ACADEMIC PROGRAM

OBJECT MODELING

B.F.A. IN **ANIMATION**

MODALITY: ON CAMPUS

ACADEMIC YEAR: 2023-2024

Name of the course:	Object Modeling
Degree :	Animation
Location:	Centro Universitario de Tecnología y Arte Digital
Area:	Digital Creation Techniques
Year:	2º
Teaching period:	1
Type:	OB
ECTS credits:	3
Teaching modality:	On campus
Language:	English
Lecturer / Email	Tomás Mesón Ramírez/tomas.meson@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 course is oriented to provide an advanced knowledge of modeling tools and techniques. It is directly related to Principles of 3D Graphics and represents the logical evolution in modeling skills to be applied in an animation project. Its importance lies in the need to reach a level of modeling that presents the characteristics of optimization and realism necessary in a professional development. The course consolidates and expands the acquired modeling skills, while making the student understand the real needs of professional projects.

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

· Organic Modeling Techniques.

· Digital Sculpture: Patterns, layers, poses.

· Characters, Geometry and Retopology.

· Creation of shape and details.

· Modeling projections and productivity.

SUBJECT SYLLABUS

1.1 - Maya interface

1.1.1 - Large areas

1.1.2 - Specific areas

1.2 - Navigation and basic modelling in Maya

1.2.1 - Camera movements

1.2.2 - Basic modification

1.2.3 - Advanced modification

1.3 - References and Project Management

1.3.1 - References

1.3.2 - Project Window

1.4 - Main Modelling Tools and Techniques

1.4.1 - Mesh

1.4.2 - Components

1.4.3 - Tools

1.4.4 - Soft Selection1.4.5 - "The Three Wizard Buttons" 1.4.6 - "The Three Wizard Buttons" 1.4.7 - "The Three Wizard Buttons

1.5 - Additional Modelling Tools and Techniques

1.5.1 - Tools

1.5.2 - Triangles, N-gons, Quads and Clean Up

1.5.3 - Duplicate Special

2 - NURBS: Curves, Surfaces, Deformers and Hypershade

2.1 - NURBs

2.1.1 - Curves and how to create them

2.1.2 - Anatomy of curves

2.1.3 - Basic surfaces and their anatomy

2.1.4 - Transition to polygonal geometries

2.2 - Curve tools

2.2.1 - Modification tools

2.2.2 - Editing tools

2.3 - Surface tools

2.3.1 - Creation tools

2.3.2 - Editing tools

2.4 - Deformers

2.4.1 - Creation

2.4.2 - Editing

2.5 - Hypershade

2.5.1 - Interface

2.5.2 -Shaders3 -Fabrics, UVs and optimisation

3.1 - Fabrics

3.1.1 - Gravity and collisions

3.1.2 - Anchoring and wind

3.2 - UVs

3.2.1 - Interfaces

3.2.2 - Projection of UVs

3.2.3 - Tools for UVs

3.3 - Bonus Tools

3.3.1 - Installation and enablement

3.3.2 - Tools

3.4 - Retopology

3.4.1 - Tools to use

3.4.2 - Orientations

3.4.3 - Main areas of the face

3.5 - AI Standard Surface

3.5.1 - Base

3.5.2 - Specular

3.5.3 - Geometry

3.6 - Normal Maps

3.6.1 - Bake in Blender

3.6.2 - Application in Maya

TRAINING ACTIVITIES AND TEACHING METHODOLOGIES

TRAINING ACTIVITIES

LEARNING ACTIVITIES	Total hours	Hours of presence
Theoretical / Expository classes	12,00	12,00

Practical classes	15,00	15,00
Tutorials	2,60	1,30
Independent study and autonomous work of the student	19,00	0,00
Elaboration of work (group or individual)	24,00	0,00
Evaluation Activities	2,40	2,00
TOTAL	75	30,3

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 1-7 weeks

Theme 2-4 weeks

Theme 3-4 weeks

EVALUATION SYSTEM

ASSESSMENT SYSTEM	MINIMUM SCORE RESPECT TO THE FINAL ASSESSMENT (%)	MAXIMUM SCORE RESPECT TO THE FINAL ASSESSMENT (%)
Assessment of participation in class, exercises or projects of the course	10	20

Assessment of assignments, projects, reports, memos	20	60
Objective test	30	70

GRADING CRITERIA

ASSESSMENT SYSTEM	ORDINARY EVALUATION	EXTRAORDINARY EVALUATION
Assessment of participation in class, exercises or projects of the course	10	10
Assessment of assignments, projects, reports, memos	60	60
Objective test	30	30

General comments on the evaluations/assessments

The course is eminently practical. Exercises and tests will be carried out in groups of three to four people, each student will present their own part of the work, although there will be a group leader, teamwork, attitude in class and punctuality will be valued.

Attendance is compulsory. If attendance is less than 80%, the student may be subject to an extraordinary evaluation.communication will be done through Blackboard.individual practice in Sketchbook will be necessary to evaluate the personal evolution of each student. All assignments will be handed in on the due date and time. Special circumstances will be taken into account, with justification, and it is crucial to hand in all assignments on time. A 10 minute courtesy period will be given during which the hand-in is considered to be on time. After this time, work may be handed in within a maximum of 24 hours after the deadline, but with a penalty on the mark that will be determined by the teacher. There will also be multiple-choice tests for the evaluation of cinematographic and artistic knowledge. There will be three main exams for the final mark: two in teams and one individual multiple-choice test.

LIST OF REFERENCES (BOOKS, PUBLICATIONS, WEBSITES):

Basic: KOENIGSMARCK, Arndt von (2008). Creación y modelado de personajes 3D. AnayaMultimedia.JAHIRUL, Amin (2015): Beginner's guide to character creation in Maya. 3DTotalPublishing.Bibliografía recomendadaCAPIZZI, Tom (2002): Inspired 3D Modeling and Texture Mapping. Premier Press.LUHTA, Eric (2013): How to Cheat in Maya 2013. Focal Press.MEDIAACTIVE (2012). Aprender Maya 2012 Avanzado con 100 Ejercicios prácticos.MarcomboVAUGHAN, William (2012). Modelado Digital. Anaya Multimedia.Webgrafía recomendada3D PODER.- (http://www.foro3d.com/foro3d.php)Dominance War.-

(http://www.dominancewar.com/2010/en/index.php)CG SOCIETY.- (http://www.cgsociety.org/)Conceptart.org.- (http://conceptart.org/forums/forum.php)Concept ships.- (http://conceptships.blogspot.com.es/)Guerrilla CG Project.- (http://www.youtube.com/user/GuerrillaCG)

REQUIRED MATERIALS, SOFTWARE AND TOOLS

Type of classroom
Theory

Materials:
Display - Digital whiteboard, Laptop

Software:
Blender, software básico, Autodesk Maya, Adobe Photoshop