Course guide
804252 - ADA - Data Analysis

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
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

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours large group</td>
<td>30,0</td>
<td>20.00</td>
</tr>
<tr>
<td>Hours medium group</td>
<td>18,0</td>
<td>12.00</td>
</tr>
<tr>
<td>Self study</td>
<td>90,0</td>
<td>60.00</td>
</tr>
<tr>
<td>Guided activities</td>
<td>12,0</td>
<td>8.00</td>
</tr>
</tbody>
</table>

**Total learning time:** 150 h

CONTENTS

1. Introduction

**Description:**
1.1 Planning
1.2 Acquisition & 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

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:

RESOURCES

Hyperlink: