Course guide
804230 - P1VJ - Project I

Last modified: 08/02/2024

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: Jesús Alonso

Others:

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 on the development of a video game of moderate complexity.
Learn how to work in a small team and coordinate with the rest.

STUDY LOAD

Type	Hours	Percentage
Guided activities	12,0	8.00
Hours medium group	30,0	20.00
Self study	90,0	60.00
Hours large group	18,0	12.00

Total learning time: 150 h

CONTENTS

1. Development tools

Description:
Distributed work with Git
Services of github.com
Tools for communication and teamwork: Trello and Slack
Development tools: Visual Studio

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

2. Introduction to raylib programming

Description:
Game structure with raylib
Sprites and transparencies
Using input devices
Using audio systems

Full-or-part-time: 35h
Theory classes: 14h
Self study : 21h

3. Coding arcade games

Description:
Modular code structure
Rendering and texture management
The input subsystem
The audio subsystem
Sprite animations
Collision management
User Interfaces

Full-or-part-time: 60h
Theory classes: 24h
Self study : 36h

4. Logic and FSM

Description:
Artificial Intelligence
Graph theory
Coding FSM
QA, testing and debugging

Full-or-part-time: 35h
Theory classes: 14h
Self study : 21h

GRADING SYSTEM

15% - Assignment 1
20% - Assignment 2
30% - Assignment 3
25% - Exam
10% - Attitude
WARNING: This subject does not feature any content that can be revaluated.

BIBLIOGRAPHY

Basic:
- Robert Nystrom. Game Programming Patterns. Genever Benning, 2014. ISBN 0990582906.

Complementary:
- Clinton Keith. Agile Game Development: Build, Play, Repeat. Pearson Education Limited, 2020. ISBN 0136527817.

RESOURCES

Hyperlink:
- https://www.raylib.com/cheatsheet/cheatsheet.html. Raylib cheatsheet
- http://www.proyectosagiles.org/- http://www.uml.org/- https://github.com/raysan5/raylib/wiki. Raylib Wiki
- https://www.raylib.com/examples.html. Raylib examples