Course Unit	3D Animation			Field of study	Audiovisuals and Media Production		
Bachelor in	Multimedia			School	School of Public Management, Communication and Tourism		
Academic Year	2023/2024	Year of study	3	Level	1-3	ECTS credits	6.0
Type	Semestral	Semester	1	Code	9213-656-3101-00-23		

Workload (hours)	162	Contact hours	T -	TP 60	PL -	TC -	S -	E -	OT -	O -

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s): Claudio Severino Pimenta Goncalves

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:
1. Understand the fundamentals of the concepts of animation
2. Understand the importance and space reserved for animation in the production of multimedia content
3. Acquire advanced knowledge of the methods and techniques used in the industry
4. Understand the fundamental concepts of animation
5. Acquire advanced knowledge of 3D animation software (Blender 3D, AfterEffects, MotionCapture)
6. Understand the mechanisms of building a total and functional character structure

Prerequisites

Before the course unit the learner is expected to be able to:
Understand basic concepts of traditional animation.

Course contents

Exhaustion of the basic rules of animation, developed at the beginning of the 20th century alongside traditional animation;
Character construction and modeling;
Basic and advanced 3D animation techniques in Blender;
Understand the importance and status of 3D animation in the industry;
3D animation practice.

Course contents (extended version)

1. Introduction to 3D animation
   - Different uses and applications of 3D Animation
   - History of 3d animation
   - Importance of modeling in 3d animation
   - Distinction between creativity, technique and expression in 3D animation
2. Basic and advanced 3D animation techniques in Blender
   - Understanding pose-by-pose animation
   - Hierarchies and Parent between objects
   - Simple object animations (move, rotate, scale, visibility)
   - Character animation with advanced frames
   - Building complex Armatures using constraints, drivers and modifiers
   - Expressive animation using shape keys
   - Animation using Motion Capture
3. CGI Basics
   - Understanding perspective and lighting in the context of the scene
   - Keying and green screen
   - VFX and its applications

Recommended reading

1. Williams, R. (2009). The animator's survival kit. New York: Faber and Faber. [ISBN: 0865478978]
2. Wartmann, C. & Kauppi, M. (2009). The Blender gamekit. Amsterdam San Francisco, CA: Blender Foundation Distributed by No Starch Press. [ISBN: 1593272057]
3. Parent, R. (2012). Computer animation algorithms and techniques. San Francisco, Calif: Morgan Kaufmann. [ISBN: 0124158420]
4. 3. Hess, R. (2013). Blender production : creating short animations from start to finish. Burlington, MA: Focal Press. [ISBN: 0240821459]
5. Pardeshi, A. S., & Karbhari, V. B. (2019). Recent Trends in VFX (Virtual Effects) and SFX (Special Effects). Int. J. Eng. Res. Technol, 8(07), 882-884.

Teaching and learning methods

Expository method for transmitting knowledge in a structured and continuous way;
Interrogative method, systematically questioning students in order to develop critical skills;
Demonstrative method, practical application by students; Active method, solving exercises, in order to allow a better consolidation of the knowledge acquired.

Assessment methods

1. Continued evaluation - (Regular, Student Worker) (Final)
   - Practical Work - 40% (Develop a short film using CGI techniques or a 3D animated short: Within 5 min)
   - Practical Work - 10% (3D model of an object, manipulating the)
   - Practical Work - 10% (Animate an object, using only scale, translate and rotation.)
   - Practical Work - 10% (Animation using bones / armature)
   - Practical Work - 10% (Construction of scenes and ambiences)
   - Practical Work - 10% (Animate characters inside a scene)
   - Presentations - 10% (Project presentations and class participation)
2. Final evaluation - (Regular, Student Worker) (Supplementary, Special)
   - Projects - 100% (Develop a short film using CGI techniques or a 3D animated short: Within 5 min)

Language of instruction

1. Portuguese
2. English
3. Portuguese, with additional English support for foreign students.

Electronic validation

Claudio Severino Pimenta Goncalves	Ana Lucia Jesus Pinto	Barbara Costa Vilas Boas Barroso	Luisa Margarida Barata Lopes
23-05-2024	23-05-2024	29-05-2024	04-06-2024