

POLI ESCOLA SUPERIOR TECNOLOGIA GESTÃO TÉCNICO GUARDA	SUBJECT DESCRIPTION	MODELO PED.013.03
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Course	Data Science and Artificial Intelligence					
Subject	Programming for Data Science					
Academic year	2023/2024	Curricular year	1st	Study period	2nd semester	
Type of subject	Compulsory	Student workload (H)	Total: 182	Contact: 90	ECTS	6,5
Professor(s)	Doutor Paulo Jorge Costa Nunes					
<input checked="" type="checkbox"/> Area/Group Coordinator <input type="checkbox"/> Head of Department	(select)	Doutor José Carlos Coelho Martins da Fonseca				

PLANNED

1. LEARNING OBJECTIVES

- 1) Know the basic concepts of a programming language suitable for Data Science.
- 2) Know data structures of that language.
- 3) Understand the data structures of Data Science libraries.
- 4) Apply the language using object-oriented paradigm.
- 5) Use the language with relational and non-relational databases.

2. PROGRAMME

- 1) Introduction to the Python Language
- 2) Data structures in Python
- 3) Object Oriented Python
- 4) Python Libraries for Data Science: Panda, Numpy, and other.
- 5) Data Types and Structures in Data Science bookstores: (Example: Numpy; arrays, ndarrays; Panda: Series, Dataframe, Panel)
- 6) Python and MySQL Lite
- 7) Python and MongoDB

3. COHERENCE BETWEEN PROGRAMME AND OBJECTIVES

Content 1 is consistent with objective 1. Content 2 is consistent with objective 2. Content 3 is consistent with objective 4. Content 4 is consistent with objective 3. Content 5 is consistent with objective 3. Content 6 and 7 are consistent with objective 4.

4. MAIN BIBLIOGRAPHY

- [1] <https://docs.python.org/3/> [Out 2021]
- [2] Programação em Python-Fundamentos e resolução de problemas. 2015, FCA. ISBN: 978-972-722-816-4.
- [3] Niall O'Higgins, MongoDB and Python, September 2011, O'Reilly Media, Inc. ISBN: 9781449310370
- [4] Lukaszewski, A., & Reynolds, A. (2010). MySQL for Python. Packt Publishing Ltd. ISBN 978-1-849510-18-9
- [5] Rance D. Necaie (2010). Data Structures and Algorithms Using Python. ISBN 978-0-470-61829-5

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[6] Wes McKinney (2013). Python for Data Analysis. O'Reilly Media, Inc. ISBN: 978-1-449-31979-3

5. TEACHING METHODOLOGIES (INCLUDING EVALUATION)

Teaching methodologies:

- 1) Lecture;
- 2) Interactive lesson;
- 3) Troubleshooting;
- 4) Practical group work.

Evaluation methodologies:

Continuous evaluation: 40% Practical group work + 60% Assessment test.

Other assessment periods: Written test.

6. COHERENCE BETWEEN TEACHING METHODOLOGIES AND OBJECTIVES

Expository lesson is coherent with the objectives due to the need to present the theoretical contents to the students.

The interactive lesson is consistent with the objectives, as the student/teacher interaction helps to learn concepts in addition to introducing new ideas, perspectives and solutions that can be applied in the implementation, manipulation and study of different strategies for code development.

Problem solving is consistent with the objectives as the application of theoretical content to practical exercises allows for a better consolidation of knowledge.

Practical work is coherent with the objectives since the work allows the student to develop his individual organizational capacity and recognize the advantages of working in a group. In carrying out the work, students have to solve a problem and are obliged to apply most of the acquired knowledge. Group work also allows the student to consolidate the knowledge acquired in the curricular unit and to develop their problem-solving skills.

7. ATTENDANCE

There are no minimum requirements.

8. CONTACTS AND OFFICE HOURS

Nome	E-Mail	Telephone	Office #	Office hours
Paulo Nunes	pnunes@ipg.pt		20	Monday: 11:30 to 13:00 Monday: 14:00 to 15:30 Tuesday: 11:30 to 13:00

DATE

19 February 2024

SIGNATURES

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

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Professor

Paulo Jorge Costa Nunes
(Professor Adjunto Paulo Jorge Costa Nunes)

Area/Group Coordinator

(Professor Coordenador José Carlos Coelho Martins da Fonseca)