

# Postgraduate Diploma Advanced Facial Rigging



## Postgraduate Diploma Advanced Facial Rigging

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

Website: [www.techtute.com/pk/videogames/postgraduate-diploma/postgraduate-diploma-advanced-facial-rigging](http://www.techtute.com/pk/videogames/postgraduate-diploma/postgraduate-diploma-advanced-facial-rigging)

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Certificate

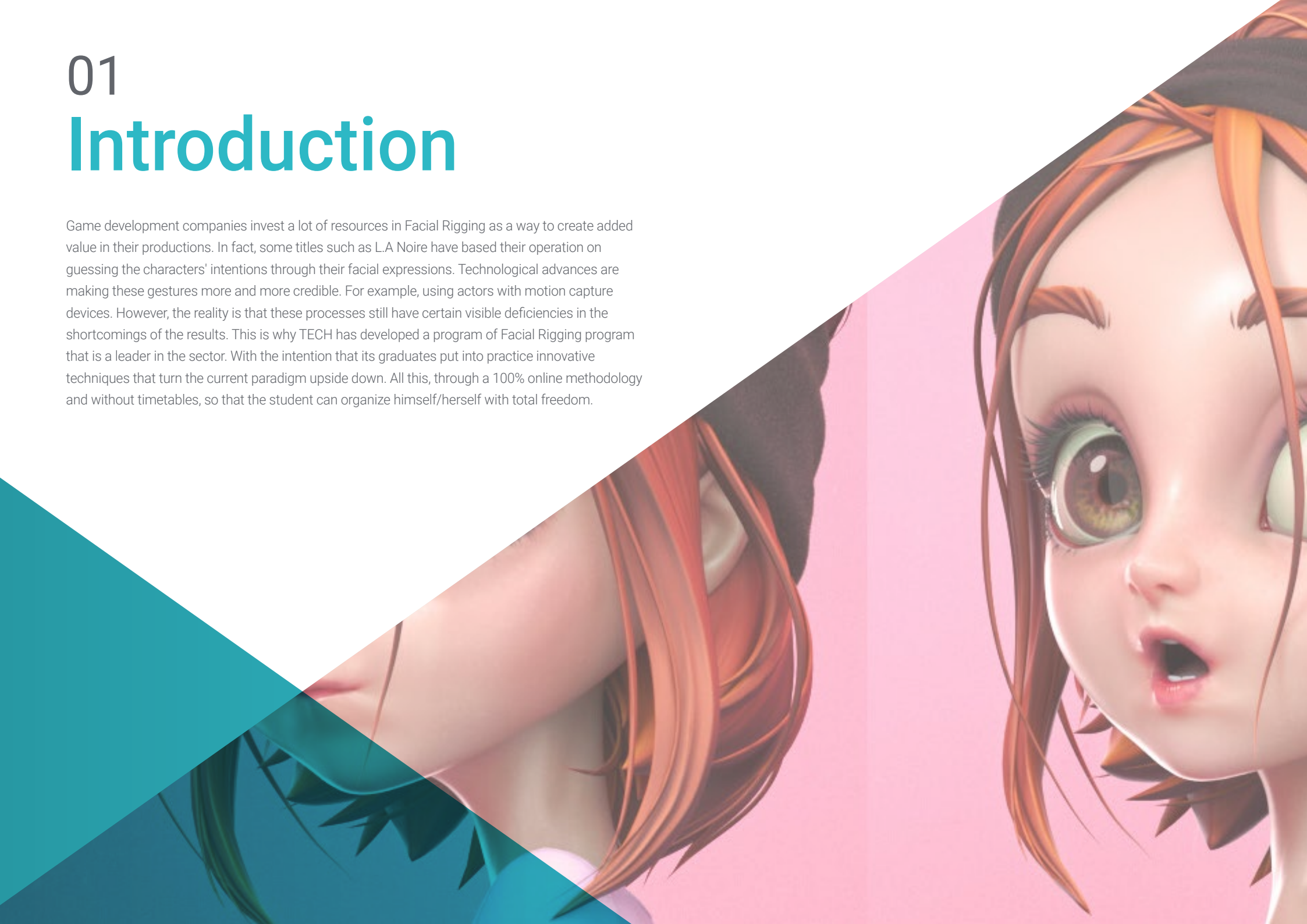
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# 01

