Course guide
804239 - E3D - 3D Scenarios

Last modified: 20/07/2025

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: 2025 **ECTS Credits:** 6.0 **Languages:** Catalan, English

LECTURER

Coordinating lecturer: Ripoll, Marc

Others: Ripoll, Marc
Serrano, Josep

PRIOR SKILLS

Basic 3d modeling and texturing.

TEACHING METHODOLOGY

Exhibition and learning of new content through theory, references and practical cases.
Participatory class, problem-solving activities and discussion.
Practical work with contents seen in class. Exercises will be proposed to work during the week to improve the experience necessary to master the 3d design tools.

LEARNING OBJECTIVES OF THE SUBJECT

- To describe the basic concepts and procedures involved in the modeling, texture, lighting and 2D and 3D animation of objects, characters and environments for video games.

- To apply modeling, texture and lighting techniques to characters, "near" and 3D scenarios that recreate real or imaginary environments.

- To program interactive 3D elements within a video game scene.

- To create objects, characters, textures, scenes, visual effects and 2D and 3D animations for inclusion in video game projects.

- To collaborate effectively and responsibly as a member or leader of a team, in interdisciplinary contexts or not, considering the available resources.

STUDY LOAD

Type	Hours	Percentage
Hours large group	18,0	12.00
Self study	90,0	60.00
Hours medium group	32,0	21.33
Guided activities	10,0	6.67

Total learning time: 150 h

CONTENTS

Level design

Description:
Planning & preproduction.
Game types.
Environment art.
2d vs 3d.
Progressió visual.

Full-or-part-time: 41h 20m
Theory classes: 5h
Practical classes: 8h 20m
Guided activities: 3h
Self study : 25h

Architecture and lightning

Description:
Architecture and urban planning.
Visual perception and lightning.
Virtual sets.

Full-or-part-time: 41h 20m
Theory classes: 5h
Practical classes: 8h 20m
Guided activities: 3h
Self study : 25h

Content creation

Description:
Digital sculpture and painting.
Map extraction.
Photogrametry.
Baking of light.

Full-or-part-time: 41h 20m
Theory classes: 5h
Practical classes: 8h 20m
Guided activities: 3h
Self study : 25h

Export and integration

Description:
Interactivity.
Collision model.
Effects.
Optimization.

Full-or-part-time: 26h
Theory classes: 3h
Practical classes: 7h
Guided activities: 1h
Self study : 15h

ACTIVITIES

Level design

Description:
To design a game level from a variety of rules and concepts specified in the documentation of the exercice. This is an individual task.

Specific objectives:
To design a functional game level, following the classroom documentation.

Material:
Classroom documentation, Adobe photoshop, Microsoft Word.

Delivery:
Upload to the folder located in the Àgora campus, as specified in the classroom documentation.

Full-or-part-time: 10h
Self study: 10h

Production of a game level

Description:
Following a design guide, a 3d level must be created, alongside its game executable. This is a group activity.

Specific objectives:
Teamwork.
3d assets production.
Game engine integration.

Material:
Autodesk Maya, Unity 3d

Delivery:
The project will be presented in class. Documentation, graphics and a working executable must also be uploaded to the campus.

Full-or-part-time: 20h
Practical classes: 5h
Self study: 15h

GRADING SYSTEM

2 exercises
1 exercise with a weight of 15% of the final grade for the course.
1 exercise with a weight of 30% of the final grade for the course.

1 control
1 mid-term exam with a weight of 15% of the final grade of the course.

Final exam
A final exam with a weight of 30% of the final grade for the course.

Participation and learning attitude: 10% of the grade for the course.

Re-evaluation exam: possibility of re-evaluating the weight of the final grade corresponding to the partial and final exam (45%). Only students who have not passed the course can apply. In case of passing the course, the maximum final mark will be 5.

Irregular actions that may lead to a significant variation of the grade of one or more students constitute a fraudulent performance of an evaluation act. This action entails the descriptive grade of failure and a numerical grade of 0 for the ordinary global evaluation of the course, without the right to re-evaluation.

If the lecturers have indications of the use of AI tools not allowed in the evaluation tests, they may summon the students concerned to an oral test or a meeting to verify the authorship.

EXAMINATION RULES.

A part of the exercises can be done during the classes with the teacher of the course. Students will also have to dedicate time for autonomous work (after hours), to carry out the exercises. To do so, the indications specified in the working document must be followed.

Once the exercise is finished, it will be deposited in the Virtual Campus in the delivery room and on the corresponding date. Only those exercises delivered before 24:00 of the deadline will be taken into account to assess those exercises.

The documents have to be completed, following the instructions, especially regarding the name of files. The correct management of the documentation provided is one aspect of the competencies to be acquired and part of the evaluation.

BIBLIOGRAPHY

Basic:
- Sjoerd "Hourences" de Jong. The hows and whys of level design. [Belgium]; [Morrisville]: Sjoerd de Jong: Lulu.com, 2006.
- Kremers, R. Level design: concept, theory, and practice. Wellesley. MA: A.K. Peters, 2009. ISBN 9781568813387.
- Birn, J. Digital lighting and rendering. 3rd ed. Berkeley, CA: New Riders, 2014. ISBN 0321928989.

Complementary:
- Demers, O. Digital texturing and painting. [S.l.]: New Riders, 2002. ISBN 0735709181.
- Kerr, N. Techniques of photographic lighting. New York: American Photographic Book Publishing, 1982. ISBN 0817460241.
- Brown, B. Cinematography: theory and practice: image making for cinematographers and directors. [s.l.]: Focal Press, 2011. ISBN 9780240812090.
- Ahearn, L. 3D game textures: create professional game art using Photoshop [on line]. 3rd ed. Waltham, MA: Focal Press, 2012 [Consultation: 06/05/2022]. Available on: https://www-sciencedirect-com.recursos.biblioteca.upc.edu/book/9780240820774/3d-game-textures. ISBN 9780240820774.
- Rogers, S. Level up!: the guide to great video game design. 2nd ed. Chichester: Wiley, 2014. ISBN 9781118877166.

RESOURCES

Hyperlink:
- www.digitaltutors.com. Resource
- http://www.brainstorm-digital.com. Resource
- http://level-design.org. Resource