804230 - P1VJ - Project I

Coordinating unit: 804 - CITM - Image Processing and Multimedia Technology Centre
Teaching unit: 804 - CITM - Image Processing and Multimedia Technology Centre
Academic year: 2019
Degree: BACHELOR’S DEGREE IN VIDEO GAME DESIGN AND DEVELOPMENT (Syllabus 2014). (Teaching unit Compulsory)
ECTS credits: 6
Teaching languages: Catalan, Spanish, English

Teaching staff
Coordinator: Pillosu González, Ricard

Prior skills
Knowledge of programming using C

Degree competences to which the subject contributes
Specific:
5. Design the mechanics, rules, structure, script and artistic concept of a video game, maximising immersion and criteria of playability and balance to provide the best possible user experience.
7. Master the wide range of professional tools in the sector for developing all kinds of digital content.
8. Identify the production process and methodologies for developing a video game, and the role of each of the profiles and functions involved.
11. Undertake and manage video game design and development projects, including planning, direction, execution and evaluation.
13. 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.

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
Learn how to embark in the development of a video game of small complexity.
Learn how to work in a small team and coordinate with the rest.
### Study load

<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours large group: 18h</th>
<th>12.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours medium group:</td>
<td>20.00%</td>
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<tr>
<td></td>
<td>Hours small group:</td>
<td>0.00%</td>
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<td></td>
<td>Guided activities:</td>
<td>8.00%</td>
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<tr>
<td></td>
<td>Self study:</td>
<td>60.00%</td>
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</tbody>
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## Content

### 1. Development tools

**Learning time:** 20h  
Theory classes: 8h  
Self study: 12h

**Description:**
- Distributed work with Git  
- Services of github.com  
- Tools for communication and teamwork: Trello and Slack

### 2. Introduction to SDL programming

**Learning time:** 25h  
Theory classes: 10h  
Self study: 15h

**Description:**
- Initial setup for a game with SDL  
- Sprites and transparencies  
- Using input devices  
- Using the audio features

### 3. Coding arcade games

**Learning time:** 50h  
Theory classes: 20h  
Self study: 30h

**Description:**
- Modular code structure  
- The renderer and texture management  
- The input subsystem  
- The channels audio  
- Sprite animation and the parallax effect  
- Collision management  
- Foundation for User Interfaces

### 4. FSM and entering Beta

**Learning time:** 25h  
Theory classes: 10h  
Self study: 15h

**Description:**
- Introduction to functional QA  
- QA for quality  
- Graph theory  
- Programming state machines
Qualification system

First Assignment with a weight of 20%: Documenting the arcade game.
Second Assignment with a weight of 15%: First SDL demo.
Third Assignment with a weight of 25%: Playable demo (Alpha).
Final Assignment with a weight of 40%: Final presentation of the game.
WARNING: This subject does not feature any content that can be reevaluated.

Bibliography

Basic:

Others resources:
- Hyperlink
  - http://www.uml.org/
  - http://www.proyectosagiles.org/