# Introduction

Game development companies invest a lot of resources in Facial Rigging as a way to create added value in their productions. In fact, some titles such as L.A Noire have based their operation on guessing the characters' intentions through their facial expressions. Technological advances are making these gestures more and more credible. For example, using actors with motion capture devices. However, the reality is that these processes still have certain visible deficiencies in the shortcomings of the results. This is why TECH has developed a program of Facial Rigging program that is a leader in the sector. With the intention that its graduates put into practice innovative techniques that turn the current paradigm upside down. All this, through a 100% online methodology and without timetables, so that the student can organize himself/herself with total freedom.







“

*A video game with highly realistic facial expressions has its place in the market. For this reason, TECH has introduced in this Postgraduate Diploma the most innovative techniques and tools”*

Faces are, without a doubt, the main focus of attention in any production. And this applies to both film and video games. Misfortunes such as the death of Paul Walker during the filming of *Fast and Furious* highlighted the importance of Facial Rigging. For this technique became essential in order not to get to the point of canceling the movie. This is just one extreme example of the application of this technique, which is more prevalent in the industry than you might think.

This qualification will prepare the professional for one of the most complex tasks of the rigger. Due to the diversity of systems and deformations that occur in the same area of the character. An anatomical study of the muscles and expressions will be made, we will analyze separately each of the parts of the face and we will focus on the rigging of the hair, both geometric and realistic, the latter generated through the XGen tool.

The syllabus also includes deformation rigging and body control rigging, as a complement to facial rigging. The former will provide the animator with an accessible and intuitive Set-Up to develop character animations. While the second will provide the characters with a skeleton that articulates and deforms their geometry. In addition, this last part will teach different methodologies to develop the system in the most logical and intuitive way.

These contents will be available in their entirety from the first day and will be offered in a 100% online mode. In addition, the Postgraduate Diploma has no timetable so that students can organize it according to their own schedule and thus promote work-life balance.

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

- ◆ The development of case studies presented by experts in Body Rigging
- ◆ 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



*A good facial representation will make your video game stand out. That's why development companies are in continuous search of Riggers with the learning that TECH provides"*

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*This qualification puts at the student's all the knowledge, techniques and tools that companies are demanding from their Riggers"*

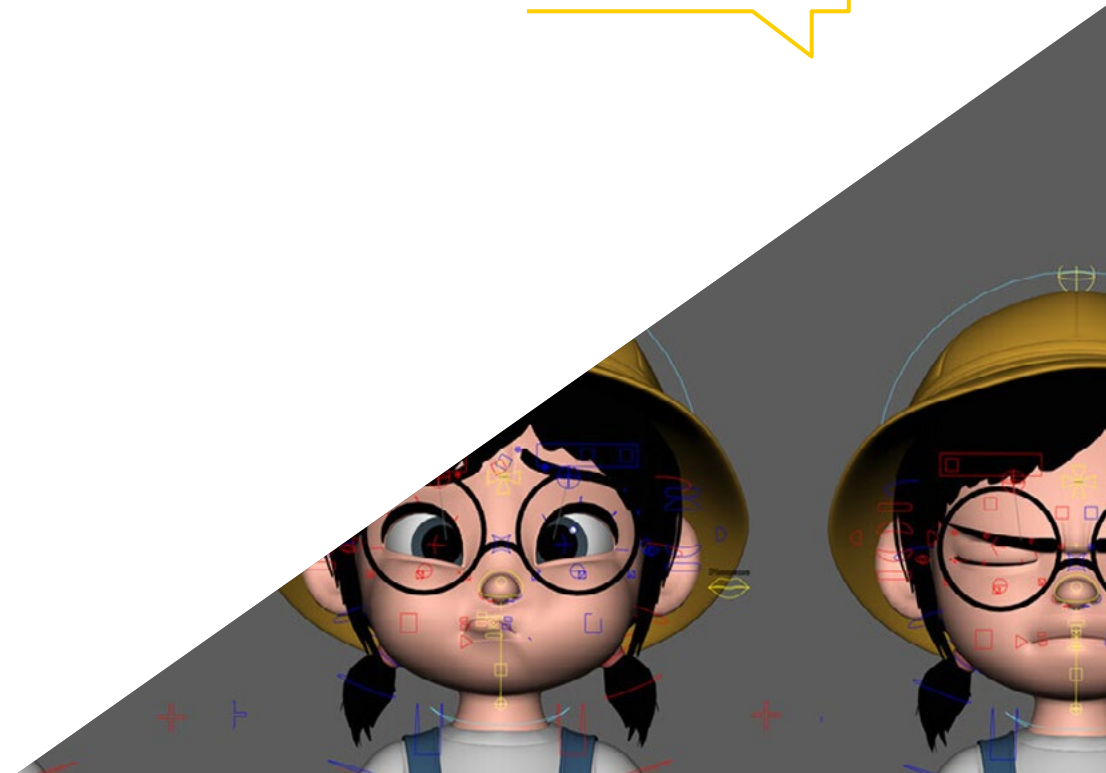
The program includes, in its teaching staff, professionals from the sector who bring to this program the experience of their work, in addition to recognized specialists from prestigious reference societies and universities.

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. For this purpose, the student will be assisted by an innovative interactive video system created by renowned and experienced experts.

*Develop Blend Shapes systems, from modeling to configuration.*

*The program includes the development of customized scripts, essential in the Rigger's work.*



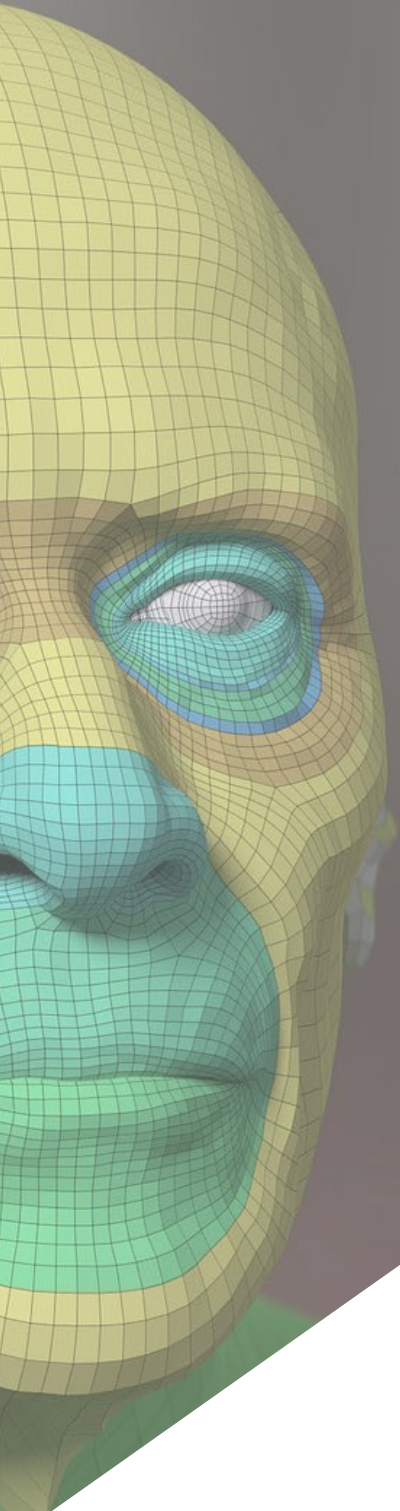


# 02 Objectives

Students who take the Postgraduate Diploma in Advanced Facial Rigging will be able to develop facial Rigs and connect them with the rest of the Rig elements. Anatomy and human expressions will be analyzed, different types of facial rig deformation and control systems will be introduced, Blend Shapes systems will be developed from start to finish and the different facial elements will be studied in depth. The program also includes content on body control, Python tools and body deformation to provide the graduate with a complete learning experience.







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*TECH provides you with the keys to link objects through the Set Driven Key tool, as well as its functionalities”*



## General Objectives

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- ◆ Develop Facial Rigs
- ◆ Working on projects requiring Blend Shapes
- ◆ Automate processes related to facial rigging
- ◆ Understand the relationship between body deformation rigging and the bone system
- ◆ Familiarization with body control Rigging
- ◆ Introduction to the Python programming language

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*Developing a good facial rig requires an in-depth anatomical study, which is why a specific topic has been reserved for this field”*





## Specific Objectives

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### Module 1. Advanced Facial Rigging

- ◆ Identify and analyze the anatomy and facial expressions of the human body
- ◆ Introduce different types of Rig facial deformation systems
- ◆ Introduce different types of facial rig control systems
- ◆ Develop Blend Shapes systems, from modeling to configuration
- ◆ Developing a rig system for jaw and tongue
- ◆ Develop an advanced lip rig system with Sticky Lips capability
- ◆ Developing eye rig and eyelid movement
- ◆ Automate facial systems
- ◆ Incorporate dynamic systems for character hair rigging
- ◆ Connecting the facial rig to the body rig

### Module 2. Body Control Rigging and Tool Creation with Python

- ◆ Highly knowledgeable about the functions that a control rig has and its relevance
- ◆ Master the standard nomenclature of the elements in the industry
- ◆ Create and edit NURBS type curve elements for the creation of controls for the Rig
- ◆ Analyze the character to propose a suitable control Rig
- ◆ Configure the controls properly to facilitate the animation phase
- ◆ Conceive Constrain tools and their possibilities
- ◆ Introduce the Python programming language for tool creation in Autodesk Maya
- ◆ Develop custom Scripts for Rigging work

### Module 3. Body Deformation Rigging

- ◆ Know the deformation rigging and its relevance
- ◆ To set up the bone system by studying the pose of the model
- ◆ Conceive the possible errors that can occur in deformation Rigging
- ◆ Create in a professional way a bone chain by means of Joints type elements
- ◆ Know how to correctly orient and place bones in the deformation system
- ◆ Perform a correct methodology in the painting process to understand the influences on the geometry
- ◆ Conceive how all the tools available in Autodesk Maya work for Skinning work

