

Postgraduate Certificate

Industry-Specific Applications of Additive Manufacturing





Postgraduate Certificate Industry-Specific Applications of Additive Manufacturing

- » 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/industry-specific-applications-additive-manufacturing

Index

01

Introduction to the Program

p. 4

02

Why Study at TECH?

p. 8

03

Syllabus

p. 12

04

Teaching Objectives

p. 16

05

Study Methodology

p. 20

06

Teaching Staff

p. 30

07

Certificate

p. 34

01

Introduction to the Program

Additive Manufacturing is no longer an emerging technology; it has become a key tool in multiple industrial sectors. From prototyping to manufacturing end-use products, the applications of 3D printing are rapidly diversifying. For example, in the healthcare sector, these technologies are revolutionizing the customization of implants and prosthetics. Faced with this reality, professionals need to have comprehensive knowledge of the use of these tools in multiple fields. In response, TECH has developed a revolutionary 100% online university program focused on Industry-Specific Applications of Additive Manufacturing.



“

Through this completely online Postgraduate Certificate, you will stand out for your comprehensive knowledge of Industry-Specific Applications of Additive Manufacturing”

Additive Manufacturing has established itself as one of the most relevant technologies today due to its ability to transform the way goods are produced in multiple industries. In fact, its usefulness lies in the ability to create complex parts quickly and in a customized manner. In industries such as automotive, medicine, and aeronautics, additive manufacturing enables the creation of prototypes, functional components, and customized parts, opening up new opportunities in the design and production of innovative products.

In this context, TECH has developed an innovative Postgraduate Certificate in Industry-Specific Applications of Additive Manufacturing. Designed by renowned experts in this field, the syllabus will delve into the production of rapid prototypes for design validation, a crucial stage in the development of new products. In addition, the syllabus will explore the creation of functional and customized parts for vehicles, where the creation of specific components improves both performance and efficiency. The teaching materials will also provide various strategies for optimizing the energy efficiency of parts and reducing their environmental impact.

It is worth noting that the university program is based on the cutting-edge Relearning method, pioneered by TECH, which guarantees the thorough assimilation of complex concepts. In this regard, the only thing designers need to access this Virtual Campus is a device with Internet access, where they will have access to a variety of multimedia support resources that will make their study more enjoyable (such as explanatory videos, specialized readings, and interactive summaries).

This **Postgraduate Certificate in Industry-Specific Applications of Additive Manufacturing** 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 Industry-Specific Applications of Additive Manufacturing
- ♦ 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 in engineering practice
- ♦ 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



With a comprehensive and efficient approach, you will enjoy a flexible, dynamic, and applied academic experience designed to enhance your professional development in this highly competitive field"

“

You will hone your skills in the manufacture of functional and customized parts, bringing your abilities to the highest standards of efficiency and precision”

The teaching staff includes professionals from the field of Industry-Specific Applications of Additive Manufacturing, 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 TECH's revolutionary Relearning methodology that will help you consolidate complex concepts efficiently and dynamically.

You will choose the most appropriate 3D printing technologies according to the specific needs of each industry, improving the quality of the final products.



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

The academic program will delve into key aspects of Additive Manufacturing Applications applied to various fields ranging from Automotive and Medicine to Biotechnology. In this regard, the syllabus will provide students with the keys to developing functional parts that also stand out for their strength and durability. Likewise, the teaching content will analyze a variety of strategies to optimize both the use of materials and efficiency in production flows. Thanks to this, professionals will be able to provide customized designs and ensure that products meet the highest quality standards.





