

# Postgraduate Diploma Hard Surface Modeling



## Postgraduate Diploma Hard Surface Modeling

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

Website: [www.techtute.com/in/design/postgraduate-diploma/postgraduate-diploma-hard-surface-modeling](http://www.techtute.com/in/design/postgraduate-diploma/postgraduate-diploma-hard-surface-modeling)

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Certificate

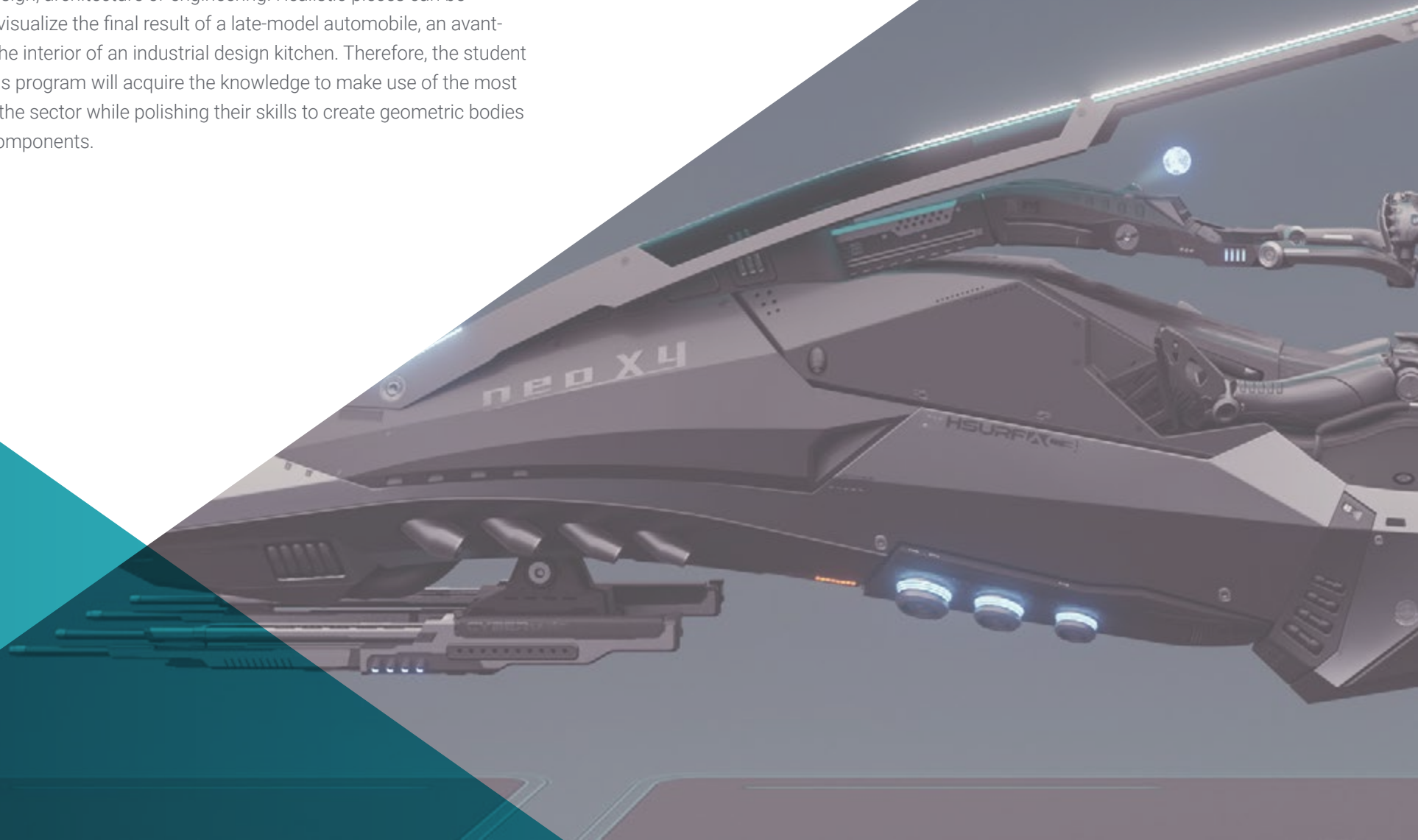
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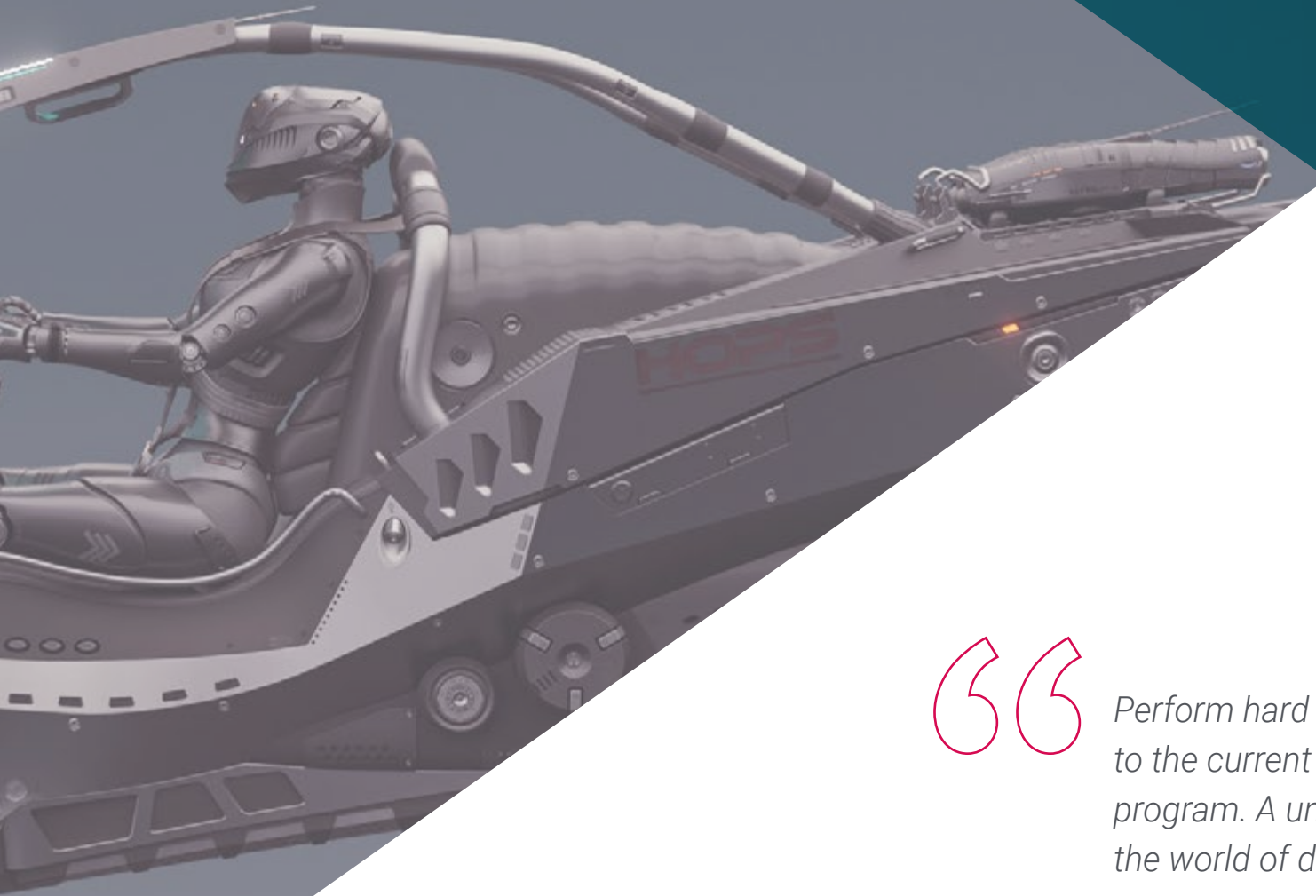
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# 01

# Introduction

*Hard Surface* modeling is of vital importance today. Its contribution goes beyond the world of animation and video games, being indispensable for other areas such as interior design, architecture or engineering. Realistic pieces can be presented to help visualize the final result of a late-model automobile, an avant-garde building or the interior of an industrial design kitchen. Therefore, the student who completes this program will acquire the knowledge to make use of the most advanced tools in the sector while polishing their skills to create geometric bodies and mechanical components.





“

*Perform hard surface modeling thanks to the current content presented in this program. A unique opportunity to grow in the world of design"*

To create realistic surfaces that meet the parameters of engineers, architects, designers, animators, among others, this Postgraduate Diploma has the most current syllabus on this subject. In this way, the students will begin with an in-depth review of the basics of the creation of shapes and primitive figures, which will allow them to develop their criteria for the realization of mechanical components.

Then, in the second module, the different applicable modeling techniques and their principles will be analyzed. This will allow the students to develop their criteria for the topology of objects, using 3D mesh mapping and texturing as a reference. With all this, in the last module, you will be able to execute a modeling in Sculpt, understanding how the Hard Surface principles are applied to characters.

All this content is condensed in a 100% online program, which will allow students to adapt their learning pace to their professional activities, without abandoning them. In addition, 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 educational program on the market. The most important features include:

- ◆ The development of case studies presented by experts in Hard Surface 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



*If your goal is to be the best in Hard Surface modeling, this program will help you achieve it"*

“

*TECH has the best educational methodology to help you learn at your own pace and in a natural way: Relearning"*

The program's teaching staff includes professionals from the sector who contribute their work experience to this educational 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 during the academic year. For this purpose, the student will be assisted by an innovative interactive video system created by renowned and experienced experts.

*Enroll now and you will have access to a 100% online program and to the most current contents of the academic scenario.*

*You will learn how to model any surface, allowing you to provide a realistic result, close to the final vision of the creator.*





# 02

# Objectives

Thanks to this Postgraduate Diploma, the students will learn to model any surface, identifying different mechanical components and applying transformations by means of symmetries. For this, they will make use of one of the most important programs in the industry, ZBrush, understanding its interface and configuring each tool to make the clothing and accessories of a character.







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*With this program you will be one step closer to achieving professional independence, providing your services to large companies and positioning yourself as an expert in Hard Surface"*



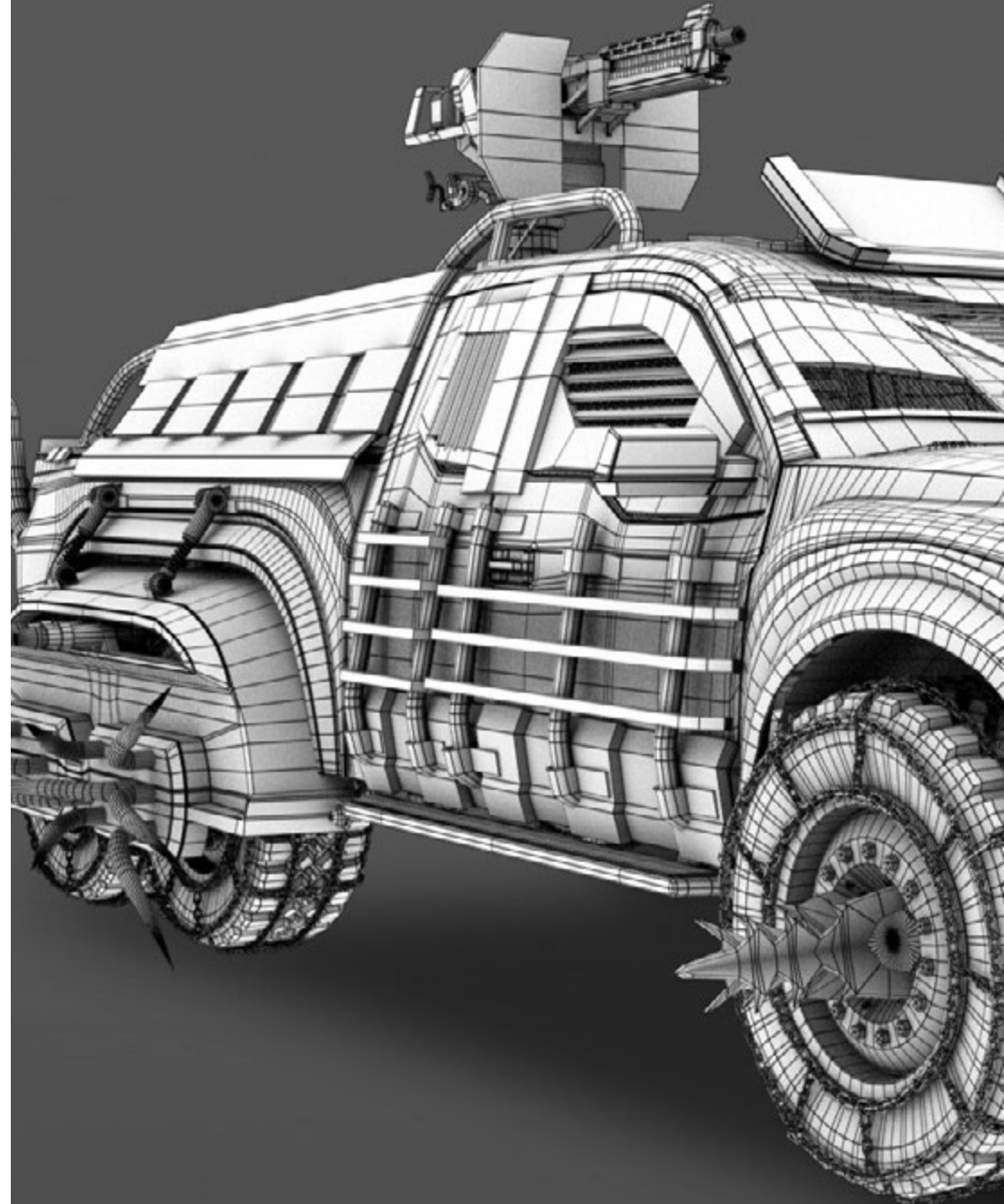
## General Objectives

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- ◆ Learn in depth the different types of Hard surface modeling, the different concepts and features to apply them in the 3D modeling industry
- ◆ Delve into the theory of shape creation in order to develop shape masters
- ◆ Learn in detail the basics of 3D modeling in its different forms
- ◆ Generate designs for different industries and their application
- ◆ Be a technical expert and/or artist in 3D modeling for Hard surface
- ◆ Know all the tools involved in the 3D modeling profession
- ◆ Acquire skills for the development of textures and FX of 3D models



*With this TECH program, you will achieve your best professional version, register now to access all the content"*





## Specific Objectives

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### Module 1. Study of Figure and Shape

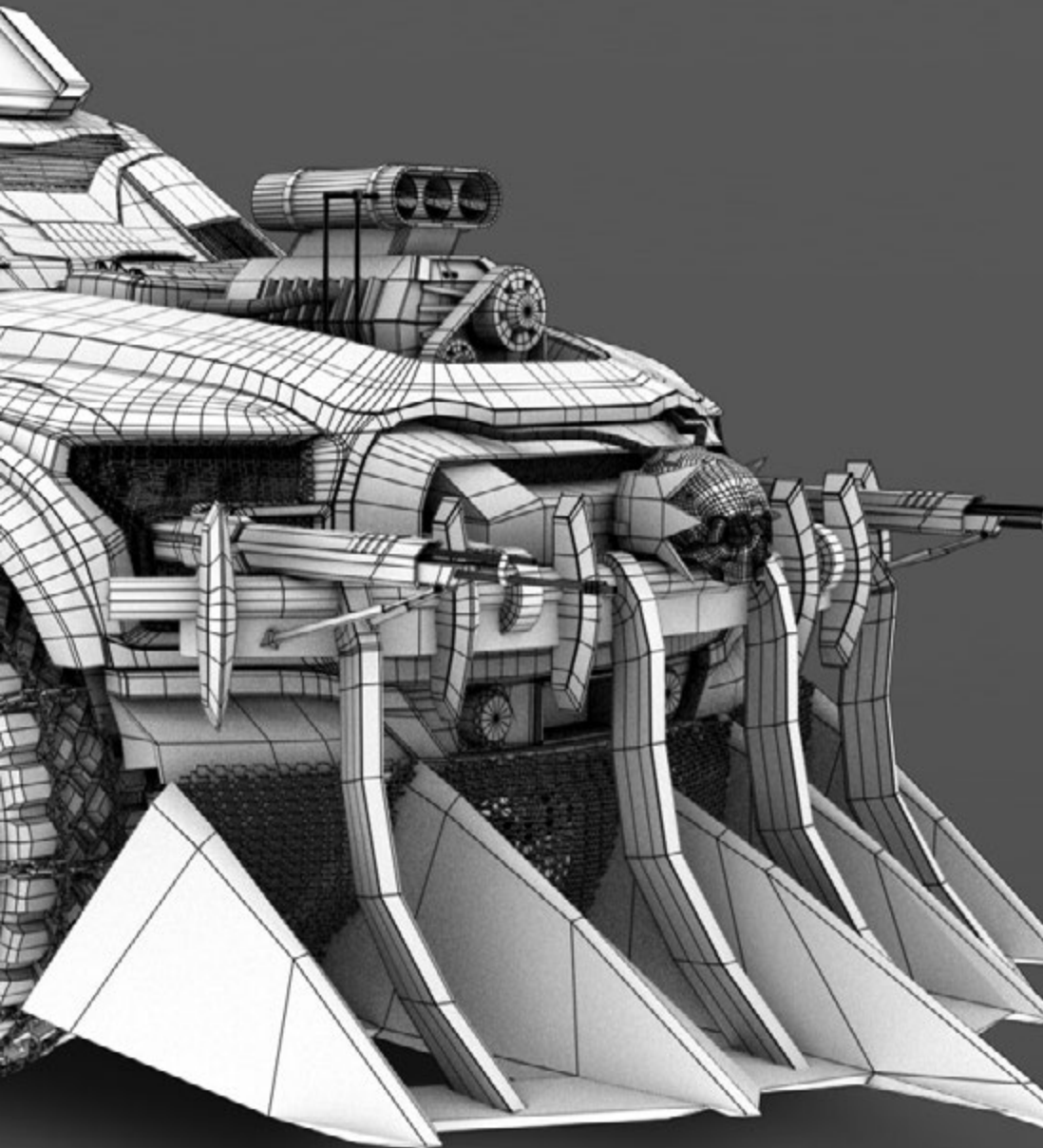
- ◆ Conceive and apply constructions of geometric figures.
- ◆ Understand the basics of three-dimensional geometry.
- ◆ Knowing in detail how it is represented in technical drawing
- ◆ Identify different mechanical components
- ◆ Apply transformations through symmetries
- ◆ Develop an understanding of how shapes are developed
- ◆ Work through shape analysis

### Module 2. Hard Surface Modeling

- ◆ Understand in depth how to control the topology
- ◆ Develop function communication
- ◆ Have knowledge of the emergence of Hard Surface
- ◆ Have a detailed understanding of the different industries of its application
- ◆ Have a comprehensive understanding of the different types of modeling
- ◆ Possess valid information on the fields that make up modeling

### Module 3. Hard Surface Modeling for Characters

- ◆ How Sculpt modeling works
- ◆ Know extensively the tools that will make our performance
- ◆ Conceive what type of sculpt will be developed on our model
- ◆ Understand how character props will play a role in our concept
- ◆ Learn in detail how to clean up meshes for export
- ◆ Presenting a Hard Surface character model

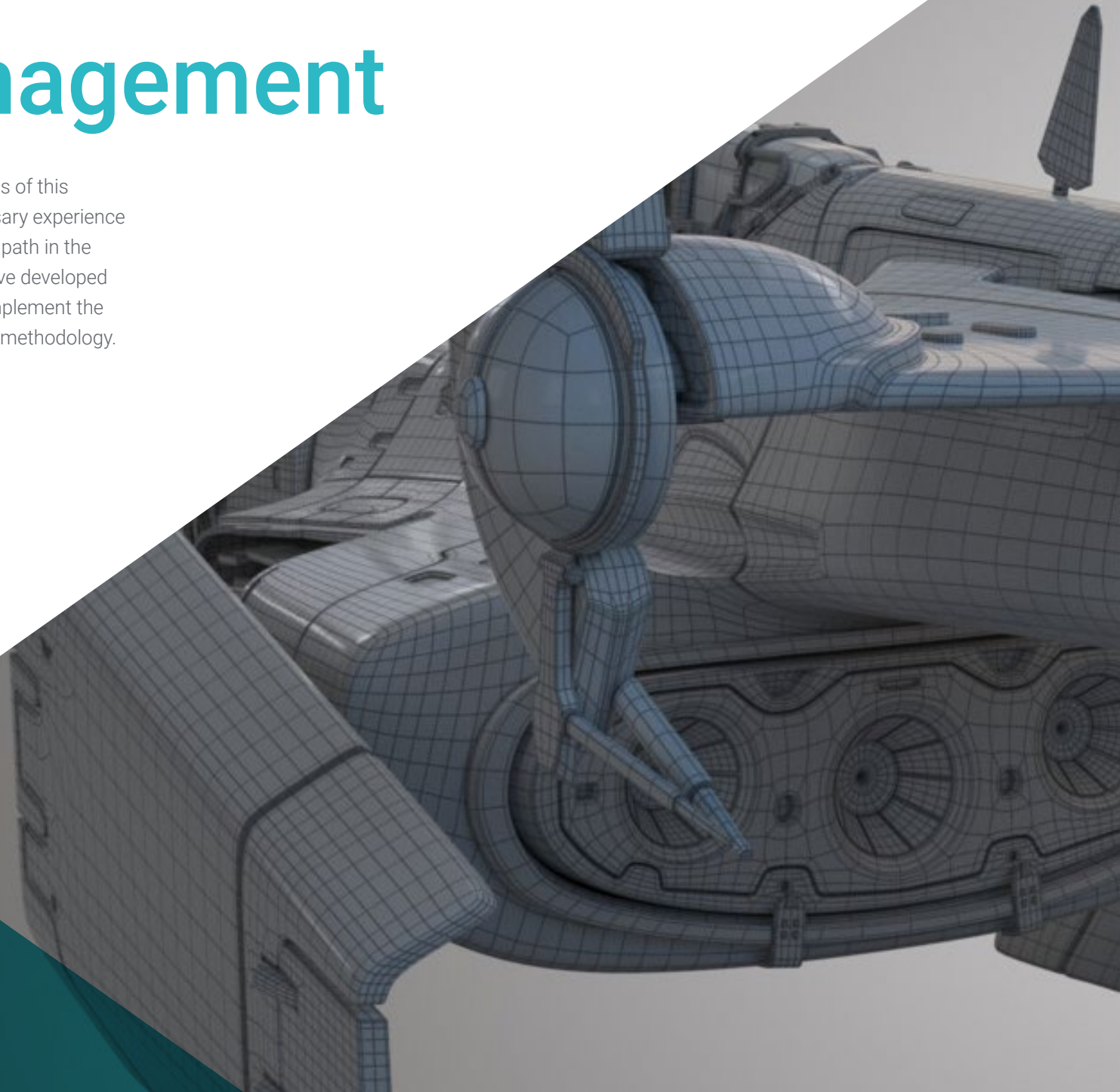


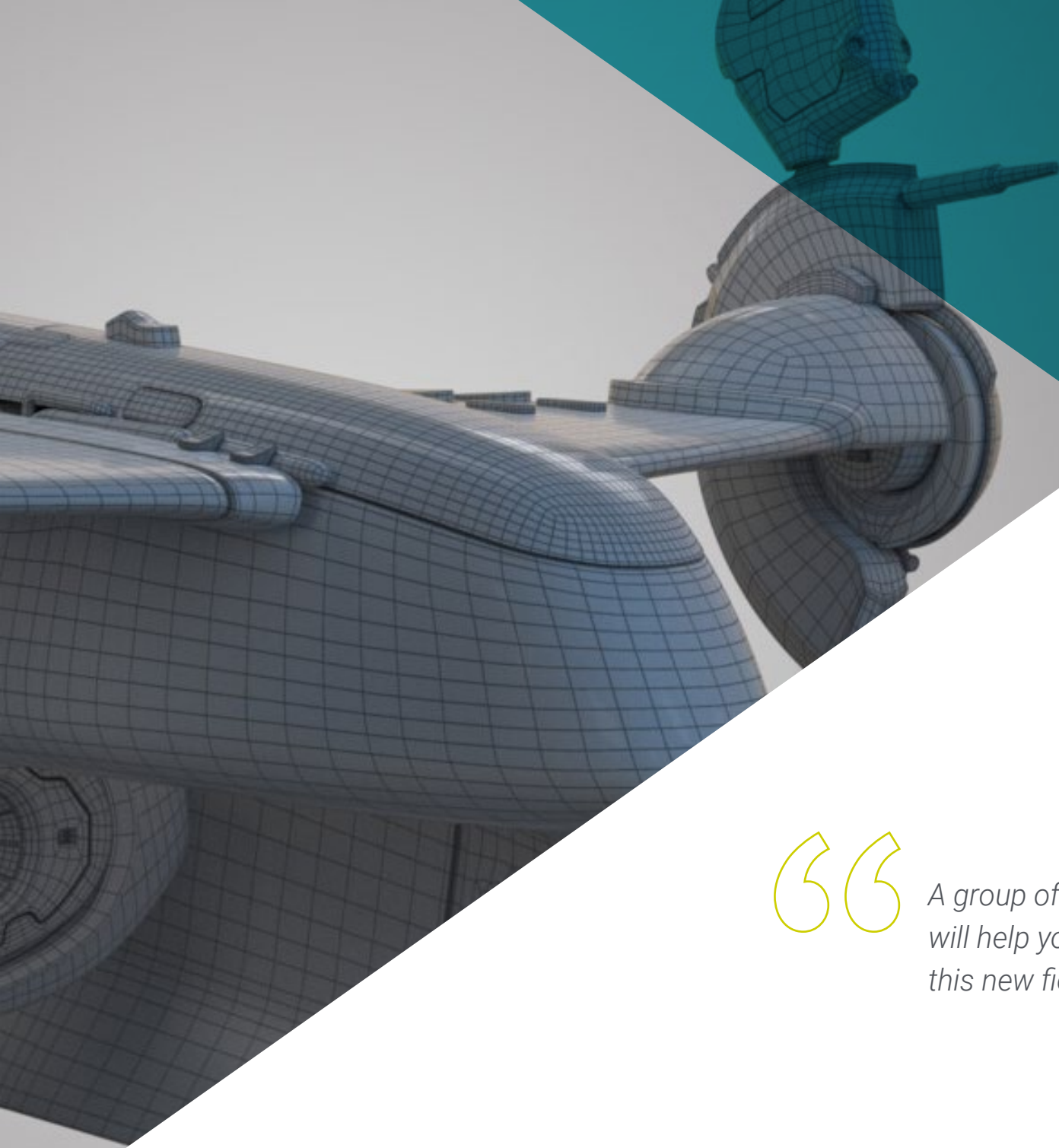


# 03

# Course Management

This program has been developed following the indications of this teaching staff. This group of professionals has the necessary experience to guide and support the student who wishes to begin his path in the design and modeling of hard textures. In addition, they have developed a set of practical exercises and educational videos to complement the theoretical content, favoring learning under the relearning methodology.





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*A group of professionals of the highest level will help you strengthen your knowledge in this new field of design and modeling"*

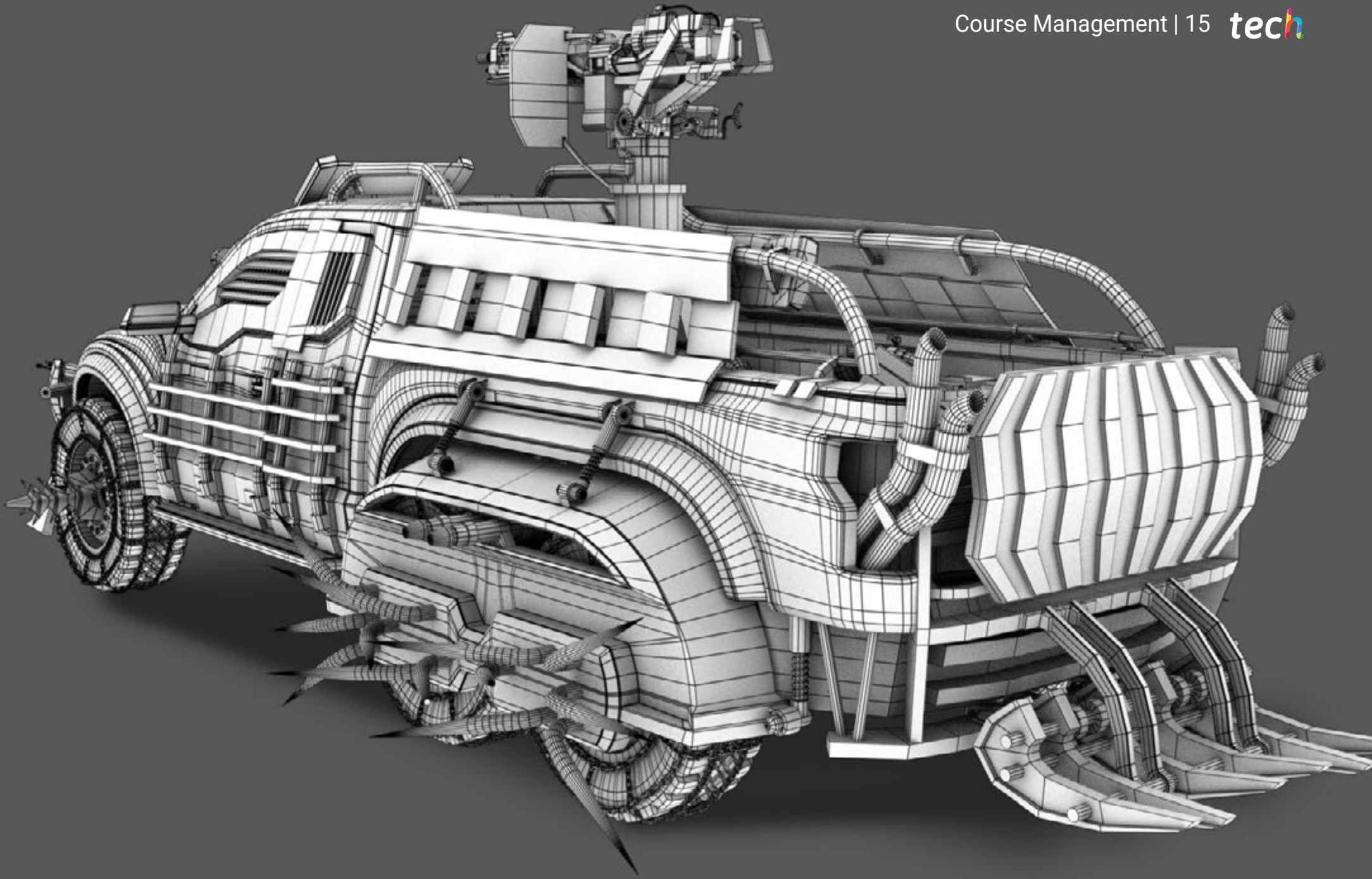
## Management



### 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 at Shay Bonder Multimedia TV Production Company
- Audiovisual Producer at Digital Film
- Product Designer for Escencia de los Artesanos by Eliana M
- Industrial Designer Specializing in Products. National University of Cuyo
- Honorable Mention in Mendoza Late Contest
- Exhibitor at the Regional Visual Arts Salon Vendimia.
- Digital Composition Seminar. National University of Cuyo
- National Congress of design and production. C.P.R.O.D.I.

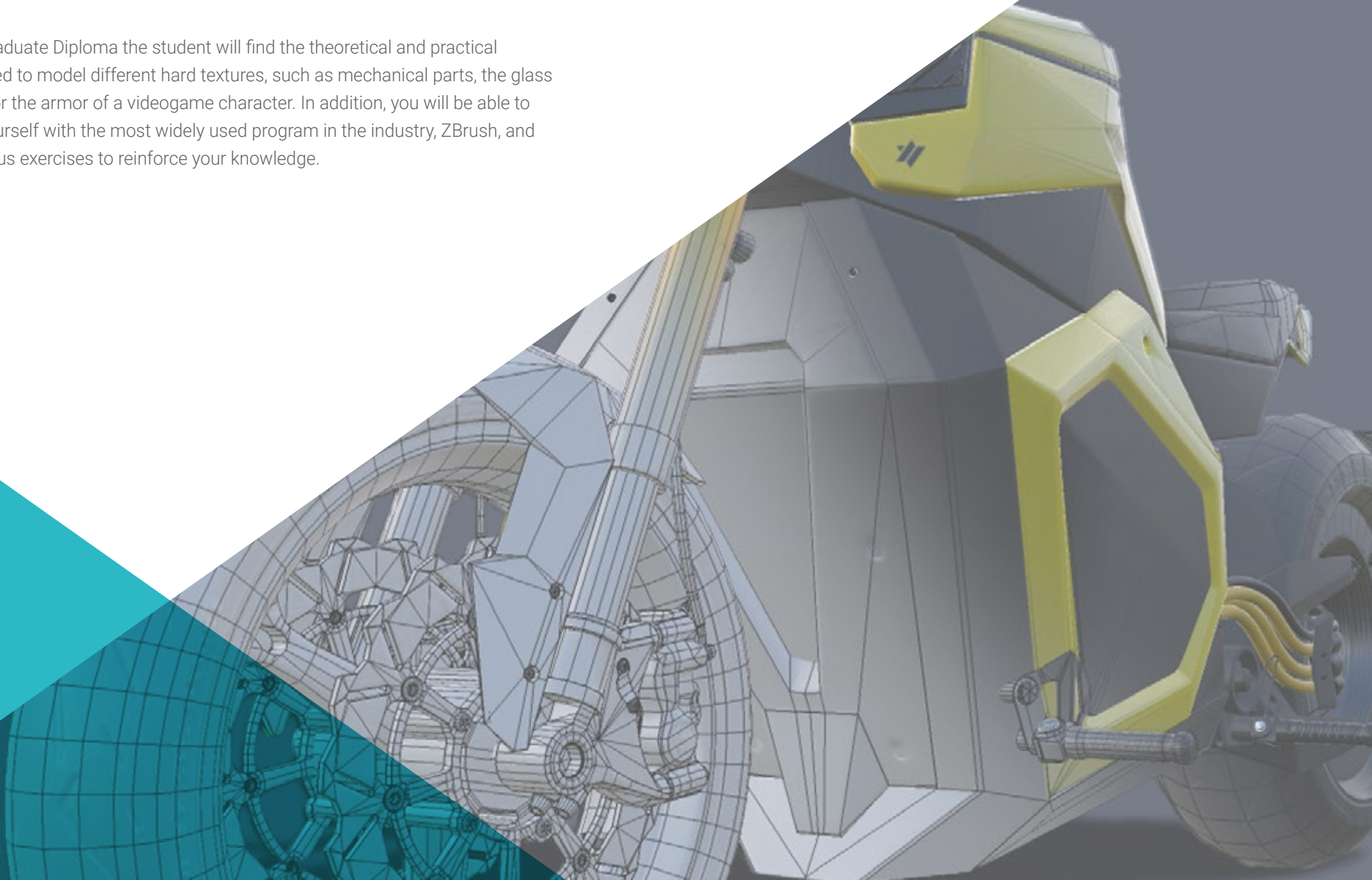




# 04

## Structure and Content

In this Postgraduate Diploma the student will find the theoretical and practical content needed to model different hard textures, such as mechanical parts, the glass of a building or the armor of a videogame character. In addition, you will be able to familiarize yourself with the most widely used program in the industry, ZBrush, and perform various exercises to reinforce your knowledge.





A 3D CAD model of a yellow motorcycle frame and engine components, shown in a perspective view. The model is rendered in a bright yellow color with some grey and black details. The background is a dark teal gradient. The image is split diagonally from the bottom-left to the top-right, with the white area containing the quote on the right side.

“

*Thanks to this program you will be able to reinforce your knowledge of technical drawing and use it in the modeling of mechanical parts”*

## Module 1. Study of Figure and Shape

- 1.1. Geometrical Figures
  - 1.1.1. Types of Geometrical Figures
  - 1.1.2. Basic Geometric 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 of 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 Elements

- 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. Surgery
- 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. Hard Surface Modeling 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. Brushes Configurations
  - 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. Conception
  - 3.4.1. Dressing a Character
  - 3.4.2. Concept Analysis
  - 3.4.3. Rhythm
- 3.5. Initial Character Modeling
  - 3.5.1. The Torso
  - 3.5.2. The Arms
  - 3.5.3. Legs
- 3.6. Accessories
  - 3.6.1. Adding Belt
  - 3.6.2. The Hoof
  - 3.6.3. The Wings
- 3.7. Accessory Details
  - 3.7.1. Head Details
  - 3.7.2. Wing Details
  - 3.7.3. Shoulder Details
- 3.8. Body Details
  - 3.8.1. Torso Details
  - 3.8.2. Arm Details
  - 3.8.3. Leg Details
- 3.9. Cleaning
  - 3.9.1. Cleaning the Body
  - 3.9.2. Creating Subtools
  - 3.9.3. Rebuilding Subtools
- 3.10. Finalization
  - 3.10.1. Posing the Model
  - 3.10.2. Materials
  - 3.10.3. Rendering

# 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.



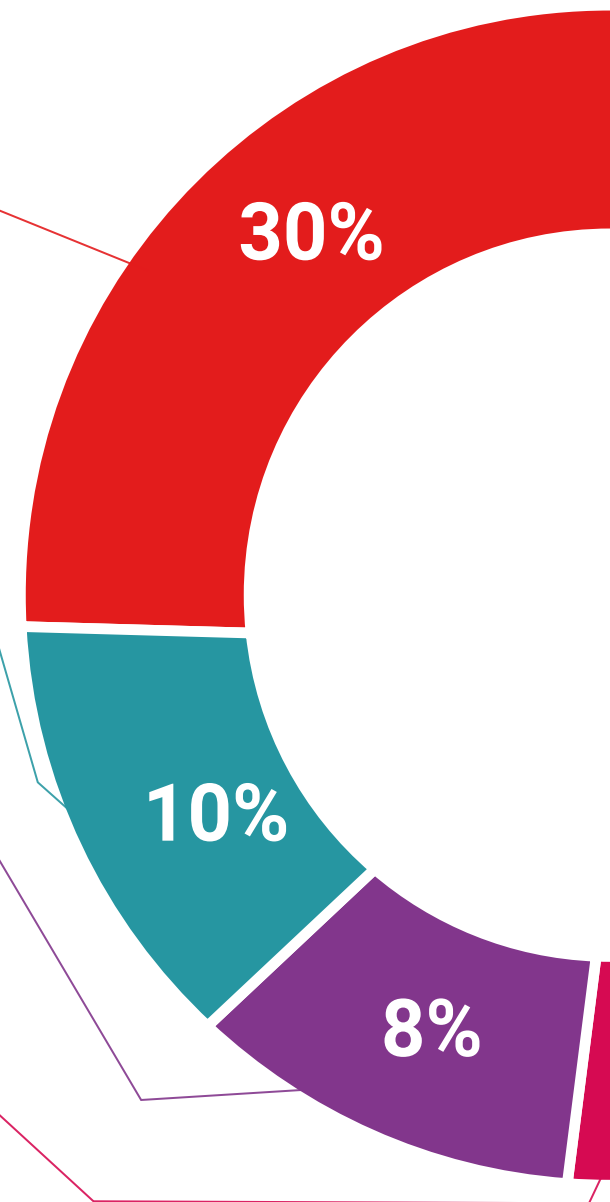
### Practising Skills and Abilities

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 Technological University.



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

This **Postgraduate Diploma in Hard Surface 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 **Postgraduate Diploma**, issued by **TECH Technological University** via tracked delivery\*.

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

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

Official N° of Hours: **450 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 quality  
development language  
virtual classroom



## Postgraduate Diploma Hard Surface Modeling

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



# Postgraduate Diploma

## Hard Surface Modeling

