

<p>POLI ESCOLA SUPERIOR TECNOLOGIA GESTÃO TÉCNICO GUARDA</p>	<h2>SUBJECT DESCRIPTION</h2>	<p>MODELO PED.013.03</p>
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Course	Energy and Environment					
Subject	Cartography and Geographic Information Systems					
Academic year	2023/2024	Curricular year	3rd	Study period	1st semester	
Type of subject	Compulsory	Student workload (H)	Total: 139	Contact: 75	ECTS	5
Professor(s)	Maria Elisabete Santos Soares, Ph.D.					
<input checked="" type="checkbox"/> Area/Group Coordinator <input type="checkbox"/> Head of Department	Maria Elisabete Santos Soares, Ph.D.					

PLANNED SUBJECT DESCRIPTION

1. LEARNING OBJECTIVES

Understand the representation, reading and interpretation of Geographic Information. To know the applicability of Geographic Information in studies of the territory, mainly directed to environmental problems. Know how to organize and structure geographic data in a Geographic Information System (GIS). Be able to implement spatial analysis in a GIS environment applied to the study area.

2. PROGRAMME

1. *Introduction. General concepts of geographic information.*
2. *Courses involved in the acquisition of geographic information.*
3. *Interpretation and analyze of geographic information.*
 - a. *Cartography. Classification of maps. Representation's scales. Simbology in maps.*
 - b. *Cartographic coordinate systems.*
 - c. *Methods for measuring areas in maps.*
 - d. *Topographic relief and its representation and interpretation.*
 - e. *Cartographic representation focused to the study of environmental problems. Some examples.*
4. *Introduction to Geographic Information Systems (GIS).*
5. *GIS data models and structures. Attributes and geographical entities. Vectorial model and raster model.*
6. *Using GIS tools. Inquire the database (alphanumeric and geographic); extract data from the geographical database; carry out operations to edit attributes and geographical entities; create and structure a geographical database and implement it in a GIS environment; perform spatial analysis operations; create layouts; create graphs and reports of the attributes. Resolution of practical exercises.*
7. *Application of GIS in solving practical problems.*

3. COHERENCE BETWEEN PROGRAMME AND OBJECTIVES

The syllabus contents of the curricular unit are developed in such a way that the student obtains knowledge to interpret Geographic Information, represented in different formats and from different sources, and to be able to apply it jointly; use Geographic Information Systems to solve problems. In the end, the student should be able to identify and use the different formats of representation of the Earth's surface, structure geographic data in a GIS environment and perform spatial analysis.

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4. MAIN BIBLIOGRAPHY

Compulsory:

- [1] *Texts support elaborated and provided by the teacher.*
- [2] Burrough, P.A.; McDonnell, R.A. (2000) *Principles of Geographical Information Systems*. Oxford University Press.
- [3] Casaca, João; Matos, J.; Baio, M. (2000) *Topografia Geral*. Lidel, Edições Técnicas.
- [4] Demers, Michael N. (2009) *Fundamentals of Geographic Information Systems*. Fourth Edition. John Wiley & Sons, Inc.
- [5] ESRI, 2016. *ArcGIS 10.5 Using ArcGis Desktop*.
- [6] Instituto Geográfico do Exército (2004) *Manual de Leituras de Cartas*, 6ª Edição.
- [7] Skidmore, A., *Environmental Modelling with GIS and Remote Sensing*.

Recommended:

- [1] Garcia-Molina, Hector; Ullman, Jeffrey D.; Widom, Jennifer (2002) *Database Systems - The Complete Book*. International Edition. Pearson Education International.
- [2] Instituto Geográfico do Exército (2004) *Sistemas de Referênciação*, 3ª Edição.
- [3] Longley, Paul A.; Goodchild, Michael F.; Maguire, David J.; Rhind, David W. (2001) *Geographic Information Systems and Science*. John Wiley & Sons, Ltd.
- [4] Longley, Paul A.; Goodchild, Michael F.; Maguire, David J.; Rhind, David W. (2005) *Geographic Information Systems and Science*. Second edition. John Wiley & Sons, Ltd.
- [5] Matos, J.L. (2008) *Fundamentos de Informação Geográfica*. 5.ª Edição. Lidel, Edições Técnicas.
- [6] Paredes, E.A. (1994) *Sistemas de Informação Geográfica – Princípios e Aplicações*. Editora Érica.

5. TEACHING METHODOLOGIES (INCLUDING EVALUATION)

Theoretical, theoretical-practical, laboratory and tutorial expository method. Use of audiovisual resources and GIS software. Resolution of practical exercises. Availability of e-learning contents.

Evaluation continuous: *Theoretical-practical test + Practical works with presentation and practical exercise with GIS Software.*

Evaluation not continuous: *Theoretical-practical test + Practical test. The students who did not taken the practical assessment component, take a practical exam, using the GIS software, instead of practical work.*

Mandatory to carry out the two components of the evaluation.

The theoretical-practical test can be replaced by research work.

6. COHERENCE BETWEEN TEACHING METHODOLOGIES AND OBJECTIVES

The theoretical and theoretical-practical expository method allows the student to understand the importance of Geographic Information for solving problems related to the scope of the study. The practical application of the GIS software allows learning to organize and structure a GIS database, in order to perform spatial analysis applied to territory studies. The practical works applied to studies related to the environment allow the students to understand the applicability of Geographic Information and GIS for solving problems within the scope of the subject.

7. ATTENDANCE

Nothing to refer.

8. CONTACTS AND OFFICE HOURS

<p>POLI ESCOLA SUPERIOR TECNOLOGIA GESTÃO TÉCNICO GUARDA</p>	<p>SUBJECT DESCRIPTION</p>	<p>MODELO PED.013.03</p>
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Email: esoares@ipg.pt

Office: 71 (ESTG)

Office hours:

Wednesday (11:30 am to 12:30 pm)

Thursday (10:30 am to 12:30 pm)

9. OTHERS

Nothing to refer.

DATE

22 de setembro de 2023

SIGNATURES

Professor

(Maria Elisabete Santos Soares)

Area/Group Coordinator

(Maria Elisabete Santos Soares)