

POLI ESCOLA SUPERIOR TECNOLOGIA GESTÃO TÉCNICO GUARDA	SUBJECT DESCRIPTION	MODELO PED.013.03
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Course	Topographic Engineering					
Subject	Topography Applied					
Academic year	2023/2024	Curricular year	2nd	Study period	2nd semester	
Type of subject	Compulsory	Student workload (H)	Total: 182	Contact: 75	ECTS	6,5
Professor(s)	Maria Elisabete Santos Soares, Ph.D.					
☒ Area/Group Coordinator ☐ Head of Department	(select)	Maria Elisabete Santos Soares, Ph.D.				

PLANNED SUBJECT DESCRIPTION

1. LEARNING OBJECTIVES

Qualifying the students for the execution of topographic surveying with different technologies and methods and their automatic treatment with appropriated software. Understanding of methods in the field to execute the stakeout of points. Studying of circular curves and their stakeout methods.

2. PROGRAMME

1. Electronic distance measurement with Total Station.
2. Circular curves geometry. Stakeout methods of points in circular curves.
3. Types of horizontal curves on roads.
4. Topographic survey and their principal methods.
5. Types of topographic survey.
6. Accuracy of topographic survey.
7. Digital terrain models. Applications of the digital terrain models.
8. Study and practice with Total Station.
9. Automatic processing of geographic information acquired on the ground.
10. Execution of Topographic Map with appropriate scale. Study of the tracing of a circular curve. Drawing of the circular curve over the Topographic Map.

3. COHERENCE BETWEEN PROGRAMME AND OBJECTIVES

The programme contents of the subject are developed in order to provide the student knowledge to autonomously carry out topographic surveys at any scale and carry out the respective Topographic Map, as well as calculate the parameters of plane circular curves. In this context, methods for carrying out topographic surveys and the respective automatic treatment of observations are studied. Contents related to the types of plane curves, calculation their parameters and stakeout methods of points in field are also taught. Based on the concept of "learning by doing", the practical component is valued.

4. MAIN BIBLIOGRAPHY

Compulsory:

- Support texts for subject prepared and provided by the professor.
- Alves, J.; Cruz, J.; Norte, C.; Manual de Topografia.
- Borges, A. Campos Exercícios de Topografia.

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- Casaca J., Matos J. e Baio M. *Topografia Geral*. Lidel – Edições Técnicas.

- *Manual da Estação Total*, Topcon GTS-750

- *Manual da Estação Total*, Leica TCR803

- Tutoriais AutoCAD Civil 3D, Autodesk.

Recommended:

- Bannister, Arthur; Raymond, B. *Problemas Resueltos de Topografia*.

- Matos, João Luis *Fundamentos de Informação Geográfica*, LIDEL Geomática

- Tejero, F.D.G. *Topografia Abreviada* – 10ª Edição.

5. TEACHING METHODOLOGIES (INCLUDING EVALUATION)

Theoretical and practical expository method. Practical field classes. Audiovisual's resources and appropriate software (Autocad Civil 3D). Resolution of practical exercises. Availability of e-learning contents.

Final classification = 60% Written test + 30% Practical assignments + 10% Practical assessment in field.

Given the importance of the practical component (practical works) to achieve the know-hows granted by the subject, these are mandatory for any evaluation period. The practical works requires presentation and defense.

6. COHERENCE BETWEEN TEACHING METHODOLOGIES AND OBJECTIVES

In order to enable the student to represent geographic entities based on topographic observation, practical classes are given with the application of appropriate topographic instruments and software (Autocad Civil 3D) for the automatic treatment of observations collected in the field. In order to analyse the tracing of the plane circular curves, are taught contents related to the calculation of curves, as well as the study of the tracing of a circular curve on the topographic map. Learning is reinforced by the development of practical work, applied to the real problems, which the student have to present and defend, demonstrating the degree of mastery. This technique aims to encourage the student to carry out a topography project and elaborate the respective descriptive memory.

7. ATTENDANCE

Not applicable.

8. CONTACTS AND OFFICE HOURS

e-mail: esoares@ipg.pt

Office 71

Office hours: Tuesday 3:30 pm to 5:30 pm.

9. OTHERS

The student is responsible for the safety and proper functioning of all equipment used in class, whether topographical equipment or computers in the classroom.

DATE

15 de março de 2024

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SIGNATURES

Professor

(Maria Elisabete Santos Soares)

Area Coordinator

(Maria Elisabete Santos Soares)