Course guide
804252 - ADA - Data Analysis

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). (Compulsory subject).

Academic year: 2026 **ECTS Credits:** 6.0 **Languages:** English

LECTURER

Coordinating lecturer: Loepfe, Lasse

Others: Loepfe, Lasse

TEACHING METHODOLOGY

The teaching methodology is divided in four parts:

- Sessions for the content's exposition at classroom
- Practical working sessions at classroom
- Practical development of applications with special reference to the Dashboard project
- Autonomous work to study and carry out exercises and activities

LEARNING OBJECTIVES OF THE SUBJECT

- To analyse the data provided by the metrics and indicators of a game to improve its balance in terms of design and economic performance.

- To design processes based on data analysis for decision making in an objective, responsible and ethical way.

- To identify the processes necessary for the "game analytics".

- To remember the main KPIs used in the industry.

STUDY LOAD

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

Total learning time: 150 h

CONTENTS

1. Introduction

Description:
1.1 Planning
1.2 Adquision & Storage
1.3 Analytics
1.4 Presentation

Full-or-part-time: 10h
Theory classes: 2h
Guided activities: 2h
Self study : 6h

2. KPIs

Description:
Overview of the most commonly used indicators in game analytics
Number of users: DAU, MAU
Retention: DAU/MAU, D1,D3,D7
Monetisation: ARPU, ARPPU
Marketing: CPI
Community: Virality
Performance: FPS, Crashes

Full-or-part-time: 10h
Theory classes: 4h
Self study : 6h

3. Data bases

Description:
3.1 Events
3.2 Server structure
3.3 SQL
3.3.1 Tables
3.3.2 Queries
3.3.3 Views

Full-or-part-time: 30h
Theory classes: 4h
Guided activities: 8h
Self study : 18h

4. Visualization

Description:
4.1 General considerations of visualization
4.2 Buisness inteligence software

Full-or-part-time: 20h
Theory classes: 2h
Guided activities: 6h
Self study : 12h

5. Case studies

Description:
5.1 Level progression
5.2 Spatial Data
5.3 Level Design
5.4 IAP

Full-or-part-time: 40h
Theory classes: 4h
Laboratory classes: 12h
Self study : 24h

6. Statistics

Description:
6.1 Sampling
6.2 Regressions
6.3 Classification
6.4 Networks

Full-or-part-time: 20h
Theory classes: 4h
Guided activities: 4h
Self study : 12h

7. Machine Learning and Big Data

Description:
7.1 Uses and abuses of ML
7.2 Supervised vs unsupervised learning
7.3 Cost function and its optimisation
7.4 Regressions
7.5 Descicion trees
7.6 Neural Networks
7.7 Suport Vector Machine
7.8 ML-Agents in Unity

Full-or-part-time: 20h
Theory classes: 4h
Laboratory classes: 4h
Self study : 12h

ACTIVITIES

Data Analysis

Full-or-part-time: 18h
Self study: 18h

Predictive Models

Full-or-part-time: 24h
Self study: 24h

Dashboard

Full-or-part-time: 48h
Self study: 48h

GRADING SYSTEM

Any academic fraud, plagiarism or use or possession of unauthorised means in an assessment activity leads to a mark of zero (0) for the affected test or assignment. Furthermore, in accordance with the University's regulations, if disciplinary proceedings are initiated the subject is recorded as "Pending Assessment" until a decision is reached. These incidents are managed in accordance with the **Action Framework for Academic Integrity in Assessment at the UPC**.

Practice 1 (Case study 1): 15%
Practice 2 (Case study 2): 20%
Practice 3: 20%
Final exam: 35%
Participation and attitude towards learning: 10%

In case of suspending the subject through continuous evaluation, you will have the option to perform a recovery exam of the theoretical part, corresponding to 35% of the subject's grade.

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

If the lecturers have indications of the use of AI tools not allowed in the evaluation tests, they may summon the students concerned to an oral test or a meeting to verify the authorship.

BIBLIOGRAPHY

Basic:
- Drachen, Anders; Seif El-Nasr, Magy; Canossa, Alessandro, eds. Game analytics: maximizing the value of player data. London: Springer, 2013. ISBN 9781447147688.
- Lovell, Nicholas; Fahey, Rob. Design rules for free-to-play games. London: GAMESbrief, 2012.
- Luton, Will. Free 2 play: making money from games you give away. Upper Saddle River: Pearson Education, 2013. ISBN 9780321919014.

RESOURCES

Hyperlink:
- Game Analytics 101. https://www.raywenderlich.com/2972-game-analytics-101