

# Postgraduate Certificate Modeling and File Preparation for 3D Printing



## Postgraduate Certificate Modeling and File Preparation for 3D Printing

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Global University
- » Accreditation: 6 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/us/design/postgraduate-certificate/modeling-file-preparation-3d-printing](http://www.techtute.com/us/design/postgraduate-certificate/modeling-file-preparation-3d-printing)

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# 01

# Introduction to the Program

Modeling and File Preparation for 3D Printing is a key field in the technological revolution that has transformed various sectors of great importance today. In fact, a new study by the International Monetary Fund predicts that the adoption of these systems will increase by up to 35% in the coming years. To take advantage of these opportunities, specialists need to gain a competitive edge to differentiate themselves in the market and create customized solutions that stand out for both their innovation and functionality. With this in mind, TECH is launching an exclusive university program focused on this area of Additive Manufacturing. It is based on a convenient 100% online format with free access to educational content.



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*Through this completely online program, you will master the most innovative strategies for optimizing Modeling and File Preparation for 3D Printing”*

The ability to create digital models suitable for 3D printing has become indispensable in various industries, enabling the precise and customized manufacturing of products. In fact, this technology facilitates rapid prototyping, part customization, and improved production processes, thereby contributing to greater efficiency and cost reduction. Furthermore, in sectors such as engineering and architecture, the proper development of digital models for 3D printing is crucial to ensuring functionality and quality.

Within this framework, TECH presents a cutting-edge program in Modeling and File Preparation for 3D Printing. Designed by specialists in this field, the academic curriculum will delve into the use of CAD software, specialized tools for 3D modeling, and file format management. As a result, designers will acquire advanced skills in design optimization for Additive Manufacturing, with a focus on improving process efficiency and ensuring superior quality in the final product. As a result, they will be able to apply their knowledge to lead projects that drive innovation in product development and industrial process optimization, opening up new opportunities in the field of 3D printing.

In addition, TECH uses its ground-breaking Relearning method to ensure that professionals enjoy natural and progressive learning. This way, they will not have to resort to costly traditional techniques such as memorization. This way, they will not have to rely on costly traditional techniques such as memorization. In this sense, the only thing students will need is an electronic device with an Internet connection to enter the Virtual Campus. There you will find a variety of multimedia support pills in formats such as explanatory videos, interactive summaries, and specialized readings. Without a doubt, this is an immersive experience that will allow designers to take a significant leap forward in their careers.

This **Postgraduate Certificate in Modeling and File Preparation for 3D Printing** 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 Modeling and File Preparation for 3D Printing
- ♦ 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 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



*Your path to excellence begins at TECH University, where you will acquire advanced knowledge to develop digital models suitable for 3D printing”*

“

*You will become familiar with handling STL files, using advanced tools to ensure the optimization of your digital designs”*

The teaching staff includes professionals in the field of Modeling and File Preparation for 3D Printing, who bring their work experience to this program, as well as renowned specialists from leading companies 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 an immersive learning experience designed to prepare for real-life situations.

This program is designed around Problem-Based Learning, whereby the student must try to solve the different professional practice situations that arise throughout the program. For this purpose, the professional will be assisted by an innovative interactive video system created by renowned and experienced experts.

*A syllabus based on the innovative Relearning system, which will help you assimilate complex concepts quickly, flexibly, and efficiently.*

*You will gain comprehensive knowledge of CAD software, ensuring that your digital designs are accurate and optimized.*



02

# Why Study at TECH?

TECH is the world's largest online university. With an impressive catalog of more than 14,000 university programs available in 11 languages, it is positioned as a leader in employability, with a 99% job placement rate. In addition, it relies on an enormous faculty of more than 6,000 professors of the highest international renown.



“

*Study at the world's largest online university  
and guarantee your professional success.  
The future starts at TECH”*

**The world's best online university, according to FORBES**

The prestigious Forbes magazine, specialized in business and finance, has highlighted TECH as "the best online university in the world" This is what they have recently stated in an article in their digital edition in which they echo the success story of this institution, "thanks to the academic offer it provides, the selection of its teaching staff, and an innovative learning method oriented to form the professionals of the future".

**Forbes**

The best online university in the world

The most complete syllabus

**The most complete syllabuses on the university scene**

TECH offers the most complete syllabuses on the university scene, with programs that cover fundamental concepts and, at the same time, the main scientific advances in their specific scientific areas. In addition, these programs are continuously updated to guarantee students the academic vanguard and the most demanded professional skills. and the most in-demand professional competencies. In this way, the university's qualifications provide its graduates with a significant advantage to propel their careers to success.

**The best top international faculty**

TECH's faculty is made up of more than 6,000 professors of the highest international prestige. Professors, researchers and top executives of multinational companies, including Isaiah Covington, performance coach of the Boston Celtics; Magda Romanska, principal investigator at Harvard MetaLAB; Ignacio Wistumba, chairman of the department of translational molecular pathology at MD Anderson Cancer Center; and D.W. Pine, creative director of TIME magazine, among others.

**TOP**  
international faculty



The most effective methodology

**A unique learning method**

TECH is the first university to use Relearning in all its programs. This is the best online learning methodology, accredited with international teaching quality certifications, provided by prestigious educational agencies. In addition, this innovative academic model is complemented by the "Case Method", thereby configuring a unique online teaching strategy. Innovative teaching resources are also implemented, including detailed videos, infographics and interactive summaries.

**The world's largest online university**

TECH is the world's largest online university. We are the largest educational institution, with the best and widest digital educational catalog, one hundred percent online and covering most areas of knowledge. We offer the largest selection of our own degrees and accredited online undergraduate and postgraduate degrees. In total, more than 14,000 university programs, in ten different languages, making us the largest educational institution in the world.

**World's No.1**  
The World's largest online university

### The official online university of the NBA

TECH is the official online university of the NBA. Thanks to our agreement with the biggest league in basketball, we offer our students exclusive university programs, as well as a wide variety of educational resources focused on the business of the league and other areas of the sports industry. Each program is made up of a uniquely designed syllabus and features exceptional guest hosts: professionals with a distinguished sports background who will offer their expertise on the most relevant topics.

### Leaders in employability

TECH has become the leading university in employability. Ninety-nine percent of its students obtain jobs in the academic field they have studied within one year of completing any of the university's programs. A similar number achieve immediate career enhancement. All this thanks to a study methodology that bases its effectiveness on the acquisition of practical skills, which are absolutely necessary for professional development.



### Google Premier Partner

The American technology giant has awarded TECH the Google Premier Partner badge. This award, which is only available to 3% of the world's companies, highlights the efficient, flexible and tailored experience that this university provides to students. The recognition not only accredits the maximum rigor, performance and investment in TECH's digital infrastructures, but also places this university as one of the world's leading technology companies.



### The top-rated university by its students

Students have positioned TECH as the world's top-rated university on the main review websites, with a highest rating of 4.9 out of 5, obtained from more than 1,000 reviews. These results consolidate TECH as the benchmark university institution at an international level, reflecting the excellence and positive impact of its educational model.



# 03 Syllabus

This program will address the most modern techniques for Modeling and File Preparation for 3D Printing, keeping in mind the use of favorable angles and geometries. This will ensure that professionals design parts that are both efficient and functional as well as aesthetically pleasing. In this regard, the syllabus will provide various parametric design strategies to easily modify the characteristics of goods according to project needs.



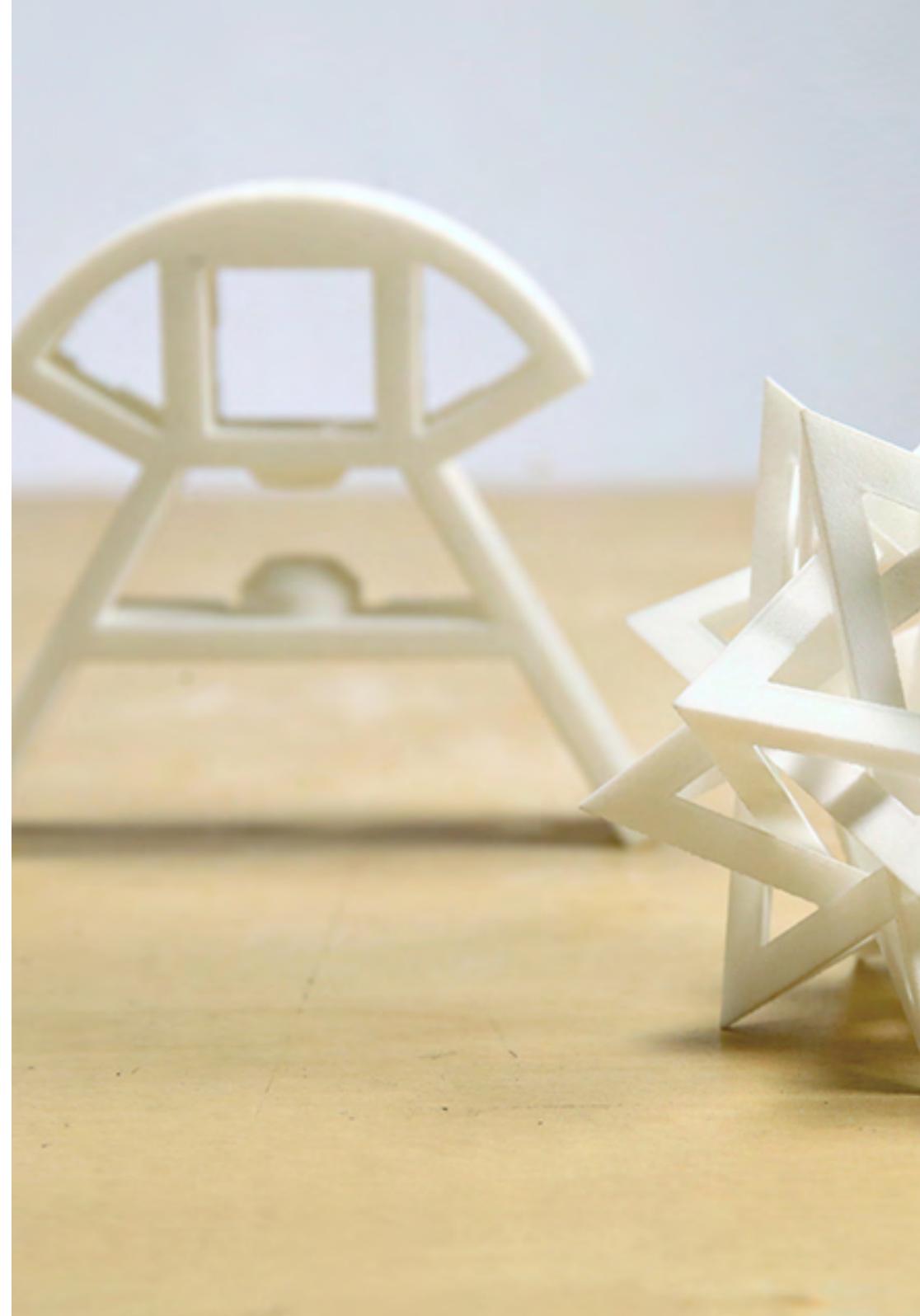


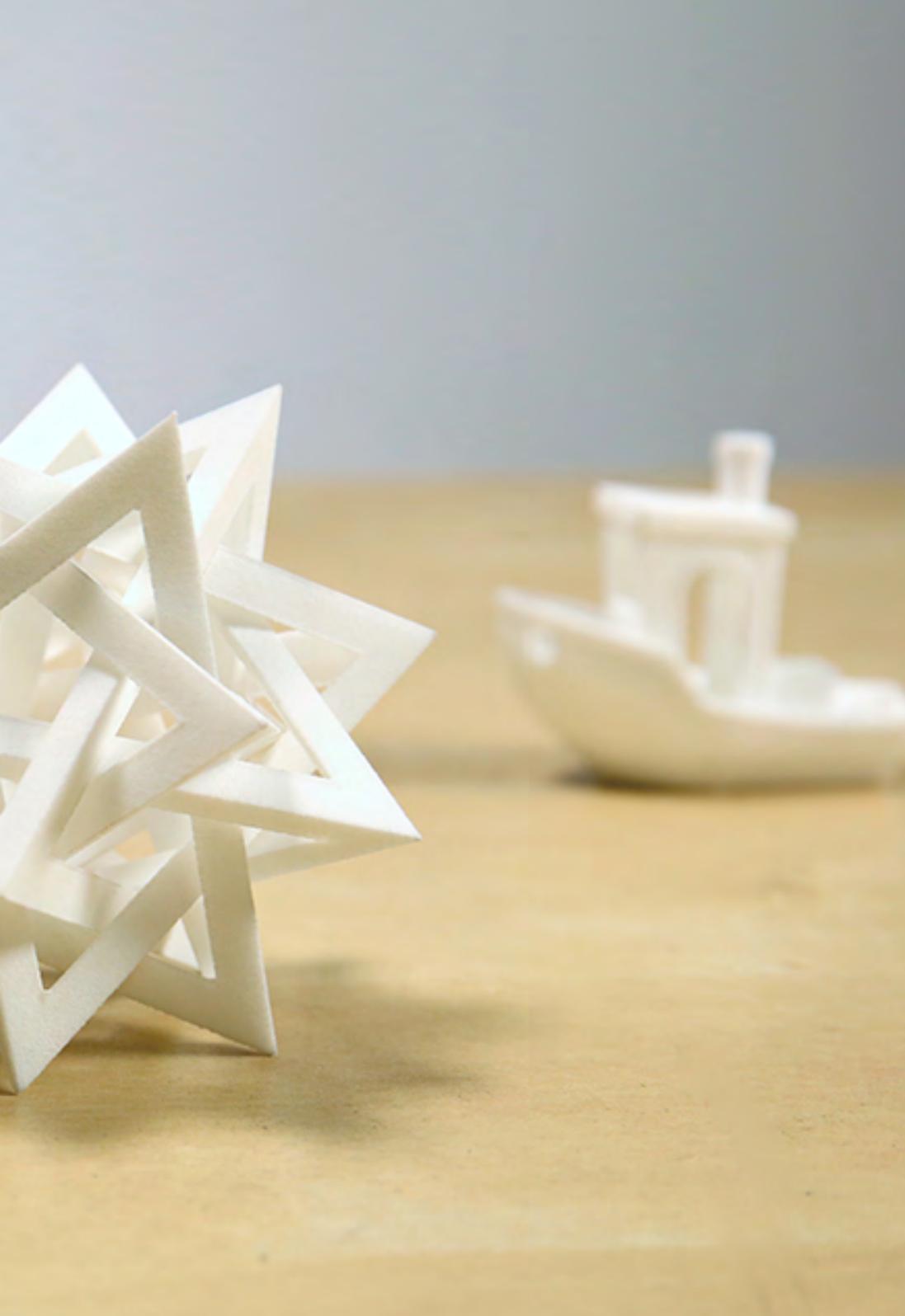
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*You will increase your mastery of the use of favorable angles and geometries, improving the stability and accuracy of models in 3D Printing”*

## Module 1. Modeling and File Preparation for 3D Printing

- 1.1. CAD Software: Tools for 3D Modeling
  - 1.1.1. Main CAD Programs for 3D Design
  - 1.1.2. Creating Parametric Models
  - 1.1.3. Model Editing and Correction Tools
- 1.2. From CAD Design to STL File
  - 1.2.1. File Export Process in STL Format
  - 1.2.2. Considerations Regarding File Resolution and Size
  - 1.2.3. Optimizing the Model to Avoid Printing Errors
- 1.3. Adjusting Parameters in the STL File: Resolution and Tolerance
  - 1.3.1. Using Slicing Software to Generate GCODE
  - 1.3.2. Adjusting Parameters (Speed, Temperature, Layers)
  - 1.3.3. Correcting Common Problems in Slicing
- 1.4. Slicing Software: Preparing GCODE
  - 1.4.1. Using Slicing Software to Generate GCODE
  - 1.4.2. Adjusting Parameters (Speed, Temperature, Layers)
  - 1.4.3. Correcting Common Problems in Slicing
- 1.5. Design Optimization for Additive Manufacturing
  - 1.5.1. Design to Improve Printing Efficiency
  - 1.5.2. Avoiding Unnecessary Support Structures
  - 1.5.3. Adapting Design to Technology Capabilities
- 1.6. Strategies for Reducing Support Use
  - 1.6.1. Design Focused on Minimizing Supports
  - 1.6.2. Use of Favorable Angles and Geometries
  - 1.6.3. Technologies That Eliminate the Need for Supports
- 1.7. Techniques for Improving Surface Finish
  - 1.7.1. Optimization of Print Settings
  - 1.7.2. Post-Processing Methods for Improving Surfaces
  - 1.7.3. Use of Thinner Layers to Improve Quality



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- 1.8. Parametric Modeling and Generative Design
    - 1.8.1. Advantages of Parametric Modeling in 3D Printing
    - 1.8.2. Use of Generative Design for Part Optimization
    - 1.8.3. Advanced Generative Design Tools
  - 1.9. Integration of 3D Scanning into the Workflow
    - 1.9.1. Use of 3D Scanners for Model Capture
    - 1.9.2. Processing and Cleaning of Scanned Files
    - 1.9.3. Integration of Scanned Models into CAD Software
  - 1.10. Pre-Printing Simulations and Analysis
    - 1.10.1. Simulation of Deformations and Stress in Parts
    - 1.10.2. Optimization of Orientation and Force Distribution
    - 1.10.3. Printability Analysis of Complex Models

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*You will enhance your ability to integrate three-dimensional scanning techniques into your usual Design processes”*

# 04

# Teaching Objectives

This university program allows students to develop advanced skills in 3D Printing Modeling, optimizing each stage of the digital process. Through mastery of state-of-the-art CAD software, designers will acquire the ability to create accurate, functional, and stable models. Along the same lines, graduates will be prepared to integrate three-dimensional scanning processes and optimize the quality of the printed parts manufactured, positioning themselves as experts in the creation of customized solutions.



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*You will master the most cutting-edge methods of Generative Design to generate customized models that adapt to the specific needs of each business project”*



## General Objectives

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- ♦ Understand the concepts of how Additive Manufacturing works
- ♦ Delve into the technologies specifically for the materials used
- ♦ Understand how each technology works and its application, whether by the function of the part or object or by its performance
- ♦ Use 3D surface modeling software
- ♦ Delve into the different types of 3D printers, understanding their operating principles
- ♦ Learn about topological design and optimization of parts for 3D printing
- ♦ Use the most advanced post-processing techniques to optimize 3D printing
- ♦ Visualize products for specific sectors such as automotive, aerospace, and architecture
- ♦ Encourage the identification of business opportunities in the field of Additive Manufacturing
- ♦ Develop project management skills, from conceptualization and design to manufacturing and post-processing of parts





## Specific Objectives

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- Differentiate between software and its 3D modeling capabilities
- Transfer files from one software to another and export them in a format compatible with 3D printing



*You will achieve your goals with the support of TECH's educational tools, including explanatory videos and interactive summaries"*



05

# Study Methodology

TECH is the world's first university to combine the **case study** methodology with **Relearning**, a 100% online learning system based on guided repetition.

This disruptive pedagogical strategy has been conceived to offer professionals the opportunity to update their knowledge and develop their skills in an intensive and rigorous way. A learning model that places students at the center of the educational process giving them the leading role, adapting to their needs and leaving aside more conventional methodologies.



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*TECH will prepare you to face new challenges in uncertain environments and achieve success in your career”*

## The student: the priority of all TECH programs

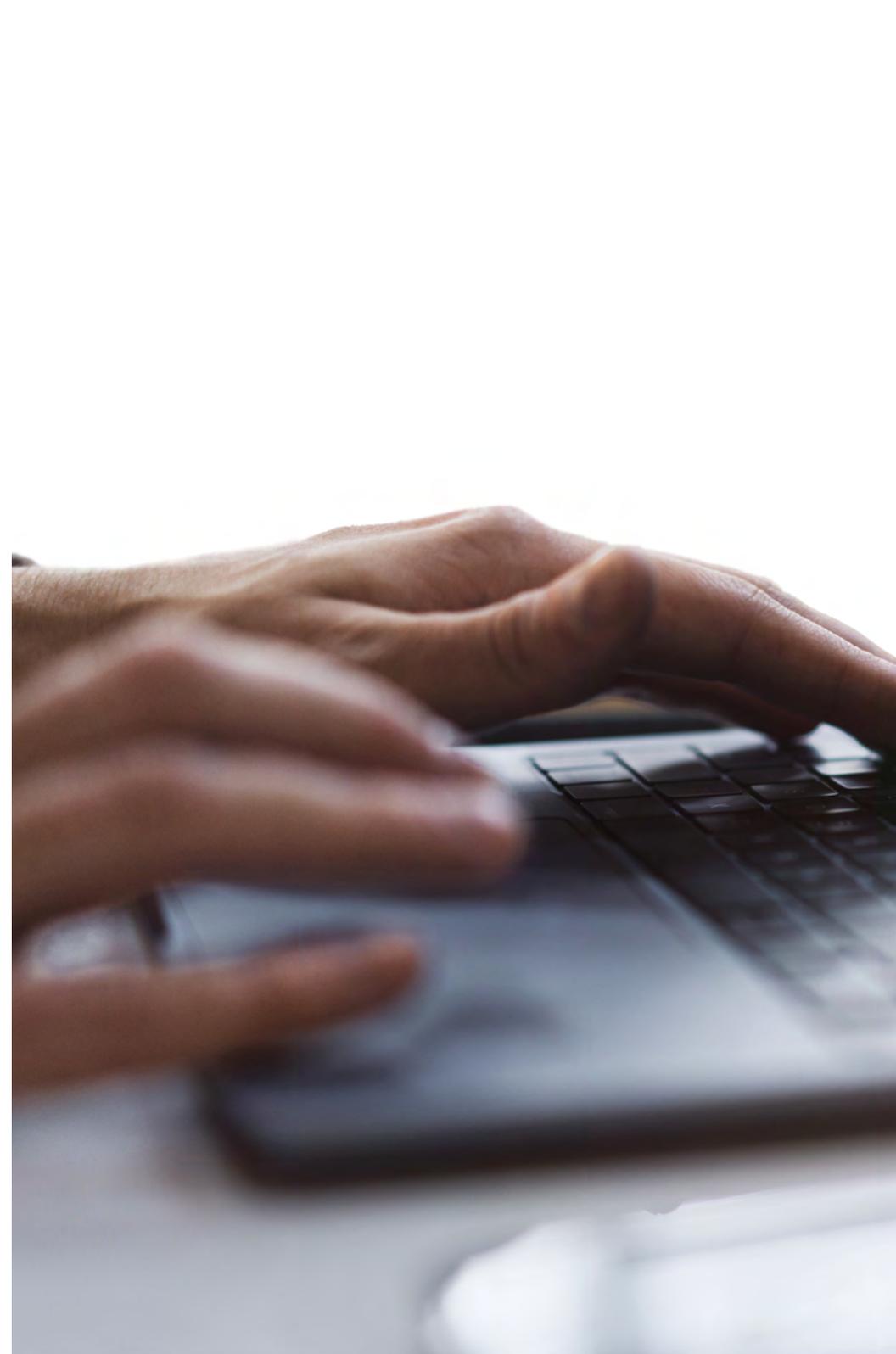
In TECH's study methodology, the student is the main protagonist.

The teaching tools of each program have been selected taking into account the demands of time, availability and academic rigor that, today, not only students demand but also the most competitive positions in the market.

With TECH's asynchronous educational model, it is students who choose the time they dedicate to study, how they decide to establish their routines, and all this from the comfort of the electronic device of their choice. The student will not have to participate in live classes, which in many cases they will not be able to attend. The learning activities will be done when it is convenient for them. They can always decide when and from where they want to study.

“

*At TECH you will NOT have live classes  
(which you might not be able to attend)”*



### The most comprehensive study plans at the international level

TECH is distinguished by offering the most complete academic itineraries on the university scene. This comprehensiveness is achieved through the creation of syllabi that not only cover the essential knowledge, but also the most recent innovations in each area.

By being constantly up to date, these programs allow students to keep up with market changes and acquire the skills most valued by employers. In this way, those who complete their studies at TECH receive a comprehensive education that provides them with a notable competitive advantage to further their careers.

And what's more, they will be able to do so from any device, pc, tablet or smartphone.

“

*TECH's model is asynchronous, so it allows you to study with your pc, tablet or your smartphone wherever you want, whenever you want and for as long as you want”*

## Case Studies and Case Method

The case method has been the learning system most used by the world's best business schools. Developed in 1912 so that law students would not only learn the law based on theoretical content, its function was also to present them with real complex situations. In this way, they could make informed decisions and value judgments about how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

With this teaching model, it is students themselves who build their professional competence through strategies such as Learning by Doing or Design Thinking, used by other renowned institutions such as Yale or Stanford.

This action-oriented method will be applied throughout the entire academic itinerary that the student undertakes with TECH. Students will be confronted with multiple real-life situations and will have to integrate knowledge, research, discuss and defend their ideas and decisions. All this with the premise of answering the question of how they would act when facing specific events of complexity in their daily work.



## Relearning Methodology

At TECH, case studies are enhanced with the best 100% online teaching method: Relearning.

This method breaks with traditional teaching techniques to put the student at the center of the equation, providing the best content in different formats. In this way, it manages to review and reiterate the key concepts of each subject and learn to apply them in a real context.

In the same line, and according to multiple scientific researches, reiteration is the best way to learn. For this reason, TECH offers between 8 and 16 repetitions of each key concept within the same lesson, presented in a different way, with the objective of ensuring that the knowledge is completely consolidated during the study process.

*Relearning will allow you to learn with less effort and better performance, involving you more in your specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.*



## A 100% online Virtual Campus with the best teaching resources

In order to apply its methodology effectively, TECH focuses on providing graduates with teaching materials in different formats: texts, interactive videos, illustrations and knowledge maps, among others. All of them are designed by qualified teachers who focus their work on combining real cases with the resolution of complex situations through simulation, the study of contexts applied to each professional career and learning based on repetition, through audios, presentations, animations, images, etc.

The latest scientific evidence in the field of Neuroscience points to the importance of taking into account the place and context where the content is accessed before starting a new learning process. Being able to adjust these variables in a personalized way helps people to remember and store knowledge in the hippocampus to retain it in the long term. This is a model called Neurocognitive context-dependent e-learning that is consciously applied in this university qualification.

In order to facilitate tutor-student contact as much as possible, you will have a wide range of communication possibilities, both in real time and delayed (internal messaging, telephone answering service, email contact with the technical secretary, chat and videoconferences).

Likewise, this very complete Virtual Campus will allow TECH students to organize their study schedules according to their personal availability or work obligations. In this way, they will have global control of the academic content and teaching tools, based on their fast-paced professional update.



*The online study mode of this program will allow you to organize your time and learning pace, adapting it to your schedule”*

### The effectiveness of the method is justified by four fundamental achievements:

1. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that assess real situations and the application of knowledge.
2. Learning is solidly translated into practical skills that allow the student to better integrate into the real world.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.
4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.

## The university methodology top-rated by its students

The results of this innovative teaching model can be seen in the overall satisfaction levels of TECH graduates.

The students' assessment of the teaching quality, the quality of the materials, the structure of the program and its objectives is excellent. Not surprisingly, the institution became the top-rated university by its students according to the global score index, obtaining a 4.9 out of 5.

*Access the study contents from any device with an Internet connection (computer, tablet, smartphone) thanks to the fact that TECH is at the forefront of technology and teaching.*

*You will be able to learn with the advantages that come with having access to simulated learning environments and the learning by observation approach, that is, Learning from an expert.*



As such, the best educational materials, thoroughly prepared, will be available in this program:



#### 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.

This content is then adapted in an audiovisual format that will create our way of working online, with the latest techniques that allow us to offer you high quality in all of the material that we provide you with.



#### Practicing Skills and Abilities

You will carry out activities to develop specific competencies and skills in each thematic field. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop within the framework of the globalization we live in.



#### Interactive Summaries

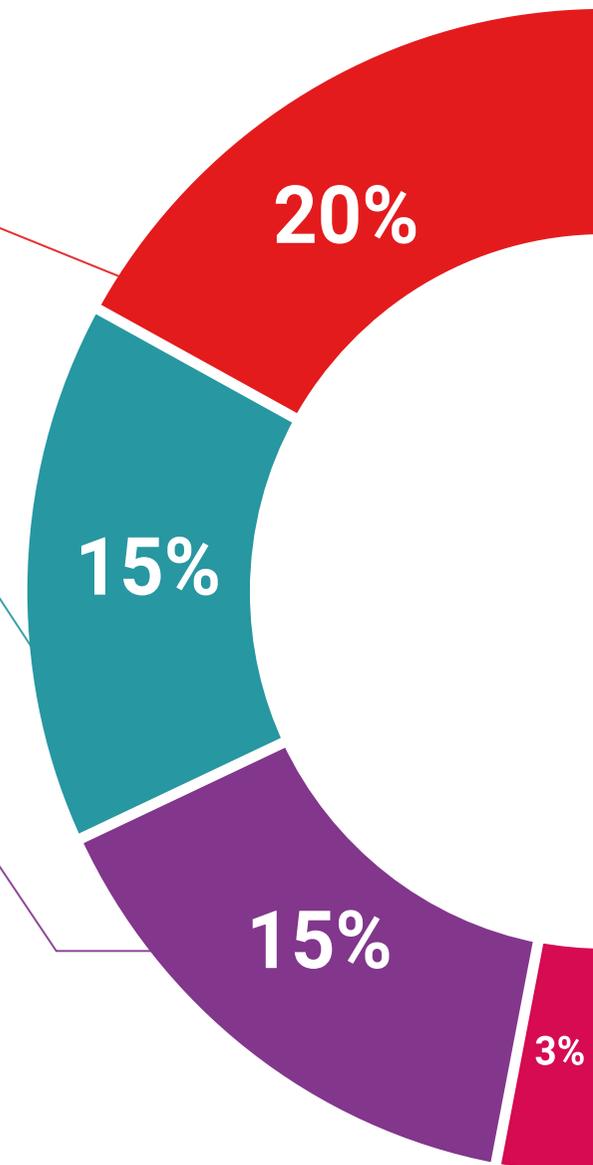
We present the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

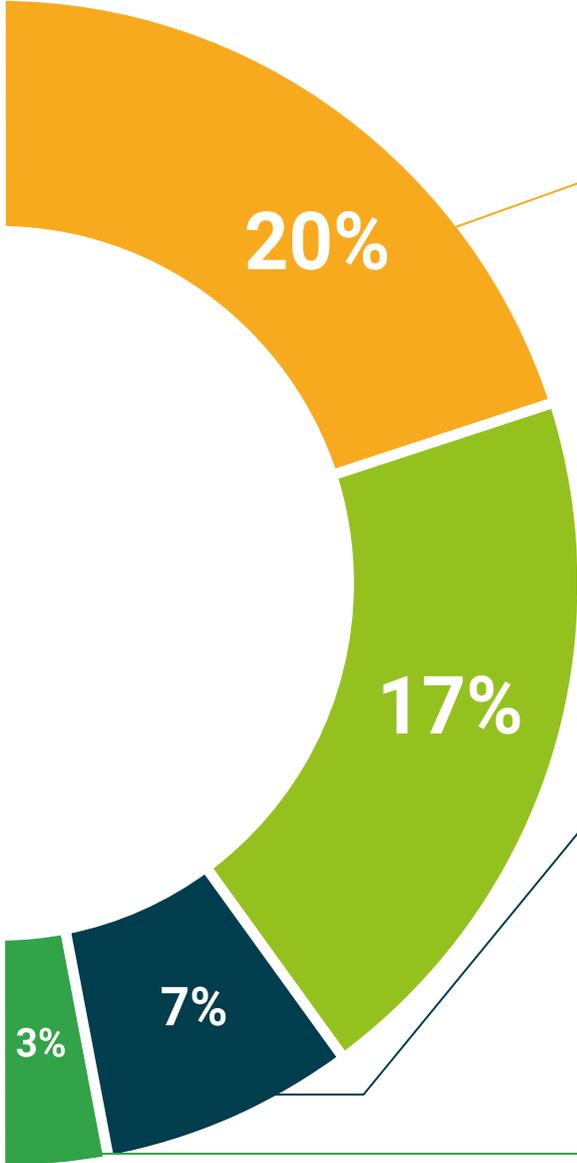
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



#### Additional Reading

Recent articles, consensus documents, international guides... In our virtual library you will have access to everything you need to complete your education.





**Case Studies**

Students will complete a selection of the best case studies in the field. Cases that are presented, analyzed, and supervised by the best specialists in the world.



**Testing & Retesting**

We periodically assess and re-assess your knowledge throughout the program. We do this on 3 of the 4 levels of Miller's Pyramid.



**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 for future difficult decisions.



**Quick Action Guides**

TECH offers the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical and effective way to help students progress in their learning.



06

# Teaching Staff

In its commitment to offering the most complete and cutting-edge university programs in the field of design, TECH carefully selects the professionals who make up its teaching staff. Thanks to this, this university program features renowned experts in the field of Digital Design and 3D Modeling. This way, students will have access to a high-intensity experience that will allow them to significantly increase their job prospects.



“

*The faculty of this university program has extensive experience in research and professional application in the field of 3D Printing”*

## Management



### Mr. Parera Buxeres, Antoni

- ♦ CEO and Creative Director at Innou
- ♦ Project Manager and Industrial Designer at Play
- ♦ Master's Degree in Project Management and Efficient Project Management from the Polytechnic University of Catalonia
- ♦ Bachelor of Arts with a specialization in Design from the University of Southampton

## Professors

### Mr. Sánchez González, Antonio

- ♦ Director of AsorCAD Engineering
- ♦ Industrial Designer at Segui Desing
- ♦ Project Manager in R&D at Play
- ♦ Founder of Innou
- ♦ Master's Degree in Technical Management and Production
- ♦ Bachelor's Degree in Mechanical Engineering from the University of Southampton



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*A unique, crucial and decisive learning experience to boost your professional development”*

# 07 Certificate

This Postgraduate Certificate in Modeling and File Preparation for 3D Printing guarantees students, in addition to the most rigorous and up-to-date education, access to a diploma for the Postgraduate Certificate issued by TECH Global University.



“

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

This private qualification will allow you to obtain a diploma for the **Postgraduate Certificate in Modeling and File Preparation for 3D Printing** 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** private qualification, 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 Certificate in Modeling and File Preparation for 3D Printing**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 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.



## Postgraduate Certificate Modeling and File Preparation for 3D Printing

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# Postgraduate Certificate

## Modeling and File Preparation for 3D Printing

