

# Postgraduate Diploma Hard Surface Modeling



## Postgraduate Diploma Hard Surface Modeling

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Global University
- » Credits: 18 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtitute.com/us/videogames-design/postgraduate-diploma/postgraduate-diploma-hard-surface-modeling](http://www.techtitute.com/us/videogames-design/postgraduate-diploma/postgraduate-diploma-hard-surface-modeling)

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# 01

# Introduction

Hard Surface modeling is a type of three-dimensional modeling eminently necessary for the video game industry. The demands of the public in this area are increasing in terms of finishes and realism of the images, therefore, game developers have to hone their skills and abilities to respond to this niche that is gradually settling in the market. Students who take this program will be easily introduced to three-dimensional Hard Surface design applied to video games thanks to a plan developed by professionals in the field, who will prepare them in the most complete way to face the challenges of the sector.





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*Thanks to a plan developed by professionals in the field, you will be prepared to face the challenges of the Hard Surface modeling sector”*

In order to realize realistic surfaces that meet the parameters of game developers, designers and animators, this Postgraduate Diploma has the most up-to-date curriculum on this subject. The content focuses on an in-depth understanding of the different types of Hard Surface modeling, as well as the different concepts and features to apply them in the 3D modeling industry.

The program focuses its bases on the study of figure and form. In fact, a deepening of the theory of form creation is sought in order to train true masters of form. Subsequently, it explores topology, the areas of modeling and notions about the emergence of the Hard Surface to establish a basic knowledge of them.

Finally, the program focuses on the specialization of Sculpt modeling and on the practical model to be performed afterwards for a deeper understanding of Hard Surface modeling for characters. In order to do so, it is proposed to have a broad knowledge of the tools that will make the work possible, as well as to understand how the character accessories intervene in the concept.

All this content is compiled in a 100% online program that allows you to adapt the pace of learning to your professional activities. Additionally, thanks to the Relearning Methodology, you will be able to learn in a natural and progressive way with various audiovisual materials that will help you consolidate the knowledge of each theoretical class.

This **Postgraduate Diploma in Hard Surface Modeling** contains the most complete and up-to-date program on the market. The most important features include:

- ◆ The development of practical cases presented by experts in Hard Surface 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 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



*With this Postgraduate Diploma you will be able to refocus your professional career towards the development of video games with the Hard Surface modeling technique"*



“

*With each practical cases presented in the Postgraduate Diploma, you will get one step closer to your goal: modeling characters with Hard Surface”*

*Delve into the theory of form creation to develop yourself as a true master of form.*

*Combine updating your knowledge with your daily life with this fully online program.*

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 immersive education programmed to learn 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

This program, designed for the student to develop as a true professional in Hard Surface modeling for video games, is structured through a series of fundamental objectives to achieve the application of knowledge in the professional career and acquire a better curriculum. In this sense, it will provide an up-to-date knowledge to master the technique and be able to face the challenges that may arise in the real professional career.







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*This Postgraduate Diploma is designed for you to develop as a true professional in Hard Surface modeling for video games"*



## General Objectives

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- ◆ In-depth knowledge of the different types of Hard Surface modeling, the different concepts and characteristics to apply them in the 3D modeling industry
- ◆ Delve into the theory of form creation to develop form masters
- ◆ Be a technical expert and/or artist in 3D modeling for Hard Surface



*Become a true technical expert in three-dimensional modeling in Hard Surface"*





## Specific Objectives

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### Module 1. Study of Figure and Form

- ◆ Create and apply geometrical figure constructs
- ◆ Understand the basics of three-dimensional geometry
- ◆ Learn in detail how it is represented in technical drawing
- ◆ Identify different mechanical components
- ◆ Apply transformations by means of symmetries
- ◆ Improve your understanding of how shapes are developed
- ◆ Work using the analysis of form

### Module 2. Hard Surface Modeling

- ◆ In-depth understanding of how to control a topology
- ◆ Develop communication of functions
- ◆ Have knowledge on the emergence of Hard Surface
- ◆ Detailed knowledge of the different industries where it is applied
- ◆ Gain a broad understanding of the different types of modeling
- ◆ Have valid information on the areas that make up modeling

### Module 3. Hard Surface Modeling for Characters

- ◆ Integrate functionality of sculpt modeling
- ◆ Gain a broad knowledge of the tools that increase performance
- ◆ Develop the type of sculpt to be implemented in the model
- ◆ Understand how character props play a role in the concept
- ◆ Learn in detail how to clean screens for export
- ◆ Learn to present a Hard Surface character model



# 03

# Course Management

This program has a first-class management team and faculty, made up of prestigious professionals in the video game programming sector. All of them are highly qualified to prepare students for the challenges of a sector in constant growth and transformation. Thanks to their many years of experience, they will be able to provide examples and practical exercises to hone the skills in each class.





“

*All faculty are highly qualified to prepare students for the challenges of a sector in constant growth and transformation”*

## Management



### Mr. Salvo Bustos, Gabriel Agustín

- 9 years of experience in Aeronautical 3D modeling
- 3D Artist at 3D Visualization Service Inc
- 3D production for Boston Whaler
- 3D Modeler for Shay Bonder Multimedia TV Production Company
- Audiovisual Producer in Digital Film
- Product Designer for Escencia de los Artesanos by Eliana M
- Industrial Designer Specializing in Products National University of Cuyo
- Mendoza Late Contest Honorable Mention
- Exhibitor in Regional Visual Arts Salon Vendimia
- Digital Composition Seminar National University of Cuyo
- National Congress of Design and Production CPRODI







# 04

## Structure and Content

The Postgraduate Diploma in Hard Surface Modeling has a program divided into three modules. The first of these will present a study of figure and form, and will delve into basic geometric constructs and the fundamentals of mechanical elements. Then, it goes into Hard Surface modeling with the different types and their respective bases. Finally, Hard Surface modeling for characters, an essential element when creating characters or creatures in a videogame, is discussed in depth. At the end of this program, students will have the necessary tools to carry out Hard Surface modeling in the professional environment.





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*At the end of this program students will have the necessary tools to develop Hard Surface modeling in a professional environment”*



## Module 1. Study of Figure and Form

- 1.1. Geometrical Figures
  - 1.1.1. Types of Geometrical Figures
  - 1.1.2. Basic Geometrical Constructions
  - 1.1.3. Geometric Transformations on the Plane
- 1.2. Polygons
  - 1.2.1. Triangles
  - 1.2.2. Quadrilaterals
  - 1.2.3. Regular Polygons
- 1.3. Axonometric System
  - 1.3.1. System Fundamentals
  - 1.3.2. Types of Orthogonal Axonometry
  - 1.3.3. Sketches
- 1.4. Three-Dimensional Drawing
  - 1.4.1. Perspective and Third Dimension
  - 1.4.2. Essential Elements in Drawing
  - 1.4.3. Perspectives
- 1.5. Technical Drawing
  - 1.5.1. Basic Notions
  - 1.5.2. Disposition of Views
  - 1.5.3. Cuts
- 1.6. Fundamentals of Mechanical Elements I
  - 1.6.1. Axis
  - 1.6.2. Joints and Bolts
  - 1.6.3. Springs
- 1.7. Fundamentals of Mechanical Elements II
  - 1.7.1. Bearings
  - 1.7.2. Gears
  - 1.7.3. Flexible Mechanical Components
- 1.8. Laws of Symmetry
  - 1.8.1. Translation-Rotation-Reflection-Extension
  - 1.8.2. Touch-Overlay-Subtract-Intersect-Join
  - 1.8.3. Combined Laws

- 1.9. Form Analysis
  - 1.9.1. Form and Function
  - 1.9.2. Mechanical Form
  - 1.9.3. Types of Shapes
- 1.10. Topological Analysis
  - 1.10.1. Morphogenesis
  - 1.10.2. Composition
  - 1.10.3. Morphology and Topology

## Module 2. Hard Surface Modeling

- 2.1. Hard Surface Modeling
  - 2.1.1. Topology Control
  - 2.1.2. Function Communication
  - 2.1.3. Speed and Efficiency
- 2.2. Hard Surface I
  - 2.2.1. Hard Surface
  - 2.2.2. Development
  - 2.2.3. Structure
- 2.3. Hard Surface II
  - 2.3.1. Applications
  - 2.3.2. Physical Industry
  - 2.3.3. Virtual Industry
- 2.4. Types of Modeling
  - 2.4.1. Technical Modeling / NURBS
  - 2.4.2. Polygonal Modeling
  - 2.4.3. Sculpt Modeling
- 2.5. Deep Hard Surface Modeling
  - 2.5.1. Profiles
  - 2.5.2. Topology and Edge Flow
  - 2.5.3. Mesh Resolution
- 2.6. NURBS Model
  - 2.6.1. Dots-Lines-Polylines-Curves
  - 2.6.2. Surfaces
  - 2.6.3. 3D Geometry

- 2.7. Fundamentals of Polygonal Modeling
  - 2.7.1. Edit Poly
  - 2.7.2. Vertices-Edges-Polygons
  - 2.7.3. Operations
- 2.8. Fundamentals of Sculpt Modeling
  - 2.8.1. Basic Geometry
  - 2.8.2. Subdivisions
  - 2.8.3. Deformities
- 2.9. Topology and Retopology
  - 2.9.1. High Poly and Low Poly
  - 2.9.2. Polygonal Count
  - 2.9.3. Bake Maps
- 2.10. UV Maps
  - 2.10.1. UV Coordinates
  - 2.10.2. Techniques and Strategies
  - 2.10.3. Unwrapping

### Module 3. Modeling of Hard Surface for Characters

- 3.1. ZBrush
  - 3.1.1. ZBrush
  - 3.1.2. Understanding the Interface
  - 3.1.3. Creating Some Meshes
- 3.2. Brushes and Sculpting
  - 3.2.1. Brush Settings
  - 3.2.2. Working with Alphas
  - 3.2.3. Standard Brushes
- 3.3. Tools
  - 3.3.1. Subdivision Levels
  - 3.3.2. Masks and Polygroups
  - 3.3.3. Tools and techniques
- 3.4. Design
  - 3.4.1. Dressing a Character
  - 3.4.2. Analysis of Concepts
  - 3.4.3. Rhythm

- 3.5. Initial Modeling of a Character
  - 3.5.1. The Torso
  - 3.5.2. The Arms
  - 3.5.3. The Legs
- 3.6. Accessories
  - 3.6.1. Adding a Belt
  - 3.6.2. Helmet
  - 3.6.3. Wings
- 3.7. Accessory Details
  - 3.7.1. Helmet Details
  - 3.7.2. Wing Details
  - 3.7.3. Shoulder Detailing
- 3.8. Body Details
  - 3.8.1. Torso Details
  - 3.8.2. Arm Detailing
  - 3.8.3. Leg Detailing
- 3.9. Cleaning
  - 3.9.1. Cleaning the Body
  - 3.9.2. Creating Sub-Tools
  - 3.9.3. Rebuilding Sub-Tools
- 3.10. Completion
  - 3.10.1. Posing the Model
  - 3.10.2. Materials
  - 3.10.3. Rendering



*Learn to model with Hard Surface and design characters with this Postgraduate Diploma*

# 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.







“

*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.



06

# Certificate

The Postgraduate Diploma in Hard Surface Modeling guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma issued by TECH Global University.



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



This program will allow you to obtain your **Postgraduate Diploma in Hard Surface Modeling** 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.

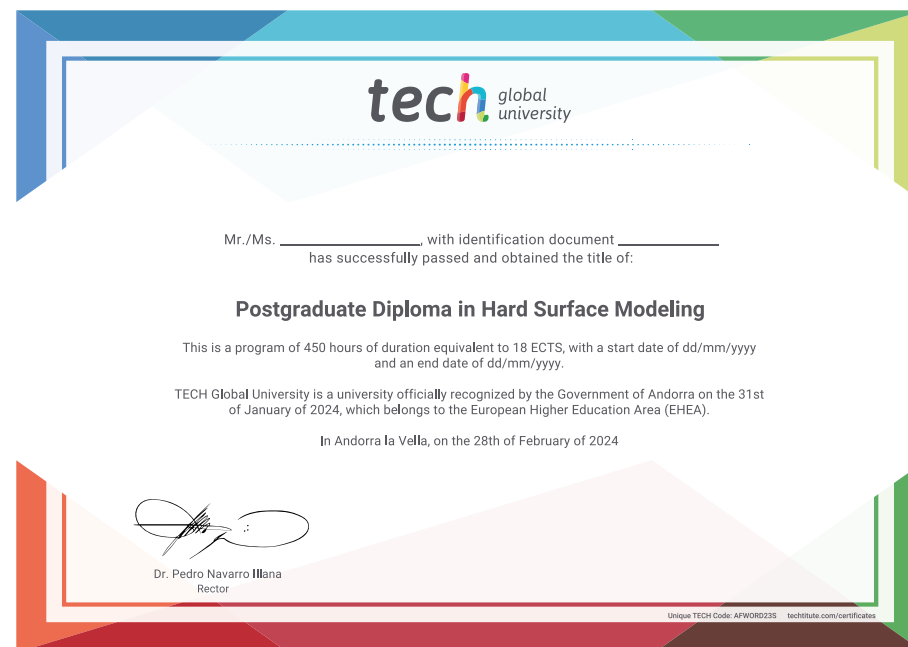
This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Diploma in Hard Surface Modeling**

Modality: **online**

Duration: **6 months**

Accreditation: **18 ECTS**



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



## Postgraduate Diploma Hard Surface Modeling

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