

Course guide

804484 - VDC - Data Display

Last modified: 18/05/2026

Unit in charge:	Image Processing and Multimedia Technology Centre	
Teaching unit:	804 - CITM - Image Processing and Multimedia Technology Centre.	
Degree:	BACHELOR'S DEGREE IN VIDEO GAME DESIGN AND DEVELOPMENT (Syllabus 2014). (Optional subject). BACHELOR'S DEGREE IN DIGITAL DESIGN AND MULTIMEDIA TECHNOLOGIES (Syllabus 2023). (Optional subject).	
Academic year: 2026	ECTS Credits: 6.0	Languages: English

LECTURER

Coordinating lecturer: Molins Pitarch, Carla

Others:

TEACHING METHODOLOGY

There are two types of classes that we call Theory and Practice:

Theory refers to reference contents, main glossary, history of the field, state of the art, resources, books, concepts, authors, etc.

Practice refers to everything related to the data visualization projects that will be developed during the semester.

There are sessions where the two types of classes co-occur.

Participation is essential, as the aim is to develop the ability to communicate ideas based on data and information.

LEARNING OBJECTIVES OF THE SUBJECT

Knowledge

Identify the main emerging technologies currently used by industry, as well as some of the fundamentals of artificial intelligence.

Skills

Apply knowledge related to data visualisation from a research and applied-professional point of view, in order to have a basic command of how to work with data: collecting, transforming, representing and presenting it.

1. Approach the discipline of data visualization from a theoretical/research point of view.
2. Approach the discipline of data visualization from a practical/professional point of view.
3. Approach the discipline of data visualization from an experimental point of view.
4. Understand the mechanisms and psychological processes of attention, perception, memory, learning, and emotions and their role in the interaction process between humans and computers.
5. Know the methodology and process of creating a data visualization.
6. Know what they are and how to work with data: collect them, transform them, represent them, and present them.
7. Critical evaluation of visualization tools
8. Identify personal knowledge needs to work in a transdisciplinary field.

STUDY LOAD

Type	Hours	Percentage
Self study	90,0	60.00
Guided activities	12,0	8.00
Hours large group	18,0	12.00
Hours medium group	30,0	20.00

Total learning time: 150 h

CONTENTS

PART A: Fundamentals. Analog Data Display

Description:

Course presentation. Course norms.

What is data?

Retrospective of history of data visualization.

Class dynamics: Visualization of data in space.

Analog data collection

Analog data analysis

Analog data display.

Full-or-part-time: 10h

Practical classes: 10h

PART B: Consolidation. Digital Data Display

Description:

Visual design and hierarchy.

Graphics anatomies.

Visual Keys

Encoding information.

Visualization tools.

Full-or-part-time: 46h

Practical classes: 16h

Self study : 30h

PART C: Final Project. Interactive Data Visualization

Description:

Data, Interaction and Society.

Class Dynamics: Data Viz Guerrilla

Storytelling.

Interactivity

Accessibility and responsibility.

Dashboards.

Full-or-part-time: 90h

Guided activities: 30h

Self study : 60h

ACTIVITIES

Activities

Description:

Individual class practices to work on weekly topics.

Group class exercises: Visualization of Data in space, Data Viz Guerrilla to take the subject further.

Full-or-part-time: 10h

Guided activities: 10h

Individual assignments

Description:

Analog Quantified Self Exercise

Quantified Self Digital exercise

Final Project Report.

Full-or-part-time: 50h

Practical classes: 20h

Self study: 30h

Group deliverables

Description:

Interactive Final Project

Full-or-part-time: 75h

Practical classes: 25h

Self study: 50h

GRADING SYSTEM

- Individual class practices - 10%
- Group class practices - 10%
- Analog Quantified Self Exercise: individual deliveries - 15%
- Quantified Self Digital exercise: individual delivery - 20%
- Final Project: group presentation - 25%
- Final Project: Individual Report - 10%
- Participation and learning attitude - 10%

Irregular actions that may lead to a significant variation in the grade of one or more students constitute a fraudulent performance of an evaluation act. This action will lead to a descriptive grade of fail and a numerical grade of 0 for the ordinary global assessment of the subject, without the right to re-evaluation.

