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804237 - DESVJ - Game Development

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)
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: Garrigó Invers, Marc

Others: Santamaria Pena, Ramon

Degree competences to which the subject contributes

Specific:

CEVJ 5. (ENG) Utilizar lenguajes de programación, patrones algorítmicos, estructuras de datos, herramientas visuales de programación, motores de juego y librerías para el desarrollo y prototipado de videojuegos, de cualquier género y para cualquier plataforma y dispositivo móvil.

Generical:

CGFC5VJ. (ENG) Diseñar y utilizar de forma eficiente los tipos y estructuras de datos más adecuados a la resolución de un problema relacionado con el desarrollo de videojuegos.

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 soluctions 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.

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Study load

Total learning time: 150h	Hours large group:	18h	12.00%
	Hours medium group:	30h	20.00%
	Hours small group:	0h	0.00%
	Guided activities:	12h	8.00%
	Self study:	90h	60.00%

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Content

Loading resources and the XML format

Learning time: 15h
Theory classes: 6h
Self study : 9h

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

Loading and rendering Tiled maps

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

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

Meta information and mask maps

Learning time: 10h
Theory classes: 4h
Self study : 6h

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

Controlling the FPS and timing the logic

Learning time: 10h
Theory classes: 4h
Self study : 6h

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

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Controlling game entities	Learning time: 15h Theory classes: 6h Self study : 9h

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

Graphical User Interface systems	Learning time: 25h Theory classes: 10h Self study : 15h

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

Real time tweaking systems	Learning time: 15h Theory classes: 6h Self study : 9h

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

Qualification system

Three assignments with a weight of 15%, 15% and 20% each of the final grade.
One final examination with a total weight of 40% of the final grade. It will consist of a two hour practical and theoretical test.
One revaluation with a total weight of 40% of the final grade. It will consist of a two hour practical and theoretical test.
A final 10% grade will be about class participation and attitude.

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Bibliography

Complementary:

Thorn, A. Game engine design and implementation. Sudbury, Mass: Jones & Bartlett Learning, 2011. ISBN 9780763784515.

McShaffry, M.; Graham, D. Game coding complete. 4th ed. Boston, Mass: Course Technology, 2012. ISBN 9781133776574.

Gregory, J. Game engine architecture. 2nd ed. Boca Raton: CRC Press, 2014. ISBN 9781466560017.