INSTITUTO POLITÉCNICO DE BRAGANÇA

Course Unit	3D Animation			Field of study	Visual Arts/Computing Science		
Bachelor in	Game Design			School	School of Public Management, Communication and Tourism		
Academic Year	2021/2022	Year of study	2	Level	1-2	ECTS credits	6.0
Type	Semestral	Semester	2	Code	8309-414-2201-00-21		

Workload (hours)	162	Contact hours	T -	TP 15	PL 45	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): Rogerio Junior Correia Tavares

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:
1. Acquire knowledge of 3D animation software (Blender);
2. Develop creative capacities for the integration of previous modeling (3D Design, Digital Architecture and designing characters) in 3D animations;
3. Understanding the fundamental concepts of 3D animation.
4. Understanding the building mechanisms of a complete character Rig.
5. Understanding the placement and the importance of animation In a Game Production.
6. Acquire knowledge of the methods and techniques used by the game industry.

Prerequisites

Before the course unit the learner is expected to be able to:
1. Use basic tools in 3D software (Blender).
2. Understand the basic concepts of traditional animation.

Course contents

Basic golden rules of animation developped in the beggining of the twentieth centrury with traditional animation. Basic and advanced 3D animation techniques in Blender. Understanding the value and status of 3D Animation in the gamming industry. Animation Practice.

Course contents (extended version)

1. Introduction to 3D animation for video games
   - Difference between other types of animation and 3D animation for games
   - History of 3D animation in games
   - Importance of modeling in 3d animation for games
   - Difference between creativity, technique and expression in 3d animation
2. Simple and advanced techniques of 3D animation in Blender:
   - Understanding keyframe animation
   - Relationship between objects and hierarchies
   - Simple object animations(move, rotate, scale, visibility)
   - Animating with an advanced character Rigs.
   - Construct rigs using constraints, drivers, FK, IK, deforms, tweaks, switchers and custom bones.
   - Expressive animation using shape keys
   - Blocking Workflow: planning, blocking, blocking plus and polishing

Recommended reading

1. Parent, R. (2012). Computer animation algorithms and techniques. San Francisco, Calif: Morgan Kaufmann. [ISBN: 0124158420]
2. Webster, C. (2012). Action Analysis for Animators. Ed. Focal Press. ISBN 9780415115971
3. Hess, R. (2013). Blender production : creating short animations from start to finish. Burlington, MA: Focal Press. [ISBN: 0240821459]
4. Marx, C. (2013). Writing for animation , comics, and games. Focal Press. [ISBN: 9780240805825]
5. Williams, R. (2009). The animator's survival kit. New York: Faber and Faber. [ISBN: 0865478978]

Teaching and learning methods

Content exposition, in structured transmission knowledge; Interrogative method, asking the students systematically in order to develop critical capacity; Demonstrative method with practical application by students; Active method, solving exercises in order to allow greater consolidation of knowledge.

Assessment methods

- DISTRIBUTED EVALUATION (i): minimum 9 - (Regular, Student Worker) (Final, Supplementary, Special)
   - Practical Work - 20% (Animating a bouncing ball and of an object with drivers and constraints Construction of a manual rig)
   - Practical Work - 25% (Producing and animating a rig (armature))
   - Practical Work - 25% (Animating a series of loop cycles, or forwarding walking for a character. Animating a human face.)
   - Projects - 5% (Project from Interdisciplinar Week.)
   - Projects - 25% (Capstone Project)

Language of instruction

1. Portuguese
2. English

Electronic validation

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12-04-2022	12-04-2022	27-04-2022	04-05-2022