

# Course guide

## 804252 - ADA - Data Analysis

**Last modified:** 27/07/2022

**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:** 2022    **ECTS Credits:** 6.0    **Languages:** Catalan, English

### LECTURER

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**Coordinating lecturer:** Loepfe, Lasse

**Others:** Loepfe, Lasse

### DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

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**Specific:**

CEVJ 12. Analyse and interpret the various data provided by the metrics and indicators of a game in order to improve its balance in terms of design and economic performance.

### TEACHING METHODOLOGY

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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

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- Learning and use of the analytical approach applied to the development of video games
- Knowledge of the main processes necessary for "game analytics"
- Understanding of common problems in the analytical approach, their detection and means for their solution
- Understanding with the main concepts and KPIs used in the industry
- Knowledge of the most common tools used in the industry, including web applications, installable applications, languages, file formats, etc ...
- Ability to understand and use the most widespread analytical visualizations
- Ability to express yourself for clear and effective communication in reports
- Use of the most common basic analytics techniques
- Familiarity with the most popular and widespread advanced analytics techniques
- Familiarity with the fundamental equations of the sector
- Knowledge of the structured approach of an analytics department



## STUDY LOAD

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

**Total learning time:** 150 h

## CONTENTS

### 1. Introduction

**Description:**

- 1.1 Planning
- 1.2 Adquisition & Storage
- 1.3 Analytics
- 1.4 Presentation

**Related competencies :**

CEVJ 12. Analyse and interpret the various data provided by the metrics and indicators of a game in order to improve its balance in terms of design and economic performance.

**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

**Related competencies :**

CEVJ 12. Analyse and interpret the various data provided by the metrics and indicators of a game in order to improve its balance in terms of design and economic performance.

**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 Business intelligence software

**Related competencies :**

CEVJ 12. Analyse and interpret the various data provided by the metrics and indicators of a game in order to improve its balance in terms of design and economic performance.

**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

**Related competencies :**

CEVJ 12. Analyse and interpret the various data provided by the metrics and indicators of a game in order to improve its balance in terms of design and economic performance.

**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 Decision trees
- 7.6 Neural Networks
- 7.7 Support 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

#### Related competencies :

CEVJ 12. Analyse and interpret the various data provided by the metrics and indicators of a game in order to improve its balance in terms of design and economic performance.

#### Full-or-part-time: 18h

Self study: 18h

### Predictive Models

#### Related competencies :

CEVJ 12. Analyse and interpret the various data provided by the metrics and indicators of a game in order to improve its balance in terms of design and economic performance.

#### Full-or-part-time: 24h

Self study: 24h



## Dashboard

### Related competencies :

CEVJ 12. Analyse and interpret the various data provided by the metrics and indicators of a game in order to improve its balance in terms of design and economic performance.

**Full-or-part-time:** 48h

Self study: 48h

## GRADING SYSTEM

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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 55% of the subject's grade.

## BIBLIOGRAPHY

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### Basic:

- Luton, Will. Free 2 play: making money from games you give away. Upper Saddle River: Pearson Education, 2013. ISBN 9780321919014.

- Lovell, Nicholas; Fahey, Rob. Design rules for free-to-play games. London: GAMESbrief, 2012.

- Drachen, Anders; Seif El-Nasr, Magy; Canossa, Alessandro, eds. Game analytics: maximizing the value of player data. London: Springer, 2013. ISBN 9781447147688.

## RESOURCES

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### Hyperlink:

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