If the teachers have evidence of the use of AI tools that are not permitted in the assessment tests, they may summon the students involved to an oral test or a meeting to verify the authorship.

EXAMINATION RULES.

Part of the practices and exercises can be done during classes with a teacher. Students will also have to devote time to independent work (outside class hours) to carry out these practices and exercises.

To carry out the practicals and exercises, follow the instructions given in the "Statement" document and the instructions that may be given in the corresponding class for this purpose.

The practice or solved exercise must be deposited in the CITM Virtual Campus. Each statement includes a delivery date; only those practices or exercises delivered on the delivery date and before the time marked as a limit for this will be taken into account for the evaluation.

The evaluation of the practices does not only entail the resolution of these, but also the defense of the results when the group is required for this during the classes and the creation of the corresponding documents.

Any incident that does not allow the practice to be resolved within the indicated period must be communicated to the teacher by means of a message via the Virtual Campus; after this communication, the relevance or not of the causes that motivate the non-presentation of the practice will be resolved and the alternatives will be established to complete the evaluation if the causes are justified.

The documents must be completed following the instructions given in them, especially with regard to labeling file names. Under no circumstances will the layout of the document be modified or saved in a format or version other than the one indicated. The correct management of the documentation provided is an aspect related to the skills to be acquired and is, therefore, subject to evaluation.

BIBLIOGRAPHY

Basic:

- Bremer, NAdieh ; Wu, Shirley. Data Sketches: A Journey of imagination, exploration, and beautiful data visualizations. Boca Raton: CRC Press, 2021.
- Cairo, A. Functional Art, The: An Introduction to Information Graphics and Visualization. San Francisco, US: New Riders, 2012.
- Tufte, E. R., Goeler, N. H., & Benson, R.. Envisioning information (Vol. 126). CT: Graphics press, 1990.
- Cairo, Alberto. . The Art of Insight: How Great Visualization Designers Think. John Wiley & Sons Inc, 2023.
- Cairo, Alberto. How Charts Lie: Getting smarter about Visual Information. Washington: National Geographic Books, 2020.
- Drucker Johanna. Graphesis: Visual Forms of Knowledge Production. 2014.
- Lima, Manuel. The Book of Circles. Princeton Architectural Press, 2017.
- Lima, Manuel. The Book of Trees. Princeton Architectural Press,
- Levin, Golan ; Brain, Tega. Code as Creative Medium: A Handbook for Computational Art and Design. Cambridge: MIT Press, 2021.
- Lima, Manuel. Visual Complexity: Mapping Patterns of Information. Princeton Architectural Press, 2013.
- Lupi, Georgia ; Posavec, Stefanie. Dear Data. Princeton Architectural Press, 2016.
- Rendgen, Sandra. History of Information Graphics. 2019.
- Bremer, NAdieh ; Wu, Shirley. Data Sketches: A Journey of imagination, exploration, and beautiful data visualizations. Boca Raton: CRC Press, 2021.
- Thorp, Jer. Living in Data: A Citizen's Guide to a Better Information Future. USA: Picador, 2022.
- Tufte, Edward. Beautiful Evidence. 2006.
- Tufte, Edward. Visual Explanations: Images and Quantities, Evidence and Narrative. 1997.
- Yau, Nathan. Data Points: Visualization That Means Something. Hoboken: John Wiley & Sons, 2013.
- Sandra Rendgen and, Julius Wiedemann. Understanding the World. The Atlas of Infographics. TASCHEN, ISBN 383659496X.

RESOURCES

Audiovisual material:

- Recursos Visualització. www.visualisingdata.com/resources
- Papers DataViz. piim.newschool.edu/research/PIIM-PAPER

Hyperlink:

- Lima, M. (2011). Visual complexity. <http://www.visualcomplexity.com>.
- Graphic presentation. by Brinton, Willard Cope, 1939. <https://archive.org/details/graphicpresentat00brinrich/mode/2up>- Catàleg visualitzacions. Resource

Other resources:

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