1. BASIC DETAILS

Course	**Computer Graphics and Data Visualization**
Degree	Bachelor's Degree in Advertising
School/Faculty	Social and Communication Sciences
Year	3º
ECTS	3
Type	Optional
Language(s)	Spanish
Delivery Mode	On campus
Semester	S1

2. INTRODUCTION

Computer Graphics and Data Visualization is an optional course of the Bachelor's Degree in Advertising. It covers the role played by data in the context of digital communication, analysing the concepts of Big Data, Open Data and Data Science, as well as the various techniques used in capturing, processing and analysing data. Students will also learn about the various tools used in computer graphics and data visualization.

3. SKILLS AND LEARNING OUTCOMES

Key skills (CB, by their acronym in Spanish):

CB1: Students have shown their knowledge and understanding of a study area originating from general secondary school education, and are usually at the level where, with the support of more advanced textbooks, they may also demonstrate awareness of the latest developments in their field of study.

CB2: Students can apply their knowledge to their work or vocation in a professional manner and possess the skills which are usually evident through the forming and defending of opinions and resolving problems within their study area.

CB5: Students have developed the learning skills necessary to undertake further study in a much more independent manner.

Transversal skills (CT, by their acronym in Spanish):

CT1: Independent Learning: The ability to choose the most effective strategies, tools and opportunities for independent learning and implementation of what they have learnt.

CT3: Ability to adapt to new circumstances: Being able to evaluate and understand different points of view, taking different approaches to suit the situation.

CT13: Critical thinking: Ability to analyse an idea, occurrence or situation from different perspectives and adopt their own personal viewpoint of it based on scientific rigour and subjective debate rather than from intuition.

CT18: Use of information and communication technology (ICT): Ability to effectively use information and communication technology such as search tools, processing and storing information, as well as developing communication skills.

CT8: Entrepreneurial spirit: Ability to take on and carry out activities that generate new opportunities, foresee problems or lead to improvements.

CT9: Global mindset: Be able to show interest in and understand other customs and cultures, be aware of your own biases and work effectively as part of a global community.

Specific skills (CE, by their acronym in Spanish):

CE3: Knowledge of technological tools, how to use them and apply them to advertising.

CE6: Ability to use creative techniques in the design of advertising products in an innovative way.

CE7: Knowledge of the specific technological tools, hardware and software required for the creation, production and exchange of projects, as well as issuing of advertising products.

CE8: Knowledge of the techniques and uses of graphic design applied to means of communication and to the new advertising environments according to aesthetic, audiovisual, artistic criteria, etc., providing value to each project through the creative process.

CE12: Knowledge of the linguistic resources and advertising communication techniques to be used in the execution of advertising productions.

CE13: Ability to recognise and implement the basic legal regulations, ethics and deontology in the advertising communication sector as a whole.

CE14: Knowledge of the technical tools to choose the most appropriate ones for carrying out both 2D and 3D animation projects.

CE15: Ability to devise, give form to and carry out advertising projects while bearing in mind the social areas in which the project will be carried out.

CE18: Ability to detect the trends of each of the communication disciplines according to their use in the advertising sector.

CE22: Knowledge of the correct use of both spoken and written Spanish as a way to convey information in the scope of advertising and in the professional field.

Learning outcomes (RA, by their acronym in Spanish):

RA1: Students will obtain the skills and abilities required to use the various database creation and processing techniques.

RA2: Students will obtain the skills and abilities required to create interactive computer graphics.

The following table shows how the skills developed in the course match up with the intended learning outcomes:

Skills	Learning outcomes
CB1, CB2, CB5, CG1, CT1, CT3, CT13, CT18, CE3, CE7, CE12, CE13, CE15, CE22	RA1
CB1, CB2, CB5, CG2, CG3, CT1, CT3, CT13, CT18, CE3, CE7, CE8, CE12, CE13, CE14, CE15, CE18, CE22	RA2

4. CONTENTS

UA1. Introduction to data culture. Use in the field of advertising.
UA2. General principles of computer graphics.
UA3. General principles of data visualization.
UA4. Project.

5. TEACHING/LEARNING METHODS

The types of teaching/learning methods are as follows:

- Lecture.
- Case studies.
- Collaborative learning.
- Problem-based learning.
- Project-based learning.

6. LEARNING ACTIVITIES

The types of learning activities, plus the amount of time spent on each activity, are as follows:

On-campus:

Learning activity	Number of hours

Lectures	15
Case study analysis	5
Problem-solving	15
Oral presentations	10
Drawing up reports and written work	5
Tutorials	5
Independent working	20
TOTAL	75

7. ASSESSMENT

The assessment methods, plus their weighting in the final grade for the course, are as follows:

On-campus:

Assessment system	Weighting
On-campus knowledge tests	40%
Learning activities	50%
Performance observation	10%

On the Virtual Campus, when you open the course, you can see all the details of your assessment activities and the deadlines and assessment procedures for each activity.

8. BIBLIOGRAPHY

We recommend that you consult the resources below:

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- Madden, S. (2012). From databases to big data. IEEE Internet Computing, 16(3), 4-6.
- Manovich, L. (2005). El lenguaje de los nuevos medios de comunicación. Barcelona, España: Ediciones Paidós. Col. Paidós Comunicación.
- Mayer-Schönberger, V. y Cukier, K. (2015). Big data: la revolución de los datos masivos. Madrid, España: Turner.
- Kimball, Ralph and Caserta, Joe. (2007). The Data WarehouseETL Toolkit: Practical Techniques for Extracting, Cleaning, Conforming, and Delivering Data, Wiley. ISBN-13 978-0764567575

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- Padial Solier, Antonio. (2017). Aprende SQL en un fin de semana: El curso definitivo para crear y consultar bases de datos, ISBN 9781520363462
- Indurkhya, N., and Damerau, F. (2010). Handbook Of Natural Language Processing, 2nd Edition. Boca Raton, FL: CRC Press. ISBN 978-1-4200-8592-1
- Grus, J. Data Science from Scratch. O'Reilly Media.
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- MySQL Reference Manual. https://dev.mysql.com/doc/refman/5.7/en/
- Bertin, J. (1981). Graphics and Graphic Information Processing. Berlin, Alemania: de Gruyter.
- Cairo, A. (2016). The Truthful Art: Data, charts, and maps for communication. USA: New Riders.
- Meirelles, I. (2013). La información en el diseño. Barcelona, España: Parramón.
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