



Course guide

804248 - A3D - 3D Animation

Last modified: 08/09/2024

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: 2024	ECTS Credits: 6.0	Languages: Catalan, English

LECTURER

Coordinating lecturer:	Ripoll, Marc
Others:	Ripoll, Marc Cabello, José María

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:

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 8. Design, model, texturise and animate 2D and 3D objects, characters and scenes for inclusion in digital projects, audiovisual sequences and video games.

CEVJ 7. Master the wide range of professional tools in the sector for developing all kinds of digital content.

Transversal:

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.

04 COE N3. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 3. Communicating clearly and efficiently in oral and written presentations. Adapting to audiences and communication aims by using suitable strategies and means.

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.

TEACHING METHODOLOGY

Learning of new contents through theory, references and practical examples.

Participative classroom where to resolve problems and discuss contents.

Practical exercises to apply and experiment with the contents of the course. They will be used to work during the week and improve the skills to master the 3d design tools and techniques.

LEARNING OBJECTIVES OF THE SUBJECT

- Mostrar comprensión de los conceptos básicos y de los procedimientos implicados en la animación 2D y 3D, así como de los fundamentos matemáticos y físicos.

- Mostrar capacidad de análisis del movimiento en objetos, seres humanos y animales y capacidad de aplicar las técnicas de animación por ordenador y sus fundamentos matemáticos y físicos en animación 2D y 3D.

- Mostrar conocimiento y dominio de los procedimientos, de las técnicas, de las tecnologías y de los programas informáticos gráficos y capacidad para seleccionar el más adecuado en cada caso y para aplicarlos, en el proceso de composición y animación de objetos y personajes 2D y 3D en la creación de videojuegos.

- Llevar a cabo las tareas encomendadas a partir de las orientaciones básicas dadas por el profesorado, decidiendo el tiempo que se necesita emplear para cada tarea, incluyendo aportaciones personales y ampliando las fuentes de información indicadas.



STUDY LOAD

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

Total learning time: 150 h

CONTENTS

Animation

Description:

Animation concepts
Playback speed
Keyframes
Animation curves

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 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.

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.

04 COE N3. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 3. Communicating clearly and efficiently in oral and written presentations. Adapting to audiences and communication aims by using suitable strategies and means.

Full-or-part-time: 26h

Theory classes: 3h
Practical classes: 7h
Guided activities: 1h
Self study : 15h



Rigging and Skinning

Description:

Setup
Joints
Inverse kinematics
Skinning

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 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.

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.

04 COE N3. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 3. Communicating clearly and efficiently in oral and written presentations. Adapting to audiences and communication aims by using suitable strategies and means.

Full-or-part-time: 41h 20m

Theory classes: 5h
Practical classes: 8h 20m
Guided activities: 3h
Self study : 25h

Character animation

Description:

References and acting
Animation concepts with characters
Motion capture
Facial animation

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 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.

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.

04 COE N3. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 3. Communicating clearly and efficiently in oral and written presentations. Adapting to audiences and communication aims by using suitable strategies and means.

Full-or-part-time: 41h 20m

Theory classes: 5h
Practical classes: 8h 20m
Guided activities: 3h
Self study : 25h



Techniques

Description:

Retargeting
Scripting
Physics
Non Linear animation

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 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.

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.

04 COE N3. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 3. Communicating clearly and efficiently in oral and written presentations. Adapting to audiences and communication aims by using suitable strategies and means.

Full-or-part-time: 41h 20m

Theory classes: 5h
Practical classes: 8h 20m
Guided activities: 3h
Self study : 25h

ACTIVITIES

Exercise 1

Description:

To create a functional rig for a character and adjust the skin until getting a ready to animate character.

Specific objectives:

To practice and better understand the rigging tools and techniques applied to characters.

Material:

Autodesk Maya

Delivery:

The exercise will be uploaded to an Atenea folder specified by the professor and saved as a Maya scene with the full name of the student.

Related competencies :

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.

CEVJ 7. Master the wide range of professional tools in the sector for developing all kinds of digital content.

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: 10h

Self study: 10h



Exercise 2

Description:

Design the animations of a character and create the basic poses for the integration into a videogames.

Specific objectives:

To animate a character, designing his actions.

Material:

Autodesk Maya

Delivery:

The exercise will be uploaded to an Atenea folder specified by the professor and saved as a Maya scene with the full name of the student.

Related competencies :

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 7. Master the wide range of professional tools in the sector for developing all kinds of digital content.

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.

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.

04 COE N3. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 3. Communicating clearly and efficiently in oral and written presentations. Adapting to audiences and communication aims by using suitable strategies and means.

Full-or-part-time: 20h

Guided activities: 5h

Self study: 15h

GRADING SYSTEM

2 exercises

1 practice with a percentage of 15% of the final evaluation.

1 practice with a percentage of 30% of the final evaluation.

1 midterm exam with a percentage of 15% from the final evaluation.

1 final exam with a percentage of 30% from the final evaluation.

Learning attitude and learning: 10% of the final evaluation.

Revaluation exam: possibility to access the revaluation exam to reevaluate the two previous exams (45% of the final evaluation). Only students that didn't pass the course can access the revaluation exam.

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.

Part of the exercises can be done during classes with the lecturer of the course. The students will also have to dedicate time for independent work (outside the timetable) to carry out the exercises. To do them, students must follow the indications specified in the work document.

Once the exercise is finished, it will be deposited in the Virtual Campus in the delivery classroom and on the corresponding date, only those exercises delivered before 24:00 hours of the deadline will be taken into account for the evaluation.

The documents must be completed, following the instructions, especially regarding the file names. The correct management of the documentation provided is an aspect of the competences to be acquired and part of the evaluation.

BIBLIOGRAPHY

Basic:

- Williams, Richard. The animator's survival kit. Expanded ed. London: Faber and Faber, 2009. ISBN 9780571238347.
- Thomas, F.; Johnston, O. The illusion of life: Disney animation. New York: Hyperion, 1995. ISBN 0786860707.
- Osipa, J. Stop staring: facial modeling and animation done right. 2nd ed. Indianapolis: Wiley, 2007. ISBN 9780471789208.
- Luhta, E.; Roy, K. How to cheat in Maya 2012: tools and techniques for character animation. Waltham, MA: Focal Press, 2011. ISBN 9780240816982.

Complementary:

- Hooks, Ed. Acting for animators. London: Routledge, 2011. ISBN 9780415580236.
- Jones, A.; Oliff, J. Thinking animation: bridging the gap between 2D and CG. Boston, MA: Course Technology, 2008. ISBN 9781598632606.

RESOURCES

Hyperlink:

- www.thegnomonworkshop.com. Resource
- www.digitaltutors.com. Resource
- <http://area.autodesk.com>. Resource
- <http://www.cgociety.org/>. Resource