

# Professional Master's Degree

## Organic 3D Modeling



## Professional Master's Degree Organic 3D Modeling

- » Modality: online
- » Duration: 12 months
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/pk/information-technology/professional-master-degree/master-organic-3d-modeling](http://www.techtute.com/pk/information-technology/professional-master-degree/master-organic-3d-modeling)

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# 01

# Introduction

In today's fast-paced technological revolution, the hands-on education required for the creation of organic digital characters for any digital animation, advertising or video game project is a differentiating factor. In this program, the graduate will learn in depth about 3D modeling tools such as ZBrush, Maya, Mari, Marvelous Designer, Substance Painter, among others. All this, simulating the conditions of a real Workflow so that the student learns in accordance with the needs of the industry. A 100% online program aimed primarily at computer scientists in the 3D animation sector, who wish to continue their studies by specializing in the world of high-level character modeling.





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*You will be able to autonomously create any kind of completely organic living being including its clothing and props with great quality"*

Based on curves and irregular shapes, 3D Modeling is the process of developing a mathematical representation of any three-dimensional object, whether inanimate or living, through specialized software. This program is based on an extensive compilation of industry experience and different professional opinions to manage and organize all the information involved in this degree, making use of the most innovative software used by computer experts in Organic 3D Modeling in the industry.

The program will provide the student with the necessary updating of skills in a constantly evolving environment. They will gain the knowledge to be able to cope with the supervision and technical direction, to the point that they will be able to become 3D computer experts in film, advertising and video game companies and a great digital sculptor who can work as a freelancer.

In addition, as it is a 100% online Professional Master's Degree, the student will be able to take it wherever and whenever they want. The only requirement is to have a device with internet access from which you can follow the contents, as well as download and consult them at any time.

This **Professional Master's Degree in Organic 3D Modeling** contains the most complete and up-to-date program on the market. Its most notable features are:

- ◆ The development of practical cases presented by experts in 3D modeling
- ◆ The graphic, schematic, and practical contents with which they are created, provide practical information on the disciplines that are essential for professional practice
- ◆ Practical exercises where the self-assessment process can be carried out to improve learning
- ◆ Its special emphasis on innovative methodologies
- ◆ Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- ◆ Content that is accessible from any fixed or portable device with an Internet connection



*In order for you to be up to date and prepared for any situation with the latest software on the market, you will learn how to implement Blender in your Workflow"*

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*You will understand the importance of a good topology and how it influences all levels of a production in order to be as professional as possible"*

The program includes in its teaching staff professionals from the sector who bring to this training the experience of their work, as well as recognized specialists from leading societies and prestigious universities.

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive education programmed to learn in real situations.

This program is designed around Problem-Based Learning, whereby professionals must try to solve the different professional practice situations that arise during the academic year. For this purpose, the student will be assisted by an innovative interactive video system created by renowned and experienced experts.

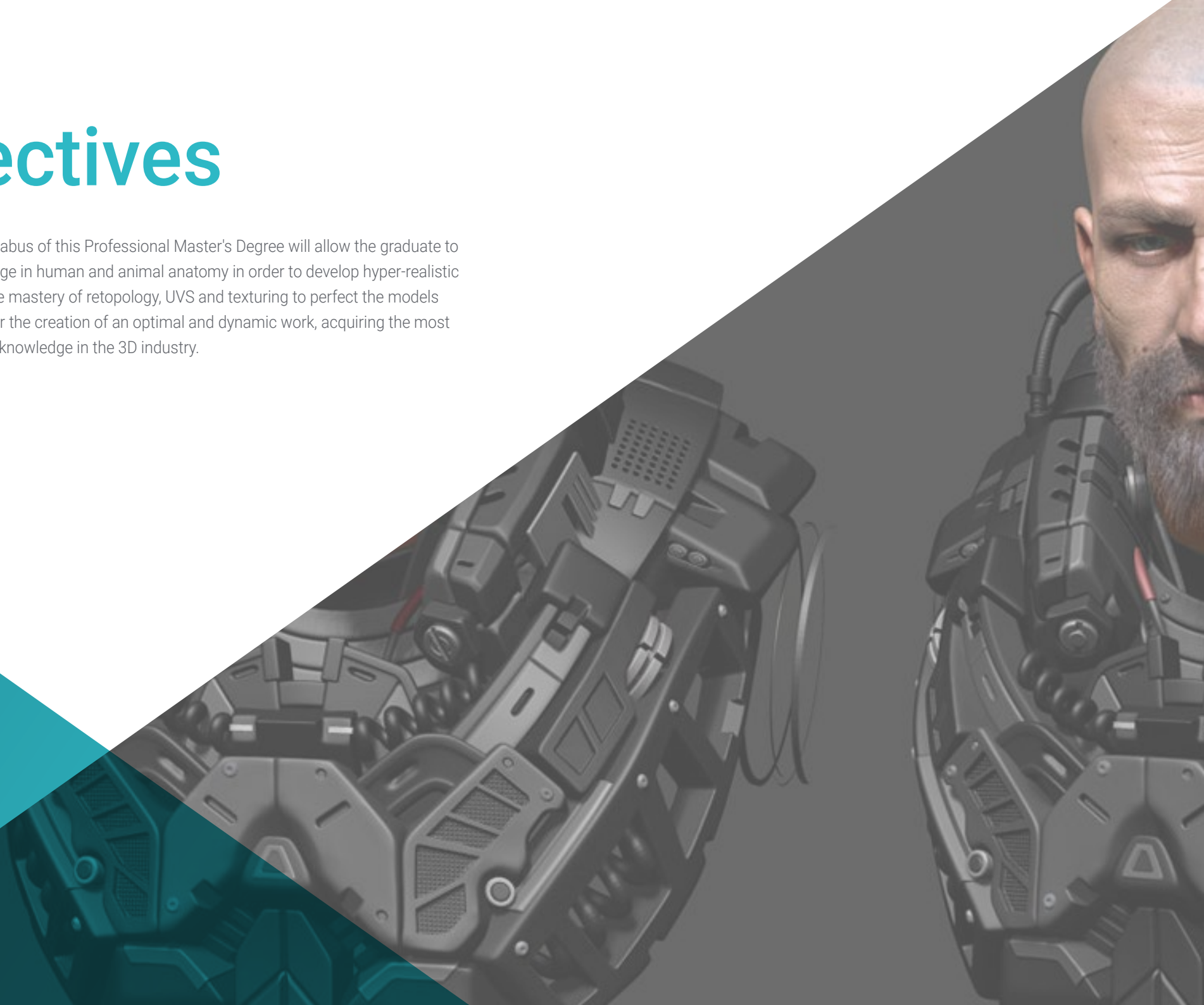
*Learn how to use the most famous 3D Modeling tools and be part of the technological change from excellence.*

*You will learn different ways of modeling to build the character of your dreams.*



# 02 Objectives

The design of the syllabus of this Professional Master's Degree will allow the graduate to expand their knowledge in human and animal anatomy in order to develop hyper-realistic creatures, through the mastery of retopology, UVS and texturing to perfect the models created. All this, under the creation of an optimal and dynamic work, acquiring the most demanded skills and knowledge in the 3D industry.







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*TECH puts at your disposal the best program to help you reach the professional elite of the sector”*



## General Objectives

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- ◆ Expand knowledge of human and animal anatomy in order to develop hyper-realistic creatures
- ◆ Master the retopology, UVS and texturing to perfect the models created
- ◆ Create an optimal and dynamic workflow to work more efficiently with 3D modeling
- ◆ Have the skills and knowledge most in demand in the 3D industry to be able to apply for the best jobs



*This Professional Master's Degree, aimed at professionals in the 3D animation sector like you, will specialize you in the world of high-level character modeling"*



## Specific Objectives

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### Module 1. Anatomy

- ◆ Investigate both male and female human anatomy
- ◆ Develop the highly detailed human body
- ◆ Sculpt hyper-realistic faces

### Module 2. Retopology and Maya Modeling

- ◆ Master the different professional sculpting techniques
- ◆ Create advanced full body and face retopology in Maya
- ◆ Learn how to apply details using *Alphas* and brushes in *ZBrush*

### Module 3. UVS and Texturing with *Allegorithmic Substance Painter* and *Mari*

- ◆ Study the optimal way to UVS's in Maya and UDIM systems
- ◆ Develop the knowledge to texture in *Substance Painter* for video games
- ◆ Gain knowledge of texturing in *Mari* for hyper-realistic models
- ◆ Learn how to create XYZ textures and displacement maps on our models
- ◆ Delve into the import of our textures in Maya

### Module 4. Rendering, Lighting and Posing of Models

- ◆ Discover advanced lighting and photography concepts to sell models more efficiently
- ◆ Develop the learning of model posing by means of different techniques
- ◆ Delve into the development of a *Rig* in Maya for the subsequent possible animation of the model
- ◆ Observe the control and use of the rendering of the model, bringing out all its details

### Module 5. Hair Creation for Video Games and Movies

- ◆ Delve into the advanced use of XGen in Maya
- ◆ Create hair for movies
- ◆ Studying hair using *Cards* for video games
- ◆ Develop your own hair textures
- ◆ See the different use of hairbrushes in *ZBrush*

### Module 6. Clothing Simulation

- ◆ Study the use of Marvelous Designer
- ◆ Create fabric simulations in Marvelous Designer
- ◆ Practice different types of complex patterns in Marvelous Designer
- ◆ Delve into the *Workflow* of professional work from Marvelous to *ZBrush*
- ◆ Develop the texturing and *shading* of clothes and fabrics in Mari

### Module 7. Stylized Characters

- ◆ Focus anatomical knowledge in simpler, cartoon-like forms
- ◆ Create a cartoon model from the base to the detail by applying what has been previously learned
- ◆ Review the techniques learned in the course in a different modeling style.

### Module 8. Creature Modeling

- ◆ Learn the modeling of different types of animal anatomy
- ◆ Review the different types of reptiles and how to create scales with Displacement and Alphas maps
- ◆ Investigate how to export models to Mari for realistic texturing
- ◆ Learn more about Grooming and how to Groom animals with XGen
- ◆ Render models in Arnold Render in Maya

### Module 9. Blender: A New Twist in the Industry

- ◆ Outstanding software performance
- ◆ Transfer knowledge of Maya and *ZBrush* to Blender to create amazing models
- ◆ Delve into *Blender's* node system to create different shaders and materials
- ◆ Render *Blender* practice models with the two types of render engines Eevee and Cycles

### Module 10. Creation of Organic Environments in Unreal Engine

- ◆ Study software functionality and project configuration
- ◆ Delve into the study of PST and the Storytelling of the scene to achieve a good design for our Environment
- ◆ Learn the different terrain and organic modeling techniques, as well as the implementation of our own scanned models.
- ◆ Delve into the vegetation creation system and how to control it perfectly in Unreal Engine
- ◆ Create different types of texturing of the parts of the project, as well as Shading and materials with their corresponding configurations
- ◆ Develop knowledge about the different types of lights, atmospheres, particles and fog, how to place different types of cameras and how to take pictures to have our composition in different ways

# 03 Skills

The skills acquired by the student in this degree are the most demanded in the 3D design industry today. The teaching staff in charge of the development of the syllabus has extensive experience in dealing with three-dimensional modeling projects and is therefore aware of the market requirements and has translated the best possible knowledge into the training material. As a result, the student graduates from the Professional Master's Degree in Organic 3D Modeling with all the necessary skills to be able to apply for the most prestigious and demanding positions.





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*The skills you will acquire after completing this Professional Master's Degree will position you as a computer expert in Organic 3D Modeling"*



## General Skills

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- ◆ Create any kind of completely organic living being including its clothes and *Props* autonomously and with high quality
- ◆ Adapt to any type of *Workflow* in the sector, using the most convenient for each type of work
- ◆ Create the skeleton of a character using a *Rig* to test its functionality and correct bugs
- ◆ Use the best and most widespread software in the industry in the field of 3D modeling and sculpting

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*Acquire the best skills to stand out in a sector in full expansion”*





## Specific Skills

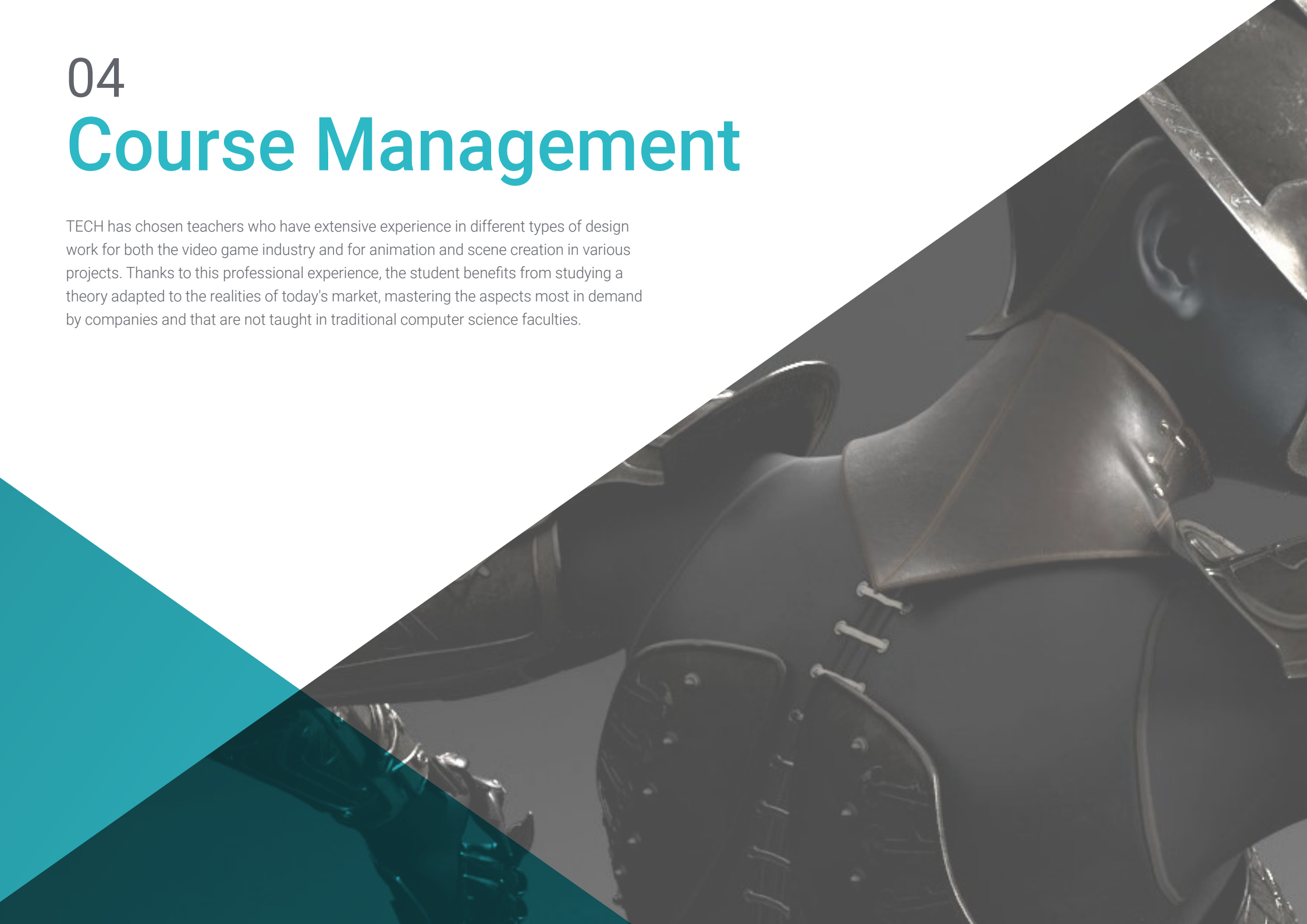
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- ◆ In-depth knowledge of the anatomy of the body, making the most of every detail
- ◆ Lay the artistic foundations to differentiate yourself from other designers
- ◆ Create great human models, both male and female
- ◆ Solve problems of other work departments
- ◆ Increase the professionalism of the student with cross-cutting competencies in rhotopology
- ◆ Understand the influence of a good topology at all levels of production
- ◆ Master Mari software, which is widely used in the film industry
- ◆ Knowledge of the standard in video game texturing through Substance
- ◆ Delve into the current demands of the film and video game industry to offer the best possible design solutions
- ◆ Mastering rendering to avoid models that look bad or do not meet required standards
- ◆ Present models and design portfolios in a professional manner
- ◆ Refine the composition of light, shape, color and pose of the models to enhance the work.
- ◆ Know and meet the demands in hair creation for film and video games
- ◆ Create hair mastering different artistic styles
- ◆ Master the Marvelous Designer tool and its complex patterns
- ◆ Create realistic or cartoon characters in a versatile and plausible manner
- ◆ Know the anatomy of all types of creatures in order to represent them accurately
- ◆ Master Unreal Engine and Blender more effectively than most designers

# 04

# Course Management

TECH has chosen teachers who have extensive experience in different types of design work for both the video game industry and for animation and scene creation in various projects. Thanks to this professional experience, the student benefits from studying a theory adapted to the realities of today's market, mastering the aspects most in demand by companies and that are not taught in traditional computer science faculties.







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*Don't wait any longer and become the best computer scientist specialized in Organic 3D Modeling in the labor market"*

## Management



### Ms. Gómez Sanz, Carla

- ♦ 3D Generalist at Blue Pixel 3D
- ♦ Concept Artist, 3D Modeler, Shading in Timeless Games Inc.
- ♦ Collaboration with multinational consulting firm for the design of vignettes and animation for commercial proposals
- ♦ Advanced Technician in 3D Animation, video games and interactive environments at CEV School of Communication, Image and Sound
- ♦ Master's Degree and Bachelor's Degree in 3D Art, Animation and Visual Effects for video games and cinema at CEV School of Communication, Image and Sound.



# 05

## Structure and Content

The syllabus has been designed based on the requirements of computer science applied to the specific sector of Organic 3D Modeling, bringing together a curriculum whose modules offer a broad perspective of anatomy, retopology and Maya Modeling, as well as UVS and texturing with Allegorithmic Substance Painter and Mari. In addition, important elements such as rendering, lighting and posing of models, hair creation and clothing simulation, etc., are also included.





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*You will have the confidence that you are taking the most complete and up-to-date program on the market to become an expert in Organic 3D Modeling"*

## Module 1. Anatomy

- 1.1. General Skeletal Masses, Proportions
  - 1.1.1. Bones
  - 1.1.2. The Human Face
  - 1.1.3. Anatomical Canons
- 1.2. Anatomical Differences between Genders and Sizes
  - 1.2.1. Shapes Applied to Characters
  - 1.2.2. Curves and Straight Lines
  - 1.2.3. Behavior of Bones, Muscles and Skin
- 1.3. The Head
  - 1.3.1. The Skull
  - 1.3.2. Muscles of the Head
  - 1.3.3. Layers: Skin, Bone and Muscle Facial Expressions
- 1.4. The Torso
  - 1.4.1. Torso Musculature
  - 1.4.2. Central Axis of the Body
  - 1.4.3. Different Torsos
- 1.5. The Arms
  - 1.5.1. Joints: Shoulder, Elbow and Wrist
  - 1.5.2. Arm Muscle Behavior
  - 1.5.3. Detail of the Skin
- 1.6. Hand Sculpting
  - 1.6.1. Hand Bones
  - 1.6.2. Hand Muscles and Tendons
  - 1.6.3. Hand Skin and Wrinkles
- 1.7. Leg Sculpting
  - 1.7.1. Joints: Hip, Knee and Ankle
  - 1.7.2. Muscles of the Leg
  - 1.7.3. Detail of the Skin
- 1.8. The Feet
  - 1.8.1. Bone Construction for the Foot
  - 1.8.2. Foot Muscles and Tendons
  - 1.8.3. Foot Skin and Wrinkles

- 1.9. Whole Human Figure Composition
  - 1.9.1. Complete Creation of a Human Base
  - 1.9.2. Joint and Muscle Attachment
  - 1.9.3. Skin Composition, Pores and Wrinkles
- 1.10. Complete Human Model
  - 1.10.1. Model Polishing
  - 1.10.2. Hyper Skin Detail
  - 1.10.3. Composition

## Module 2. Retopology and Maya Modeling

- 2.1. Advanced Facial Retopology
  - 2.1.1. Importing into Maya and the Use of Quad Draw
  - 2.1.2. Retopology of the Human Face
  - 2.1.3. Loops
- 2.2. Human Body Retopology
  - 2.2.1. Creation of Loops in the Joints
  - 2.2.2. Ngons and Tris and When to Use Them
  - 2.2.3. Topology Refinement
- 2.3. Retopology of Hands and Feet
  - 2.3.1. Movement of Small Joints
  - 2.3.2. Loops and Support Edges to Improve the Base Mesh of Feet and Hands
  - 2.3.3. Difference of Loops for Different Hands and Feet
- 2.4. Differences Between Maya Modeling vs. ZBrush Sculpting
  - 2.4.1. Different Workflows for Modeling
  - 2.4.2. Low Poly Base Model
  - 2.4.3. High Poly Model
- 2.5. Creation of a Human Model from Scratch in Maya
  - 2.5.1. Human Model Starting From the Hip
  - 2.5.2. General Base Form
  - 2.5.3. Hands and Feet and their Topology

- 2.6. Transformation of Low poly Model to High Poly
  - 2.6.1. ZBrush
  - 2.6.2. High Poly: Differences Between Divide and Dynamesh
  - 2.6.3. Sculpting Form: Alternation Between Low Poly and High Poly
- 2.7. Application of Details in ZBrush: Pores, Capillaries, etc.
  - 2.7.1. Alphas and Different Brushes
  - 2.7.2. Detail: Dam-Standard Brush
  - 2.7.3. Projections and Surfaces in ZBrush
- 2.8. Advanced Eye Creation in Maya
  - 2.8.1. Creation of the Spheres: Sclera, Cornea and Iris
  - 2.8.2. Lattice Tool
  - 2.8.3. Displacement Map from ZBrush
- 2.9. Use of Deformers in Maya
  - 2.9.1. Maya Deformers
  - 2.9.2. Topology Movement: Polish
  - 2.9.3. Polishing of the Final Mesh
- 2.10. Creation of Final UVs and Application of Displacement Mapping
  - 2.10.1. UVs of the Character and Importance of Sizes
  - 2.10.2. Texturing
  - 2.10.3. Displacement Map

### Module 3. UVs and Texturing with *Allegorithmic Substance Painter and Mari*

- 3.1. Creation of High-Level UVs in Maya
  - 3.1.1. Facial UVs
  - 3.1.2. Creation and Layout
  - 3.1.3. Advanced UVs
- 3.2. Preparation of UVS for UDIM's Systems Focused on Large Production Models
  - 3.2.1. UDIM
  - 3.2.2. UDIM in Maya
  - 3.2.3. 4K Textures
- 3.3. XYZ Textures: What Are They and How to Use Them?
  - 3.3.1. XYZ. Hyperrealism
  - 3.3.2. MultiChannel Maps
  - 3.3.3. Texture Maps
- 3.4. Texturing: Videogames and Cinema
  - 3.4.1. Substance Painter
  - 3.4.2. Mari
  - 3.4.3. Types of Texturing
- 3.5. Texturing in Substance Painter for Videogames
  - 3.5.1. Baking from High to Low Poly
  - 3.5.2. PBR Textures and Their Importance
  - 3.5.3. ZBrush with Substance Painter
- 3.6. Finalizing our Substance Painter Textures
  - 3.6.1. Scattering, Translucency
  - 3.6.2. Texturing of Models
  - 3.6.3. Scars, Freckles, Tattoos, Paints or Makeup
- 3.7. Hyper-Realistic Facial Texturing with XYZ Textures and Color Mapping I
  - 3.7.1. XYZ Textures in ZBrush
  - 3.7.2. Wrap
  - 3.7.3. Error Correction
- 3.8. Hyper-Realistic Facial Texturing with XYZ Textures and Color Mapping II
  - 3.8.1. Mari Interface
  - 3.8.2. Texturing in Mari
  - 3.8.3. Projection of Skin Textures
- 3.9. Advanced Detailing of Displacements Maps in ZBrush and Mari
  - 3.9.1. Texture Painting
  - 3.9.2. Displacement for Hyperrealism
  - 3.9.3. Creation of Layers
- 3.10. Shading and Texture Implementation in Maya
  - 3.10.1. Skin Shaders in Arnold
  - 3.10.2. Hyperrealistic Eye
  - 3.10.3. Touch-ups and Tips

## Module 4. Rendering, Lighting and Posing of Models

- 4.1. Characters Posing in ZBrush
  - 4.1.1. Rig in ZBrush with ZSpheres
  - 4.1.2. Transpose Master
  - 4.1.3. Professional Finish
- 4.2. Rigging and Weighting of our Own Skeleton in Maya
  - 4.2.1. Rig in Maya
  - 4.2.2. Rigging Tools with Advanced Skeleton
  - 4.2.3. Rig Weighting
- 4.3. Blend Shapes to Give Life to Your Character's Face
  - 4.3.1. Facial Expressions
  - 4.3.2. Blend Shapes of Maya
  - 4.3.3. Animation with Maya
- 4.4. Mixamo, a Quick Way to Present Our Model
  - 4.4.1. Mixamo
  - 4.4.2. Mixamo Rigs
  - 4.4.3. Animations
- 4.5. Lighting Concepts
  - 4.5.1. Lighting Techniques
  - 4.5.2. Light and Color
  - 4.5.3. Shade
- 4.6. Arnold Render Lights and Parameters
  - 4.6.1. Lights with Arnold and Maya
  - 4.6.2. Lighting Control and Parameters
  - 4.6.3. Arnold Parameters and Configuration
- 4.7. Lighting of our Models in Maya with Arnold Render
  - 4.7.1. Lighting Set Up
  - 4.7.2. Model Lighting
  - 4.7.3. Mixing Light and Color
- 4.8. Going Deeper in Arnold: Denoising and the Different AOVs
  - 4.8.1. AOVs
  - 4.8.2. Advanced Noise Treatment
  - 4.8.3. Denoiser





- 4.9. Real-Time Rendering in Marmoset Toolbag
  - 4.9.1. Real-Time vs. Ray Tracing
  - 4.9.2. Advanced Marmoset Toolbag
  - 4.9.3. Professional Presentation
- 4.10. Post-Production Rendering in Photoshop
  - 4.10.1. Image Processing
  - 4.10.2. Photoshop: Levels and Contrasts
  - 4.10.3. Layers: Characteristics and their Effects

## Module 5. Hair Creation for Video Games and Movies

- 5.1. Differences Between Videogame Hair and Film Hair
  - 5.1.1. FiberMesh and Cards
  - 5.1.2. Tools for Hair Creation
  - 5.1.3. Hair Software
- 5.2. ZBrush Hair Sculpting
  - 5.2.1. Basic Shapes for Hairstyles
  - 5.2.2. Creating Brushes in ZBrush for Hair
  - 5.2.3. Curve Brushes
- 5.3. Hair Creation in XGen
  - 5.3.1. XGen
  - 5.3.2. Collections and Descriptions
  - 5.3.3. Hair vs. Grooming
- 5.4. XGen Modifiers: Adding Realism to Hair
  - 5.4.1. Clumping
  - 5.4.2. Coil
  - 5.4.3. Hair Guides
- 5.5. Color and Region Maps:: for Absolute Hair Control
  - 5.5.1. Maps of Hair Regions
  - 5.5.2. Cuts: Curly, Shaved and Long Hair
  - 5.5.3. Micro Detail: Facial Hair



- 5.6. Advanced XGen: Use of Expressions and Refinement
  - 5.6.1. Expressions
  - 5.6.2. Utilities
  - 5.6.3. Hair Refinement
- 5.7. Cards Placement in Maya for Videogame Modeling
  - 5.7.1. Fibers in Cards
  - 5.7.2. Cards by Hand
  - 5.7.3. Cards and Real-Time Engine
- 5.8. Optimization for Movies
  - 5.8.1. Optimization of the Hair and its Geometry
  - 5.8.2. Preparation for Physics with Movements
  - 5.8.3. XGen Brushes
- 5.9. Hair Shading
  - 5.9.1. Arnold Shader
  - 5.9.2. Hyper-Realistic Look
  - 5.9.3. Hair Treatment
- 5.10. Render
  - 5.10.1. Rendering When Using XGen
  - 5.10.2. Lighting
  - 5.10.3. Noise Elimination

## Module 6. Clothing Simulation

- 6.1. Importing your Model to Marvelous Designer and Program Interface
  - 6.1.1. Marvelous Designer
  - 6.1.2. Software Functionality
  - 6.1.3. Real-Time Simulations
- 6.2. Creation of Simple Patterns and Clothing Accessories
  - 6.2.1. Creations: T-shirts, Accessories, Hats and Pockets
  - 6.2.2. Fabric
  - 6.2.3. Patterns, Zippers and Seams
- 6.3. Advanced Clothing Creation: Complex Patterns
  - 6.3.1. Pattern Complexity
  - 6.3.2. Physical Qualities of Fabrics
  - 6.3.3. Complex Accessories
- 6.4. Clothing Simulation at Marvelous
  - 6.4.1. Animated Models at Marvelous
  - 6.4.2. Fabric Optimization
  - 6.4.3. Model Preparation
- 6.5. Export of Clothing from Marvelous Designer to ZBrush
  - 6.5.1. Low Poly in Maya
  - 6.5.2. UVs in Maya
  - 6.5.3. ZBrush, Use of Reconstruct Subdiv
- 6.6. Refinement of Clothing
  - 6.6.1. Workflow
  - 6.6.2. Details in ZBrush
  - 6.6.3. Clothing Brushes in ZBrush
- 6.7. Improve the Simulation with ZBrush
  - 6.7.1. From Tris to Quads
  - 6.7.2. UV Maintenance
  - 6.7.3. Final Carving
- 6.8. High Detail Clothing Texturing in Mari
  - 6.8.1. Tileable Textures and Fabric Materials
  - 6.8.2. Baking
  - 6.8.3. Texturing in Mari
- 6.9. Maya Fabric Shading
  - 6.9.1. Shading
  - 6.9.2. Textures Created in Mari
  - 6.9.3. Realism with Arnold Shaders
- 6.10. Render
  - 6.10.1. Clothing Rendering
  - 6.10.2. Illumination in Clothing
  - 6.10.3. Texture Intensity

## Module 7. Stylized Characters

- 7.1. Choice of a Stylized Character and Blocking of Base Forms
  - 7.1.1. References and Concept Arts
  - 7.1.2. Base Forms
  - 7.1.3. Deformities and Fantastic Shapes
- 7.2. Conversion of our Low Poly into High Poly Model: Head, Hair and Face Sculpting
  - 7.2.1. Head Blocking
  - 7.2.2. New Hair Creation Techniques
  - 7.2.3. Improvements
- 7.3. Model Refinement: Hands and Feet
  - 7.3.1. Advanced Sculpting
  - 7.3.2. Refinement of General Shapes
  - 7.3.3. Shape Cleaning and Smoothing
- 7.4. Creation of Jaw and Teeth
  - 7.4.1. Creation of Human Teeth
  - 7.4.2. Increase its Polygons
  - 7.4.3. Fine Detailing of Teeth in ZBrush
- 7.5. Modeling Clothing and Accessories
  - 7.5.1. Types of Cartoon Clothing
  - 7.5.2. ZModeler
  - 7.5.3. Applied Maya Modeling
- 7.6. Retopology and Clean Topology Creation from Scratch
  - 7.6.1. Retopology
  - 7.6.2. Loops According to the Model
  - 7.6.3. Optimization of the Mesh
- 7.7. UV Mapping and Baking
  - 7.7.1. UVs
  - 7.7.2. Substance Painter: Baking
  - 7.7.3. Polishing Baking

- 7.8. Texturing and Painting In Substance Painter
  - 7.8.1. Substance Painter: Texturing
  - 7.8.2. Hand Painted Cartoon Techniques
  - 7.8.3. Fill Layers with Generators and Masks
- 7.9. Lighting and Rendering
  - 7.9.1. Lighting of Our Character
  - 7.9.2. Color Theory and Presentation
  - 7.9.3. Substance Painter: Render
- 7.10. Posing and Final Presentation
  - 7.10.1. Diorama
  - 7.10.2. Posing Techniques
  - 7.10.3. Presentation of Models

## Module 8. Creature Modeling

- 8.1. Understanding Animal Anatomy
  - 8.1.1. Study of the Bones
  - 8.1.2. Proportions of an Animal Head
  - 8.1.3. Anatomic Differences
- 8.2. Anatomy of the Skull
  - 8.2.1. Animal Face
  - 8.2.2. Muscles of the Head
  - 8.2.3. Skin Layer, Over Bones and Muscles
- 8.3. Anatomy of the Spine and Thoracic Cage
  - 8.3.1. Animal Torso and Hip Musculature
  - 8.3.2. Central Axis of its Body
  - 8.3.3. Creation of Torsos in Different Animals
- 8.4. Animal Musculature
  - 8.4.1. Muscle
  - 8.4.2. Synergy Between Muscles and Bones
  - 8.4.3. Shapes of an Animal Body

- 8.5. Reptiles and Amphibians
  - 8.5.1. Reptilian Skin
  - 8.5.2. Small Bones and Ligaments
  - 8.5.3. Fine Detail
- 8.6. Mammals
  - 8.6.1. Fur
  - 8.6.2. Larger, Stronger Bones and Ligaments
  - 8.6.3. Fine Detail
- 8.7. Animals with Feathers
  - 8.7.1. Plumage
  - 8.7.2. Elastic and Light Bones and Ligaments
  - 8.7.3. Fine Detail
- 8.8. Analysis of the Jaw and Creation of Teeth
  - 8.8.1. Animal Specific Teeth
  - 8.8.2. Detailing of Teeth
  - 8.8.3. Teeth in the Jaw Cavity
- 8.9. Creation of Fur, Fur for Animals
  - 8.9.1. XGen in Maya: Grooming
  - 8.9.2. XGen: Feathers
  - 8.9.3. Render
- 8.10. Fantastic Animals
  - 8.10.1. Fantastic Animal
  - 8.10.2. Complete Modeling of the Animal
  - 8.10.3. Texturing, Lighting and Rendering

## Module 9. Blender: A New Twist in the Industry

- 9.1. Blender vs. ZBrush
  - 9.1.1. Advantages and Differences
  - 9.1.2. Blender and the 3D Art Industry
  - 9.1.3. Advantages and Disadvantages of Freeware
- 9.2. Blender Interface and Program Knowledge
  - 9.2.1. Interface
  - 9.2.2. Customization
  - 9.2.3. Experimentation
- 9.3. Head Sculpting and Transpotation of Controls from ZBrush to Blender
  - 9.3.1. The Human Face
  - 9.3.2. 3D Sculpting
  - 9.3.3. Blender Brushes
- 9.4. Full Body Sculpting
  - 9.4.1. The Human Body
  - 9.4.2. Advanced Techniques
  - 9.4.3. Detail and Refinement
- 9.5. Retopology and UVs in Blender
  - 9.5.1. Retopology
  - 9.5.2. UVs
  - 9.5.3. Blender UDIMs
- 9.6. From Maya to Blender
  - 9.6.1. Hard Surface
  - 9.6.2. Modifiers
  - 9.6.3. Keyboard Shortcuts
- 9.7. Blender Tips & Tricks
  - 9.7.1. Range of Possibilities
  - 9.7.2. Geometry Nodes
  - 9.7.3. Workflow
- 9.8. Nodes in Blender: Shading and Texture Placement
  - 9.8.1. Nodal System
  - 9.8.2. Shaders Through Nodes
  - 9.8.3. Textures and Materials

## 9.9. Rendering in Blender with Cycles and Eevee

### 9.9.1. Cycles

### 9.9.2. Eevee

### 9.9.3. Lighting

## 9.10. Implementation of Blender in our Workflow as Artists

### 9.10.1. Implementation in the Workflow

### 9.10.2. Search for Quality

### 9.10.3. Types of Exports

## Module 10. Creation of Organic Environments in Unreal Engine

### 10.1. Unreal Engine Configuration and Project Organization

#### 10.1.1. Interface and Configuration

#### 10.1.2. Folder Organization

#### 10.1.3. Search for Ideas and References

### 10.2. Blocking an Environment in Unreal Engine

#### 10.2.1. Primary, Secondary and Tertiary PST Elements

#### 10.2.2. Scene Design

#### 10.2.3. Storytelling

### 10.3. Terrain Modeling: Unreal Engine and Maya

#### 10.3.1. Unreal Terrain

#### 10.3.2. Terrain Sculpting

#### 10.3.3. Heightmaps: Maya

### 10.4. Modeling Techniques

#### 10.4.1. Rock Sculpting

#### 10.4.2. Rock Brushes

#### 10.4.3. Cliffs and Optimization

### 10.5. Creation of Vegetation

#### 10.5.1. Speedtree Software

#### 10.5.2. Low-Poly Vegetation

#### 10.5.3. Unreal's Foliage System

### 10.6. Texturing in Substance Painter and Mari

#### 10.6.1. Stylized Terrain

#### 10.6.2. Hyper-realistic Texturing

#### 10.6.3. Tips and Guidelines

### 10.7. Photogrammetry

#### 10.7.1. Megascan Library

#### 10.7.2. Agisoft Metashape Software

#### 10.7.3. Model Optimization

### 10.8. Shading and Materials in Unreal Engine

#### 10.8.1. Blending of Textures

#### 10.8.2. Material Settings

#### 10.8.3. Final Touches

### 10.9. Lighting and Post-production of our Environment in Unreal Engine

#### 10.9.1. Scene Look

#### 10.9.2. Types of Lights and Atmospheres

#### 10.9.3. Particles and Fog

### 10.10. Cinematic Rendering

#### 10.10.1. Camera Techniques

#### 10.10.2. Video and Screen Capture

#### 10.10.3. Presentation and Final Finishing



*Thanks to the quality content presented in this program, you will leave with the best possible preparation to use the industry's best and most widely used 3D modeling and sculpting software"*

06

# Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning**.

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.





*Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"*

## Case Study to contextualize all content

Our program offers a revolutionary approach to developing skills and knowledge. Our goal is to strengthen skills in a changing, competitive, and highly demanding environment.

“

*At TECH, you will experience a learning methodology that is shaking the foundations of traditional universities around the world”*



*You will have access to a learning system based on repetition, with natural and progressive teaching throughout the entire syllabus.*





### A learning method that is different and innovative

This TECH program is an intensive educational program, created from scratch, which presents the most demanding challenges and decisions in this field, both nationally and internationally. This methodology promotes personal and professional growth, representing a significant step towards success. The case method, a technique that lays the foundation for this content, ensures that the most current economic, social and professional reality is taken into account.

“*Our program prepares you to face new challenges in uncertain environments and achieve success in your career”*”

*The student will learn to solve complex situations in real business environments through collaborative activities and real cases.*

The case method has been the most widely used learning system among the world's leading Information Technology schools for as long as they have existed. The case method was developed in 1912 so that law students would not only learn the law based on theoretical content. It consisted of presenting students with real-life, complex situations for them to make informed decisions and value judgments on how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

What should a professional do in a given situation? This is the question that you are presented with in the case method, an action-oriented learning method. Throughout the course, students will be presented with multiple real cases. They will have to combine all their knowledge and research, and argue and defend their ideas and decisions.

## Relearning Methodology

TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines different teaching elements in each lesson.

We enhance the Case Study with the best 100% online teaching method: Relearning.

*In 2019, we obtained the best learning results of all online universities in the world.*

At TECH, you will learn using a cutting-edge methodology designed to train the executives of the future. This method, at the forefront of international teaching, is called Relearning.

Our university is the only one in the world authorized to employ this successful method. In 2019, we managed to improve our students' overall satisfaction levels (teaching quality, quality of materials, course structure, objectives...) based on the best online university indicators.



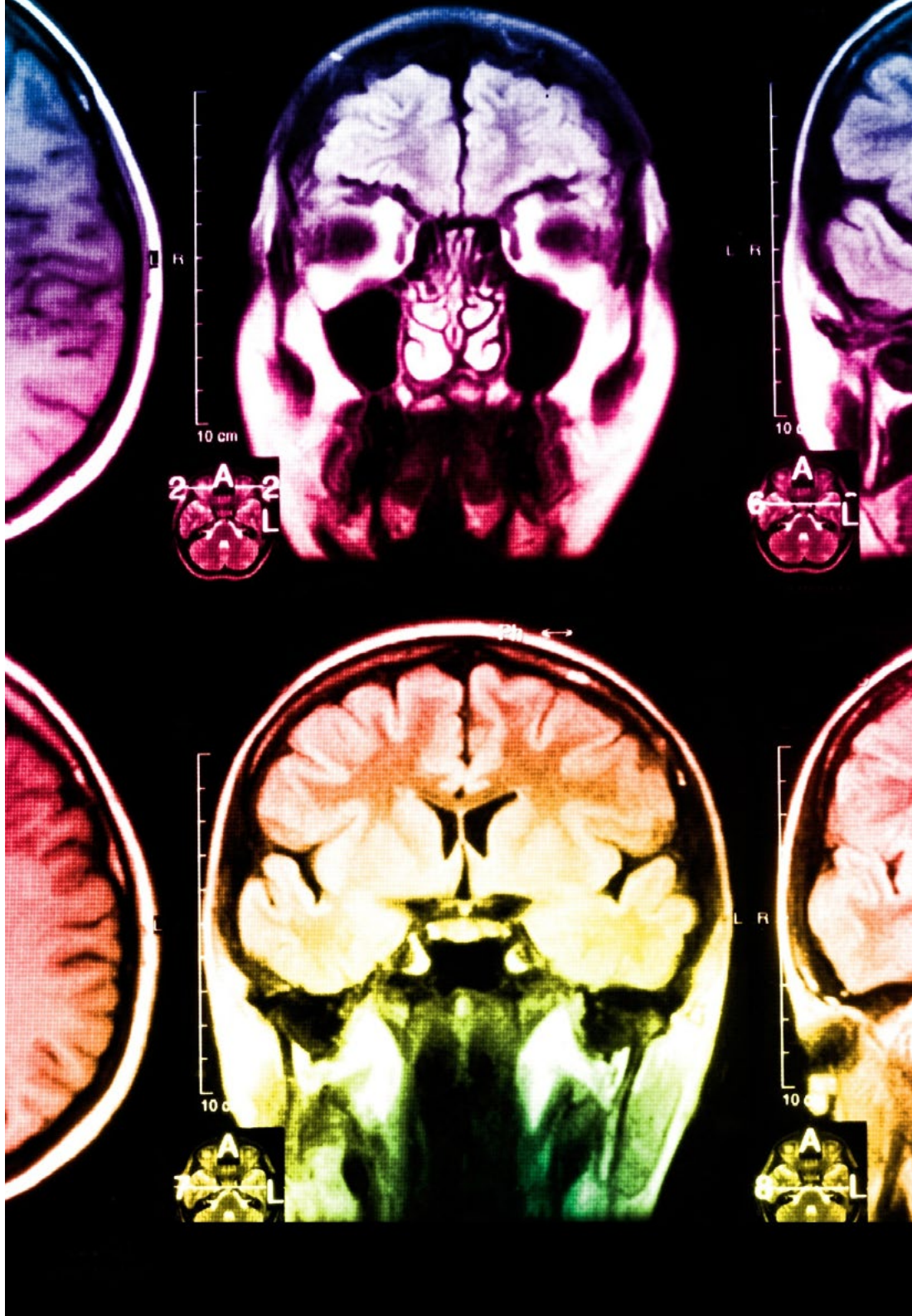
In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

This methodology has trained more than 650,000 university graduates with unprecedented success in fields as diverse as biochemistry, genetics, surgery, international law, management skills, sports science, philosophy, law, engineering, journalism, history, and financial markets and instruments. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

*Relearning will allow you to learn with less effort and better performance, involving you more in your training, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation for success.*

From the latest scientific evidence in the field of neuroscience, not only do we know how to organize information, ideas, images and memories, but we know that the place and context where we have learned something is fundamental for us to be able to remember it and store it in the hippocampus, to retain it in our long-term memory.

In this way, and in what is called neurocognitive context-dependent e-learning, the different elements in our program are connected to the context where the individual carries out their professional activity.



This program offers the best educational material, prepared with professionals in mind:



### Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise.

These contents are then adapted in audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high-quality pieces in each and every one of the materials that are made available to the student.



### Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.



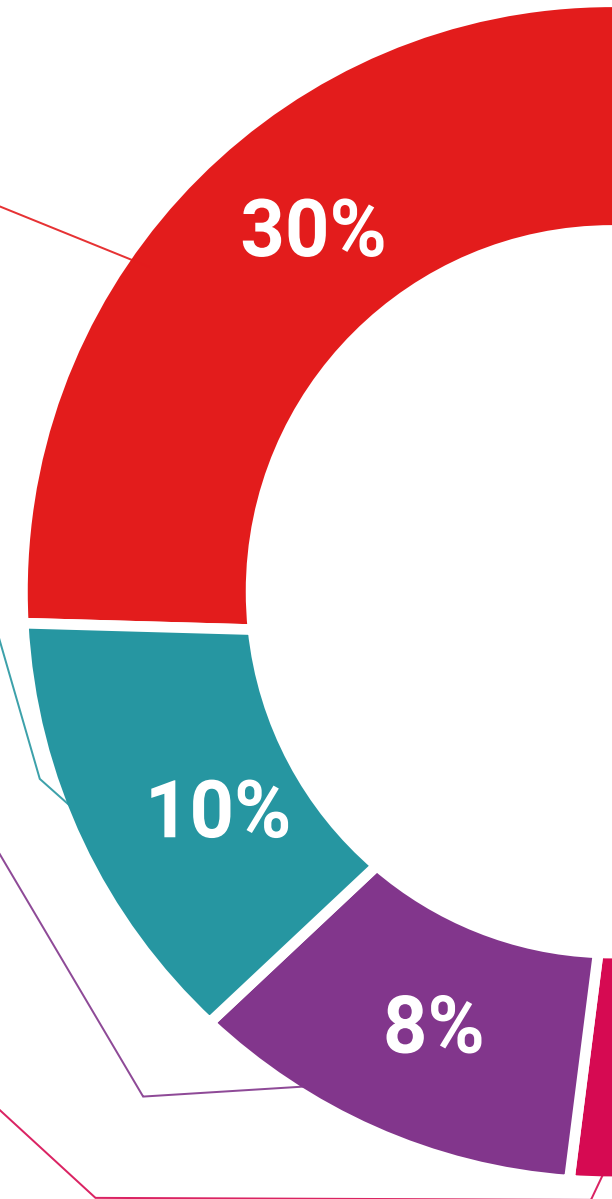
### Practising Skills and Abilities

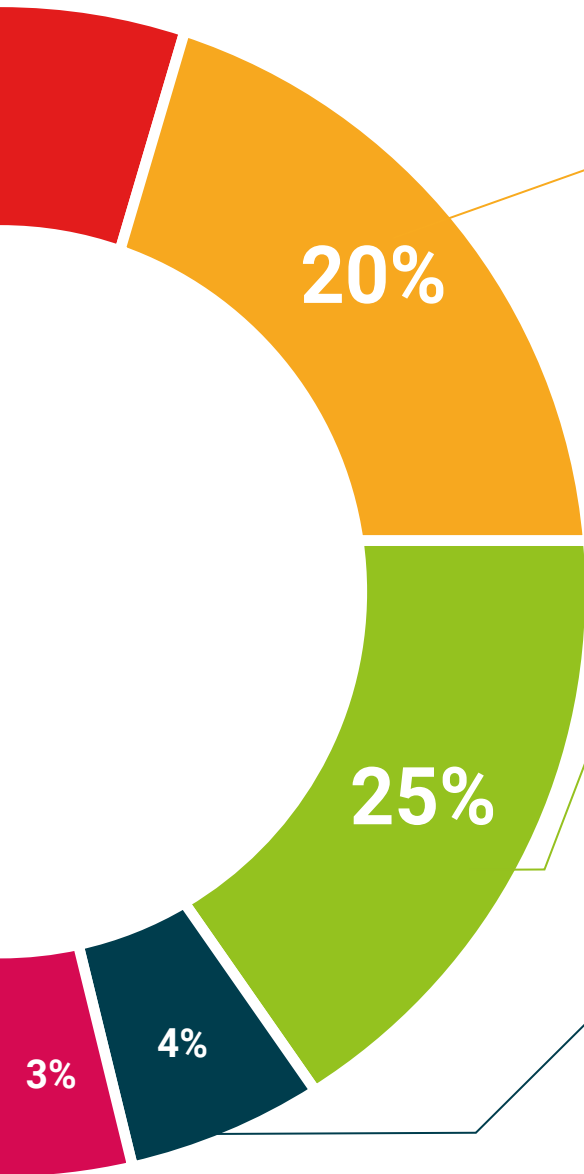
They will carry out activities to develop specific competencies and skills in each thematic area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.



### Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.





#### Case Studies

Students will complete a selection of the best case studies chosen specifically for this program. Cases that are presented, analyzed, and supervised by the best specialists in the world.



#### Interactive Summaries

The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



#### Testing & Retesting

We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises, so that they can see how they are achieving their goals.



# 07 Certificate

The Professional Master's Degree in Organic 3D Modeling guarantees students, in addition to the most rigorous and up-to-date education, access to a Professional Master's Degree issued by TECH Technological University.



“

*Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork”*

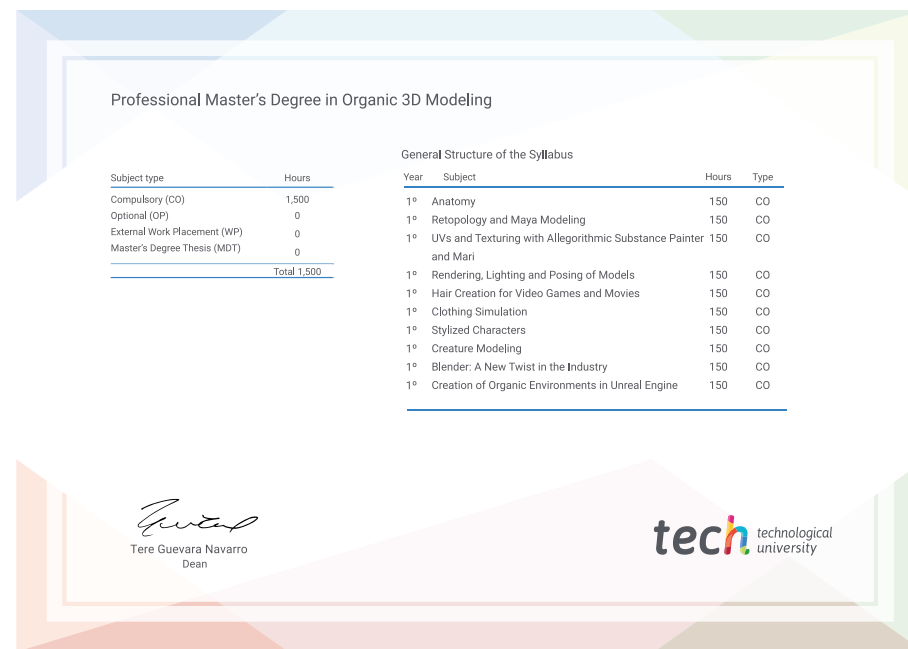
This **Professional Master's Degree in Organic 3D Modeling** contains the most complete and up-to-date educational program on the market.

After the student has passed the assessments, they will receive their corresponding **Professional Master's Degree** issued by **TECH Technological University** via tracked delivery\*.

The certificate issued by **TECH Technological University** will reflect the qualification obtained in the Professional Master's Degree, and meets the requirements commonly demanded by labor exchanges, competitive examinations and professional career evaluation committees.

Title: **Professional Master's Degree in Organic 3D Modeling**

Official N° of Hours: **1,500 h.**



\*Apostille Convention. In the event that the student wishes to have their paper certificate issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.



future  
health confidence people  
education information tutors  
guarantee accreditation teaching  
institutions technology learning  
community commitment  
personalized service innovation  
knowledge present  
development language  
virtual classroom

**tech** technological  
university

## Professional Master's Degree

### Organic 3D Modeling

- » Modality: online
- » Duration: 12 months
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

# Professional Master's Degree

## Organic 3D Modeling