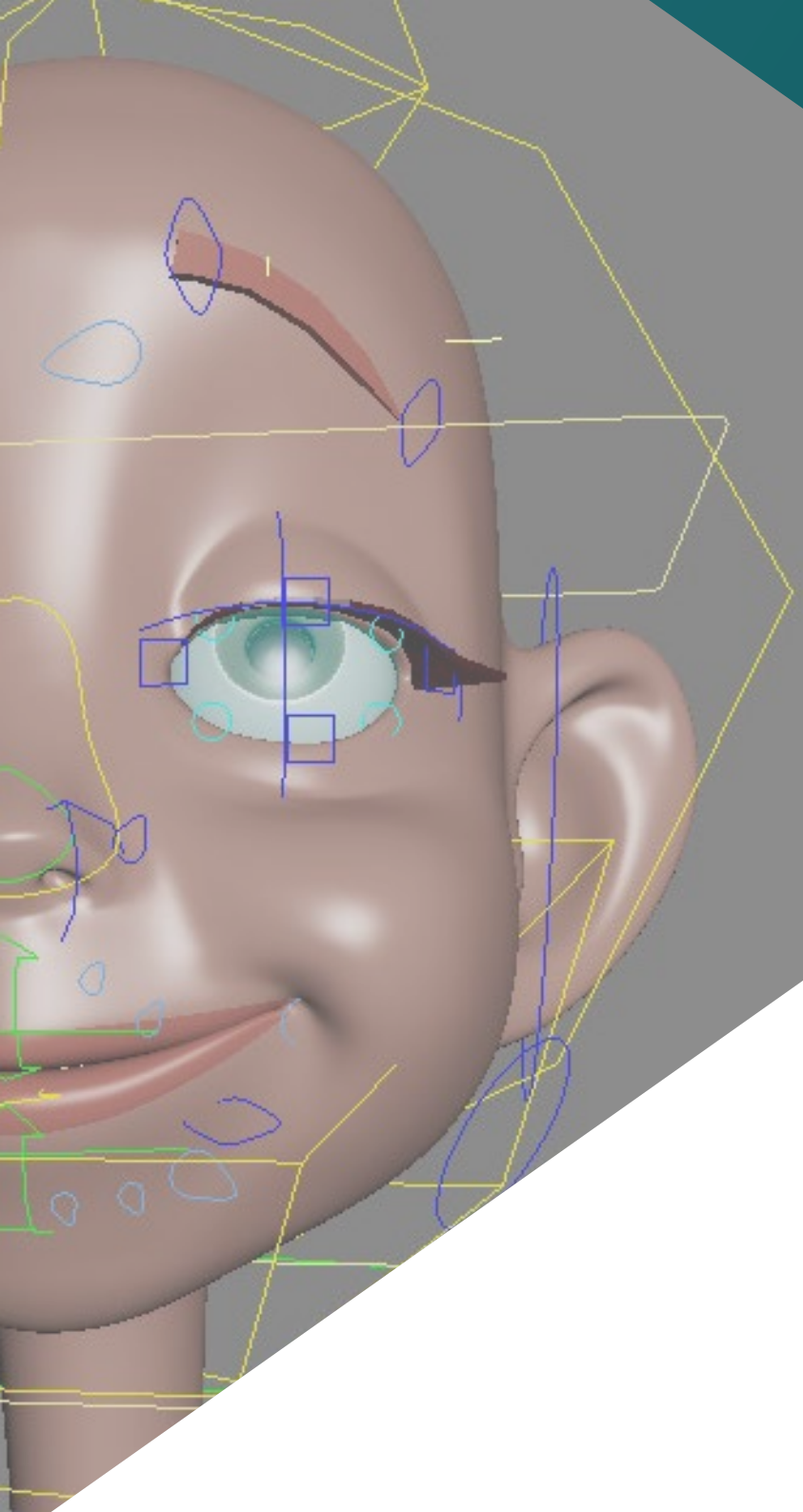


# 03

# Course Management

Generating facial expressions requires a very specific technique that is highly valued in the market. For this reason, professionals with a proven track record in the field of Rigging have been selected to direct this Postgraduate Diploma. So that students can raise not only theoretical questions, but also practical doubts closely related to the performance of the work activity.





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*The most crucial questions arise in the course of project development. That's why TECH offers you professionals with a wide working background"*

