



ACADEMIC PROGRAM

TEXTURING AND SHADING

B.F.A. IN ANIMATION

MODALITY: ON CAMPUS

ACADEMIC YEAR: 2023-2024

Name of the course:	Texturing and Shading
Degree :	Animation
Location:	Centro Universitario de Tecnología y Arte Digital
Area:	Digital Creation Techniques
Year:	3º
Teaching period:	1
Type:	OB
ECTS credits:	6
Teaching modality:	On campus
Language:	English
Lecturer / Email	Hugo Alberquilla Greciano / hugo.alberquilla@u-tad.com
Web page:	http://www.u-tad.com/

SUBJECT DESCRIPTION

Area description

This subject provides the student with the knowledge of the procedures, techniques and digital artistic tools for the creation of characters and digital environments, using modeling techniques for three-dimensional representation in virtual environments and texturing and shading for the simulation of the representation of textures and materials of the digital object or character in the field of animation. In the subject of digital creation techniques the student also acquires the knowledge and skills necessary to create narrative content, applying the principles of audiovisual language to an environment of cameras and 3D elements, as well as their lighting and digital composition.

Subject description

The subject "Texturing and Shaders" aims to promote in the student the skills and competencies related to the proper visual representation of surfaces and textures, as well as the adequacy of color and light in achieving a visual sensation. The importance of this subject lies in its direct application in the development of the subjects of modeling and creation of characters or objects. The visual representation of textures and surfaces is a fundamental axis for artistic practice in the field of animation.

All animation development requires a graphic visualization, which is formed from the textures and shaders used on the modeling of characters. It is essential for the student to understand and apply textures and shaders to obtain an appearance according to the narrative needs of the animation.

COMPETENCIES AND LEARNING OUTCOMES

Competencies

BASIC AND GENERAL

CG11 - Know the legal framework of the professions associated with the degree.

GC3 - Participate in the management of projects linked to the design and development processes of a digital product.

GC7 - Knowing the employability resources of the professions associated with the degree.

CG8 - Optimize the work according to the technological resources related to the processes and tools of the project to be developed.

CG9 - Use the techniques and artistic tools associated with the generation of digital content.

CB1 - That students have demonstrated to possess and understand knowledge in an area of study that starts from the basis of general secondary education, and is usually found at a level that, although supported by advanced textbooks, also includes some aspects that involve knowledge from the forefront of their field of study.

CB2 - That students know how to apply their knowledge to their work or vocation in a professional manner and possess the skills that are usually demonstrated through the development and defense of arguments and problem solving within their field of study.

CB3 - That students have the ability to gather and interpret relevant data (usually within their area of study) to make judgments that include reflection on relevant social, scientific or ethical issues.

CB4 - That students can transmit information, ideas, problems and solutions to both specialized and non-specialized audiences.

CB5 - That students have developed those learning skills necessary to undertake further studies with a high degree of autonomy.

TRANSVERSALS

CT1 - To know the definition and scope, as well as to put into practice the fundamentals of the methodologies of management of technological development projects.

CT2 - To know the main agents of the sector and the complete life cycle of a project in development and commercialization of digital content.

CT4 - Update the knowledge acquired in the use of digital tools and technologies according to the current state of the sector and the technologies used.

CT5 - Demonstrate versatility, flexibility and creativity in the development of projects, activities and works.

SPECIFIC

CE17 - Use texturing techniques to apply materials to 3D models.

SC4 - Represent three-dimensional forms and spaces using the essential techniques of traditional and digital modeling.

CE7 - Create audiovisual pieces applying the principles of composition, audiovisual narrative and graphics animation to the realization, planning, editing and post-production of sequences and shots.

CE9 - Use modeling techniques for the three-dimensional representation of shapes from a design.

CE11 - Use the theory, techniques and tools associated with lighting, rendering and compositing

Learning outcomes

At the end of the degree, the graduate will be able to:

- Identify the impact of new digital media in today's society.
- Handle with ease digital tools for the creation of images, videos, modeling and artistic works.
- Use various techniques of artistic expression such as drawing, 3D modeling and postproduction for the generation of digital content.
- Model objects or figures with different techniques, whether digital or traditional.
- Represent objects and spaces in 3D through modeling, texturing, lighting and digital rendering.
- Apply the basic techniques of digital modeling to the creation of objects, figures and 3D environments with clean and optimized modeling meshes.
- Manage the interaction between different materials and lighting systems in 3D and 2D creative environments.
- Create environments with a high degree of verisimilitude through the use of layers, alphas and other basic digital compositing techniques.
- Identify software and hardware requirements for lighting, rendering and compositing.
- Apply the required textures and shaders convincingly and according to the needs of the production to the various parts of a 3D animation scene such as sets, objects or characters.
- Apply the fundamentals of visual language to the digital environment.
- Adapt the anthropometric and proportion rules used in other arts such as architecture or painting for the recreation of a virtual landscape.

CONTENTS

- Shading: Materials, qualities, reflection, deflection, specularly.
- Texturing. Methodology. Procedurality.
- Bit map textures: Mapping. UV's.
- Bump and displacement maps.
- Occlusión and Subsurface Scattering.
- Hypershade and shading nodes.
- Light, materials and shaders.

SUBJECT SYLLABUS

UNIT 1

Introduction to Arnold Render

Why work with Arnold?

Frame Buffer

Linear workflow

Sampling

Ray depth

Environment options

Render setting

AiStandard Surface

UNIT 2

2.2. Textures and functions

Textures: Diffuse, Metalness, Specular, Roughness, Coat, Emission, etc.

Bake maps: Displacement and Normal

Utility

UNIT 3

3. 1. UVs and UDIMs

Creation of UV s

Creating UDIM s

How to work for animation or video games

UNIT 4

4.1. Pre Look Development with Foundry Mari

Introduction to Mari

Objects, Palettes and Brushes

Channels and Shader Arnold

Patches and Imports

Colour manager and Layers

Displacement in Mari

Editing and texturing in Mari

4.2. Look Development

Creating a Light Rig with Maya Arnold

Presentation

UNIT 5

5.1. Pre Look Development with Substance Painter

Substance Painter interface

Layers

Materials

Bake Maps

Adjustments and masks

Texture import and export

5.2. Look Development

Creating a Light Rig with Maya Arnold

Presentation

TRAINING ACTIVITIES AND TEACHING METHODOLOGIES

TRAINING ACTIVITIES

LEARNING ACTIVITIES	Total hours	Hours of presence
<i>Theoretical / Expository classes</i>	24,00	24,00
<i>Practical classes</i>	30,00	30,00
<i>Tutorials</i>	5,20	2,60
<i>Independent study and autonomous work of the student</i>	38,00	0,00
<i>Elaboration of work (group or individual)</i>	48,00	0,00
<i>Evaluation Activities</i>	4,80	5,00
TOTAL	150	61,6

Teaching methodologies

Expository method or master class

Case method

Problem-based learning

Cooperative or collaborative learning

Inquiry-based learning

Flipped classroom or inverted classroom methodology

Gamification

TEMPORAL DEVELOPMENT

Theme 1- 2 weeks

Theme 2- 2 weeks

Theme 3- 3 weeks

Theme 4- 4 weeks

Topic 5- 4 weeks

EVALUATION SYSTEM

ASSESSMENT SYSTEM	MINIMUM SCORE RESPECT TO THE FINAL ASSESSMENT (%)	MAXIMUM SCORE RESPECT TO THE FINAL ASSESSMENT (%)
<i>Assessment of participation in class, exercises or projects of the course</i>	10	20
<i>Assessment of assignments, projects, reports, memos</i>	20	60
<i>Objective test</i>	30	70

GRADING CRITERIA

ASSESSMENT SYSTEM	ORDINARY EVALUATION	EXTRAORDINARY EVALUATION
<i>Assessment of participation in class, exercises or projects of the course</i>	10	10
<i>Assessment of assignments, projects, reports, memos</i>	60	60

<i>Objective test</i>	30	30
-----------------------	----	----

General comments on the evaluations/assessments

The course consists of 5 units that are divided into 4 blocks.

Block 1: Unit 1 is complemented by Unit 2 together. The exercises will be exercises will be carried out in class as practical exercises.

Block 2: Unit 3: Creation of UVs and UDIMs.

Block 3: Texturing with Mari.

Block 4: Unit 5 conforms a final project exercise where both Mari and Substance Painter will be used.

Computerization per Block:

Block 2 = 15% of the final grade

Block 3 = 30% of the final grade

Block 4 = 45% of the final grade

The remaining 10% will depend on behavior, interest, participation and self-evaluation.

In order to obtain a passing grade, the student is obliged to hand in each and every one of the projects required by the faculty in the form and time indicated. Indispensable conditions to have the right to obtain a passing grade. Except for justified cause, failure to comply with this requirement will lead the student directly to recovery.

Late deliveries will be penalized with a lower grade.

To have delivered all the practices is an indispensable requirement to obtain a positive grade, in ordinary call.

The grades of the approved parts will be maintained in the extraordinary call.

In order to pass the course in the extraordinary exam, it will be required the presentation of the failed or undelivered final papers.

Any detection of plagiarism in a work or exam will imply the failure of that work with a zero, the report to the faculty and academic coordinator and the application of the current regulations, which can lead to very serious penalties for the student.

LIST OF REFERENCES (BOOKS, PUBLICATIONS, WEBSITES):

Basic:

MEDIAACTIVE, 2017. El gran libro de 3ds Max 2017. Marcombo, S.A. Autodesk, 2005. 3Ds Max. Tutorial guide. Microsoft Corporation, S.A.

TICKOO, Sham, 2013. Autodesk Maya 2013, A Comprehensive Guide, CADCIM Technologies

MCKINLEY, Michael, 2010. Maya studio projects, Game Environments and props. WileyPub.

Bibliografía recomendada:

LLENA HURTADO, Sonia. 3ds Max: bases, modelado, texturizado y render. Marcombo
AMIN, Jahirul, 2015. Beginner's guide to character creation in Maya. 3DTotal Publishing

VAUGHAN, William (2012). Digital Modeling. New Riders

DUNLOP, 2014. Production pipeline fundamentals for film and game. Focal Press

REQUIRED MATERIALS, SOFTWARE AND TOOLS

Type of classroom

Cintiq

Materials:

digital whiteboard, computer.

Software:

Autodesk Maya, Foundry Mari, Substance Painter, Adobe Photoshop.