

# Professional Master's Degree

## Digital Sculpture





## Professional Master's Degree Digital Sculpture

- » Modality: online
- » Duration: 12 months
- » Certificate: TECH Global University
- » Credits: 60 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtitute.com/us/videogames/professional-master-degree/master-digital-sculpture](http://www.techtitute.com/us/videogames/professional-master-degree/master-digital-sculpture)

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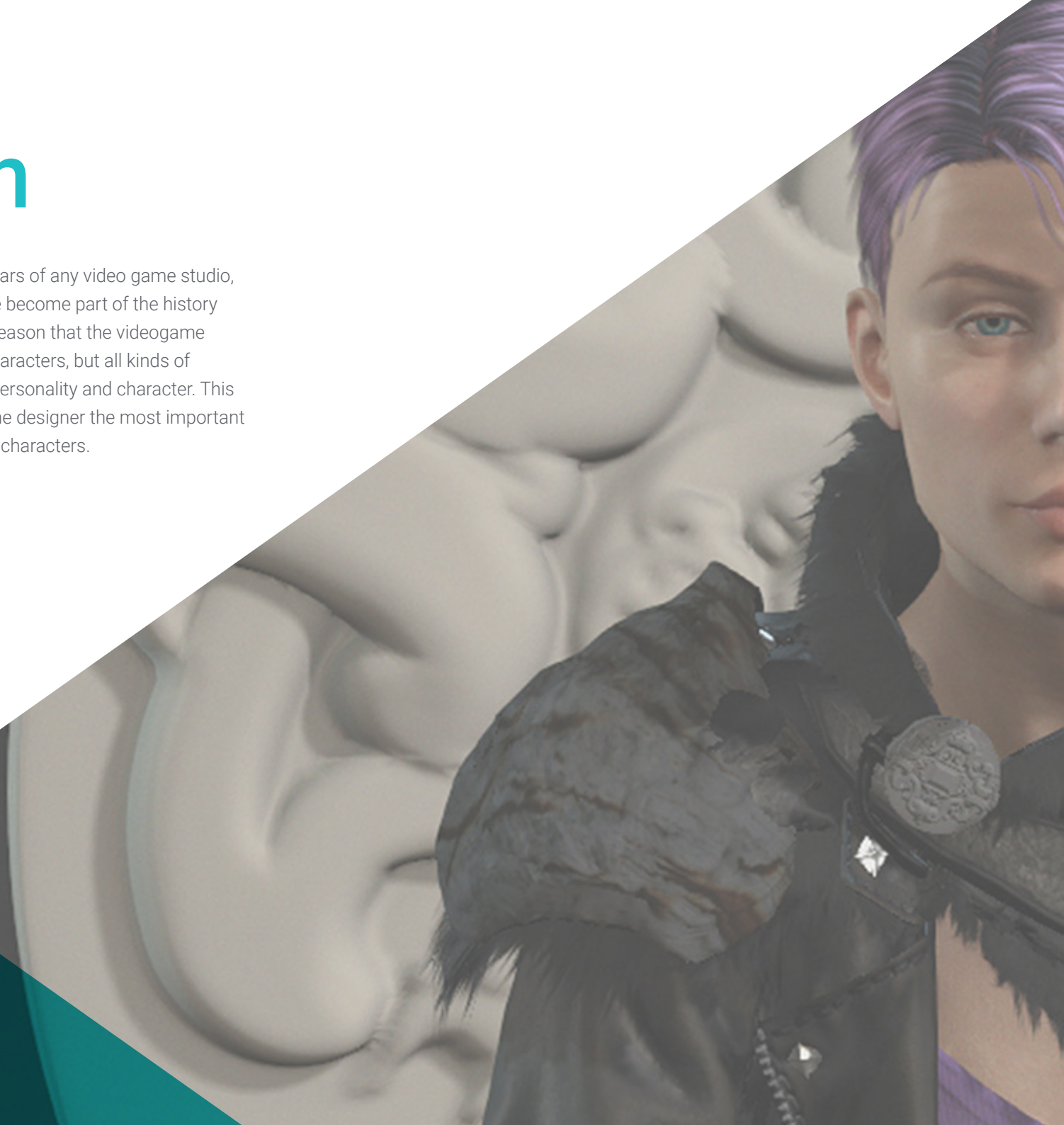
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# 01

# Introduction

The creation of characters is one of the fundamental pillars of any video game studio, as designs such as Lara Croft, Link or Master Chief have become part of the history and idiosyncrasy of the industry itself. It is for this very reason that the videogame professional must be able to create not only mythical characters, but all kinds of creatures, props and vehicles that give the title its own personality and character. This TECH program delves into this important issue, giving the designer the most important keys to create, animate and develop their own iconic 2D characters.







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*Digital Sculpting is a basic element in the development of video games. Learn about the latest developments in this area and experience immediate career advancement”*

The enormous boost that the video game industry has experienced in recent years has led to the need for highly specialized professionals in different fields. Thus, one of the most important is Digital Sculpture, which is responsible for the 3D modeling of scenarios, characters or different types of objects, devices and machines. This is a basic and absolutely essential area when creating a video game with 3D graphics.

For this reason, this Professional Master's Degree in Digital Sculpture offers students the most advanced knowledge in this sector, so that they can face present and future challenges with all the guarantees. In this degree, you will also be able to delve into issues such as baked organic textures, 3D design applied to lettering,, the use of software such as Blender, Unity or Marmoset, or organic modeling of nature and terrain, among others.

All this, through an online teaching methodology designed especially for working professionals, since it is adapted to their personal circumstances. In addition, this degree has a highly specialized teaching staff in Digital Sculpture and will transmit all its knowledge to the student, thanks to the numerous and varied multimedia learning resources present in this Professional Master's Degree.

This **Professional Master's Degree in Digital Sculpture** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ◆ The development of case studies presented by experts in 3D Modeling and Digital Sculpture
- ◆ The graphic, schematic, and eminently practical contents with which they are created, provide scientific and 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
- ◆ Access to content from any fixed or portable device with an Internet connection



*TECH's innovative methodological system allows you to choose the time and place to study this degree"*



*Enroll and gain access to numerous professional opportunities thanks to the new knowledge you will develop in this degree"*

*Master the specialized software in this area and delve into the use of tools such as Blender, Unity or Marmoset.*

*Master the most innovative Digital Sculpture techniques thanks to this Professional Master's Degree.*

The programs teaching staff includes professionals from the sector who contribute their work experience to this training program, as well as renowned 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 training programmed to train in real situations.

This program is designed around Problem Based Learning, whereby the professional 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.



# 02

# Objectives

The main objective of this Professional Master's Degree in Digital Sculpting is to prepare the professional to handle and master all the necessary tools to work in video game projects performing all kinds of tasks related to 3D modeling. Thus, at the end of this program you will have all the competencies and skills necessary to work successfully in a large company in the video game industry.







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*Know perfectly the Digital Sculpting tools needed to successfully develop video game projects thanks to this degree"*



## General Objectives

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- ◆ Understand the need for a good topology at all levels of development and production
- ◆ Knowledge of human and animal anatomy to apply it to modeling, texturing, lighting and rendering processes in an accurate way
- ◆ Meet the demands in hair and clothing creation for video games, film, 3D printing, augmented and virtual reality
- ◆ Handle modeling, texturing and lighting systems in virtual reality systems
- ◆ Know the current systems of the film and video game industry to deliver great results



*Enroll now and achieve all your professional goals”*



## Specific Objectives

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### Module 1. Creation of Hard Surfaces and Rigid Surfaces

- ◆ Use modeling by means of edit poly and splines
- ◆ Advanced handling of organic sculpture
- ◆ Creating infoarchitectures and integrating them into Lumion
- ◆ Modeling scenographies using 3Ds Max and integrating them with ZBrush

### Module 2. Texturing for Digital Sculpture

- ◆ Using PBR texture and material maps
- ◆ Use texturing modifiers
- ◆ Apply map generating software
- ◆ Create texture baked
- ◆ Manage texturing to generate improvements in our modeling
- ◆ Complex use of the import and export systems between programs
- ◆ Advanced operation of Substance Painter

### Module 3. Machine Creation

- ◆ Create, characterize and model robots, vehicles and cyborgs
- ◆ Handling internal modeling masks
- ◆ Evolve robots, vehicles and cyborgs, through the passage of time and their decay by sculpting shapes and using Substance Painter
- ◆ Adapt to biomimicry, science fiction or cartoon aesthetics
- ◆ Create a lighting studio in Arnold
- ◆ Handle rendering in photorealistic and non-photorealistic aesthetics
- ◆ Launch wireframe rendering

**Module 4. Humanoid**

- ◆ Handle and apply anatomy to human sculpture
- ◆ Know the correct topology of models to be used in 3D animation, video games and 3D printing
- ◆ Characterize and stylize humanized characters
- ◆ Making manual retopologies with 3ds Max, Blender and ZBrush
- ◆ Create groups of people and multiple objects
- ◆ Use predefined and human base grids

**Module 5. Hair, Clothes and Accessories**

- ◆ Create modeled hair, low poly, high poly, , Fibermesh and Xgen in 3ds Max, ZBrush and Maya, for 3D printing, film and video games.
- ◆ Modeling and simulating cloth physics in 3ds Max and ZBrush
- ◆ Deepening the Workflow between ZBrush and Marvelous
- ◆ Using clothes and creating patterns in Marvelous Designer
- ◆ Handle physical simulations and exports and imports in Marvelous Designer
- ◆ Modeling, texturing, lighting and rendering of clothes, hair and accessories in Arnold

**Module 6. Animals and Creatures**

- ◆ Handle and apply anatomy to animal sculpture
- ◆ Apply the correct animal topology of models to be used in 3D animation, video games and 3D printing
- ◆ Sculpting and texturing animal surfaces such as: feathers, scales, skins, fur and refinement of animal hair
- ◆ Perform the evolution of animals and humans to fantastic animals, hybridizations and mechanical beings, shape sculpting and the use of Substance Painter
- ◆ Handling photorealistic and non-photorealistic rendering of animals in Arnold

**Module 7. Blender**

- ◆ Advanced Blender software development
- ◆ Render in your Eevee and Cycles render engines
- ◆ Delve into work processes within CGI
- ◆ Transferring ZBrush and 3ds Max knowledge to Blender
- ◆ Transferring creation processes from Blender to Maya and Cinema 4D

**Module 8. Light Modeling**

- ◆ Develop advanced lighting and photography concepts in offline engines such as Arnold and Vray, as well as post-production of renders to have professional finishes
- ◆ Deepen in advanced visualizations in realtime in Unity and Unreal
- ◆ Modeling in videogame engines to create interactive scenographies
- ◆ Integrate projects in real spaces

**Module 9. Creation of Organic Soils and Environments**

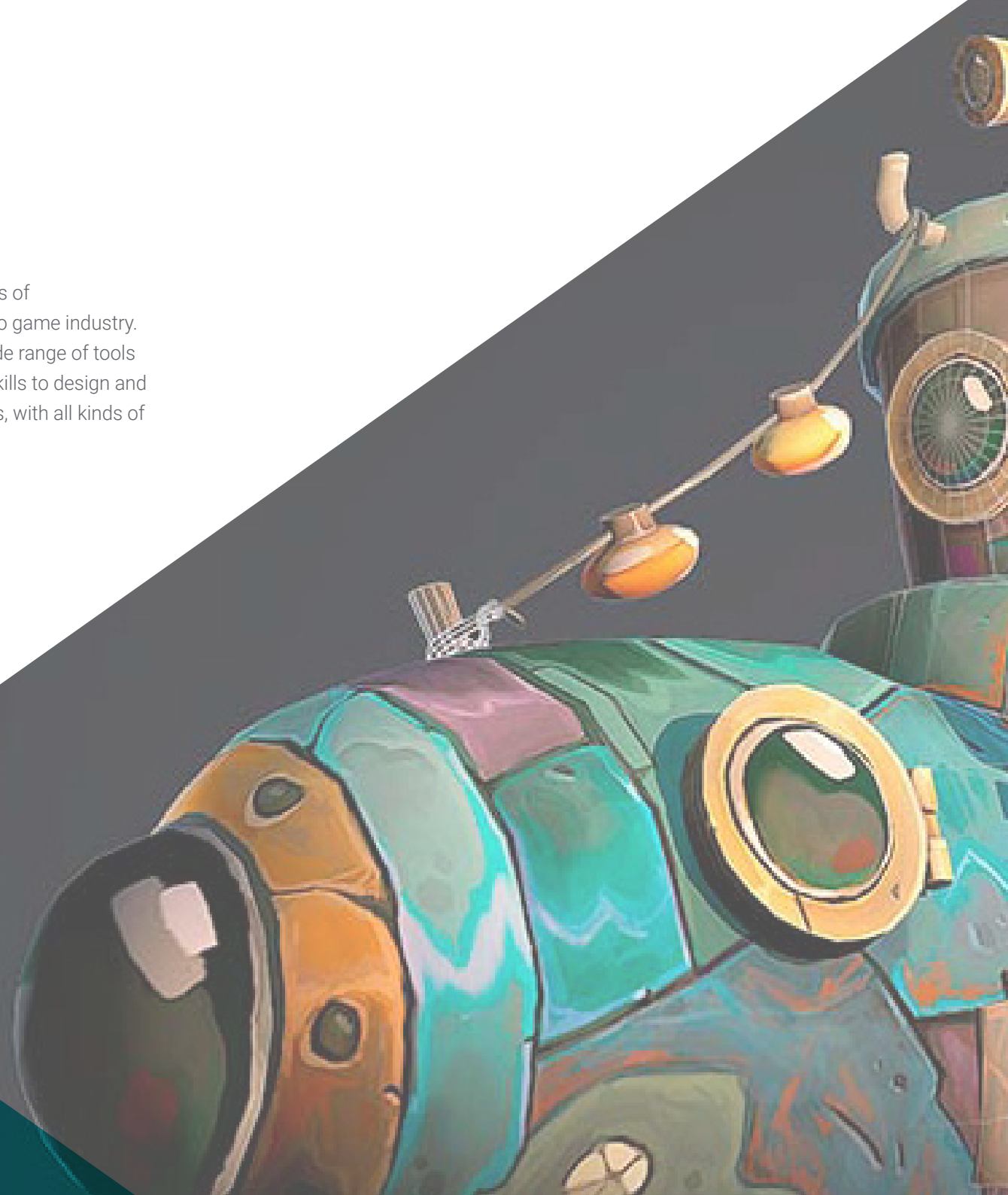
- ◆ Learn the different techniques of organic modeling and fractal systems for the generation of elements of nature and terrain, as well as the implementation of our own models and 3D scans
- ◆ Deepen in the vegetation creation system and how to control it professionally in Unity and Unreal Engine
- ◆ Create scenes with immersive VR experiences

**Module 10. Applications of Modeling to 3D Printing, VR, AR and Photogrammetry**

- ◆ Using organic modeling for the preparation of models for 3D printing and milling
- ◆ Generate 3D from models through photography and its treatment to integrate it in 3D printing, video games, cinema, etc
- ◆ Sculpting in virtual reality in a free, creative and interactive way using Quill and its import into Arnold, Unreal and Unity
- ◆ Visualization of work in real environments through augmented reality

# 03 Skills

This Professional Master's Degree in Digital Sculpture develops a series of indispensable competences to be able to work comfortably in the video game industry. Thus, when completing this program, the professional will handle a wide range of tools and software specialized in this area and will have the indispensable skills to design and model all types of elements, whether objects, terrain, people or animals, with all kinds of aesthetics, for video games of different genres and styles.







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*At the end of the degree you will be a flexible professional, with a wide variety of competencies focused on Digital Sculpting in videogames"*



## General Skills

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- ◆ Advanced handling and use of various organic modeling systems, edit poly and splines
- ◆ Specialized hard surface finishing and infoarchitecture
- ◆ Create realistic and cartoon-like characters of high quality
- ◆ Perform advanced texturing of realistic PBR and non-photorealistic systems to enhance Digital Sculpture projects
- ◆ Apply professional lighting on offline engines and realtime systems to obtain a high quality final finish of the models
- ◆ Employ and integrate 3D scans
- ◆ Advanced use of IMM and Chisel brushes
- ◆ Generate turntable of projects, through ZBrush using fast visualization engines such as Marmoset or Keyshot to create showreel

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*Updating your skills in this area is the best solution: enroll and gain access to the latest knowledge in Digital Sculpture”*





## Specific Skills

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- ◆ Manage professional workflow systems between software 3ds Max, Blender, ZBrush, Substance Painter, Marvelous Designer, Lumion, Unity and Unreal
- ◆ Advanced mastering software 3dsMax, Blender, ZBrush, Substance Painter, Marvelous Designer, Lumion, Unity and Unreal
- ◆ Model machines using software 3ds Max, Blender, ZBrush, Substance Painter, Marvelous Designer, Lumion, Unity and Unreal
- ◆ Seamlessly control posing systems and facial expressions using rigs with ZSpheres, motion capture and morpher
- ◆ Mastering 3D design and lettering using Shadowbox
- ◆ Painting meshes in 3Ds max, ZBrush and Substance Painter
- ◆ Using mesh cuts, booleans and slice in ZBrush
- ◆ Advanced development and recording with different types of cameras of interactive scenes with the characters themselves



# 04

## Course Management

The best teaching staff awaits students in this Professional Master's Degree in Digital Sculpture to accompany them throughout the learning process. Thus, the professional who enrolls in this degree will find very experienced teachers who are currently working in the area of Digital Sculpture and who will transfer all the keys of the discipline, always from a practical perspective and with the aim of incorporating the latest tools to their daily work.







*The key to this teaching staff is their experience and knowledge of the current situation of Digital Sculpture: enroll and learn with the best"*

## Management



### Mr. Sequeros Rodríguez, Salvador

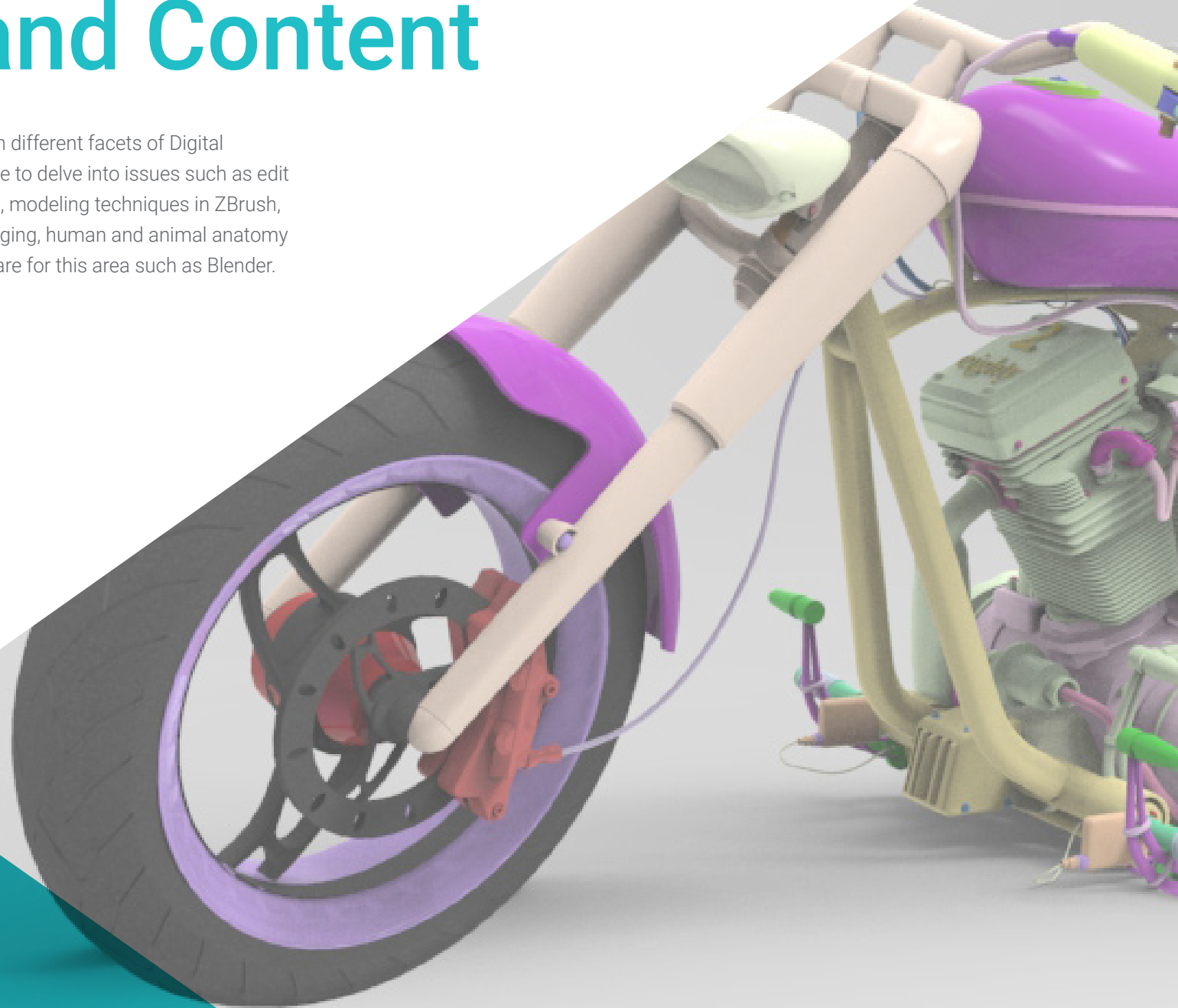
- ◆ Freelance 2D/3D modeler and generalist
- ◆ Concept art and 3D modeling for Slicecore Chicago
- ◆ Videomapping and modeling Rodrigo Tamariz Valladolid
- ◆ Professor of Higher Level Training Cycle 3D Animation Superior School of Image and Sound ESISV Valladolid
- ◆ Professor of Higher Level Training Cycle GFGS 3D Animation European Institute of Design IED Madrid
- ◆ 3D modeling for the falleros Vicente Martínez and Loren Fandos Castellón
- ◆ Master in Computer Graphics, Games and Virtual Reality URJC University. Madrid
- ◆ Bachelor of Fine Arts at the University of Salamanca (specializing in Design and Sculpture)



# 05

## Structure and Content

This degree is presented in 10 modules specialized in different facets of Digital Sculpture. Thus, through them the student will be able to delve into issues such as edit poly modeling, containment geometry for smoothing, modeling techniques in ZBrush, modeling for infoarchitecture, texturing, character rigging, human and animal anatomy applied to 3D modeling or the use of essential software for this area such as Blender.







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*You will deepen in this Professional Master's Degree in the applications of modeling in 3D printing, VR, AR and photogrammetry"*

## Module 1. Creation of Hard Surfaces and Rigid Surfaces

- 1.1. Sculpting Techniques and Applications
  - 1.1.1. Edit Poly
  - 1.1.2. Splines
  - 1.1.3. Organic Modeling
- 1.2. Edit Poly Modeling
  - 1.2.1. Loops and Extrusions
  - 1.2.2. Containment Geometry for Smoothing
  - 1.2.3. Modifiers and Ribbon
- 1.3. Mesh Optimizations
  - 1.3.1. Quads, Tris and Ngons When to Use Them?
  - 1.3.2. Booleans
  - 1.3.3. Low Poly Vs. High Poly
- 1.4. Splines
  - 1.4.1. Spline Modifiers
  - 1.4.2. Working Plots and Vectors
  - 1.4.3. Splines as Scene Assistants
- 1.5. Organic Sculpture
  - 1.5.1. ZBrush Interface
  - 1.5.2. Zbrush Modeling Techniques
  - 1.5.3. Alphas and Brushes
- 1.6. Model Sheet
  - 1.6.1. Reference Systems
  - 1.6.2. Configuration of Modeling Templates
  - 1.6.3. Measurements
- 1.7. Modeling for Infoarchitecture
  - 1.7.1. Facade Modeling
  - 1.7.2. Follow-up of Plans
  - 1.7.3. Interior Modeling

- 1.8. Scenography
  - 1.8.1. Creation of Attrezzo
  - 1.8.2. Furniture
  - 1.8.3. Detailing in ZBrush Organic Modeling
- 1.9. Masks
  - 1.9.1. Masking for Modeling and Painting
  - 1.9.2. Geometry Masks and Modeling IDs
  - 1.9.3. Mesh Occultations, Polygroups and Cuttings
- 1.10. 3D Design and Lettering
  - 1.10.1. Use of Shadow Box
  - 1.10.2. Model Topology
  - 1.10.3. ZRemesher Automatic Retopology

## Module 2. Texturing for Digital Sculpture

- 2.1. Texturing
  - 2.1.1. Texture Modifiers
  - 2.1.2. Compact Systems
  - 2.1.3. Slate Node Hierarchy
- 2.2. Materials
  - 2.2.1. ID
  - 2.2.2. Photorealistic PBR
  - 2.2.3. No Photorealistic Cartoon
- 2.3. PBR Textures
  - 2.3.1. Procedural Textures
  - 2.3.2. Color, Albedo and DiffuseMaps
  - 2.3.3. Opacity and Specular
- 2.4. Mesh Improvements
  - 2.4.1. Map of Normal
  - 2.4.2. Displacement Map
  - 2.4.3. Vector Maps

- 2.5. Texture Managers
  - 2.5.1. Photoshop
  - 2.5.2. Materialize and Online Systems
  - 2.5.3. Texture Scanning
- 2.6. UVW and Baking
  - 2.6.1. Hard SurfaceTextureBaking
  - 2.6.2. Baking Organic Textures
  - 2.6.3. Baking Unions
- 2.7. Exports and Imports
  - 2.7.1. Texture Formats
  - 2.7.2. FBX, OBJ and STL
  - 2.7.3. Subdivision Vs. Dynamesh
- 2.8. Mesh Painting
  - 2.8.1. Viewport Canvas
  - 2.8.2. Polypaint
  - 2.8.3. Spotlight
- 2.9. Substance Painter
  - 2.9.1. Zbrush with Substance Painter
  - 2.9.2. Low Poly with High Poly Texture Maps
  - 2.9.3. Material Treatments
- 2.10. Advanced Substance Painter
  - 2.10.1. Realistic Effects
  - 2.10.2. Improve the Baked
  - 2.10.3. SSS Materials, Human Skin

## Module 3. Machine Creation

- 3.1. Robots
  - 3.1.1. Functionality
  - 3.1.2. Character
  - 3.1.3. Motor Skills in its Structure
- 3.2. Robot Despiece
  - 3.2.1. IMM and Chisel Brushes
  - 3.2.2. Insert Mesh and Nanomesh
  - 3.2.3. Zmodeler in ZBrush
- 3.3. Cyborg
  - 3.3.1. Sectioned by Masks
  - 3.3.2. Trim Adaptive and Dynamic
  - 3.3.3. Mechanization
- 3.4. Ships and Aircraft
  - 3.4.1. Aerodynamics and Smoothing
  - 3.4.2. Surface Texture
  - 3.4.3. Cleaning of Polygonal Mesh and Details
- 3.5. Land Vehicles
  - 3.5.1. Vehicle Topology
  - 3.5.2. Modeling for Animation
  - 3.5.3. Caterpillars
- 3.6. Passage of Time
  - 3.6.1. Credible Models
  - 3.6.2. Materials Over Time
  - 3.6.3. Oxidations
- 3.7. Accidents
  - 3.7.1. Crashes
  - 3.7.2. Object Fragmentations
  - 3.7.3. Destruction Brushes

- 3.8. Adaptations and Evolution
  - 3.8.1. Biomimicry
  - 3.8.2. Sci-fi Dystopia, Uchronias and Utopias
  - 3.8.3. Cartoon
- 3.9. Realistic Render Hardsurface
  - 3.9.1. Studio Scene
  - 3.9.2. Lights
  - 3.9.3. Physical Camera
- 3.10. NPR Render Hardsurface
  - 3.10.1. Wireframe
  - 3.10.2. Cartoon Shader
  - 3.10.3. Illustration

## Module 4. Humanoid

- 4.1. Human Anatomy for Modeling
  - 4.1.1. Canon of Proportions
  - 4.1.2. Evolution and Functionality
  - 4.1.3. Superficial Muscles and Mobility
- 4.2. Lower Body Topology
  - 4.2.1. Torso
  - 4.2.2. Legs
  - 4.2.3. Feet
- 4.3. Upper Body Topology
  - 4.3.1. Arms and Hands
  - 4.3.2. Neck
  - 4.3.3. Head and Face and Inside Mouth
- 4.4. Characterized and Stylized Characters
  - 4.4.1. Details with Organic Modeling
  - 4.4.2. Anatomy Characterization
  - 4.4.3. Styling
- 4.5. Expressions
  - 4.5.1. Facial Animations and Layer
  - 4.5.2. Morpher
  - 4.5.3. Texture Animation
- 4.6. Pose
  - 4.6.1. Character Psychology and Relaxation
  - 4.6.2. Rig with Zpheras
  - 4.6.3. Posed with Motion Capture
- 4.7. Characterizations
  - 4.7.1. Tattoos
  - 4.7.2. Scars
  - 4.7.3. Wrinkles, Freckles and Marks
- 4.8. Manual Retopology
  - 4.8.1. in 3ds Max
  - 4.8.2. Blender
  - 4.8.3. Zbrush and Projections
- 4.9. Predefined
  - 4.9.1. Fuse
  - 4.9.2. Vroid
  - 4.9.3. MetaHuman
- 4.10. Crowds and Repetitive Spaces
  - 4.10.1. Scatter
  - 4.10.2. Proxys
  - 4.10.3. Object Groups





## Module 5. Hair, Clothes and Accessories

- 5.1. Creating Hair
  - 5.1.1. Modeled Hair
  - 5.1.2. Low PolyHair and Cards
  - 5.1.3. High Poly Hair, Fibermesh Hair and Fur and Xgen
- 5.2. Cartoon Clothes
  - 5.2.1. Mesh Extractions
  - 5.2.2. False Geometry
  - 5.2.3. Shell
- 5.3. Sculpting Fabrics
  - 5.3.1. Physical Simulations
  - 5.3.2. Strength Calculations
  - 5.3.3. Curving Brushes on Clothing
- 5.4. Realistic Clothes
  - 5.4.1. Importing to Marvelous Designer
  - 5.4.2. Software Philosophy
  - 5.4.3. Pattern Creation
- 5.5. Standard Patterns
  - 5.5.1. T-shirts
  - 5.5.2. Trousers
  - 5.5.3. Coats and Footwear
- 5.6. Unions and Physics
  - 5.6.1. Realistic Simulations
  - 5.6.2. Zips
  - 5.6.3. Seams
- 5.7. Clothes
  - 5.7.1. Complex Patterns
  - 5.7.2. Fabric Complexity
  - 5.7.3. Shading
- 5.8. Advanced Clothes
  - 5.8.1. Baked from Clothes
  - 5.8.2. Adaptation
  - 5.8.3. Exporting

- 5.9. Accessories
  - 5.9.1. Jewellery
  - 5.9.2. Backpacks and Bags
  - 5.9.3. Tools
- 5.10. Rendering on Fabrics and Hair
  - 5.10.1. Illumination and Shading
  - 5.10.2. Hair Shader
  - 5.10.3. Realistic Rendering in Arnold

## Module 6. Animals and Creatures

- 6.1. Animal Anatomy for Modelers
  - 6.1.1. Proportion Research
  - 6.1.2. Anatomic Differences
  - 6.1.3. Musculature of the Different Families
- 6.2. Main Masses
  - 6.2.1. Main Structures
  - 6.2.2. Balance Axis Postures
  - 6.2.3. Base Mesh with Zspheres
- 6.3. Head
  - 6.3.1. Craniums
  - 6.3.2. Jaws
  - 6.3.3. Teeth and Antlers
  - 6.3.4. Rib Cage, Spine and Hips
- 6.4. Central Zone
  - 6.4.1. Rib Cage
  - 6.4.2. Spinal Column
  - 6.4.3. Hips
- 6.5. Extremities
  - 6.5.1. Legs and Hooves
  - 6.5.2. Fins
  - 6.5.3. Wings and Claws

- 6.6. Animal Texture and Adaptation to Shapes
  - 6.6.1. Skin and Hair
  - 6.6.2. Scales
  - 6.6.3. Feathers
- 6.7. The Animal Imaginary: Anatomy and Geometry
  - 6.7.1. Anatomy of Fantastic Beings
  - 6.7.2. Geometry and SliceCuts
  - 6.7.3. Mesh Booleans
- 6.8. The Animal Imaginary: Fantastic Animals
  - 6.8.1. Fantastic Animals
  - 6.8.2. Hybridizations
  - 6.8.3. Mechanical Beings
- 6.9. NPR Species
  - 6.9.1. Cartoon Style
  - 6.9.2. Anime
  - 6.9.3. Fan Art
- 6.10. Animal and Human Rendering
  - 6.10.1. Sub Surface Scattering Materials
  - 6.10.2. Mixing Texturing Techniques
  - 6.10.3. Final Compositions

## Module 7. Blender

- 7.1. Free Software
  - 7.1.1. LTS Version and Community
  - 7.1.2. Pros and Differences
  - 7.1.3. Interface and Philosophy
- 7.2. 2D Integration
  - 7.2.1. Program Adaptation
  - 7.2.2. Crease Pencil
  - 7.2.3. Combination 2D in 3D

- 7.3. Modeling Techniques
  - 7.3.1. Program Adaptation
  - 7.3.2. Modeling Methodologies
  - 7.3.3. Geometry Nodes
- 7.4. Texturing Techniques
  - 7.4.1. Nodes Shading
  - 7.4.2. Textures and Materials
  - 7.4.3. Usage Tips
- 7.5. Lighting
  - 7.5.1. Tips for Light Spaces
  - 7.5.2. Cycles
  - 7.5.3. Eevee
- 7.6. Workflow in CGI
  - 7.6.1. Necessary Uses
  - 7.6.2. Exports and Imports
  - 7.6.3. Final Art
- 7.7. Sds Max Adaptations to Blender
  - 7.7.1. Modeling
  - 7.7.2. Texturing and Shading
  - 7.7.3. Lighting
- 7.8. Knowledge of ZBrush to Blender
  - 7.8.1. 3D Sculpting
  - 7.8.2. Brushes and Advanced Techniques
  - 7.8.3. Organic Work
- 7.9. From Blender to Maya
  - 7.9.1. Important Stages
  - 7.9.2. Adjustments and Integrations
  - 7.9.3. Exploitation of Functionalities
- 7.10. From Blender to Cinema 4D
  - 7.10.1. Tips for 3D Design
  - 7.10.2. Use of Modeling Towards Video Mapping
  - 7.10.3. Modeling with Particles and Effects

## Module 8. Light Modeling

- 8.1. Offline Arnold Motors
  - 8.1.1. Interior and Exterior Lighting
  - 8.1.2. Application of Displacement and Normal Maps
  - 8.1.3. Render Modifiers
- 8.2. Vray
  - 8.2.1. Lighting Bases
  - 8.2.2. Shading
  - 8.2.3. Maps
- 8.3. Advanced Global Illumination Techniques
  - 8.3.1. ActiveShade GPU Management
  - 8.3.2. Optimization of Photorealistic Rendering Denoiser
  - 8.3.3. Non-photorealistic Rendering (Cartoon and Hand Painted)
- 8.4. Quick Display of Models
  - 8.4.1. ZBrush
  - 8.4.2. Keyshot
  - 8.4.3. Marmoset
- 8.5. Rendering Postproduction
  - 8.5.1. Multipass
  - 8.5.2. 3D Illustration in ZBrush
  - 8.5.3. Multipass in Zbrush
- 8.6. Integration in Real Spaces
  - 8.6.1. Shadow Materials
  - 8.6.2. HDRI and Global Illumination
  - 8.6.3. Image Tracing
- 8.7. Unity
  - 8.7.1. Interface and Organization
  - 8.7.2. Import to Game Engines
  - 8.7.3. Materials

- 8.8. Unreal
  - 8.8.1. Interface and Organization
  - 8.8.2. Sculpture in Unreal
  - 8.8.3. Shaders
- 8.9. Modeling in Video Game Engines
  - 8.9.1. Probuilder
  - 8.9.2. Modeling Tools
  - 8.9.3. Prefabs and Memory Storages
- 8.10. Advanced Lighting Techniques in Videogames
  - 8.10.1. Realtime, Pre-calculation of Lights and HDRP
  - 8.10.2. Raytracing
  - 8.10.3. Postprocessing

## Module 9. Creation of Organic Soils and Environments

- 9.1. Organic Modeling in Nature
  - 9.1.1. Brush Adaptation
  - 9.1.2. Creation of Rocks and Cliffs
  - 9.1.3. Integration with Substance Painter 3D
- 9.2. Terrain
  - 9.2.1. Terrain Displacement Maps
  - 9.2.2. Creation of Rocks and Cliffs
  - 9.2.3. Scanning Libraries
- 9.3. Vegetation
  - 9.3.1. SpeedTree
  - 9.3.2. Low Poly Vegetation
  - 9.3.3. Fractals
- 9.4. Unity Terrain
  - 9.4.1. Organic Terrain Modeling
  - 9.4.2. Ground Painting
  - 9.4.3. Creation of Vegetation

- 9.5. Unreal Terrain
  - 9.5.1. Hightmap
  - 9.5.2. Texturing
  - 9.5.3. Unreal's Foliage System
- 9.6. Physics and Realism
  - 9.6.1. Physical
  - 9.6.2. Wind
  - 9.6.3. Fluids
- 9.7. Virtual Walks
  - 9.7.1. Virtual Cameras
  - 9.7.2. Third Person
  - 9.7.3. First Person FPS
- 9.8. Cinematography
  - 9.8.1. Cinemachine
  - 9.8.2. Sequencer
  - 9.8.3. Recording and Executables
- 9.9. Visualization of Modeling in Virtual Reality
  - 9.9.1. Modeling and Texturing Tips
  - 9.9.2. Exploitation of Interaxial Space
  - 9.9.3. Project Preparation
- 9.10. VR Scene Creation
  - 9.10.1. Location of Cameras
  - 9.10.2. Land and Infoarchitecture
  - 9.10.3. Platforms of Use

## Module 10. Applications of Modeling to 3D Printing, VR, AR and Photogrammetry

- 10.1. Preparation for 3D Printing
  - 10.1.1. Types of Printing
  - 10.1.2. Polygon Reduction
  - 10.1.3. Mesh Projections
- 10.2. Ready for 3D Printing
  - 10.2.1. Emptying
  - 10.2.2. Inserts
  - 10.2.3. Advice and Imports
- 10.3. Photogrammetry
  - 10.3.1. Megascan Library
  - 10.3.2. Agisoft Metashape Software
  - 10.3.3. Model Preparation
- 10.4. Preparing the Photogrammetry
  - 10.4.1. Obtaining Points
  - 10.4.2. Retopology
  - 10.4.3. Model Optimization
- 10.5. Working in Virtual Reality
  - 10.5.1. Software Quill
  - 10.5.2. Interface
  - 10.5.3. Brushes and Clone Tool
  - 10.5.4. VR Character Creation
- 10.6. Character and Scenario with Quill
  - 10.6.1. VR Character Creation
  - 10.6.2. Immersive Scenario
  - 10.6.3. Character Development
- 10.7. Scene Preparation in Quill
  - 10.7.1. Character Painting in VR
  - 10.7.2. Pose
  - 10.7.3. Spawn Area Adjusting Cameras
- 10.8. From Quill to Arnold and Unreal
  - 10.8.1. Exporting and Format
  - 10.8.2. Rendering in Arnold
  - 10.8.3. Unreal Integration
- 10.9. Augmented Reality Unity and Vuforia
  - 10.9.1. Import to Unity
  - 10.9.2. Vuforia
  - 10.9.3. Lighting and Materials
- 10.10. Augmented Reality: Scene Preparation
  - 10.10.1. Preparing the Scene
  - 10.10.2. Visualization on Real Environment
  - 10.10.3. Creation of Multiple Displays in AR



*The best teachers and the best teaching methodology are combined with the most specialized and updated syllabus in Digital Sculpture. Don't miss this opportunity"*



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.*





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

### 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 case method has been the most widely used learning system among the world's leading business 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. Over the course of 4 years, you will be presented with multiple practical case studies. You will have to combine all your knowledge, and research, argue, and defend your ideas and decisions.

## Relearning Methodology

TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 8 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 applied to the 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.



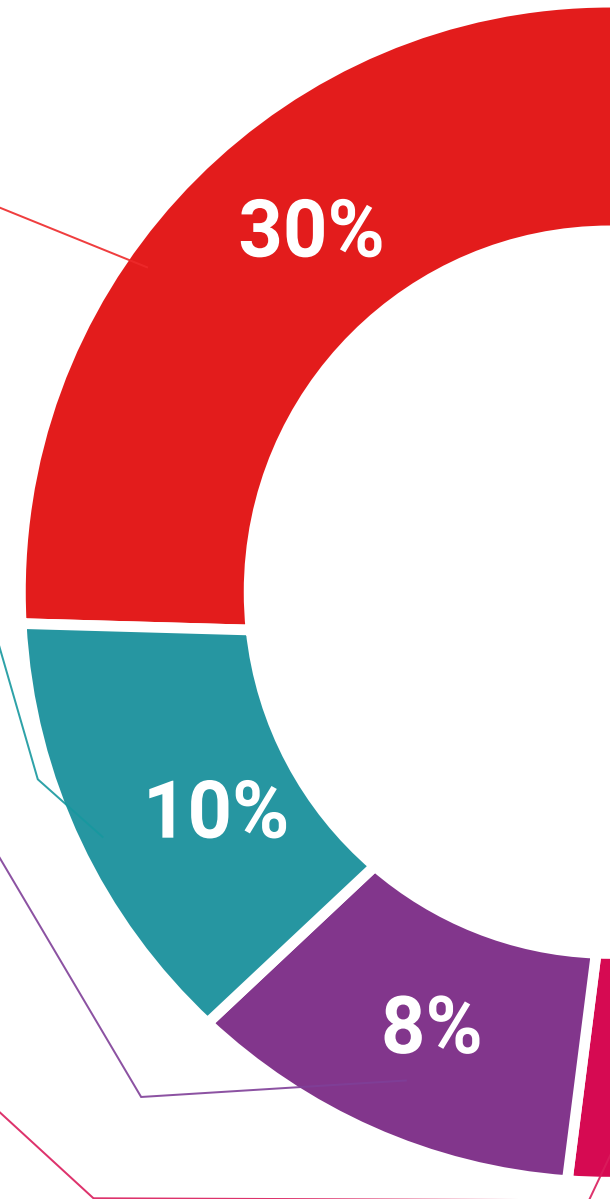
### Practising Skills and Abilities

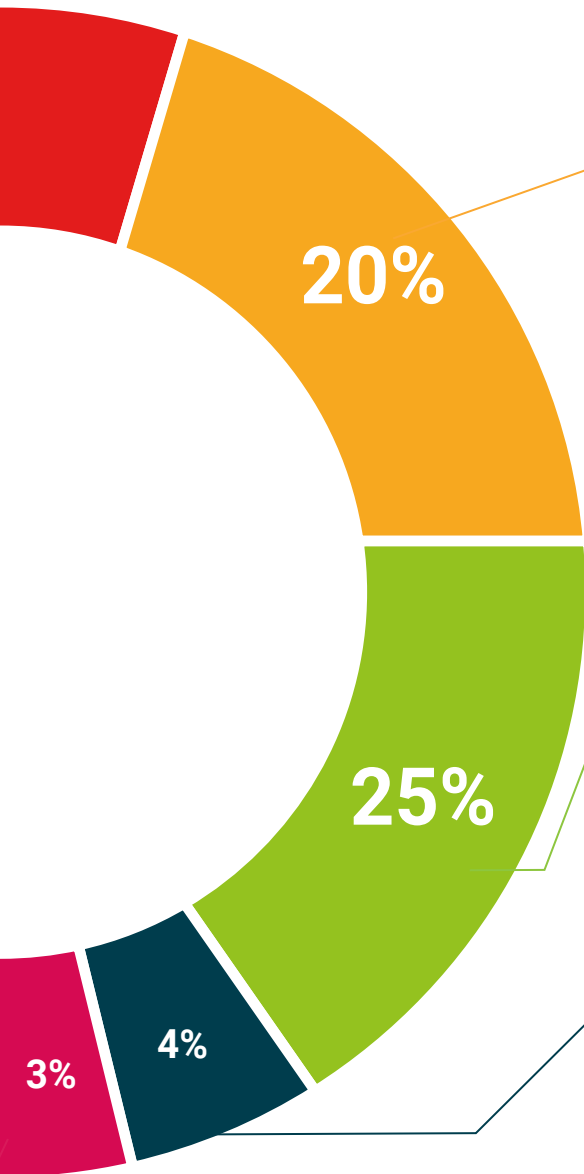
They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization we live in.



### 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 Digital Sculpture guarantees, in addition to the most rigorous and update training, access to a Professional Master's Degree issued by TECH Global University.







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*Successfully complete this training and receive your university degree without travel or laborious paperwork”*



This program will allow you to obtain your **Professional Master's Degree diploma in Digital Sculpture** endorsed by **TECH Global University**, the world's largest online university.

**TECH Global University** is an official European University publicly recognized by the Government of Andorra ([official bulletin](#)). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Professional Master's Degree in Digital Sculpture**

Modality: **online**

Duration: **12 months**

Accreditation: **60 ECTS**



\*Apostille Convention. In the event that the student wishes to have their paper diploma issued with an apostille, TECH Global University 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

**tech** global  
university

Professional Master's Degree

Digital Sculpture

- » Modality: online
- » Duration: 12 months
- » Certificate: TECH Global University
- » Credits: 60 ECTS
- » Schedule: at your own pace
- » Exams: online

# Professional Master's Degree

## Digital Sculpture