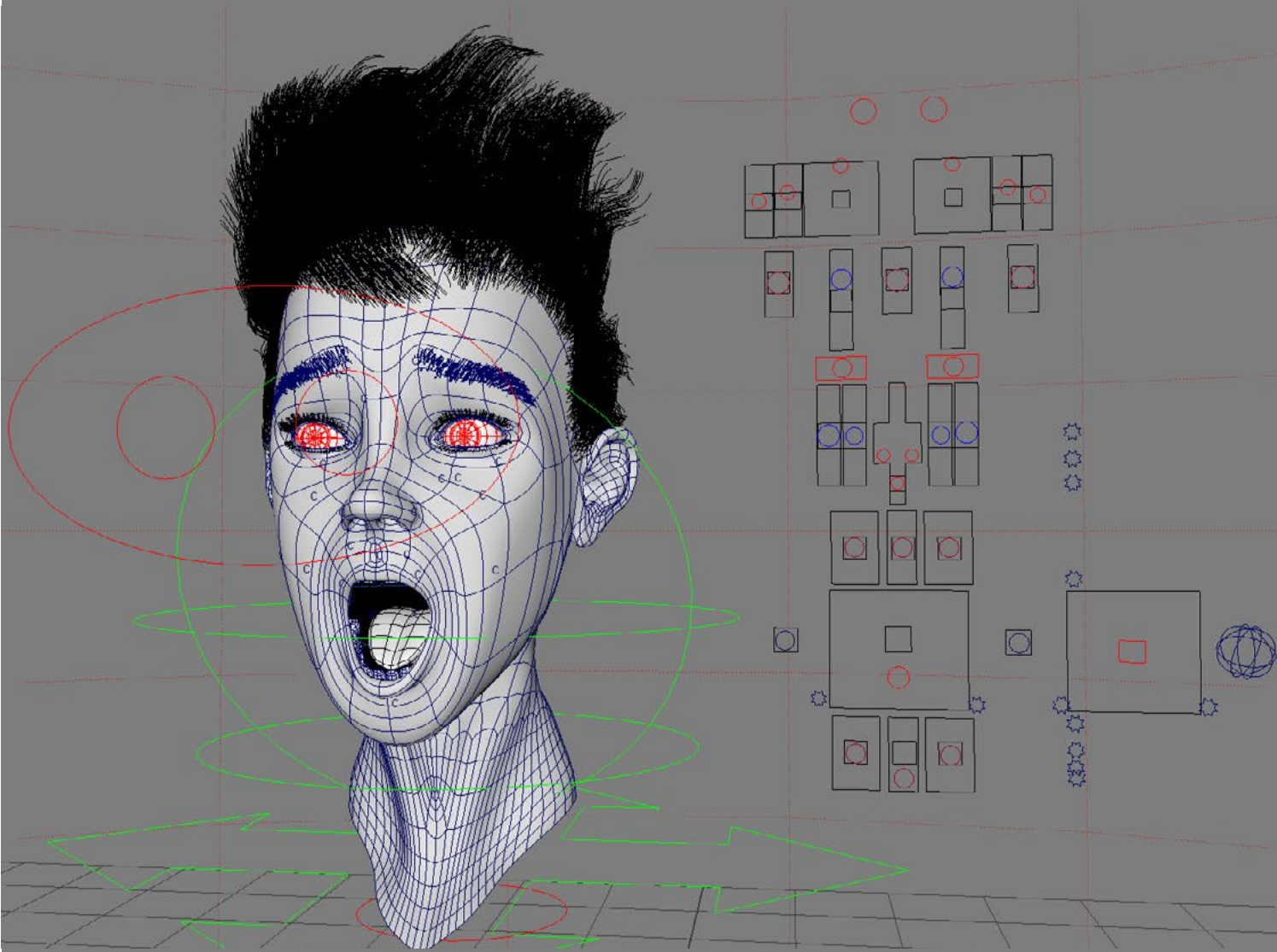
## Management



### Mr. Guerrero Cobos, Alberto

- Rigger and animator Video Games videogame Vestigion Lovem Games
- Master of Art and Production in Animation by the University of South Wales
- Master in 3D Character Modeling at ANIMUM
- Master in 3D Character Animation for Film and Video Games by ANIMUM
- Degree in Multimedia and Graphic Design at the University School of Design and Technology (ESNE)





# 04

## Structure and Content

The structure of this program focuses on facial rigging, but contextualizing it with other elements of vital importance for the work of a rigger. The qualification will teach the methods of deformation and facial control through very useful tools in this field such as Set Driven Key. In addition to complex systems such as Sticky Lips and systems for XGen-generated hair. Specific modules have also been set aside to discuss the fundamentals of control rigging; Python variables, functions and loops for rigging; and a review of body deformation models and systems.





“

*In TECH you will learn all about joystick control set-up to take your rigging skills to the next level"*



## Module 1. Advanced Facial Rigging

- 1.1. Facial Rig
  - 1.1.1. Deformation Methods
  - 1.1.2. Control Methods
  - 1.1.3. Facial Expression Study
- 1.2. Facial Rigging Using Blend Shapes
  - 1.2.1. Key Shapes Facial Partition
  - 1.2.2. Muscle Movement Modeling
  - 1.2.3. Deformation Distribution Blend Shapes
- 1.3. Facial Control Rigging
  - 1.3.1. Joystick Controls Set-Up
  - 1.3.2. Facial Controls
  - 1.3.3. Set Driven Key Tool
- 1.4. Jaw and Tongue Rigging
  - 1.4.1. Anatomical Study and Approach
  - 1.4.2. Jaw Deformation and Jaw Control
  - 1.4.3. Tongue Deformation and Control
- 1.5. Lip Rigging
  - 1.5.1. System Approach
  - 1.5.2. Deformer Wire and Controls
  - 1.5.3. Painting of Influences
- 1.6. Sticky Lips System
  - 1.6.1. Sticky Lips
  - 1.6.2. System Approach
  - 1.6.3. Development
- 1.7. Automation
  - 1.7.1. Benefits and Examples of Facial Automation
  - 1.7.2. Approach
  - 1.7.3. Development
- 1.8. Eye and Eyelid Rigging
  - 1.8.1. Approach
  - 1.8.2. Deformation Rigging and Eye Control
  - 1.8.3. Eyelid System

