

# Postgraduate Diploma 3D Hair Creation and Clothing Simulation





## Postgraduate Diploma 3D Hair Creation and Clothing Simulation

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

Website: [www.techtute.com/us/information-technology/postgraduate-diploma/postgraduate-diploma-3d-hair-creation-clothing-simulation](http://www.techtute.com/us/information-technology/postgraduate-diploma/postgraduate-diploma-3d-hair-creation-clothing-simulation)

# Index

01

Introduction

---

*p. 4*

02

Objectives

---

*p. 8*

03

Course Management

---

*p. 12*

04

Structure and Content

---

*p. 18*

05

Methodology

---

*p. 22*

06

Certificate

---

*p. 30*



# 01

# Introduction

Nowadays, 3D design has become one of the most fundamental sectors in terms of technology and architecture. 3D software is essential to be able to develop design and modeling projects. Therefore, this qualification will teach the student to create any type of hair and clothing, either for video games or for cinema, in the most professional way. For this purpose, under a 100% online modality, you will learn the basics of hair creation and, based on the practice of different styles, you will become a professional in terms of hair.





“

*You will create characters that are as real as possible, both for video games and film projects"*

Marvelous Designer is a perfect software for the creation of fabrics either for Real-Time or for movies, but it is practically not taught or at least not deepened due to its complexity with the patterns. Therefore, this Postgraduate Diploma will teach the graduate to use this software to understand the characteristics of clothing, its seams, folds, zippers and how they affect all of these with movement.

Also, *Blender* is here to stay, as it is increasingly being implemented in the 3D modeling industry. In order for students not to be left behind, whether for a personal or indie production, or for a large production that implements this software in its workflow, this qualification will teach all its tools so that students are up to date and prepared for any situation with the latest software on the market.

Additionally, as it is an online program, students are not conditioned by fixed schedules or the need to move to another physical location. You will have access to a rich content that will help you reach the 3D modeling elite at any time of the day, balancing, at your own pace, your work and personal life with your academic life.

This **Postgraduate Diploma in 3D Hair Creation and Clothing Simulation** 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 3D Hair Modeling and Clothing Simulation
- ◆ 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



*Master the fundamental aspects of hair and clothing of 3D models and become a reference when it comes to bringing realism to the characters"*



“

*You'll lay the foundations of hair creation and, by practicing different styles, you'll become a professional when it comes to hair”*

The program's teaching staff includes professionals from the sector who bring to this program the experience of their work, as well as renowned specialists from reference societies and prestigious universities.

Its multimedia content, developed with the latest educational technology, will allow the professional a situated and contextual learning, that is, a simulated environment that will provide immersive education programmed to learn in real situations.

The design of this program focuses on Problem-Based Learning, by means of which the professional must try to solve the different situations of professional practice that may arise throughout the academic course. For this purpose, students will be assisted by an innovative interactive video system developed by renowned experts.

*You will learn more about Marvelous Designer, the perfect software for the creation of fabrics for both Real-Time and films.*

*This qualification will keep you up to date and prepared for any situation with the latest software on the market.*



# 02 Objectives

The program design of this Postgraduate Diploma will allow the graduate to expand their knowledge in the 3D creation of hair and simulated clothing, through the mastery of Blender software, one of the most innovative in the industry. All this, under the creation of an optimal and dynamic work, acquiring the most demanded skills and knowledge in the 3D industry.







“

*You will excel in Blender software and transfer your knowledge of Maya and ZBrush to it to create amazing 3D models"*



## General Objectives

---

- ◆ Expand knowledge of human and animal anatomy in order to develop hyper-realistic creatures
- ◆ Master the retopology, UVS and texturing to perfect the models created
- ◆ Create an optimal and dynamic workflow to work more efficiently with 3D modeling
- ◆ Have the skills and knowledge most in demand in the 3D industry to be able to apply for the best jobs



*You will analyze the texturing and shading of clothes and fabrics in Mari to create the characters of your dreams"*





## Specific Objectives

---

### Module 1. Hair Creation for Video Games and Movies

- ◆ Delve into the advanced use of XGen in Maya
- ◆ Create hair for movies
- ◆ Study hair using Cards for video games
- ◆ Develop your own hair textures
- ◆ See the different use of hairbrushes in ZBrush

### Module 2. Clothing Simulation

- ◆ Study at Marvelous Designer
- ◆ Create fabric simulations in Marvelous Designer
- ◆ Practice different types of complex patterns in Marvelous Designer
- ◆ Delve into the Workflow of professional work from Marvelous to ZBrush
- ◆ Develop the texturing and shading of clothes and fabrics in Mari

### Module 3 Blender: a new twist in the industry

- ◆ Outstanding software performance
- ◆ Transfer knowledge of Maya and ZBrush to Blender to create amazing models
- ◆ Delve into Blender's node system to create different shaders and materials
- ◆ Render Blender practice models with the two types of render engines Eevee and Cycles



03

# Course Management

TECH has selected teachers who have extensive experience in different types of design work for both the video game industry and for animation and scene creation in various projects. Thanks to this professional experience, the student benefits from studying a theory adapted to the realities of today's market, mastering the aspects most in demand by companies and that are not taught in traditional computer science faculties.







“

*You will learn from the best how to create the most realistic looking characters possible to excel in the 3D modeling industry"*

## International Guest Director

Joshua Singh is a leading professional with over 20 years of experience in the video game industry, internationally recognized for his skills in art direction and visual development. With solid training in software such as Unreal, Unity, Maya, ZBrush, Substance Painter and Adobe Photoshop, he has made a significant mark in the field of game design. In addition, his experience spans visual development in both 2D and 3D, and is distinguished by his ability to collaboratively and thoughtfully solve problems in production environments.

In addition, as Art Director at Marvel Entertainment, he has collaborated with and guided elite teams of artists, ensuring that the artwork meets the required quality standards. He has also served as Lead Character Artist at Proletariat Inc. where he has created a safe environment for his team and has been responsible for all character assets in video games.

With an outstanding track record, including leadership roles at companies such as Wildlife Studios and Wavedash Games, Joshua Singh has been an advocate for artistic development and a mentor to many in the industry. Not to mention his time at large and well-known companies, such as Blizzard Entertainment and Riot Games, where he has worked as a Senior Character Artist. And, among his most relevant projects, stands out for his participation in hugely successful video games, including Marvel's Spider-Man 2, League of Legends and Overwatch.

Thus, his ability to unify the vision of Product, Engineering and Art has been fundamental to the success of numerous projects. Beyond his work in the industry, he has shared his experience as an instructor at the prestigious Gnomon School of VFX and has been a presenter at renowned events such as the Tribeca Games Festival and the ZBrush Summit.





## D. Singh, Joshua

---

- Art Director at Marvel Entertainment, California, USA
- Lead Character Artist at Proletariat Inc
- Art Director at Wildlife Studios
- Art Director at Wavedash Games
- Senior Character Artist at Riot Games
- Senior Character Artist at Blizzard Entertainment
- Artist at Iron Lore Entertainment
- 3D Artist at Sensory Sweep Studios
- Senior Artist at Wahoo Studios/Ninja Bee
- General Studies from Dixie State University
- Degree in Graphic Design from Eagle Gate Technical College

“

*Thanks to TECH, you will be able to learn with the best professionals in the world”*

## Management



### Ms. Gómez Sanz, Carla

- 3D Generalist at Blue Pixel 3D
- Concept Artist, 3D Modeler, Shading in Timeless Games Inc
- Collaboration with multinational consulting firm for the design of vignettes and animation for commercial proposals
- Advanced Technician in 3D Animation, video games and interactive environments at CEV School of Communication, Image and Sound
- Master's Degree and Bachelor's Degree in 3D Art, Animation and Visual Effects for video games and cinema at CEV School of Communication, Image and Sound





# 04

# Structure and Content

The syllabus has been designed based on the requirements of computer science applied to the specificity of the organic 3D modeling sector, therefore bringing together a study plan whose modules offer a broad perspective of anatomy, reprotology and Maya Modeling, as well as UVS and texturing with Allegorithmic Substance Painter and Mari. Likewise, Blender software will be used for functions such as sculpting and texture placement, among others.





“

*Implement Blender in your Workflow  
whether for a personal or indie  
production, or for a large production”*



## Module 1. Hair Creation for Video Games and Movies

- 1.1. Differences Between Videogame Hair and Film Hair
  - 1.1.1. FiberMesh and Cards
  - 1.1.2. Tools for Hair Creation
  - 1.1.3. Hair Software
- 1.2. ZBrush Hair Sculpting
  - 1.2.1. Basic Shapes for Hairstyles
  - 1.2.2. Creating Brushes in ZBrush for Hair
  - 1.2.3. Curve Brushes
- 1.3. Hair Creation in XGen
  - 1.3.1. XGen
  - 1.3.2. Collections and Descriptions
  - 1.3.3. Hair vs. Grooming
- 1.4. XGen Modifiers: Adding Realism to Hair
  - 1.4.1. Clumping
  - 1.4.2. Coil
  - 1.4.3. Hair Guides
- 1.5. Color and Region Maps:: for Absolute Hair Control
  - 1.5.1. Maps of Hair Regions
  - 1.5.2. Cuts: Curly, Shaved and Long Hair
  - 1.5.3. Micro Detail: Facial Hair
- 1.6. Advanced XGen: Use of Expressions and Refinement
  - 1.6.1. Expressions
  - 1.6.2. Utilities
  - 1.6.3. Hair Refinement
- 1.7. Cards Placement in Maya for Videogame Modeling
  - 1.7.1. Fibers in *Cards*
  - 1.7.2. Cards by Hand
  - 1.7.3. Cards and Real-Time Engine
- 1.8. Optimization for Movies
  - 1.8.1. Optimization of the Hair and its Geometry
  - 1.8.2. Preparation for Physics with Movements
  - 1.8.3. XGen Brushes

- 1.9. Hair Shading
  - 1.9.1. Arnold Shader
  - 1.9.2. Hyper-Realistic Look
  - 1.9.3. Hair Treatment
- 1.10. Render
  - 1.10.1. Rendering When Using XGen
  - 1.10.2. Lighting
  - 1.10.3. Noise Elimination

## Module 2. Clothing Simulation

- 2.1. Importing your Model to Marvelous Designer and Program Interface
  - 2.1.1. Marvelous Designer
  - 2.1.2. Software Functionality
  - 2.1.3. Real-Time Simulations
- 2.2. Creation of Simple Patterns and Clothing Accessories
  - 2.2.1. Creations: T-shirts, Accessories, Hats and Pockets
  - 2.2.2. Fabric
  - 2.2.3. Patterns, Zippers and Seams
- 2.3. Advanced Clothing Creation: Complex Patterns
  - 2.3.1. Pattern Complexity
  - 2.3.2. Physical Qualities of Fabrics
  - 2.3.3. Complex Accessories
- 2.4. Clothing Simulation at Marvelous
  - 2.4.1. Animated Models at *Marvelous*
  - 2.4.2. Fabric Optimization
  - 2.4.3. Model Preparation
- 2.5. Export of Clothing from Marvelous Designer to ZBrush
  - 2.5.1. Low Poly in Maya
  - 2.5.2. UVs in Maya
  - 2.5.3. ZBrush, Use of Reconstruct Subdiv
- 2.6. Refinement of Clothing
  - 2.6.1. Workflow
  - 2.6.2. Details in ZBrush
  - 2.6.3. Clothing Brushes in ZBrush



