Degree competences to which the subject contributes

Basic:
CB6. Ability to apply the acquired knowledge and capacity for solving problems in new or unknown environments within broader (or multidisciplinary) contexts related to their area of study.
CB8. Capability to communicate their conclusions, and the knowledge and rationale underpinning these, to both skilled and unskilled public in a clear and unambiguous way.
CB9. Possession of the learning skills that enable the students to continue studying in a way that will be mainly self-directed or autonomous.

Specific:
CTE1. Capability to model, design, define the architecture, implement, manage, operate, administrate and maintain applications, networks, systems, services and computer contents.
CTE10. Capability to use and develop methodologies, methods, techniques, special-purpose programs, rules and standards for computer graphics.
CTE11. Capability to conceptualize, design, develop and evaluate human-computer interaction of products, systems, applications and informatic services.
CTE12. Capability to create and exploit virtual environments, and to the create, manage and distribute of multimedia content.

Teaching methodology

The course spans six weeks with four hours a week of classroom lectures and labs.

In weekly sessions of two hours, the teacher will present the concepts and techniques studied.

From a practical point of view, students will develop a project in groups appropriate to the load required for the course.

Each week there will be a two-hour lab class in which students will receive guidance.

Learning objectives of the subject

1. To be exposed to general architectures for multimedia applications as well as to develop the ability of developing these kind of applications.
2. To learn the basis on which advanced 3D graphic applications are built by developing specific prototypes.
3. To learn how to implement applications that simulates physical phenomena studied in the course and their applications to computer games and virtual reality environments.
4. To be able to effectively communicate in writing which is the solved problem as well as which is the technical solution developed.
# Study load

<table>
<thead>
<tr>
<th>Total learning time: 75h</th>
<th>Theory classes:</th>
<th>12h</th>
<th>16.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Practical classes:</td>
<td>0h</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>Laboratory classes:</td>
<td>12h</td>
<td>16.00%</td>
</tr>
<tr>
<td></td>
<td>Guided activities:</td>
<td>3h</td>
<td>4.00%</td>
</tr>
<tr>
<td></td>
<td>Self study:</td>
<td>48h</td>
<td>64.00%</td>
</tr>
</tbody>
</table>
# Content

## Introduction

**Degree competences to which the content contributes:**

**Description:**

## Game programming

**Degree competences to which the content contributes:**

**Description:**
Basics concepts. Game Loop. Scripting.

## Level generation

**Degree competences to which the content contributes:**

**Description:**

## Characters and AI

**Degree competences to which the content contributes:**

**Description:**
Animació de personatges. Inteligència artificial: patrons, màquines d'estats.

## Physics

**Degree competences to which the content contributes:**

**Description:**

## Effects

**Degree competences to which the content contributes:**

**Description:**
Appearance improving effects. Shaders. Particle systems.
Qualification system

Students will be evaluated based on two types of knowledge: theoretical and practical.

The theoretical part will be assessed through a written test during the final examination.

The practical part is measured by two parts. One will evaluate the practical merits of the project developed by students. The other grade will assess a technical report on the project that each student will write.

If marks are NT, NP and NM respectively, the final grade will be

\[ N = 0.4NT + 0.4 NP + 0.2 NM \]

Bibliography

Basic: