POLI ESCOLA SUPERIOR TECNOLOGIA GESTÃO TÉCNICO GUARDA	**SUBJECT DESCRIPTION**	**MODELO** PED.013.03

Course	**Topographic Engineering**					
Subject	**Urban Water and Water Resources**					
Academic year	2023/2024	*Curricular year*	2nd	*Study period*	2nd semester	
Type of subject	Compulsory	*Student workload (H)*	Total: 182	Contact: 62	*ECTS*	6,5
Professor(s)	**Nuno Álvaro Freire de Melo**					
☒ *Area/Group Coordinator* ☐ *Head of Department* *(select)*	**José Carlos Costa Almeida**					

PLANNED SUBJECT DESCRIPTION

1. LEARNING OBJECTIVES

In the discipline it is intended that the students achieve an appropriate preparation, knowledge and understanding for the problems of the basic sanitation, respected to the public systems of distribution and drainage of urban and industrial waters. It is intended to prepare the students for the participation in work teams developing the subjects above referred, as well as an appropriate focus and sensitize for the problem of the Urban Water and Water Resources.

2. PROGRAMME

INTRODUCTION

HYDROLOGY AND WATER RESOURCES

- Cycle and water balance
- Watershed
- Precipitation
- Water resources in mainland Portugal

BASE ELEMENTS

- Study of the evolution of the population
- Distribution of the population
- Water needs and changes in consumption

ADDUCTION

- General rules of design
- Types of pipes and connections
- Devices of action and safety

Evaluation of surrounding pressure in adduction systems

STORAGE TANKS

Classification and purpose of storage tanks

Functional aspects and constructive

WATER DISTRIBUTION SYSTEMS

Design and types of networks

Preconditions for the study

Flows and study of the networks

Accessories and special elements

DRAINAGE AND SEWER SYSTEMS

Characterization of flows

Network types and their design

Evaluation of the flow design

Layout of networks

Fittings and accessories

Special design and operating conditions hydraulic and sanitary.

3. COHERENCE BETWEEN PROGRAMME AND OBJECTIVES

To give students adequate preparation to work in the context of the Hydraulic Infrastructures, in particular with regard to systems of public water supply and sewerage, the program of the discipline includes:

- supply systems, which include the basic elements, adductor systems, reservoirs and distribution networks;

- drainage systems, which include the characterization of the flow types, network types and their design, evaluation of the flow design, layout of networks, fittings and accessories, special design and operating conditions hydraulic and sanitary.

With regard to water resources, in order to provide students with the knowledge to interact with multidisciplinary teams, the concepts of cycle and water balance, watershed and criteria for their delimitation, rainfall and precipitation intensity range are introduced.

4. MAIN BIBLIOGRAPHY

Teacher Notes.

Sá Marques, J. A. A.; Sousa, J. O. – Hidráulica Urbana, Sistemas de Abastecimento de Água e de Drenagem de Águas Residuais. Imprensa da Universidade de Coimbra, Coimbra, 2008.

Lencastre, A. e Franco, F. M. - LIÇÕES DE HIDROLOGIA, Universidade Nova de Lisboa, Lisboa, 2003.

Dupont, A. Hydraulic Urbaine – Ouvrages de transport, élevation et distribution de eaux, Paris, 1977.

5. TEACHING METHODOLOGIES (INCLUDING EVALUATION)

Oral presentation of fundamental concepts supported by slides.

Accompanying the realization of practical exercises and analysis of results. Support and guidance in the realization of practical works.

Method of Evaluation

Ongoing assessment, Exam (Normal time) and Exam (Last examination).

A written test (13 values) with minimum 25%.
Compulsory practical work (4.5 Values) and respective presentation and defense (2.5 values) with minimum 25% in each part.

6. COHERENCE BETWEEN TEACHING METHODOLOGIES AND OBJECTIVES

The theoretical content of the curricular unit will be transmitted through lectures and slides. These concepts with be consolidated and applied in practical exercises and timely analysis of results. To provide students with autonomy in the application of concepts learned, they will develop practical teacher-guide assignments.

This teaching methodology provides the students with the skills needed to work within the area of Hydraulic Infrastructures and Water Resources.

7. ATTENDANCE

Attendance is not mandatory.

8. CONTACTS AND OFFICE HOURS

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Office N.º 1270

Office Hours
Thursday: 11:00H às 12:30H
Friday: 10:00H às 12:30H

DATE

1 de março de 2024

SIGNATURES

Professor(s), Area/Group Coordinator or Head of Department signatures

Professor

(signature)

Area/Group Coordinator

(signature)