

# Postgraduate Diploma Animation and Rigging



## Postgraduate Diploma Animation and Rigging

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

Website: [www.techtitute.com/pk/videogames-design/postgraduate-diploma/postgraduate-diploma-animation-rigging](http://www.techtitute.com/pk/videogames-design/postgraduate-diploma/postgraduate-diploma-animation-rigging)

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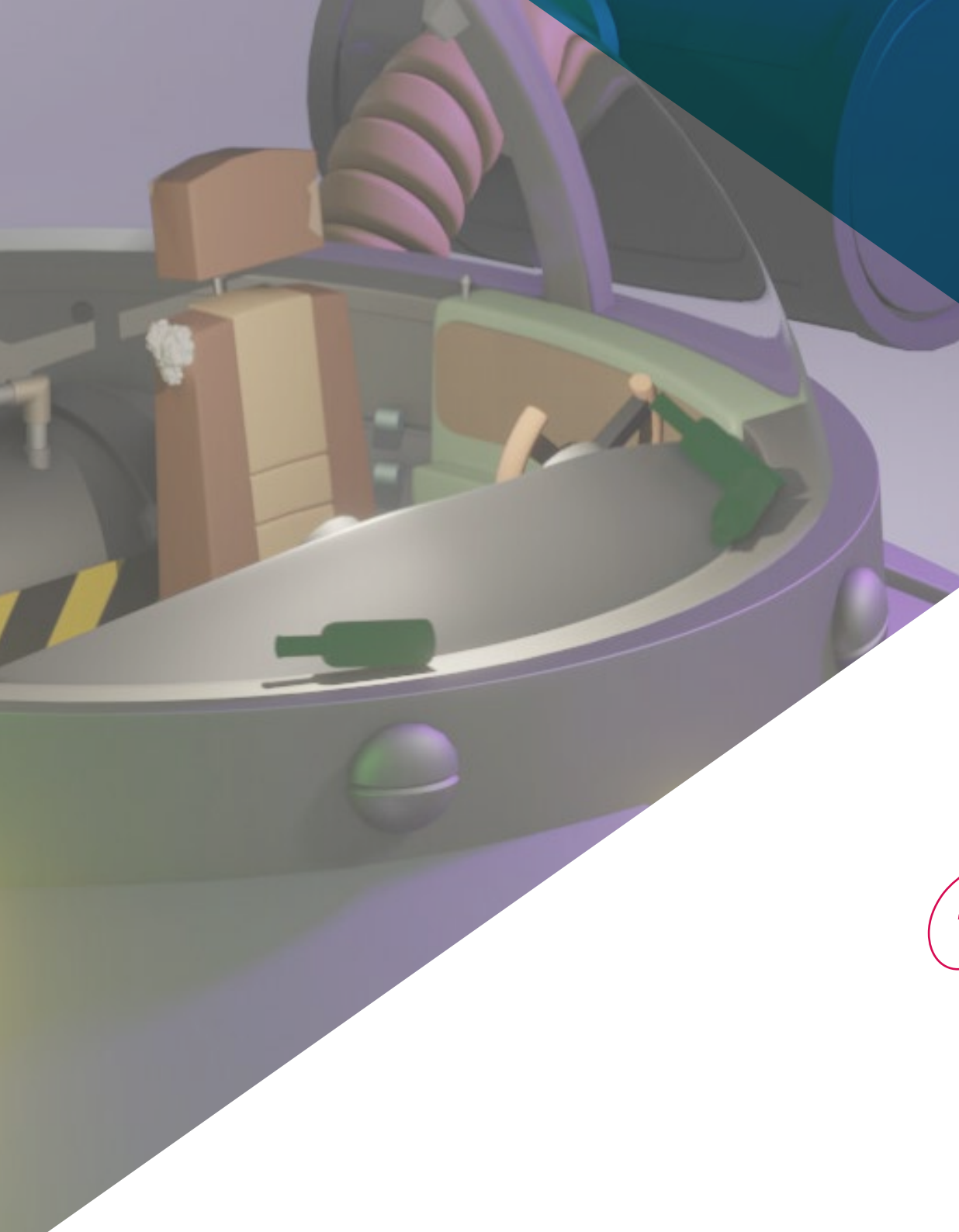
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# 01

# Introduction

Although more attention is usually paid to other issues, animation is a fundamental element of video games. Many of the elements that are usually integrated into the graphics tab actually belong to the animation section. As a result, this discipline ensures that the movement of characters and textures have an adequate fluidity. Without good animation, the video game may fail. For that reason, this qualification offers its students the best knowledge in animation and rigging, so that they can access job positions in some of the major companies in the industry thanks to their new skills.





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*You will be the best animator  
in your company when you  
finish this qualification"*

Although in the technical and visual department we usually talk about graphics as the most essential element of a video game, in reality, there are many others whose importance is at least equal. One of them is animation. The animation determines the movement of the characters and their fluidity, while helping to make their interaction with the rest of the elements realistic.

For that reason, a bad animation can ruin the gaming experience. That's why the big video game companies around the world know that they have to have the best animators possible, and so professionals who want to participate in these companies need a high level of specialization.

That is what this Postgraduate Diploma in Animation and Rigging offers, in-depth and very specific knowledge that will help students to achieve their professional goals, thanks, in part, to its 100% online teaching methodology, which adapts to the circumstances of each individual.

This **Postgraduate Diploma in Animation and Rigging** contains the most complete and up-to-date educational program on the market. The most important features include:

- ◆ The development of practical cases presented by experts in Animation and Rigging applied to video games
- ◆ 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
- ◆ 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



*Animation and Rigging are essential in any video game today: specialize in this area and become a highly sought-after professional"*

“

*This qualification is what you need to advance professionally”*

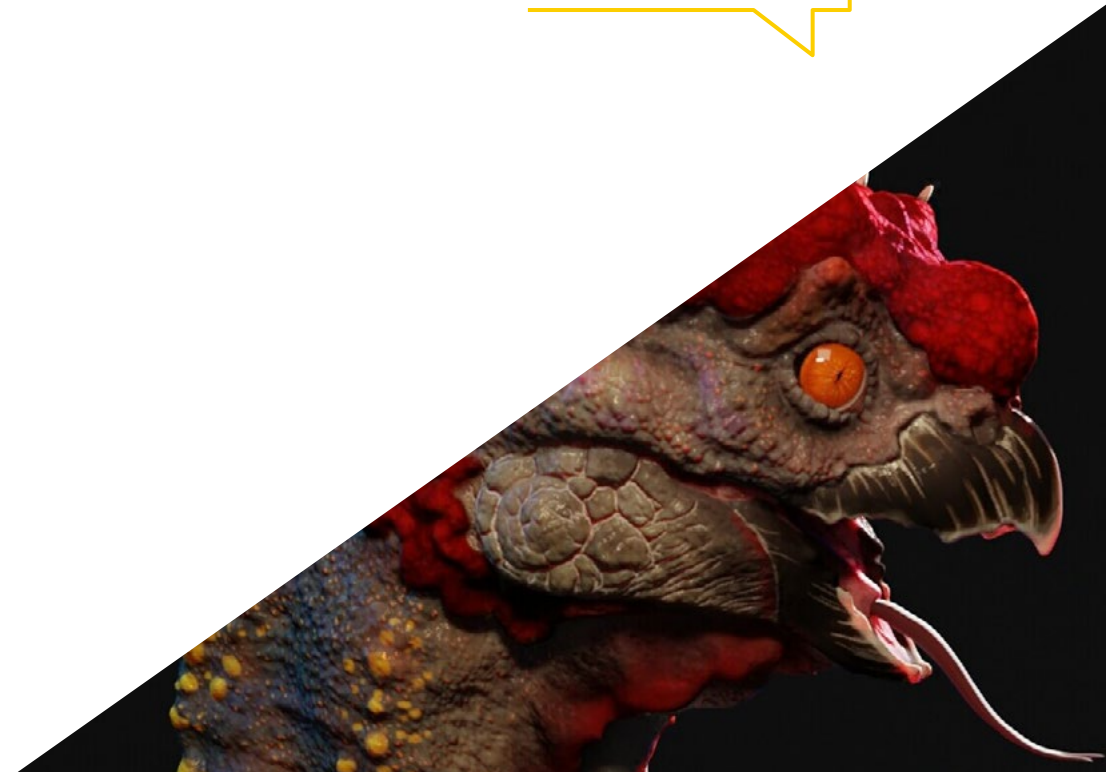
*Big companies in the industry need animators: you could be one of them.*

*Don't wait any longer and specialize with this Postgraduate Diploma.*

The program's teaching staff includes professionals from the sector who bring to this program the experience of their work, in addition to recognized specialists from prestigious societies and leading 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 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

The main objective of this Postgraduate Diploma in Animation and Rigging is to offer students the best knowledge in these disciplines, so that at the end of the qualification they become highly sought-after specialists in the industry. As such, this program will be a fundamental element in the students' careers, as it will allow them to achieve all their professional and life goals by animating all kinds of characters in a wide variety of video games.







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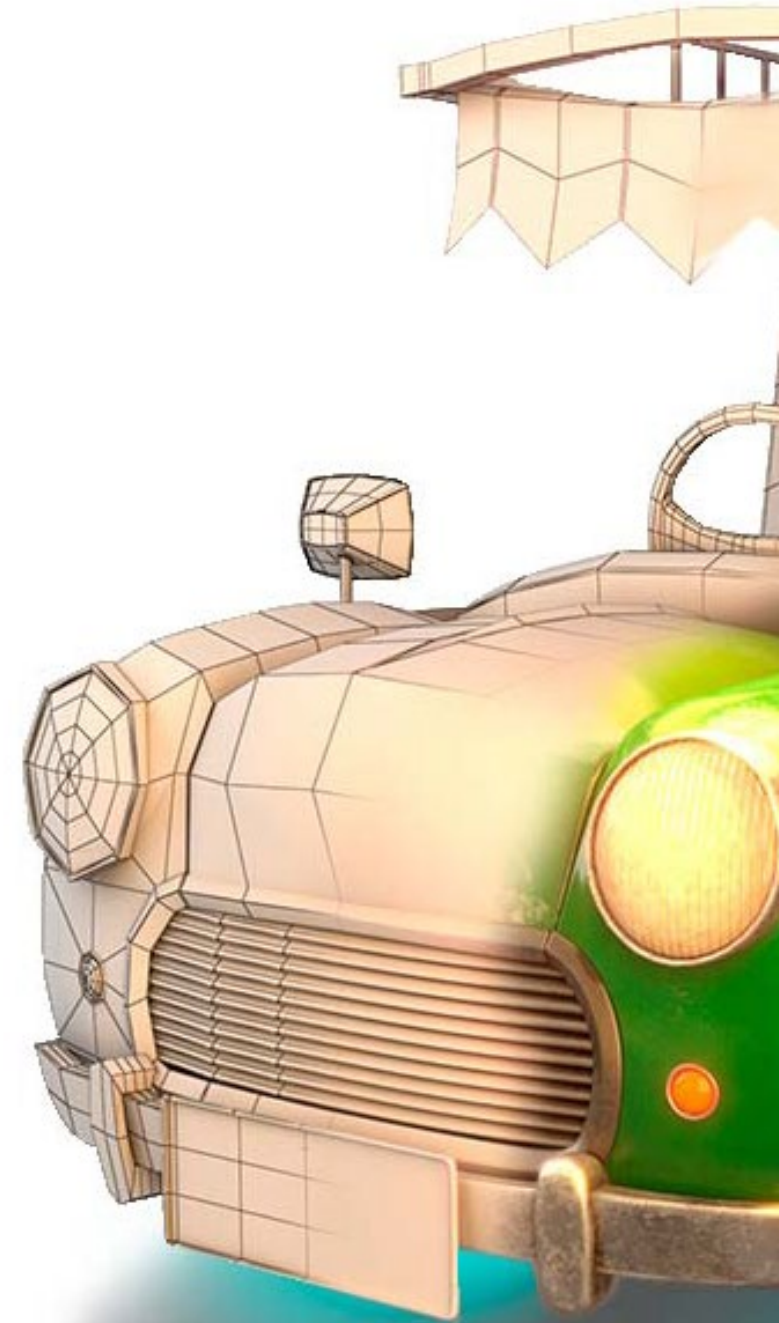
*You will be much closer to achieving your professional goals thanks to this qualification”*



