Course guides
804334 - E3D-A - 3D Scenarios

Unit in charge: Image Processing and Multimedia Technology Centre
Teaching unit: 804 - CITM - Image Processing and Multimedia Technology Centre.

Degree: BACHELOR'S DEGREE IN DESIGN, ANIMATION AND DIGITAL ART (Syllabus 2017). (Compulsory subject).

Academic year: 2021 ECTS Credits: 6.0 Languages: Catalan, Spanish

LECTURER

Coordinating lecturer: Ripoll Tarré, Marc

Others:

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
CEAAD 3. Master the wide range of professional tools in the sector for developing all kinds of digital content.
CEAAD 6. Design, model, texturise and animate 2D and 3D objects, characters and scenes for inclusion in digital projects, audiovisual sequences and video games.
CEAAD 10. Identify the process involved in directing and producing different artistic projects in the digital field, the existing methodologies, the roles involved and their functions.

Transversal:
02 SCS N2. SUSTAINABILITY AND SOCIAL COMMITMENT - Level 2. Applying sustainability criteria and professional codes of conduct in the design and assessment of technological solutions.
04 COE N2. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 2. Using strategies for preparing and giving oral presentations. Writing texts and documents whose content is coherent, well structured and free of spelling and grammatical errors.
05 TEQ N2. TEAMWORK - Level 2. Contributing to the consolidation of a team by planning targets and working efficiently to favor communication, task assignment and cohesion.
06 URI N2. EFFECTIVE USE OF INFORMATION RESOURCES - Level 2. Designing and executing a good strategy for advanced searches using specialized information resources, once the various parts of an academic document have been identified and bibliographical references provided. Choosing suitable information based on its relevance and quality.
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

LEARNING OBJECTIVES OF THE SUBJECT

- Mostrar capacidad para analizar e interpretar correctamente planos de espacios, instalaciones y objetos.
- Mostrar capacidad para diseñar, modelar, texturizar, iluminar y renderizar escenarios 3D, para interactuar con objetos o personajes virtuales.
- Mostrar conocimiento y saber aplicar conceptos relativos al control de la visualización de objetos y escenas mediante visores y cámaras sintéticas y, las técnicas de iluminación a escenarios, recreando ambientes reales o imaginarios.
STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours medium group</td>
<td>22.0</td>
<td>14.67</td>
</tr>
<tr>
<td>Hours large group</td>
<td>24.0</td>
<td>16.00</td>
</tr>
<tr>
<td>Self study</td>
<td>90.0</td>
<td>60.00</td>
</tr>
<tr>
<td>Guided activities</td>
<td>14.0</td>
<td>9.33</td>
</tr>
</tbody>
</table>

Total learning time: 150 h

CONTENTS

Game Design

Description:
- Basic concepts
- Mechanics vs themes
- Rewards and challenges
- Fun

Full-or-part-time: 10h
- Theory classes: 2h
- Practical classes: 2h
- Self study: 6h

Level design

Description:
- Planning and preproduction
- Objectives, obstacles and progression
- Game flow
- Map layout
- Game mechanics
- Player experience
- Storytelling

Full-or-part-time: 10h
- Theory classes: 2h
- Practical classes: 2h
- Self study: 6h
## Architecture and visualization

**Description:**
- Urbanism and Territory
- Architectural proportions
- Historical periods
- Projection systems
- Perspective and camera

**Full-or-part-time:** 10h
- Theory classes: 2h
- Practical classes: 2h
- Self study: 6h

## Creation of 3D assets

**Description:**
- Asset design
- Carving
- Retopology
- Map extraction

**Full-or-part-time:** 10h
- Theory classes: 2h
- Practical classes: 2h
- Self study: 6h

## Texturing 3D assets

**Description:**
- Shading techniques
- PBR
- Realistic texture

**Full-or-part-time:** 10h
- Theory classes: 2h
- Practical classes: 2h
- Self study: 6h

## Photogrammetry

**Description:**
- Concept of photogrammetry
- Scan 3D objects

**Full-or-part-time:** 10h
- Theory classes: 2h
- Practical classes: 2h
- Self study: 6h
### 3D engine

**Description:**
- Level edit.
- Unity 3d.
- Real-time render.

**Full-or-part-time:** 10h
- Theory classes: 2h
- Practical classes: 2h
- Self study: 6h

### Exteriors

**Description:**
- Level Design of exteriors
- Terrains and landscapes
- Vegetation and billboards
- Atmosphere and effects

**Full-or-part-time:** 10h
- Theory classes: 2h
- Practical classes: 2h
- Self study: 6h

### Interiors

**Description:**
- Level Design of interiors
- Modularity
- Collision model
- Creating atmospheres

**Full-or-part-time:** 10h
- Theory classes: 2h
- Practical classes: 2h
- Self study: 6h

### 3D Lighting

**Description:**
- Shaders
- Dynamic lighting
- Direct and indirect illumination
- Light baking

**Full-or-part-time:** 10h
- Theory classes: 2h
- Practical classes: 2h
- Self study: 6h
### Lightmaps

**Description:**
- Lightmaps
- Lightprobes
- Ambient occlusion

**Full-or-part-time:** 10h
- Theory classes: 2h
- Practical classes: 2h
- Self study: 6h

### Scenarios and Virtual Reality

**Description:**
- Virtual reality
- Augmented reality
- Space and proportions VR

**Full-or-part-time:** 10h
- Theory classes: 2h
- Practical classes: 2h
- Self study: 6h

### Scenarios for Postproduction

**Description:**
- Real space vs. virtual space
- Importance of the storyboard
- Integration of digital elements

**Full-or-part-time:** 10h
- Theory classes: 2h
- Practical classes: 2h
- Self study: 6h

### Optimization and rendering

**Description:**
- Optimizations
- Export
- Render engine
- Postprocessing

**Full-or-part-time:** 10h
- Theory classes: 2h
- Practical classes: 2h
- Self study: 6h
ACTIVITIES

Scene design

**Full-or-part-time:** 12h
Self study: 12h

Scene production

**Description:**
Create a 3D scenario for a functional level of video game or for an animated sequence of an audiovisual production

**Related competencies:**
CEAAD 10. Identify the process involved in directing and producing different artistic projects in the digital field, the existing methodologies, the roles involved and their functions.
CEAAD 3. Master the wide range of professional tools in the sector for developing all kinds of digital content.
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**Full-or-part-time:** 32h
Guided activities: 20h
Self study: 12h

GRADING SYSTEM

BIBLIOGRAPHY

**Basic:**

**Complementary:**
RESOURCES

Hyperlink:
- www.thegnomonworkshop.com. 3D library