

## Course file

<b>Study cycle</b>	BACHELOR IN CIVIL ENGINEERING		
<b>Course</b>	TRANSPORTATION INFRASTRUTURES II	Mandatory	<input checked="" type="checkbox"/>
		Optional	<input type="checkbox"/>
<b>Course scientific area</b>	CIVIL ENGINEERING	Category	E

Course category: B - Basic; C - Core Engineering; E - Specialization; P - Complementary.

Year: 3rd	Semester: 6th	ECTS: 5,5		Total: 149
Contact time	T: 22,5	TP: 45	PL:	S: OT:

T - Lectures; TP - Theory and practice; PL - Lab Work; S - Seminar; OT - Tutorial Guidance.

Course Director	Title	Position
Armando António Pereira Teles Fortes	Especialista	Professor Coordenador

### Learning objectives (knowledge, skills and competences to be developed by students)

(max. 1000 characters)

This curricular unit will allow the student's acquisition of the needed competences to develop streets design, taking into account the necessary compatibility buildings / roads.

Are transmitted knowledge associated with the overall coordination of several specific projects that integrate the design of a road infrastructure, as well as essential aspects of construction and maintenance.

Are also transmitted knowledge within the railway component.

### Syllabus

(max. 1000 characters)

Adequacy of calculation concepts of horizontal and vertical alignments to Streets study.

Intersections - Roundabouts and level crossings.

Drainage and Paving: calculation methodologies and case studies.

Complementary design: safety equipment, horizontal and vertical signs, fencing, landscaping, lighting and telecommunications equipment.

The integration of structures in road layout.

The Expropriation component.

The Global Design Coordination.

Construction and Maintenance of Roads - General concepts.

Portuguese Railway Network: Present and future situation; the infrastructures and the operation.

Railway platform. Tracks assemble.

**Demonstration of the consistency between the syllabus and the course objectives**

(max. 1000 characters)

Students had only one previous curricular unit dedicated to infrastructures, where, between others, they obtained competences in geometric design of infrastructures with local importance (municipality roads) . The curricular unit of Transportation Infrastructures II aims to increase their knowledge and skills in this area by addressing the calculation of Streets . On the other hand, the approach of other design components, such as drainage and structures, for example, allow students to understand the need for compatibility among the various specialties of civil engineering in the context of a comprehensive and coherent project. It also covers the road construction and maintenance as well as some railway aspects. Like this, the syllabus is organized to be achieved the course objectives.

**Teaching methodology (evaluation included)**

(max. 1000 characters)

Lectures are alternated with the theoretical and practical lessons, to allow the sequential use of knowledge obtained. Students can carry out continuous assessment or final examination. The final exam (regular session and appeal) consists of a part without consultation of any documentation (more theoretical) worth 8 points and a part with consultation (more practical) worth 12 points, requiring a total of at least 9,5 points to be approved. The result of continuous assessment is obtained by the arithmetic mean between a practical work on group (with discussion and individual evaluation) and an individual test (with the same characteristics of the final examination but only about the matters not evaluated on group work). In continuous assessment each student must obtain at least the classification of 9,5 values both at work and in the test, with the possibility of repeating the test on the first date of examination.

**Demonstration of the consistency between teaching methodology and the course learning objectives**

(max. 3000 characters)

Having the objective to ensure students acquire the skills needed to develop the calculation and design of Streets , this matter is addressed in lectures and has its application in practical classes, with the purpose of placing students in real situations in terms of design decision. They must study alternatives for selecting the most appropriate solution to present with their respective design pieces. The work may lie in a street conditioned by the level of buildings entrances, involving not only the layout but also the drainage. This methodology ensures not only that the student acquires the skills needed to develop streets current section design or the design of intersections, as well as getting an overview to ensure proper compatibility of other specific projects that make up the overall design infrastructure, as well as the necessary compatibility buildings / roads, which gives coherence between the teaching methodology adopted and the course learning objectives.



INSTITUTO SUPERIOR DE ENGENHARIA DE LISBOA



ÁREA DEPARTAMENTAL DE ENGENHARIA CIVIL

### **Main Bibliography**

(max. 1000 characters)

Norma de Intersecções (JAE, 1993);

Normas de Traçado (JAE, 1994);

A Policy on Geometric Design of Highways and Streets (AASHTO, 1990);

Recent publications of SETRA (Service d'Etudes Techniques des Routes et Autoroutes);

Curricular unit notes and slides.