- 1.9. Hair Rig
  - 1.9.1. Hair Systems
  - 1.9.2. Geometric Hair System
  - 1.9.3. XGen Generated Hair System
- 1.10. Connection of Facial Rig to Body Rig
  - 1.10.1. Rig System Analysis
  - 1.10.2. Deformer Hierarchy
  - 1.10.3. Hierarchy and Prevention of Double Transformations

## Module 2. Body Control Rigging and Tool Creation with Python

- 2.1. Fundamentals of Control Rigging
  - 2.1.1. Function of Control Rigging
  - 2.1.2. System Approach
  - 2.1.3. Elements of ControlRigging
- 2.2. NURBS Curves
  - 2.2.1. NURBS
  - 2.2.2. Predefined NURBS curves
  - 2.2.3. NURBS curve editing
- 2.3. Creation of Controls on the Human Body
  - 2.3.1. Fundamentals
  - 2.3.2. Location
  - 2.3.3. Shape and Color
- 2.4. Set Initial Position of Controls
  - 2.4.1. Function of Drones
  - 2.4.2. Approach
  - 2.4.3. Matching Process
- 2.5. Constraint Elements
  - 2.5.1. Constraints
  - 2.5.2. Types of Constraints
  - 2.5.3. Constraints use in the Rigging
- 2.6. Connect Deformation Rigging to Control Rigging
  - 2.6.1. Approach
  - 2.6.2. Parent Constrain connection process
  - 2.6.3. Hierarchy of elements and final solution

- 2.7. Script Editor
  - 2.7.1. Script Editor Tool
  - 2.7.2. Maya Command Libraries for Python
  - 2.7.3. Create Custom Tools with Programming
- 2.8. Python Fundamentals for Rigging
  - 2.8.1. Variables
  - 2.8.2. Functions
  - 2.8.3. Loops
- 2.9. Create Roots automatically with Python
  - 2.9.1. Approach
  - 2.9.2. Required Commands
  - 2.9.3. Line-by-Line Execution
- 2.10. On and Off Script Rigging of Deformation and Control
  - 2.10.1. Approach
  - 2.10.2. Required Commands
  - 2.10.3. Line-by-Line Execution

### Module 3. Body Deformation Rigging

- 3.1. Systems and Models
  - 3.1.1. Revision of the Model
  - 3.1.2. System Vulnerabilities
  - 3.1.3. Joints Nomenclatures
- 3.2. Joints Chain Creation
  - 3.2.1. Joints Editing Tools
  - 3.2.2. Factors to Consider
  - 3.2.3. Location and Hierarchy of Joints
- 3.3. Joints Orientation
  - 3.3.1. The Importance of a Correct Orientation
  - 3.3.2. Joints Orientation tools
  - 3.3.3. Symmetry of Joints
- 3.4. Skinning
  - 3.4.1. Skeleton to Geometry Linking
  - 3.4.2. Influence Painting Tools
  - 3.4.3. Symmetry of Influences in the Model

- 3.5. Painting of Influences Absolutes
  - 3.5.1. Influence Painting Process Approach
  - 3.5.2. Influences on Body Parts between Two Joints
  - 3.5.3. Influences on Body Parts between Three or More Joints
- 3.6. Smoothed Lower Body Influences of the Character
  - 3.6.1. Joint Movements
  - 3.6.2. Animations for Influence Smoothing
  - 3.6.3. Smoothing Process
- 3.7. Smoothed Upper Body Influences
  - 3.7.1. Joint Movements
  - 3.7.2. Animations for Influence Smoothing
  - 3.7.3. Smoothing Process
- 3.8. Smoothed Influences Arm and Hand
  - 3.8.1. Joint Movements
  - 3.8.2. Animations for Influence Smoothing
  - 3.8.3. Smoothing Process
- 3.9. Smoothed Clavicle Influences
  - 3.9.1. Joint Movements
  - 3.9.2. Animations for Influence Smoothing
  - 3.9.3. Smoothing Process
- 3.10. Skinning End Processes
  - 3.10.1. Reflection of Symmetrical Influences
  - 3.10.2. Error Correction with Deformers
  - 3.10.3. Skin Cluster Deformation Baking

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 Advanced Facial Rigging 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 Advanced Facial 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 Advanced Facial 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  
development language  
virtual classroom



## Postgraduate Diploma Advanced Facial Rigging

- » Modality: online
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