Course guide
804239 - E3D - 3D Scenaries

Last modified: 06/02/2025

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: 2024   **ECTS Credits:** 6.0   **Languages:** Catalan, English

LECTURER

Coordinating lecturer:	Ripoll, Marc
Others:	Ripoll, Marc Serrano, Josep

PRIOR SKILLS

Basic 3d modeling and texturing.

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
CEVJ 7. Master the wide range of professional tools in the sector for developing all kinds of digital content.
CEVJ 8. Design, model, texturise and animate 2D and 3D objects, characters and scenes for inclusion in digital projects, audiovisual sequences and video games.
CEVJ 9. Apply advanced modelling and animation, post-production and special effects techniques to the creation of digital content and/or its inclusion in a video game project.

Transversal:
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.
06 URI N3. EFFECTIVE USE OF INFORMATI0N RESOURCES - Level 3. Planning and using the information necessary for an academic assignment (a final thesis, for example) based on a critical appraisal of the information resources used.
07 AAT. SELF-DIRECTED LEARNING. Detecting gaps in one's knowledge and overcoming them through critical self-appraisal. Choosing the best path for broadening one's knowledge.
05 TEQ. TEAMWORK. Being able to work as a team player, either as a member or as a leader. Contributing to projects pragmatically and responsibly, by reaching commitments in accordance to the resources that are available.

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

- Show knowledge and know how to apply concepts related to the control of the visualisation of objects and scenes by means of viewfinders and synthetic cameras and lighting techniques to scenarios, recreating real or imaginary environments.

- Show ability to design, model and texture characters, props and 3D scenarios.

- Show ability to program a scene in order to have interactivity with 3D elements.

- Show knowledge and mastery of the procedures, techniques, technologies and computer graphics programmes and ability to select the most appropriate in each case and to apply them in the process of composition and animation of 2D and 3D objects and characters in the creation of video games.

- Use strategies to prepare and carry out oral presentations and write texts and documents with coherent content, appropriate structure and style and a good level of spelling and grammar.

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.

Related competencies :
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. TEAMWORK. Being able to work as a team player, either as a member or as a leader. Contributing to projects pragmatically and responsibly, by reaching commitments in accordance to the resources that are available.
07 AAT. SELF-DIRECTED LEARNING. Detecting gaps in one's knowledge and overcoming them through critical self-appraisal. Choosing the best path for broadening one's knowledge.
06 URI N3. EFFECTIVE USE OF INFORMATI0N RESOURCES - Level 3. Planning and using the information necessary for an academic assignment (a final thesis, for example) based on a critical appraisal of the information resources used.

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.

Related competencies :
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.
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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.

Related competencies :
CEVJ 9. Apply advanced modelling and animation, post-production and special effects techniques to the creation of digital content and/or its inclusion in a video game project.
CEVJ 7. Master the wide range of professional tools in the sector for developing all kinds of digital content.
CEVJ 8. Design, model, texturise and animate 2D and 3D objects, characters and scenes for inclusion in digital projects, audiovisual sequences and video games.
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Theory classes: 5h
Practical classes: 8h 20m
Guided activities: 3h
Self study : 25h

Export and integration

Description:
Interactivity.
Collision model.
Effects.
Optimization.

Related competencies :
CEVJ 9. Apply advanced modelling and animation, post-production and special effects techniques to the creation of digital content and/or its inclusion in a video game project.
CEVJ 7. Master the wide range of professional tools in the sector for developing all kinds of digital content.
CEVJ 8. Design, model, texturise and animate 2D and 3D objects, characters and scenes for inclusion in digital projects, audiovisual sequences and video games.
07 AAT. SELF-DIRECTED LEARNING. Detecting gaps in one's knowledge and overcoming them through critical self-appraisal. Choosing the best path for broadening one's knowledge.

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.

Related competencies :
06 URI N3. EFFECTIVE USE OF INFORMATI0N RESOURCES - Level 3. Planning and using the information necessary for an academic assignment (a final thesis, for example) based on a critical appraisal of the information resources used.

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.

Related competencies :
CEVJ 7. 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: 20h
Self study: 15h
Practical classes: 5h

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