## General objectives

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- ◆ Delve into the importance of character design
- ◆ Assimilate the basic knowledge of video game design applied to character creation
- ◆ Get to know the demands of the video game industry with respect to character design
- ◆ Observe the differences between 2D and 3D modeling applied to characters
- ◆ Understand the importance of animation in video games
- ◆ Manage the basic concepts of animation and simulation applied to video games
- ◆ Understand the importance of simulation in today's video games
- ◆ Apply simulation to video games
- ◆ Understand the concept of rigging
- ◆ Understand the importance of rigging in video game character design
- ◆ Obtain general 3D modeling skills
- ◆ Gain knowledge of the different elements involved in character design





## Specific objectives

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### Module 1. Character Design and Animation

- ◆ Apply the principles of character creation
- ◆ Understand the basic concepts of animation
- ◆ Gain knowledge of the applications of character modeling and animation in the context of video games
- ◆ Define character skeletons and use them to control their movement

### Module 2. Animation and Simulation

- ◆ Apply the use of animation and physics simulation libraries in video games
- ◆ Get to know how to use animation software for sound
- ◆ Assimilate the fundamental physics principles to simulate in a video game, the method of motion capture and the basic techniques of physical simulation
- ◆ Create a skeleton animation character

### Module 3. Character Rigging

- ◆ Prepare 3D elements for animation
- ◆ Apply physically correct deformations to 3D models
- ◆ Acquire skills in the use of digital tools
- ◆ Learn skills on character weighing for animation

03

# Structure and Content

This program has been designed so that students can acquire all the necessary skills and knowledge to become great video game animators. Throughout the Postgraduate Diploma in Animation and Rigging, students will learn about aspects such as character design and animation, 2D and 3D models, modeling, using specialized software, character rigging or animation from motion capture.





“

*The best content you'll find for animating video games is here”*

## Module 1. Character Design and Animation

- 1.1. Why is Aesthetics and Character Design so Important in Video Games?
  - 1.1.1. Design with Personality
  - 1.1.2. Sources of Inspiration. Referencing is not Plagiarism
  - 1.1.3. Filtering Reality
  - 1.1.4. Adopt your Own Style
- 1.2. 2D Phase: Alternative Use of Software or Hand Drawing
  - 1.2.1. Quick Sketch
  - 1.2.2. Cleanup
  - 1.2.3. Color
  - 1.2.4. Introduction
- 1.3. 2D Phase: Part I
  - 1.3.1. Archetypes
  - 1.3.2. Personality
  - 1.3.3. Style
  - 1.3.4. Basic Geometry
  - 1.3.5. Proportions and Anatomy
  - 1.3.6. Teamwork
- 1.4. 2D Phase: Part II
  - 1.4.1. Color Palettes
  - 1.4.2. Illumination and Contrast
  - 1.4.3. Level of Detail
  - 1.4.4. Adaptation to 2D Pipeline
- 1.5. 3D Modeling Phase: Concepts and Pipeline 3
  - 1.5.1. Modeling Adapted to Production
  - 1.5.2. Modeling for an Audiovisual Project
  - 1.5.3. Modeling for an Interactive Project
  - 1.5.4. 3D Pipeline: Phases





- 1.6. 3D Modeling Phase: Introduction to Blender
  - 1.6.1. Navigation
  - 1.6.2. Outliner and Viewport: Workbench Render
  - 1.6.3. Concept of Vertex, Edge and Face
  - 1.6.4. Concept of Normal
  - 1.6.5. Loops
- 1.7. 3D Modeling Phase: Basic Modeling Notions
  - 1.7.1. Extrude Tool
  - 1.7.2. Bevel Tool
  - 1.7.3. Apply Transformations
  - 1.7.4. Knife Tool
  - 1.7.5. Other Useful Tools
- 1.8. 3D Modeling Phase: Topology
  - 1.8.1. Edge Loops
  - 1.8.2. Face Loops
  - 1.8.3. Low-Poly vs. High-Poly
  - 1.8.4. Flow of Shapes
  - 1.8.5. Quads vs. Tris
- 1.9. 3D Modeling Phase: Textures, Materials and UVs
  - 1.9.1. Introduction to Nodes in Blender
  - 1.9.2. Basic Procedural Texture Creation
  - 1.9.3. Application of Materials
  - 1.9.4. UVs, What Are They?
  - 1.9.5. Utility of UVs
  - 1.9.6. Avoid Stretching in UVs and Optimization
- 1.10. 3D Phase Introduction to Animation
  - 1.10.1. AutoKey
  - 1.10.2. Insert Keys
  - 1.10.3. Animation Curves: Graph Editor
  - 1.10.4. Interpolation Modes

## Module 2. Animation and Simulation

- 2.1. Introduction: Physics and Mathematics Behind the Simulation
  - 2.1.1. Concepts Applied to Simulation
  - 2.1.2. Collisions, Volume Calculation
  - 2.1.3. Computing Time
  - 2.1.4. Prerendered vs. Real-Time Calculations
- 2.2. Methodology
  - 2.2.1. Emitter
  - 2.2.2. Collisions
  - 2.2.3. Fields
  - 2.2.4. Breakage
- 2.3. Rigid Body Dynamics
  - 2.3.1. Basic Concepts of Movement
  - 2.3.2. Force Management
  - 2.3.3. Interaction Between Objects
  - 2.3.4. Collisions
- 2.4. Non-Rigid Body Dynamics
  - 2.4.1. Fluid Simulation
  - 2.4.2. Smoke Simulation
  - 2.4.3. Effective Volume
  - 2.4.4. Real-Time Non-Rigid Body Simulation
- 2.5. Clothing Simulation
  - 2.5.1. Marvelous Designer
  - 2.5.2. Clothing Pattern References
  - 2.5.3. Wrinkles: Sculpted Clothing for Resource Savings
  - 2.5.4. Blender: ClothBrush
- 2.6. Hair Simulation
  - 2.6.1. Types of Particle Seism
  - 2.6.2. Technologies for Hair Simulation
  - 2.6.3. Particles vs. Mesh
  - 2.6.4. Resource Consumption
- 2.7. Motion Capture
  - 2.7.1. Motion Capture Technologies
  - 2.7.2. Motion Capture Refinement
  - 2.7.3. Application of Motion Capture to Audiovisual and Interactive Projects
  - 2.7.4. Mixamo
- 2.8. Motion Capture Software
  - 2.8.1. Kinect
  - 2.8.2. Implementation of Kinect in Video Games
  - 2.8.3. Refinement Technologies
  - 2.8.4. Other Motion Capture Software
- 2.9. Facial Capture
  - 2.9.1. FaceRig
  - 2.9.2. MocapX
  - 2.9.3. Advantages and Disadvantages of the Facial Capture
  - 2.9.4. Facial Capture Refinement
- 2.10. Future Technologies: Artificial Intelligence
  - 2.10.1. Artificial Intelligence in Animation: Cascadeur
  - 2.10.2. Artificial Intelligence in Simulation
  - 2.10.3. Future: Possible Alternatives
  - 2.10.4. Current Case Studies



## Module 3. Character Rigging

- 3.1. Functions of a Rigger. Knowledge of a Rigger. Rig Types
  - 3.1.1. What is a Rigger?
  - 3.1.2. Functions of a Rigger
  - 3.1.3. Knowledge of a Rigger
  - 3.1.4. Rig Types
  - 3.1.5. Blender Rigging Facilities
  - 3.1.6. First Contact with Bones and Constraints
- 3.2. Bone Chains and Bone Parenting. FK and IK Differences and Restrictions
  - 3.2.1. Bone Chains
  - 3.2.2. Bone Parenting
  - 3.2.3. FK and IK Chain
  - 3.2.4. Differences between FK and IK
  - 3.2.5. Use of Restrictions
- 3.3. Human Skeleton and Facial Rig. Shape Keys
  - 3.3.1. Human Skeleton
  - 3.3.2. Advanced Human Skeleton
  - 3.3.3. Facial Rig
  - 3.3.4. Shape Keys
- 3.4. Vertex Weighing. Complete Weighing of a Character and Creation of a Pose
  - 3.4.1. Weighing System
  - 3.4.2. Character Weighting: Face
  - 3.4.3. Character Weighting: Body
  - 3.4.4. Use of Pose Mode
- 3.5. Character Rig: IK-FK Column System
  - 3.5.1. Bone Location and Parenting
  - 3.5.2. FK Systems
  - 3.5.3. IK Systems
  - 3.5.4. Other Options
  - 3.5.5. Controls
- 3.6. Character Rig: IK-FK Arms System
  - 3.6.1. Bone Location and Parenting
  - 3.6.2. FK Systems
  - 3.6.3. IK Systems
  - 3.6.4. Other Options
  - 3.6.5. Controls
- 3.7. Character Rig: IK-FK Hands System
  - 3.7.1. Bone Location and Parenting
  - 3.7.2. FK Systems
  - 3.7.3. IK Systems
  - 3.7.4. Other Options
  - 3.7.5. Controls
- 3.8. Character Rig: IK-FK Leg System
  - 3.8.1. Bone Location and Parenting
  - 3.8.2. FK Systems
  - 3.8.3. IK Systems
  - 3.8.4. Other Options
  - 3.8.5. Controls
- 3.9. Facial
  - 3.9.1. Facial Setup
  - 3.9.2. Use of Shape Keys
  - 3.9.3. Use of Buttons
  - 3.9.4. Eye Configuration
  - 3.9.5. Squash and Head Stretch
- 3.10. Corrections of Facial Shape and Setup
  - 3.10.1. Shape Corrections
  - 3.10.2. Pose Mode
  - 3.10.3. Easy Weighing
  - 3.10.4. Getting the Rig Ready for Production

04

# 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.

“

*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.



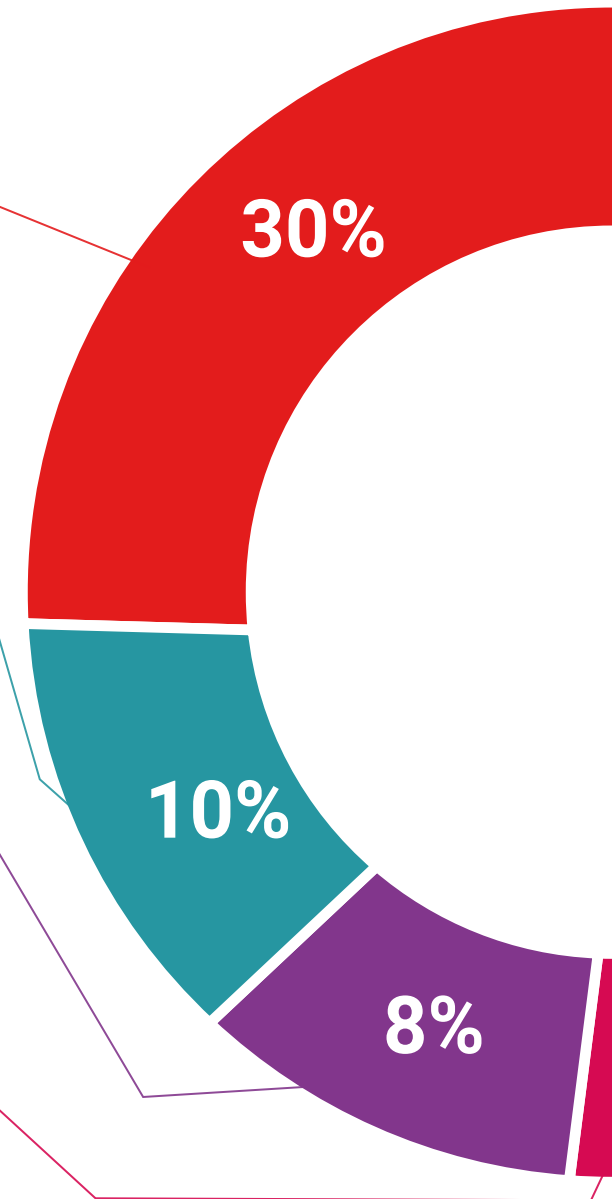
### Practising Skills and Abilities

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.



# 05 Certificate

The Postgraduate Diploma in Animation and Rigging guarantees you, in addition to the most rigorous and up-to-date training, access to a Postgraduate Diploma issued by TECH Technological University.



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

This **Postgraduate Diploma in Animation and Rigging** contains the most complete and up-to-date 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 Animation and Rigging**

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 Animation and Rigging

- » Modality: **online**
- » Duration: **6 months**
- » Certificate: **TECH Technological University**
- » Dedication: **16h/week**
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