

Postgraduate Certificate Additive Manufacturing Technologies and Processes



Postgraduate Certificate Additive Manufacturing Technologies and Processes

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

Website: www.techtitude.com/us/design/postgraduate-certificate/additive-manufacturing-technologies-processes

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01

Introduction to the Program

Additive Manufacturing, also known as 3D Printing, has revolutionized industrial production by enabling the creation of complex components with greater efficiency and customization. In fact, a report by the United Nations highlights the potential of these technologies to reduce production costs by up to 50% in key sectors such as medicine. Aware of this, designers need to incorporate the most innovative strategies into their daily practice to get the most out of these tools and significantly optimize production flows. With this in mind, TECH has created a pioneering university program focused on the management of Additive Manufacturing Technologies and Processes. In addition, it is taught in a convenient 100% online format.



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Through this completely online Postgraduate Certificate, you will master the most innovative technological tools in Additive Manufacturing and improve the precision of your designs”

The optimization of industrial processes has led to the consolidation of new production strategies that enable the creation of complex parts with high-quality standards. In this context, Additive Manufacturing has become a key solution for industries such as Automotive and Aeronautics, as it facilitates the manufacture of customized components with advanced materials. In this sense, its impact lies not only in reducing costs and development times, but also in sustainability. For this reason, experts need to develop advanced skills to choose the most appropriate 3D printing systems for each project, taking into account their specifications.

In this context, TECH presents an innovative Postgraduate Certificate in Additive Manufacturing Technologies and Processes. Designed by renowned specialists in this field, the academic program will delve into the most modern tools in 3D printing. Through a detailed focus on selective laser sintering and MultiJet Fusion, the applications and advantages of each technique are analyzed based on the materials used and the demands of the manufacturing industry. In addition, emerging trends that are revolutionizing this field are addressed. As a result, students will gain the skills to implement advanced Additive Manufacturing processes in their projects, optimizing production, customization, and functionality of parts.

It is worth noting that TECH offers a completely online learning environment, allowing graduates to set their own schedules and pace of study. It also uses its ground-breaking Relearning system, which ensures that professionals consolidate the key concepts of the syllabus in a progressive and natural way. This means that all students need is a device with an Internet connection to access the Virtual Campus. On this platform, they will find a wide variety of multimedia support resources such as interactive summaries, explanatory videos, and specialized readings.

This **Postgraduate Certificate in Additive Manufacturing Technologies and Processes** 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 Additive Manufacturing Technologies and Processes
- ♦ 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



You will optimize workflow in design and production processes, integrating the most advanced principles of Additive Manufacturing"

“

You will gain in-depth knowledge of the application of each technique depending on the materials used, maximizing their performance and adaptability”

You will hone your MultiJet Fusion skills, boosting the production of high-precision parts.

You will apply the latest advances in 3D printing, optimizing processes and developing innovative solutions.

The teaching staff includes professionals from the field of Additive Manufacturing Technologies and Processes, 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.



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".

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.

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.



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.

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 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 comprehensive Postgraduate Certificate will offer a specialized focus on Additive Manufacturing Technologies and Processes, with particular emphasis on the use of metals in advanced manufacturing. Through mastery of SLM and DLMS, you will delve into material optimization and the improvement of mechanical properties, enabling the production of high-precision, high-strength parts. In addition, applications in high-demand sectors such as aerospace and automotive, where efficiency and customization are key factors, will be addressed. This will strengthen competencies in designing, managing, and implementing solutions that optimize production processes and reduce costs.



A close-up photograph of two yellow, ring-shaped metal parts. A digital caliper is positioned to measure the inner diameter of the part in the foreground. The background is blurred, showing more of the same parts and a person's hand. The image is partially obscured by a large teal and white geometric overlay on the right side of the page.

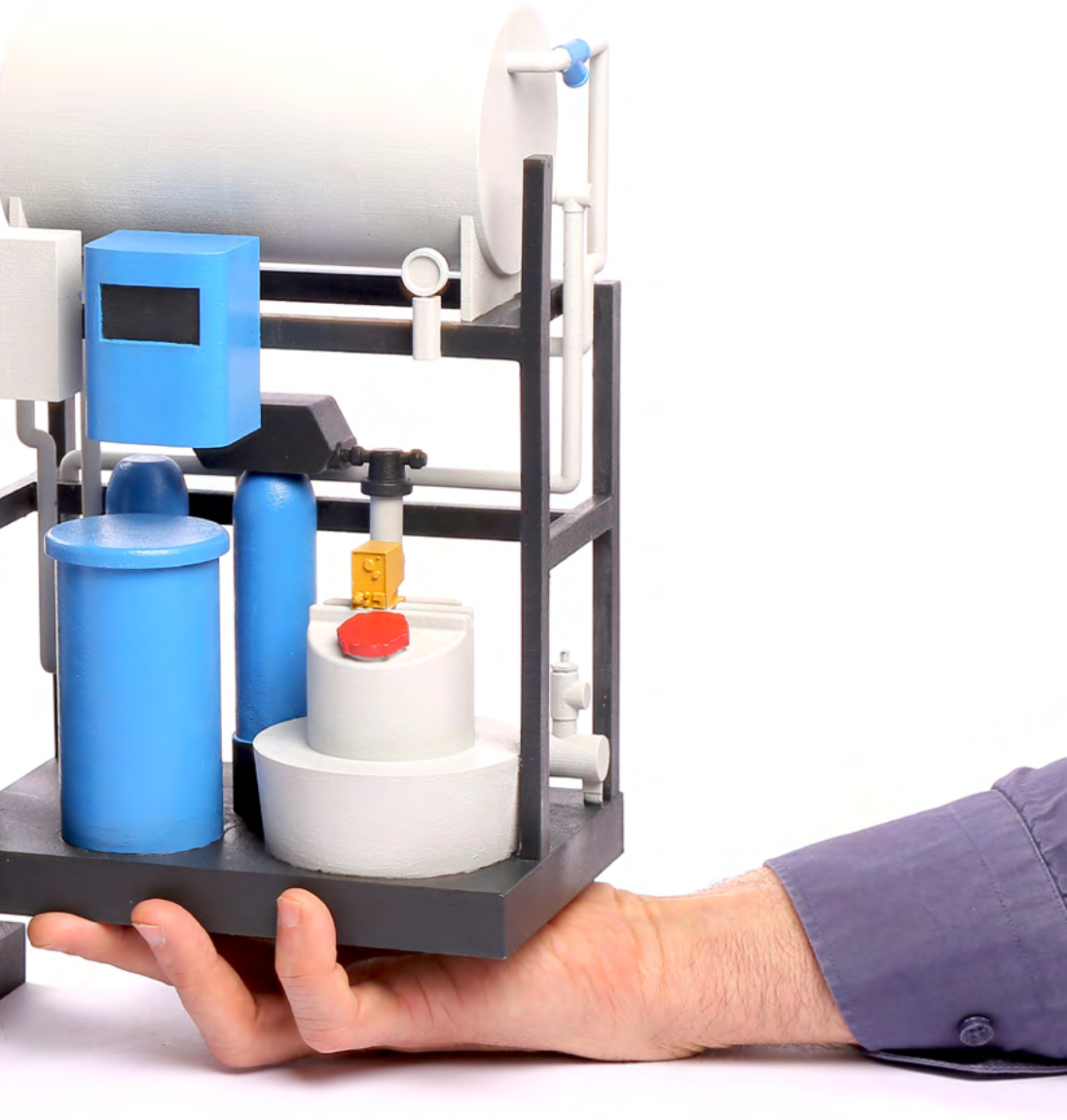
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You will develop advanced mastery of Direct Laser Metal Sintering, acquiring key skills to optimize Additive Manufacturing in metals”

Module 1. Additive Manufacturing Technologies and Processes

- 1.1. Classification of Additive Technologies
 - 1.1.1. Current Main Technologies by Parts
 - 1.1.2. Emerging Technologies in 3D Printing
 - 1.1.3. Classification by Materials Used
- 1.2. FDM – Fused Deposition Modeling – Operation and Applications
 - 1.2.1. Operation of the Extrusion Process
 - 1.2.2. Applications and Precision in Parts
 - 1.2.3. Limitations of the FDM Process
- 1.3. SLA – Stereolithography – Functioning, Characteristics, and Applications
 - 1.3.1. How It Works
 - 1.3.2. Applications and Precision in Parts
 - 1.3.3. SLA Limitations
- 1.4. SLS – Selective Laser Sintering – Operation and Applications
 - 1.4.1. How It Works
 - 1.4.2. Applications and Resolution
 - 1.4.3. SLS Limitations
- 1.5. MJF – MultiJet Fusion. Technology and Applications
 - 1.5.1. Multi-Agent Injection Technology
 - 1.5.2. Sectors Using MJF (Aerospace, Automotive)
 - 1.5.3. Comparison with Other Technologies
- 1.6. SLM – DLMS and Additive Manufacturing in Metal, Operation, Processes, and Applications
 - 1.6.1. Additive Technology for Metals
 - 1.6.2. Applications in High-Demand Industries
 - 1.6.3. Optimization of Metal Use in Manufacturing





- 1.7. Material Jetting: Polyjet, Applications and Layer-by-Layer Material Deposition Process.
Detailed and Multicolor Prototype Applications
 - 1.7.1. Layer-by-Layer Material Deposition Process
 - 1.7.2. Detailed and Multicolor Prototype Applications
 - 1.7.3. Limitations in Mechanical Strength
- 1.8. Binder Jetting. Projection of Binders onto Metal Powder
 - 1.8.1. Projection of Binders onto Metal Powder
 - 1.8.2. Industrial Applications in Metal Parts
 - 1.8.3. Comparison with Laser Sintering
- 1.9. Advantages of Additive Manufacturing over Traditional Methods
 - 1.9.1. Flexibility in Creation of Complex Geometries
 - 1.9.2. Reduction in Material Waste
 - 1.9.3. Mass Product Customization
- 1.10. Comparison of Technologies Based on Cost, Quality, and Time
 - 1.10.1. Cost Evaluation by Technology
 - 1.10.2. Analysis of Production Times for Each Process
 - 1.10.3. Final Quality of the Parts Produced

“TECH's Relearning system will allow you to learn with less effort and greater performance, involving you more in your professional specialization as a designer”

04

Teaching Objectives

The main objective of this program is to develop advanced skills in Additive Manufacturing, focusing on the optimization of production processes and the improvement of manufacturing quality. Throughout this Postgraduate Certificate, the use of technologies such as SLM will be addressed, allowing professionals to acquire the ability to implement innovative solutions for the manufacture of high-precision parts. In fact, this will enable graduates to maximize efficiency in the use of materials and reduce costs, leading projects in high-demand industrial sectors and staying at the forefront of emerging technologies.



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You will acquire advanced skills to select the most optimal Additive Manufacturing Technology based on the type of part, material, and project requirements”



General Objectives

- ♦ 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

- ♦ Differentiate technologies by their applications
- ♦ Compare production times and understand post-processing



You will have access to the multimedia resource library and the entire syllabus from day one"

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.

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*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.

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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.

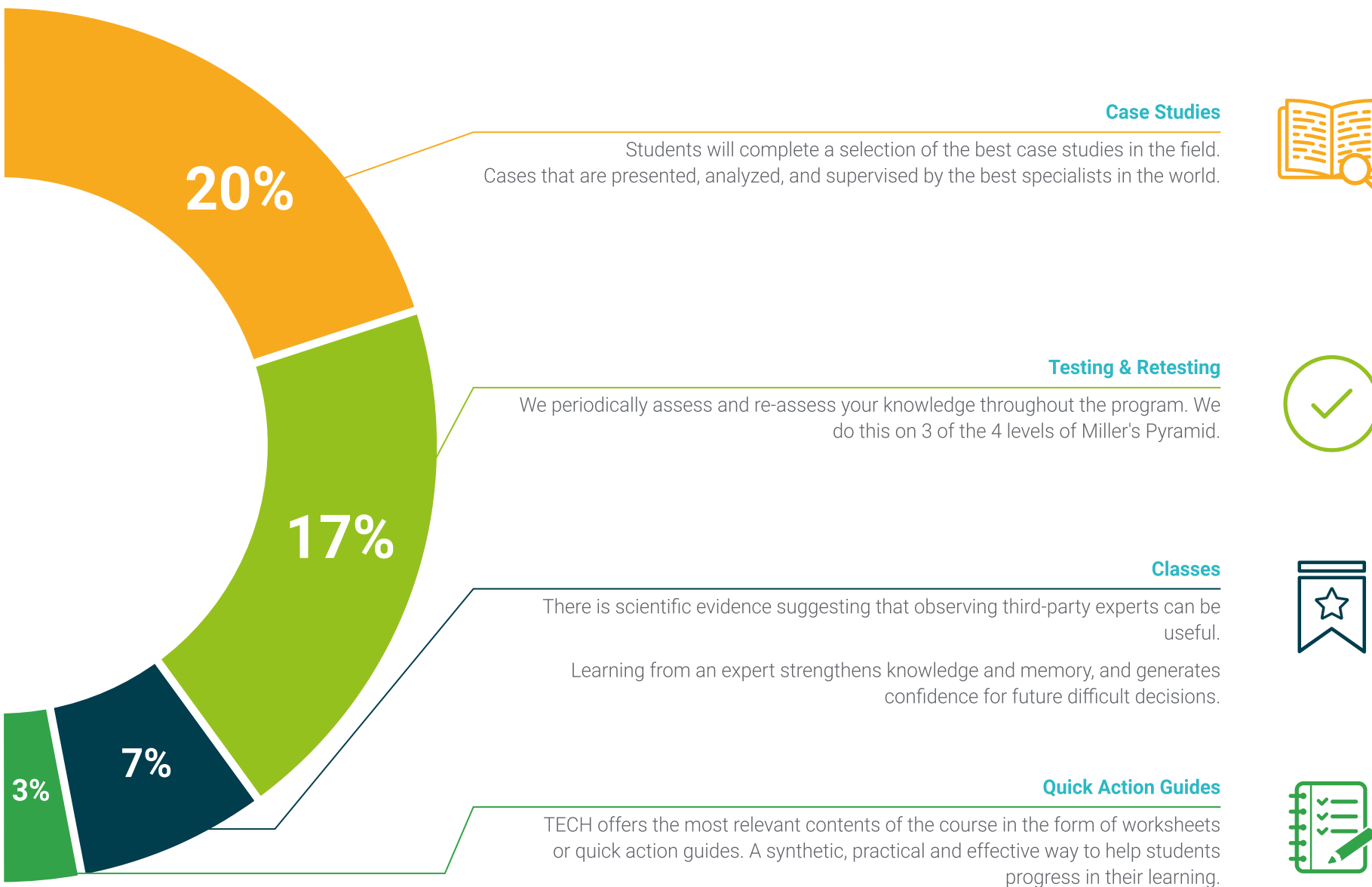
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



Additional Reading

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





06

Teaching Staff

TECH is committed to offering cutting-edge university programs, which is why it has carefully selected the most prominent experts in Additive Manufacturing Technologies and Processes. These professionals, with extensive experience in the industry, have driven innovative projects in digital design environments, significantly transforming the industry. As a result, designers will have the opportunity to immerse themselves in a unique experience that will enhance their skills and enable them to take a significant leap forward in their professional development.



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You will have the support of the teaching team, made up of renowned experts in Additive Manufacturing Technologies and Processes”

Management



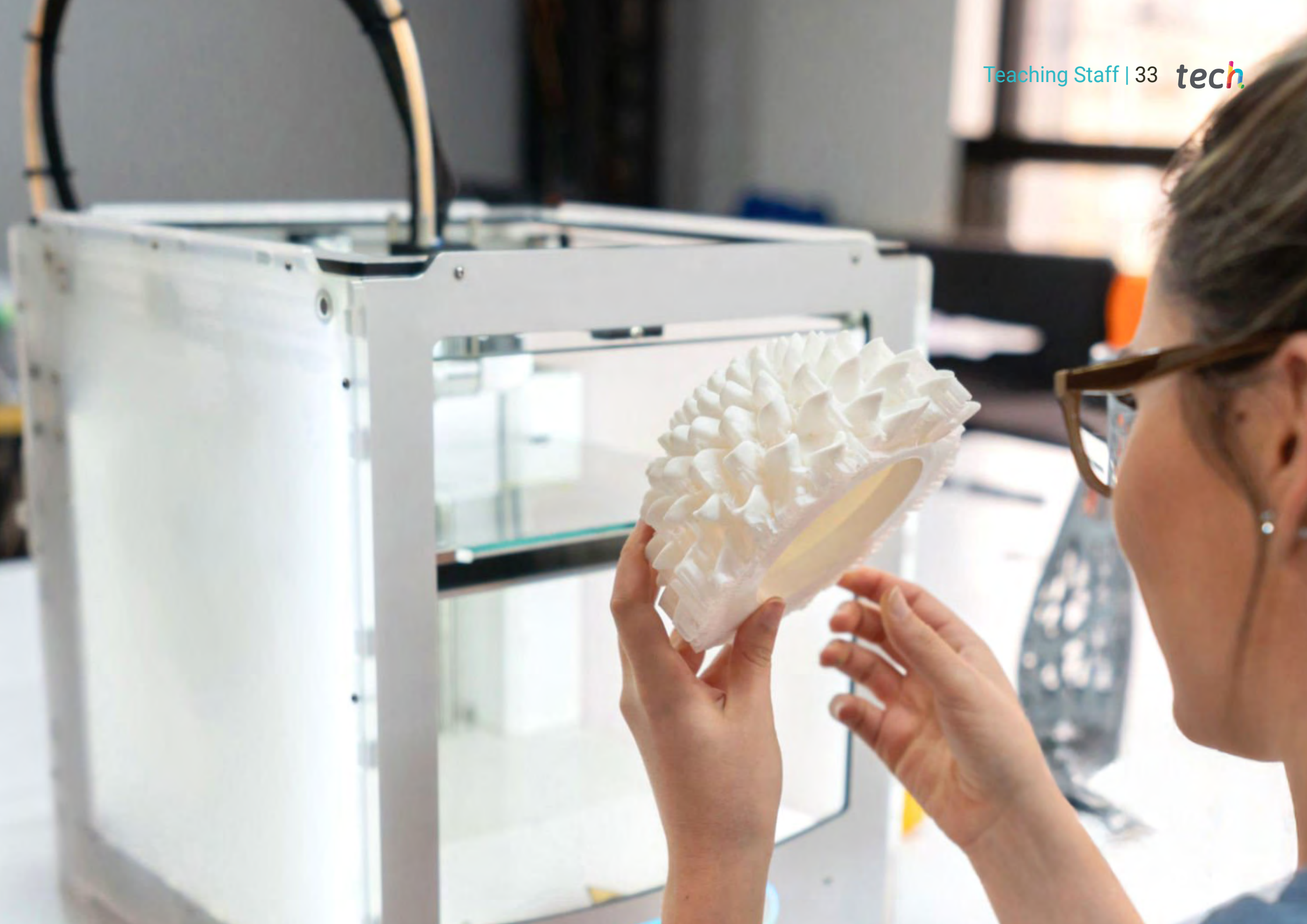
Mr. Parera Buxeres, Antoni

- 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. Bafaluy Ojea, Sergi

- Senior Researcher in Additive Manufacturing and 3D Printing in Digital Industry
- Process Engineer at Gestamp Hardtech AB
- Materials Engineer at ABB
- Industrial Doctorate in HP Printing and Computing Solutions
- Degree in Chemical and Materials Engineering from the Polytechnic University of Catalonia and the European School of Engineers



07 Certificate

This Postgraduate Certificate in Additive Manufacturing Technologies and Processes 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.



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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 Additive Manufacturing Technologies and Processes** 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 Additive Manufacturing Technologies and Processes**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**





Postgraduate Certificate
Additive Manufacturing
Technologies and Processes

- » Modality: online
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Postgraduate Certificate

Additive Manufacturing Technologies and Processes