

Degree programme	Type	Course
Interactive Communication	OP	4

Contact lecturer

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Group languages

You can consult this information at the [end](#) of the document.

Prerequisites

- Basic knowledge of Microsoft Excel or OpenOffice Calc.
- Python knowledge acquired in previous subjects.
- A clear desire to learn data-oriented Python.

Objectives

The main objective of the course is to provide students with the basic skills and competencies to be able to manage, analyze and visualize large volumes of structured information. For this, we will make an introduction to the Python programming language, oriented exclusively to working with data. We will emphasize on the methods of data mining, cleaning and transformation of information for its subsequent analysis. For this we will focus on libraries such as Pandas and Numpy. For the analysis and visualization section we will dive into Tableau Desktop.

Learning outcomes

1. Distinguish the salient features in all types of documents within the subject.
2. Cross-check information to establish its veracity, using evaluation criteria.
3. Submit course assignments on time, showing the individual and/or group planning involved.
4. Identify situations in which a change or improvement is needed.
5. Propose new methods or well-founded alternative solutions.
6. Identify the social, economic and environmental implications of academic and professional activities within one's own area of knowledge.
7. Propose viable projects and actions to boost social, economic and environmental benefits.
8. Propose projects and actions that are in accordance with the principles of ethical responsibility and respect for fundamental rights and obligations, diversity and democratic values.
9. Propose projects and actions that incorporate the gender perspective.
10. Communicate using language that is not sexist or discriminatory.
11. Critically analyse the principles, values and procedures that govern the exercise of the profession.
12. Explain the explicit or implicit deontological code in your area of knowledge.
13. Evaluate the impact of problems, prejudices and discrimination that could be included in actions and projects in the short or medium term in relation to certain people or groups.
14. Analyse a situation and identify its points for improvement.
15. Weigh up the risks and opportunities of both one's own and other people's proposals for improvement.
16. Plan and execute academic projects in the field of big data.
17. Solve basic problems in big data.

18. Share experiences with the group as a path to learning, in order to work subsequently in multidisciplinary groups.
19. Describe the infrastructure needed to store big data.
20. Explain the characteristics of the infrastructure needed to recover big data.
21. Explain the infrastructure needed to process big data.
22. Differentiate between the various types of existing architectures for working with big data.
23. Extract large volumes of data from social networks and the new digital media in particular.

Contents

Block 1: Big Data Analysis:

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- Introduction to Big Data and data analysis with Python.
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- Basic infrastructure for data manipulation with Python.
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- Data analysis using the Pandas library.
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- Data sources (APIs, web scraping...)
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Block 2: Big Data Visualization:

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- Principles of data visualization.
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- Presentation formats for Big Data.
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- Big Data visualization tools.
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The detailed calendar outlining the content of the different sessions will be presented on the day the course is introduced and will also be made available on the course's Virtual Campus site, where students will be able to find the various teaching materials deemed appropriate by the instructor, along with all the information

necessary for appropriately following the course. In the event of a change in teaching modality due to force majeure, as determined by the competent authorities, the instructor will inform students of any resulting changes to the course schedule and teaching methodologies.

Learning activities and methodology

Title	Hours	ECTS	Learning outcomes
Hours of study	27	1.08	16, 17
Group Final Project	50	2	1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 13, 14, 16, 17, 22, 23
Laboratory sessions	33	1.32	7, 16, 17, 18, 19, 20, 21, 22, 23
Laboratory practices preparation	25	1	4, 7, 14, 17, 18, 22, 23
Theory and guided hands-on learning	15	0.6	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23

Theoretical and practical sessions.

Note: The course content will be sensitive to issues related to gender perspective and the use of inclusive language.

Annotation: within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Assessment

Continuous assessment activities

Title	Weight	Hours	ECTS	Learning outcomes
Final group Project	50%	0	0	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23
Attendance and Participation	10%	0	0	16, 17, 18
Classroom exercises	35%	0	0	1, 2, 4, 16, 19, 20, 21, 22
Oral presentation in the classroom	5%	0	0	1, 3, 6, 10, 14

The competencies of this subject are assessed through the following activities:

- Attendance and participation (10% of the final grade).
- In-class exercises (35% of the final grade).
- Group practical project (50% of the final grade).
- Oral presentations of the projects (5% of the final grade).

The final grade will be the sum of the scores obtained in each of these components.

It is essential to complete and pass both the in-class exercises and the group practical project in order to pass the subject.

Students who do NOT pass the continuous assessment have the option to take a final exam, which will be held on the last day of class. This exam will include both theoretical and practical components. To sit the final exam, it is mandatory to have submitted the group project.

This subject offers the possibility of a single assessment. The conditions for being assessed under this modality will be explained on the first day of class.

If a student commits any irregularity that could significantly alter the outcome of an assessment, that assessment will be graded with a 0, regardless of any disciplinary proceedings that may be initiated. If multiple irregularities are detected in the assessment activities of the same subject, the final grade for that subject will be 0.

In this course, the use of Artificial Intelligence (AI) technologies is not permitted at any stage. Any assignment containing content generated by AI will be considered a breach of academic integrity and may result in a partial or total penalty to the assignment grade, or more serious sanctions in severe cases. Any irregularity committed during an assessment activity (academic fraud, plagiarism, or improper use of AI, unless such use is expressly authorized in the course syllabus) that could lead to a significant variation in the grade will result in that activity being graded with a 0. Where the course syllabus stipulates that obtaining a minimum grade on that assessment activity is an essential requirement for passing the course, or where multiple irregularities occur in the assessment activities of the same course, the final grade for that course will be 0. Independent of the above, disciplinary proceedings may be brought against any student who commits any of these irregularities.

Any student suspected of submitting work that has been generated by AI, produced by other people, or copied; that includes AI-generated content without proper referencing; or that does not fall within permitted uses, may be asked to provide prior drafts or other materials that can demonstrate the work is original and unpublished, the product of their own authorship. Students may also be required to explain or justify their work separately. Instructors may also use AI detection systems or carry out any verification tasks they deem appropriate. If, following review, irregularities are found to have been committed, the work may be graded with a zero and the student may be subject to further disciplinary measures.

Bibliography

Ghani, Norjihhan Abdul, et al. (2019). Social media big data analytics: A survey. *Computers in Human behavior*, 101, 417-428.

Kelleher, John D.; Namee, Brian Mac & D'arcy, Aoife (2020). *Fundamentals of machine learning for predictive data analytics: algorithms, worked examples, and case studies*. MIT press.

Knaflic, Cole Nussbaumer (2015). *Storytelling with data: A data visualization guide for business professionals*. John Wiley & Sons.

Lomborg, Stine & Bechmann, Anja (2014). Using APIs for data collection on social media. *The Information Society* 30(4), 256-265.

Parks, Malcolm R. (2014). Big data in communication research: Its contents and discontents. *Journal of communication* 64(2), 355-360.

Tufekci, Zeynep (2014). Big questions for social media big data: Representativeness, validity and other methodological pitfalls. *Proceedings of the international AAAI conference on web and social media*, 8(1).

Van Atteveldt, Wouter; Trilling, Damian & Arcila, Carlos (2022). *Computational analysis of communication*. John Wiley & Sons.

Software

- Tableau
- Gephi
- Pycharm
- Microsoft Excel / OpenOffice Calc

Course groups and languages

The information provided is provisional until November 30. After this date, you will be able to consult the language of each group through this [link](#). To access the information, you will need to enter the course CODE

Type of teaching	Group	Language	Semester	Shift
(TE) Theory	6	Catalan	second semester	afternoon
(PLAB) Practical laboratories	61	Catalan	second semester	afternoon