- 2.7. Improve the Simulation with ZBrush
    - 2.7.1. From Tris to Quads
    - 2.7.2. UV Maintenance
    - 2.7.3. Final Carving
  - 2.8. High Detail Clothing Texturing in Mari
    - 2.8.1. Tileable Textures and Fabric Materials
    - 2.8.2. Baking
    - 2.8.3. Texturing in Mari
  - 2.9. Maya Fabric Shading
    - 2.9.1. Shading
    - 2.9.2. Textures Created in Mari
    - 2.9.3. Realism with Arnold *Shaders*
  - 2.10. Render
    - 2.10.1. Clothing Rendering
    - 2.10.2. Illumination in Clothing
    - 2.10.3. Texture Intensity
- Module 3. Blender: a New Twist in the Industry**
- 3.1. Blender vs. ZBrush
    - 3.1.1. Advantages and Differences
    - 3.1.2. Blender and the 3D Art Industry
    - 3.1.3. Advantages and Disadvantages of Freeware
  - 3.2. Blender Interface and Program Knowledge
    - 3.2.1. Interface
    - 3.2.2. Customization
    - 3.2.3. Experimentation
  - 3.3. Head Sculpting and Transpolation of Controls from ZBrush to Blender
    - 3.3.1. The Human Face
    - 3.3.2. 3D Sculpting
    - 3.3.3. Blender Brushes
  - 3.4. Full Body Sculpting
    - 3.4.1. The Human Body
    - 3.4.2. Advanced Techniques
    - 3.4.3. Detail and Refinement
  - 3.5. Retopology and UV's in Blender
    - 3.5.1. Retopology
    - 3.5.2. UVs
    - 3.5.3. Blender UDIMs
  - 3.6. From Maya to Blender
    - 3.6.1. Hard Surface
    - 3.6.2. Modifiers
    - 3.6.3. Keyboard Shortcuts
  - 3.7. Blender Tips & Tricks
    - 3.7.1. Range of Possibilities
    - 3.7.2. Geometry Nodes
    - 3.7.3. Workflow
  - 3.8. Nodes in Blender: Shading and Texture Placement
    - 3.8.1. Nodal System
    - 3.8.2. Shaders Through Nodes
    - 3.8.3. Textures and Materials
  - 3.9. Rendering in Blender with Cycles and Eevee
    - 3.9.1. Cycles
    - 3.9.2. Eevee
    - 3.9.3. Lighting
  - 3.10. Implementation of Blender in our Workflow as Artists
    - 3.10.1. Implementation in the Workflow
    - 3.10.2. Search for Quality
    - 3.10.3. Types of Exports

# 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.*



### A learning method that is different and innovative

This TECH program is an intensive educational program, created from scratch, which presents the most demanding challenges and decisions in this field, both nationally and internationally. This methodology promotes personal and professional growth, representing a significant step towards success. The case method, a technique that lays the foundation for this content, ensures that the most current economic, social and professional reality is taken into account.

“*Our program prepares you to face new challenges in uncertain environments and achieve success in your career”*

*The student will learn to solve complex situations in real business environments through collaborative activities and real cases.*

The case method has been the most widely used learning system among the world's leading Information Technology 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. Throughout the course, students will be presented with multiple real cases. They will have to combine all their knowledge and research, and argue and defend their ideas and decisions.

## Relearning Methodology

TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 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 that we are experiencing.



### Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.





#### Case Studies

Students will complete a selection of the best case studies chosen specifically for this program. Cases that are presented, analyzed, and supervised by the best specialists in the world.



#### Interactive Summaries

The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



#### Testing & Retesting

We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises, so that they can see how they are achieving their goals.





06

# Certificate

The Postgraduate Diploma in 3D Hair Creation and Clothing Simulation guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma issued by TECH Global University.



“

*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 3D Hair Creation and Clothing Simulation** 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 3D Hair Creation and Clothing Simulation**

Modality: **online**

Duration: **6 months**

Accreditation: **18 ECTS**



\*Apostille Convention. In the event that the student wishes to have their paper diploma issued with an apostille, TECH Global University will make the necessary arrangements to obtain it, at an additional cost.



future

health confidence people

education information tutors

guarantee accreditation teaching

institutions technology learning

community commitment

personalized service innovation

knowledge present

online training

development language

virtual classroom

**tech** global  
university

## Postgraduate Diploma 3D Hair Creation and Clothing Simulation

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

# Postgraduate Diploma 3D Hair Creation and Clothing Simulation

