Course guides
804237 - DESVJ - Game Development

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).
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academic year: 2020 ECTS Credits: 6.0 Languages: Catalan, English, Spanish

LECTURER

Coordinating lecturer: Santamaria Pena, Ramon

Others:

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
CEVJ 5. Use programming languages, algorithmic patterns, data structures, visual programming tools, game engines and libraries for the development and prototyping of video games, in any genre and for any platform and mobile device.

General:
CGFC5VJ. Efficiently design and use the most appropriate types and structures of data to solve a problem related to the development of video games.

Transversal:
07 AAT N2. SELF-DIRECTED LEARNING - Level 2: Completing set tasks based on the guidelines set by lecturers. Devoting the time needed to complete each task, including personal contributions and expanding on the recommended information sources.

TEACHING METHODOLOGY

During each class, the lecturer will first show the students the theory behind the problem that need solving. Together with the students, the lecturer will explore the different solutions that exist in the present that solve and simplify the complexities of real time applications like videogames.

The lecturer will provide source code for the student to study and complete while integrating it in their own source code for future reference and use. Closing each session, the lecturer will provide with ideas for improving the systems challenging student in order to help and orientate the students in the self learning time.

LEARNING OBJECTIVES OF THE SUBJECT

Develop the capabilities to code the main components of a video game.
Gain the knowledge about the basic code components that structure a video game and the relationship to each other in order to create the final result.
Learn to structure the code in the most efficient and flexible way to create results of high quality and stability.
STUDY LOAD

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

Total learning time: 150 h

CONTENTS

- **Loading resources and the XML format**

  **Description:**
  Theory behind the art of loading resources in video games
  The XML format
  The JSON format
  Parsing XML with the help of a library

  **Full-or-part-time:** 15h
  Theory classes: 6h
  Self study : 9h

- **Loading and rendering Tiled maps**

  **Description:**
  Usage of Tiled to create 2D maps
  Introduction to the TMX file format
  Code to load data from TMX files
  Methodology to render orthogonial maps
  Methodology to render isometric maps

  **Full-or-part-time:** 20h
  Theory classes: 8h
  Self study : 12h

- **Meta information and mask maps**

  **Description:**
  Using Tiled for storing meta information.
  Loading of meta information for navigation.
  Alternative case of using mask maps for navigation.

  **Full-or-part-time:** 10h
  Theory classes: 4h
  Self study : 6h
Controlling the FPS and timing the logic

**Description:**
How to control the frame rate.
Ways of manipulating the timing of the logic (pause, bullet time, etc.)

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

Controlling game entities

**Description:**
Theory behind the entity systems for video games.
Coding a full featured entity system.

**Full-or-part-time:** 15h
Theory classes: 6h
Self study: 9h

Graphical User Interface systems

**Description:**
Windows with scroll.
Buttons with images.
Textboxes.
Progress bars.

**Full-or-part-time:** 25h
Theory classes: 10h
Self study: 15h

Real time tweaking systems

**Description:**
Cvar system.
Console to be able to introduce commands in real time.
Menu system to tweak values in real time.

**Full-or-part-time:** 15h
Theory classes: 6h
Self study: 9h

**GRADING SYSTEM**

Three assignments with a weight of 15%, 15% and 30% each of the final grade.
One final examination with a total weight of 30% of the final grade. It will consist of a two hour practical and theoretical test.
One revaluation with a total weight of 30% of the final grade (final exam). It will consist of a two hour practical and theoretical test.
A final 10% grade will be about class participation and attitude.
BIBLIOGRAPHY

Complementary: