# Course guide
# 804252 - ADA - Data Analysis

**Last modified:** 22/06/2023

**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:** 2023 **ECTS Credits:** 6.0 **Languages:** Catalan, English

## LECTURER

**Coordinating lecturer:** Loepfe, Lasse

**Others:** Loepfe, Lasse

## DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

**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

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

- 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 |
|---|---|---|
| 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

**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 Buisness inteligence 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 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

**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

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

**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

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