and allows us to analyze and understand the migration processes of the population towards cities, the impossibility of these to dignify newcomers and the ideological and technical proposals that appear to be able to solve the urban conflict. The appearance of urban planning in the mid-nineteenth century is coincident with the great expansion of the railroad and therefore know the mechanisms for the implantation and operation of this mode of transport becomes a first-order milestone at the time. Understand how territory is articulated and how cities are configured. The appearance of the car transforms the mobility of people and goods and, together with air transport, they end up with the position of the railroad as a universal mode. Understand, in this context, the evolution of the cities and the great metropolitan area.

After a stage of deep crisis, with a threat of disappearance, the railroad recovers, from the last third of the 20th century, a new role as a key infrastructure for sustainable mobility. The study of this period again provides us with key elements to understand the contemporary urban phenomenon.

The students have
The course will be evaluated on the basis of a series of activities held during class. Two tests will be given corresponding to the subject’s 6 content modules (from I to VI), which will be structured into questions regarding the theoretical concepts and questions aimed at evaluating the practical classes.

In classroom time, two practical exercises will be done based in comparison, discussion and critical approach about subjects and study cases of civil engineering throughout the history. Finally, an individual assignment will be given out at the end of the subject where students will work about the relationship Urbanism and Infrastructures.

In all these tests the capacity for written communication will be evaluated, along with the ability to connect cases and concepts, as well as the ability to argue points of view.

The final subject note (NT) will be obtained from the scores received from the 2 module tests (M), the 2 practical exercises (E1 and E2), the individual assignment (T) according to the following calculation: 

\[ NT = 50\%(M) + 15\%(E1) + 10\%(E2) + 25\%(T) \]

Criteria for re-evaluation qualification and eligibility: Students that failed the ordinary evaluation and have regularly attended all evaluation tests will have the opportunity of carrying out a re-evaluation test during the period specified in the academic calendar. Students who have already passed the test or were qualified as non-attending will not be admitted to the re-evaluation test. The maximum mark for the re-evaluation exam will be five over ten (5.0). The non-attendance of a student to the re-evaluation test, in the date specified will not grant access to further re-evaluation tests. Students unable to attend any of the continuous assessment tests due to certifiable force majeure will be ensured extraordinary evaluation periods.

These tests must be authorized by the corresponding Head of Studies, at the request of the professor responsible for the course, and will be carried out within the corresponding academic period.

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**Module III. City and cars. Evolution of road works from XXct. To right now**

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**Description:**

Road models and functionalist city; The introduction of the automobile; - Axles, avenues and freeways - Radial nets and models - Variants and rounds

Road models, traffic patterns and urban planning "The enthronement of the automobile" - Road specialization

Separation of functions The urban planning of the sector and the metropolis

Strategies and urban projects "The adaptation of the city of the automobile" - Integral design of the road infrastructure - Functional roadways, roundabouts, roundabouts Roadways and coexistence with the automobile

Paradigm of sustainable mobility and Smart City "The restriction to the automobile" Humanization of the urban space - Pedestrian city - Superblocks

**Specific objectives:**

Knowing how the automobile's introduction profoundly changes the shape and extent of the city.

Know the models applied to the traffic and how its influence becomes key to the growth of the cities of the 20th century.

Know the taxonomy of urban roads based on vehicle traffic

The recovery of the public space from a vision of a sustainable city must have its reflection in the modification of the urban road project.
Regulations for carrying out activities

Failure to perform a laboratory or continuous assessment activity in the scheduled period will result in a mark of zero in that activity.

Bibliography

Basic:


Complementary: