

# Postgraduate Diploma

## Digital Sculpture for Rigid Surfaces, Machines and Texturing





## Postgraduate Diploma Digital Sculpture for Rigid Surfaces, Machines and Texturing

- » Modality: **online**
- » Duration: **6 months**
- » Certificate: **TECH Technological University**
- » Dedication: **16h/week**
- » Schedule: **at your own pace**
- » Exams: **online**

Website: [www.techtute.com/us/design/postgraduate-diploma/posgraduate-diploma-digital-sculpture-rigid-surfaces-machines-texturing](http://www.techtute.com/us/design/postgraduate-diploma/posgraduate-diploma-digital-sculpture-rigid-surfaces-machines-texturing)

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# 01

# Introduction

What used to be done with a chisel can now be done with 3D modeling software and a computer. The concept of digital sculpture has transformed drastically in recent years due to the new requirements of the design industry. Digital sculpting machines are increasingly present in design firms, service agencies and sculpture studios; PR machines are used in dental clinics for customized prosthetics and many architectural offices have their own model projection facilities. With this 6 month program, the professional will acquire advanced knowledge of modeling techniques for Rigid Surfaces, Machines and Texturing.





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*Enhance your digital skills and specialize in the art of digital sculpture. Master 3D Max, Blender, ZBrush, Substance Painter, Marvelous Designer and Quills software”*

Digital art professionals need to keep up to date with the latest advancements, since new computer tools are being incorporated into this field. Professionals need training to use and exploit these resources correctly. In this Postgraduate Diploma in Digital Sculpture for Rigid Surfaces, Machines and Texturing, the student will be able to master the different software, as well as the techniques to create machines: robots, *cybord*, ships, airplanes, land vehicles, staging accidents. The *cartoon*, its adaptation, evolution and realistic and non-photorealistic Hard Surface rendering.

You will learn everything related to texturing for digital sculpture: Systems and materials, PBR textures, color maps, mesh enhancements, texture managers, texture scanning, as well as everything related to texture *baking* and *baking* in joints. The different texture formats FBX OBJ and STL, *Low Poly* with *High Poly* detail and the treatment of materials with the *Substance Painter*. You will know how to make realistic effects with the Advanced *Substance Painter* and using SSS materials to make human skin.

This course is particularly relevant to those who work in or wish to venture into digital art, an industry where, due to rapid growth in recent years, job opportunities are being diversified, especially for experts in areas such as digital sculpture. That is why, during the program, you will also be able to specialize in sculptural techniques and their applications for the creation of rigid surfaces, as covered in the contents.

This Postgraduate Diploma, taught by TECH Technological University through an innovative, 100% *onlinestudy* methodology, allows the professional a continuous and efficient training using any device with an Internet connection. With the option to download the contents to review them offline and meet the course objectives for a Postgraduate Certificate in only 6 months.

This **Postgraduate Diploma in Digital Sculpture for Rigid Surfaces, Machines and Texturing** contains the most complete and up to date educational program on the market. Its most notable features are:

- ◆ Practical cases presented by experts in 3D modeling and digital sculpture
- ◆ The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice
- ◆ Practical exercises where self assessment can be used 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



*Make your way in the digital art industry and professionalize your talent with this Postgraduate Diploma in only 6 months"*

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*Manage the structural 3D modeling techniques commonly used in film, infoarchitecture or video games, from a professional point of view"*

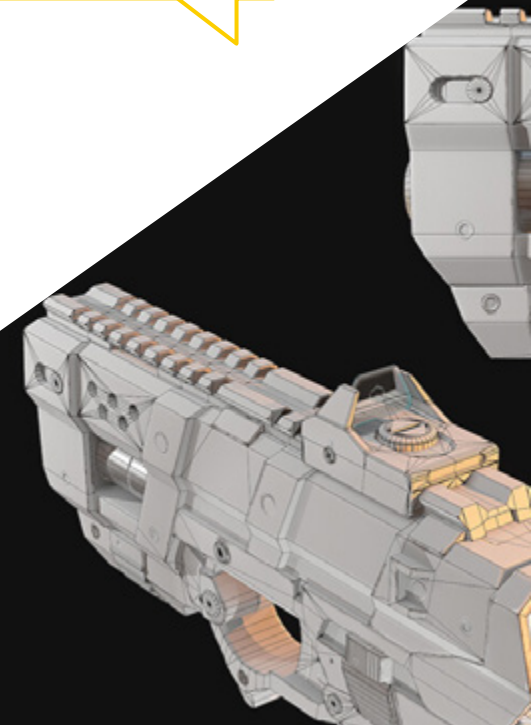
*Become skilled in digital sculpture and master the techniques for the creation of rigid surfaces, machines and textures.*

*Study whatever you want, wherever you want. Take advantage of all the quality content that TECH has to offer.*

The program's 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 immersion 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 throughout the program. This will be done with the help of an innovative system of interactive videos made by renowned experts.



# 02 Objectives

The Postgraduate Diploma in Digital Sculpture for Rigid Surfaces, Machines and Texturing, aims to open the doors of professionalization to all those who wish to specialize in the digital art sector, especially in the modeling of 3D work. Create advanced works in terms of the techniques implemented and results obtained. Be capable of offering customers, or employers, three-dimensional projects with quality finishes.







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*If you are passionate about or work in the world of design and are looking to develop your career further, this program is for you. Sign up and study 100% online"*



## General Objectives

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- ◆ Understand the necessity of having an adequate topology at all levels of development and production
- ◆ Advanced handling and use of various organic modeling systems, *Edit Poly* and *Splines*
- ◆ Obtain specialized *Hardsurface* and infoarchitecture finishes
- ◆ Operate modeling, texturing and lighting systems in virtual reality systems
- ◆ Understand the current demands of the movie and video game industries in order to offer best results





## Specific Objectives

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### Module 1. *Hard Surface Creation*

- ◆ Use modeling by means of *Edit Poly* and *Splines*
- ◆ Manage organic sculpting in an advanced way
- ◆ Create info-architecture and integrate it in Lumion
- ◆ Model scenographies using 3Ds Max and integrate them with ZBrush

### Module 2. *Texturing for Digital Sculpture*

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

### Module 3. *Machine Creation*

- ◆ Create, characterize and model robots, vehicles and *cyborgs*
- ◆ Manage internal modeling masks
- ◆ Evolve robots, vehicles and *cyborgs*, through time and study their decay by sculpting shapes and using Substance Painter
- ◆ Adapt to biomimicry, science fiction or *cartoonaesthetics*
- ◆ Create a lighting studio using Arnold
- ◆ Master rendering in photorealistic and non-photorealistic aesthetics.
- ◆ Launch *Wireframe* render

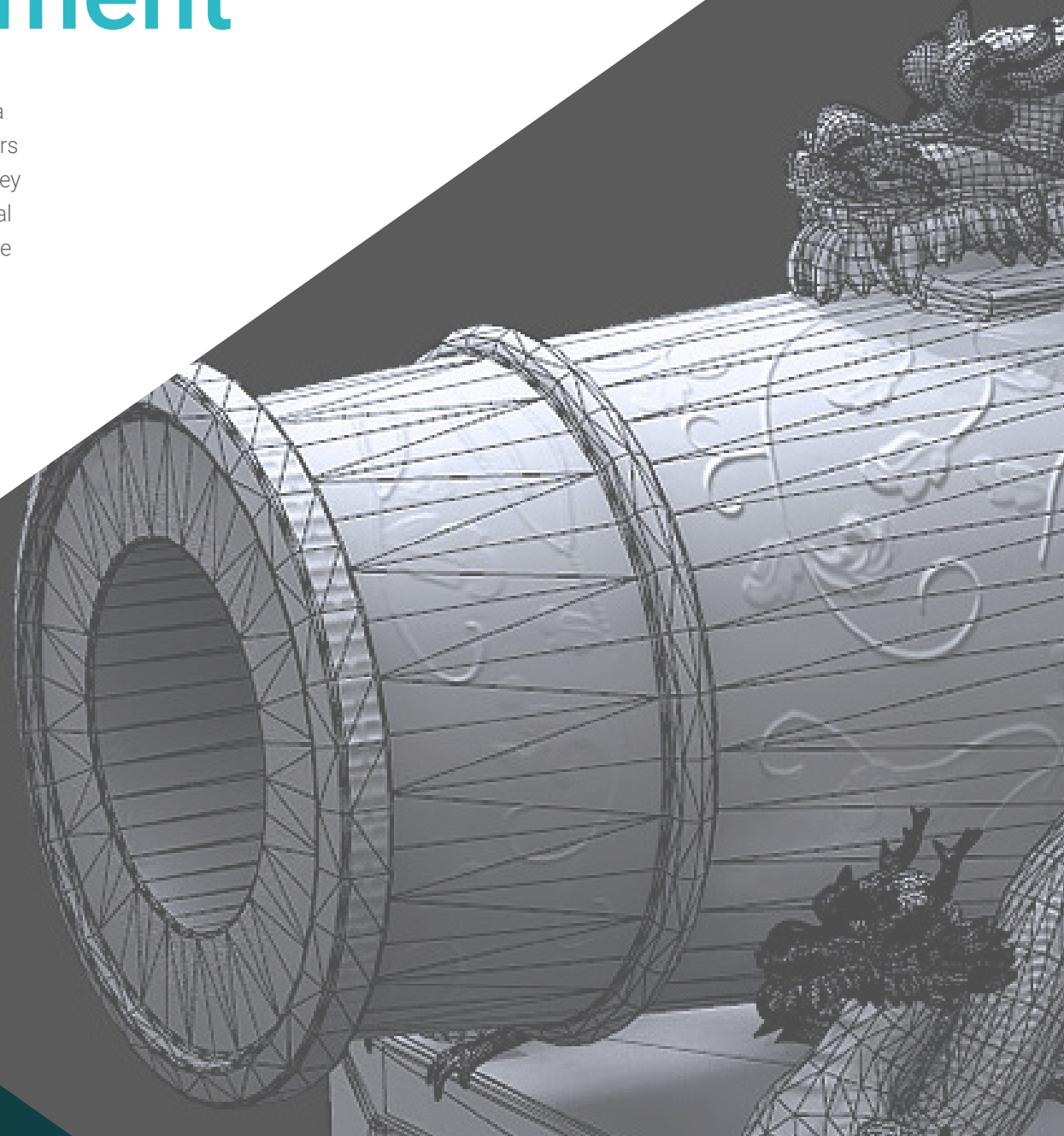


*The implementation of digital sculpting in the industry is becoming more and more promising. Be prepared to overcome the challenges that come your way and open up new opportunities"*

03

# Course Management

To ensure that the learning process is carried out properly, TECH has selected a high level teaching staff composed of practising professionals. These professors will transmit all the key elements of digital sculpture to their students so that they may integrate them into their work practice. The Postgraduate Diploma in Digital Sculpture for Rigid Surfaces, Machines and Texturing, not only has an innovative and effective teaching methodology, but also a faculty that meets the current demands of this complex and exciting discipline.



A wireframe model of a dragon sculpture, showing the intricate mesh structure of the dragon's body, head, and tail. The dragon is coiled around a central pillar. The background is a dark teal color with a diagonal split into a lighter teal and a white section.

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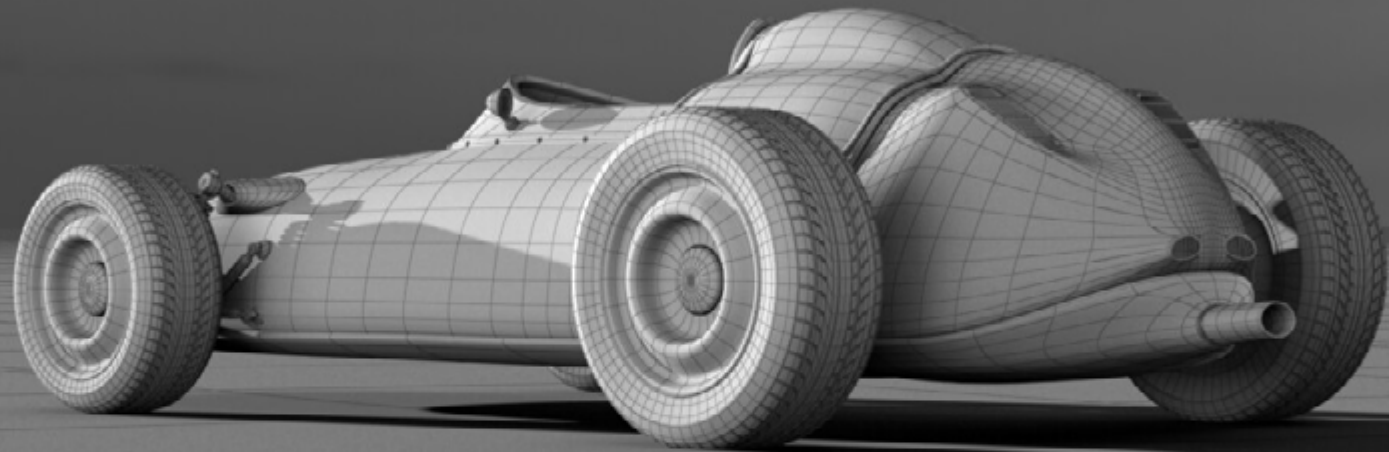
*Learn under the guidance of professionals who master the most updated contents is possible at TECH, the world's largest online university"*

## Management



### Mr. Sequeros Rodríguez, Salvador

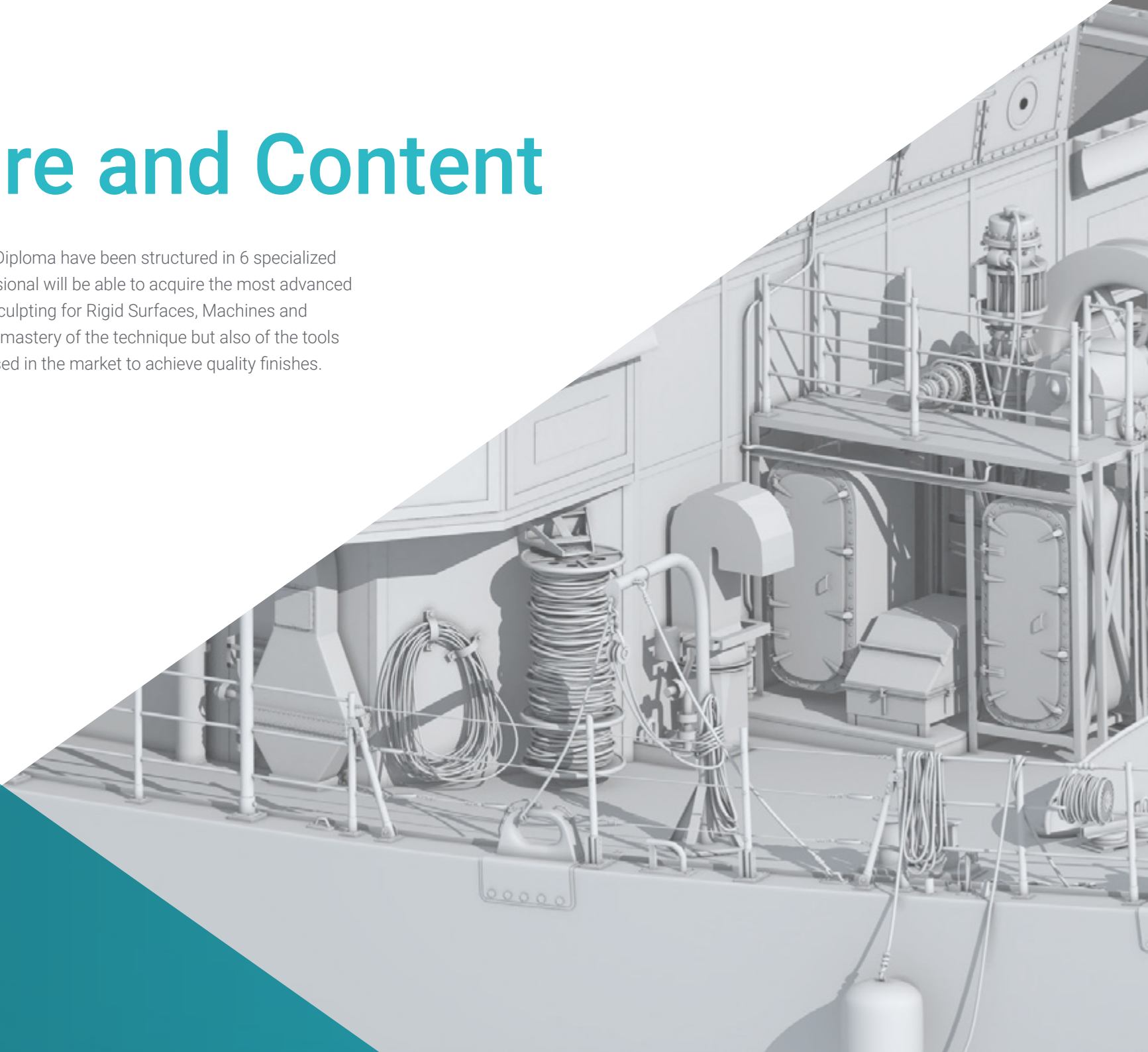
- Freelance 2D/3D modeler and generalist
- Concept Art and 3D Models for Slicecore. Chicago
- Videomapping and modeling, Rodrigo Tamariz. Valladolid
- Professor of Higher Level Training Cycle in 3D Animation. Higher Education School of Image and Sound ESISV. Valladolid
- Professor of Higher Level Training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



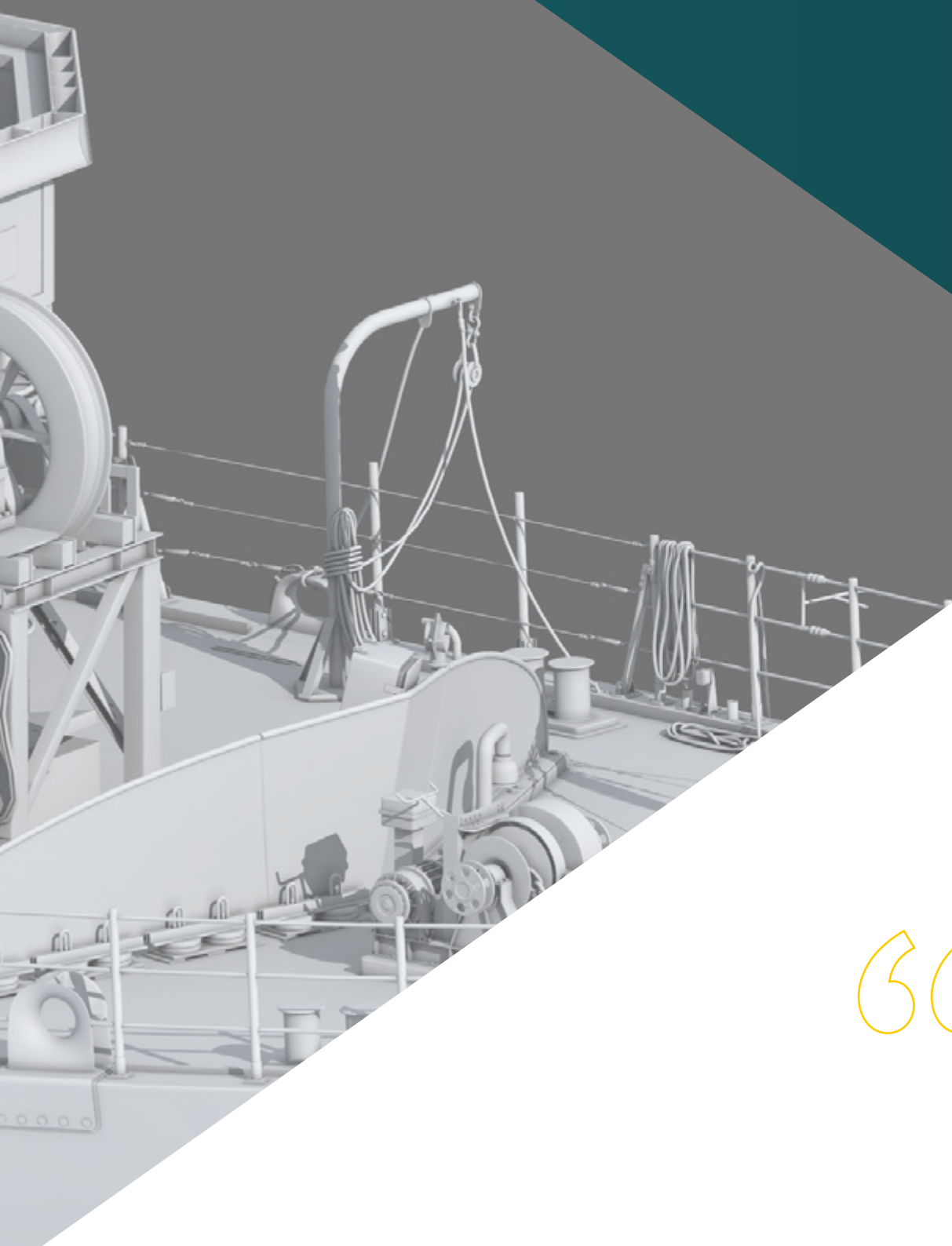
# 04

# Structure and Content

The contents of this Postgraduate Diploma have been structured in 6 specialized modules, through which the professional will be able to acquire the most advanced and updated knowledge in Digital Sculpting for Rigid Surfaces, Machines and Texturing. You will not only achieve mastery of the technique but also of the tools and procedures most commonly used in the market to achieve quality finishes.







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*A syllabus that covers: techniques, programs, processes and tools to be used in the art of digital sculpture, providing you with opportunities for professional growth"*

## Module 1. Hard Surface Creation

- 1.1. Sculpture Techniques and Applications
  - 1.1.1. *Edit Poly*
  - 1.1.2. *Splines*
  - 1.1.3. Organic Model
- 1.2. *Edit Poly* Monitoring
  - 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
  - 1.3.2. Booleans
  - 1.3.3. *Low Poly* vs. *High Poly*
- 1.4. *Splines*
  - 1.4.1. *Splines* Modifiers
  - 1.4.2. Working Plots and Vectors
  - 1.4.3. *Splines* as Helpers in Scenes
- 1.5. Organic Structure
  - 1.5.1. ZBrush Interface
  - 1.5.2. Modeling Techniques in ZBrush
  - 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. Façade 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 IDS for Modeling
  - 1.9.3. Mesh Occultations, *Polygroups* and Cuts
- 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. Non-Photorealistic *Cartoon*
- 2.3. PBR Textures
  - 2.3.1. Procedural Textures
  - 2.3.2. Color Maps, Albedo and Diffuse
  - 2.3.3. Opacity and Specularity

- 2.4. Mesh Enhancements
  - 2.4.1. Normal Mapping
  - 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 *Banking*
  - 2.6.1. *Baked Hard Surface* textures
  - 2.6.2. *Baked Organic* Textures
  - 2.6.3. *Baking Joints*
- 2.7. Exportations and Importations
  - 2.7.1. Texture Formats
  - 2.7.2. FBX, OBJ and STL
  - 2.7.3. Subdivision vs. Dinamesh
- 2.8. Mesh Paintings
  - 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* Texture Maps with *High Poly* Detail
  - 2.9.3. Material Processing
- 2.10. Substance Painter - Advanced
  - 2.10.1. Realistic Effects
  - 2.10.2. Improving *Baking*
  - 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 their Structure
- 3.2. Robot Exploded View
  - 3.2.1. IMM and Chisel Brushes
  - 3.2.2. *Insert Mesh* and *Nanomesh*
  - 3.2.3. *Zmodeler* in *ZBrush*
- 3.3. Cybord
  - 3.3.1. Sectioned by Means of 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 Polygon 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 in Time
  - 3.6.3. Oxidants
- 3.7. Accidents
  - 3.7.1. Collisions
  - 3.7.2. Object Fragmentation
  - 3.7.3. Destruction Brushes
- 3.8. Adaptations and Evolution
  - 3.8.1. Biomimicry
  - 3.8.2. Sci-fi, Dystopias, Uchronies and Utopias
  - 3.8.3. *Cartoon*
- 3.9. Realistic *Hardsurface Render*
  - 3.9.1. Studio Scene
  - 3.9.2. Light
  - 3.9.3. Physical Camera
- 3.10. NPR *Hardsurface Render*
  - 3.10.1. *Wireframe*
  - 3.10.2. *Cartoon Shader*
  - 3.10.3. Illustration



*Get a qualification with this Postgraduate Diploma and open the door to new opportunities in the labor market"*

# 05

# 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.





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*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.

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*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 is the most widely used learning system in the best faculties in the world. 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 we face in the case method, an action-oriented learning method. Throughout the program, the studies 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 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.

With this methodology we have 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, markets, and financial 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.



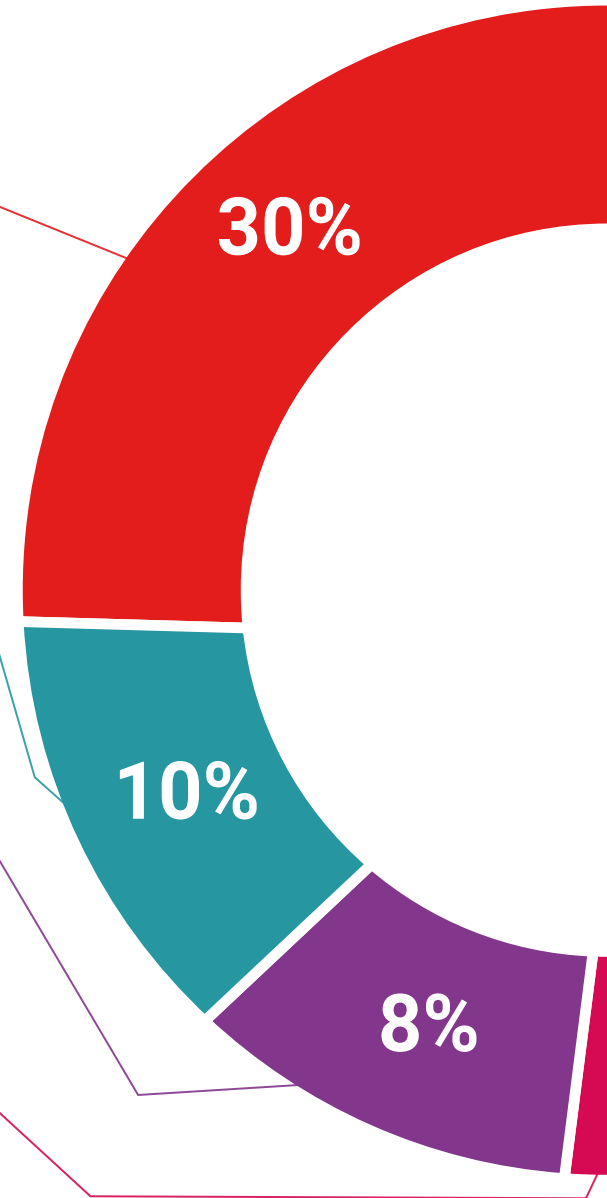
### Practising Skills and Abilities

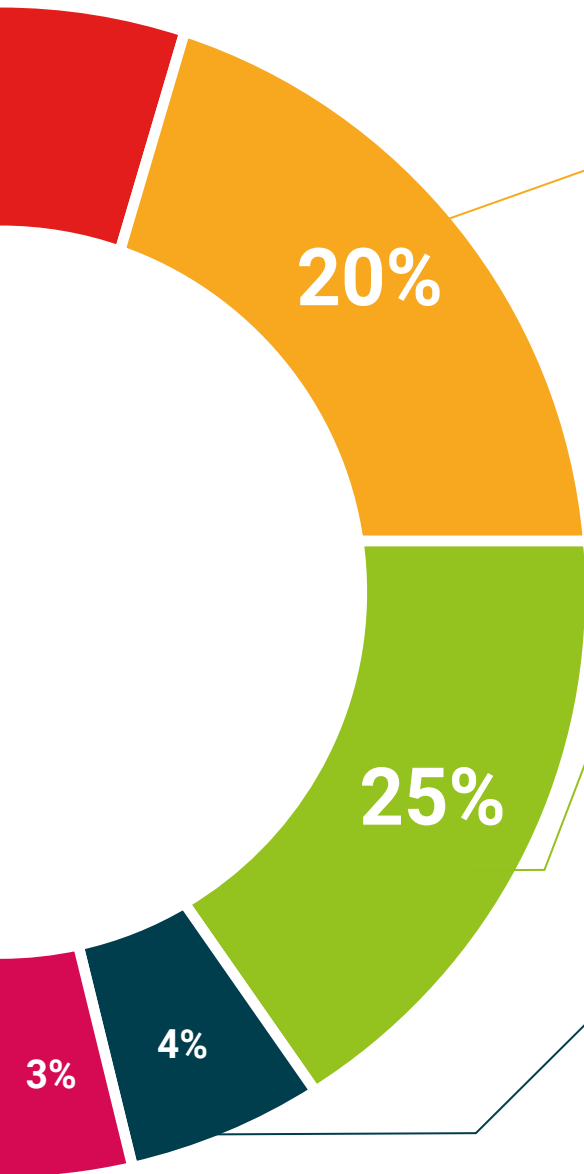
They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.



### 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.



# 06 Certificate

The Postgraduate Diploma in Digital Sculpture for Rigid Surfaces, Machines and Texturing guarantees students, in addition to the most rigorous and up to date education, access to a qualification issued by TECH Technological University.





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

This **Postgraduate Diploma in Digital Sculpture for Rigid Surfaces, Machines and Texturing** contains the most complete and up to date program on the market.

After passing the assessments, the student will receive their corresponding **Postgraduate Diploma** issued by **TECH Technological University** via tracked delivery\*.

The diploma issued by **TECH Technological University** will reflect the qualification obtained in Postgraduate Diploma, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

**Title: Postgraduate Diploma in Digital Sculpture for Rigid Surfaces, Machines and Texturing**

Official N° of hours: 450 h.



\*Apostille Convention. In the event that the student wishes to have their paper diploma 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  
online training  
development language  
classroom



## Postgraduate Diploma Digital Sculpture for Rigid Surfaces, Machines and Texturing

- » Modality: **online**
- » Duration: **6 months**
- » Certificate: **TECH Technological University**
- » Dedication: **16h/week**
- » Schedule: **at your own pace**
- » Exams: **online**

# Postgraduate Diploma

## Digital Sculpture for Rigid Surfaces, Machines and Texturing

