

## Course file

<b>Study cycle</b>	BACHELOR IN CIVIL ENGINEERING		
<b>Course</b>	MANAGEMENT OF CONSTRUCTION WORKS	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: 148
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
Jorge Sousa	Especialista	Professor Adjunto

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

(max. 1000 characters)

- A. Identifying the core elements and execution constraints in construction;
- B. Knowing the construction resources, its main characteristics and constraints;
- C. Develop skills for the "a priori" resources quantification and cost estimation, as well as planning their use in coordination with the global construction schedule;
- D. Develop skills for the integrated construction planning, including the site layout planning and resource optimization;
- E. Increase student awareness to the Health and Safety issues and their relevance;
- F. Develop skills for the analysis and integrated estimating of costs for a construction project tender;
- G. Create skills for construction works management and production control regarding quality, cost and time;

### Syllabus

(max. 1000 characters)

1. Construction base elements, particularities and constraints;
2. Labour: Types, Categories and Legal Regulations; rates, unit and total cost;
3. Equipments; Batching plants, tower cranes earthmoving equipments and others; Ownership and Operational Costs

4. Materials: selection, supplying, quality control, rates, unit and total cost;
5. Subcontracting: procurement, quality control, unit and total cost;
6. Construction Scheduling and Resource Optimization; Jobsite Health and Safety;
7. Site layout planning;
8. Cost Analysis: net cost; site costs; overheads; total cost and bill of quantities;
9. Production Control: Time, cost and quality; Earned Value Management

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

(max. 1000 characters)

- Content 1 connects directly with Objective A;
- Contents 2,3,4 and 5 connect directly with Objectives B and C;
- Contents 6 and 7 connect directly with Objective D;
- Content 8 connects directly with Objective F;
- Content 9 connects directly with Objective G;

**Teaching methodology (evaluation included)**

(max. 1000 characters)

The teaching methodology contains the following aspects:

- Lectures (Theory Classes) about the contents of the Syllabus in modules, preceded by the distribution of support and preparation elements, making them more objective and fruitful;
- Practical Classes, applying concepts and methodologies to the solution of problems and case presentation, including detailed discussion - these alternate with lectures for a more effective outcome;

Evaluation includes a written examination comprising questions about the theoretical concepts and principles, but mostly practical problems. The exam is worth 60% of the grade. The remaining 40% correspond to projects developed during the term about specific problems or themes.

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

(max. 3000 characters)

- The Lectures about the Syllabus contents, preceded by the distribution of support elements aim to create the foundation to achieve each objective in a specific and articulated manner, namely in the understanding of

base concepts, definitions and methodologies of each module;

- The Practical Classes of concept and methodology application to the solving of problems and discussion of real cases framed in the syllabus contents aim to consolidate the contribution of the lectures with which they alternate for a more complemented outcome in the sense of a complete understanding of base concepts and methodologies, as well as its practical use;

In the grading, the written exam comprises theoretical, but mostly practical concepts;

Notwithstanding, and given the time limitations of the exam, there is another component to the evaluation that corresponds to one or more projects of either solving of practical questions, case analysis or the development of specific themes, where one can explore situations with more detail and/or complexity.

### Main Bibliography

(max. 1000 characters)

PAZ BRANCO, J. – “RENDIMENTOS DE MÃO-DE-OBRA, MATERIAIS E EQUIPAMENTO EM EDIFICAÇÕES DE OBRAS PÚBLICAS” – TEXTO EDITORA – 1991

COSTA MANSO, A. ; SANTOS FONSECA, M. ; CARVALHO ESPADA, J. - “INFORMAÇÃO SOBRE CUSTOS - Fichas de Rendimentos” - LNEC - 2005

MARTÍN, J. R. NAVAS – “Engenharia de Gestão de Projectos” – FCA, Lisboa - 2008

COURTOIS, ALAN ; PILLET, MAURICE ; CHANTAL, MARTIN-BONNEFOUS - “GESTÃO DA PRODUÇÃO” - 5ª EDIÇÃO - LIDEL - 2006

LIMMER, CARL V. - “PLANEJAMENTO, ORÇAMENTAÇÃO E CONTROLE DE PROJECTOS E OBRAS” - LTC EDITORA - 1996

PAZ BRANCO, J. – “ORGANIZAÇÃO DE ESTALEIROS NA CONSTRUÇÃO CIVIL” – EPGE, QUELUZ – 1996

PEURIFOY, ROBERT ; LEDBETTER, WILLIAM ; SCHEXNAYDER, CLIFFORD – “CONSTRUCTION PLANNING, EQUIPMENT, AND METHODS – McGRAW HILL – 2010 “SPECIFICATIONS AND APPLICATION HANDBOOK” - KOMATSU, TOKYO - EDITION 30 - 2009

