3D ANIMATION TECHNOLOGIES FOR VIDEO GAMES

Degree in Engineering and Development of Digital Games

Code: 15714

Main Scientific Area: Computer Graphics and Multimedia

Lecturer: António Carlos Alves Teixeira

Language of Instruction: Portuguese

Regime: S2

Contact Hours: 90h Total Workload: 150h

ECTS: 9,0

Objectives

The 3D Animation Technologies for Video Games programme introduces students to the learning of 3D pipeline on"Industry Standard Software"and their digital tools for 3D model production aimed for video games. It also aims tointroduce the concepts of modeling, texturing, rig and animation, through practical exercises,providing a set of solutions applied to the area of digital games.

Learning Outcomes

At the end of this course students should have the necessary technical skills, promoting theirautonomy or analytical capacity in the development, production and workflow of characters and 3Delements in the context of digital games, being able to manage both the technical and creativecomponent, within the limits and characteristics inherent to such platform.

Students should also havetechnical, critical and analytical knowledge about the workflow of work on 3D and Animation ofcharacters applied to digital games.

Course Contents

1. Introduction to 3D

2. Interface and workflow

3. Nodes, Attributes, Connections, Hierarchies

4. Introduction to Materials, Lighting and Render

5. Modeling - assets and props - hard surface modeling and topology rules

6. Character Modeling

7. Use of Materials and Textures

8. Lighting and Render - Basic principles

9. 3D animation and animation support / motion capture technologies

10. Rig - Scripts and logical operators

11. Export of animations for game engines

Recommended Bibliography

- Murdock, K.L. (2022) Autodesk Maya 2023 Basics Guide.
SDC Publications. ISBN978-1630575274

- Tickoo, Sham. (2022) Autodesk Maya 2023: A Comprehensive Guide, 14th Edition.
CADCIM Technologies ISBN978-1640571433

- Hamilton, T. (2020)The PBR Guide: A Handbook for Physically Based Rendering- Computer Game Development and Animation (Practical Career Guides).
MD,Rowman Littlefield. ISBN 978-1538133682

- Cooper, J. (2019) Game Anim: Video Game Animation Explained,
NW, CRC Press. ISBN 978-1138094871

- 3DTotal, (2021) Beginner's Guide to Creating Characters in Blender.
3DTotal Publishing. ISBN978-1912843138

- Brito Allan, (2018) Blender Quick Start Guide.
Packt Publishing ISBN 978-1789619478

- Zeeshan, J.S. (2022) Realistic Asset Creation with Adobe Substance 3D.
Packt Publishing. ISBN978-1803233406

- Akenine-Möller, T., Haines, E., Hoffman, N. (2018) Real-Time Rendering (4th Edition).
NW, CRCPress ISBN 978-1138627000

Learning and Teaching Methods

Students will be able to apply the knowledge acquired in the management, production and critical / analytical capacity of 3D content, namely producing characters and assets for use in Digital Games.

Assessment Methods

Assessment based on practical exercises performed in class, quantified as follows:

1. Work developed in class.

2. Attendance and Punctuality (except for student worker-student upon presentation of supporting document).

3. Interest, participation and intervention.

4. Organization of work (including digital information)

5. Working methodology used.

6. Quantitative and qualitative evolution (intuitive / cognitive response).

7. Creativity.

8. Responsiveness and correctly deadline submissions

9. Behavior in class.

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Final evaluation of1 practical individual work(character and a action animation)developed during the classes,

quantified as follows:

- Modeling = 25%

- Texturing = 15%

- Rigging = 25%

- Animation and final assessment = 35%

Important Note: Given that the exercises and final project are carried out throughout the semester, and a continuous evaluation is done, in this discipline, there is no place to a extra assessment period at the time of appeal.

Submission after the deadline will be penalized by 2 points per day, up to a limit of 3 days, where it will be considered as "not submitted" and consequent failure an not approval on the curricular unit.

The submission dates of the works are mandatory and reflect the final grade of each evaluation moment.