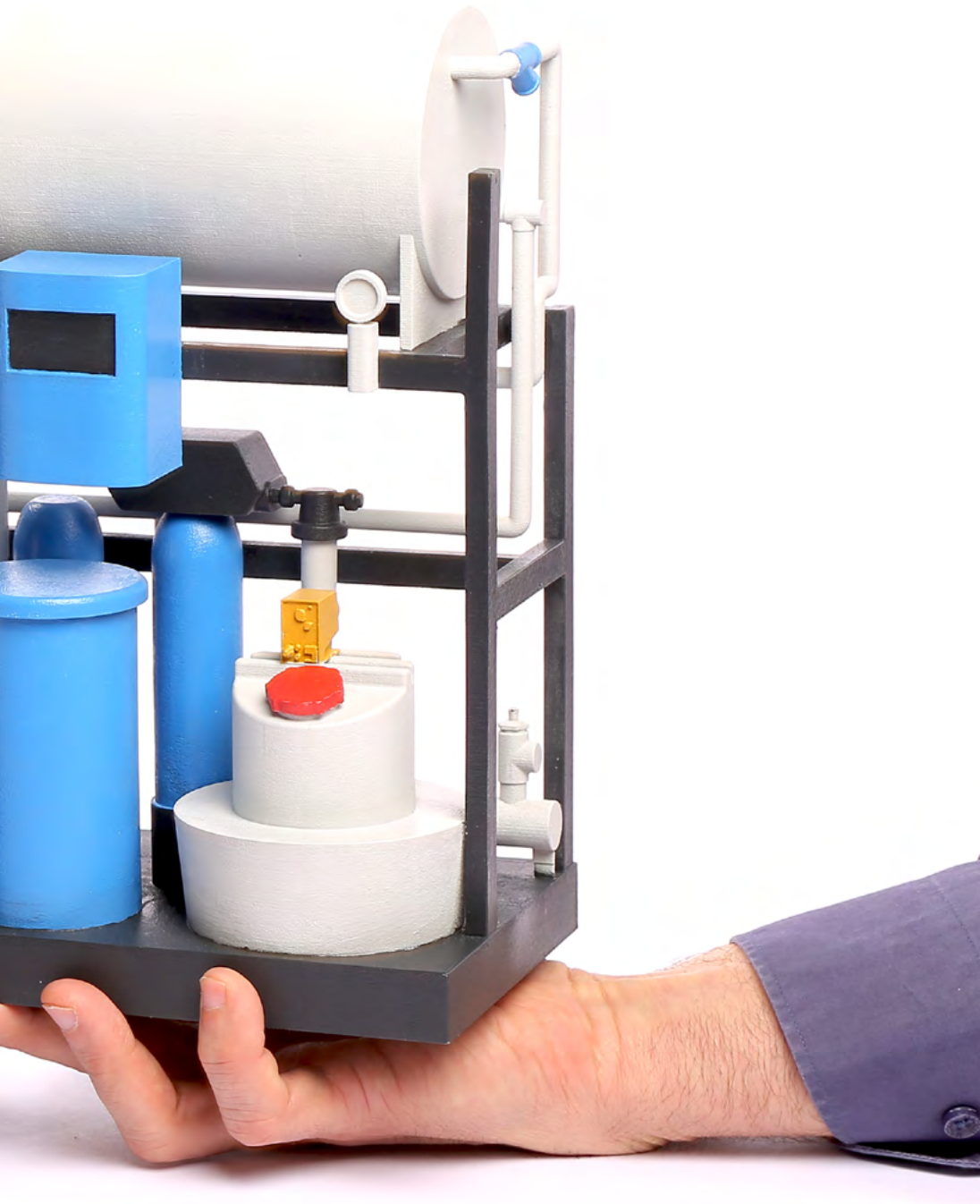
“

You will delve into the creation of products in a sustainable manner, reducing waste and optimizing the materials used during manufacturing processes”

Module 1. Industry-Specific Applications of Additive Manufacturing

- 1.1. Automotive: Prototypes and Functional Parts
 - 1.1.1. Rapid Prototyping for Design Validation
 - 1.1.2. Manufacturing of Functional and Customized Parts for Vehicles
 - 1.1.3. Optimization of 3D Printing in the Manufacturing of Lightweight Components
- 1.2. Aerospace: Optimization of Lightweight Components and Materials
 - 1.2.1. Weight Reduction in Aircraft Parts Using Lattice Structures
 - 1.2.2. Use of Lightweight Alloys in 3D-Printed Components
 - 1.2.3. Certification and Validation of Printed Parts for Aerospace Applications
- 1.3. Architecture: 3D-Printed Models and Constructions
 - 1.3.1. Creation of Detailed Models for Project Presentations
 - 1.3.2. Applications of 3D Printing in the Construction of Structures
 - 1.3.3. Recent Innovations in Concrete Printing and Architectural Materials
- 1.4. Health: Prosthetics, Implants, and Biomedical Applications
 - 1.4.1. Manufacturing Customized Prosthetics Using 3D Printing
 - 1.4.2. Printing Medical Implants Tailored to Patient Needs
 - 1.4.2. Innovations in Tissue and Organ Bioprinting
- 1.5. Fashion and Jewelry: Customization and Unique Design
 - 1.5.1. Producing Customized Jewelry with 3D Printers
 - 1.5.2. Use of 3D Printing for the Creation of Clothing and Accessories
 - 1.5.3. Impact of Additive Technology on the Fashion Industry
- 1.6. Education and Research: Innovative Projects with 3D Printing
 - 1.6.1. 3D Printing as an Educational Tool in Various Disciplines
 - 1.6.2. Research Projects Using 3D Printing for Prototyping
 - 1.6.2. Use of Technology in Scientific Research Laboratories
- 1.7. Electronics: Prototyping and Circuit Assembly
 - 1.7.1. Rapid Prototyping of Electronic Devices
 - 1.7.2. Printing Components for Integrated Circuit Assembly
 - 1.7.3. Innovations in Additive Manufacturing of Electronic Products





- 1.8. Food Industry: 3D Food Printing
 - 1.8.1. Applications in the Food Industry for Food Customization
 - 1.8.2. 3D Food Printing Technologies and Their Impact on Nutrition
 - 1.8.3. Innovations in Printed Textures and Shapes in Food
- 1.9. Energy and Sustainability: Components for Renewable Energy
 - 1.9.1. Production of Key Components for Renewable Energy Using 3D Printing
 - 1.9.2. Waste Reduction and Resource Optimization in Additive Manufacturing
 - 1.9.3. Innovations in Printing Components for the Solar and Wind Industry
- 1.10. Other Emerging Sectors: Exploration of New Fields
 - 1.10.1. Applications of 3D Printing in Fashion and Art
 - 1.10.2. Exploration of Emerging Sectors such as Biotechnology
 - 1.10.3. 3D Printing in the Manufacture of Customized Medical Devices

“

You will learn valuable lessons from practical exercises and real-life Additive Manufacturing case studies in simulated learning environments”

04

Teaching Objectives

This university program will provide design professionals with advanced knowledge of Additive Manufacturing for a variety of applications. Graduates will gain advanced technical skills to create functional, customized, and lightweight parts using state-of-the-art 3D printing techniques. At the same time, they will be highly prepared to adapt their designs to the demands of each industry, maximizing product performance and significantly reducing production costs. Experts will also gain a strategic approach based on both sustainability and innovation.



“

You will gain a comprehensive understanding of how 3D Printing enables the creation of lighter parts to optimize vehicle performance”



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

- ♦ Analyze how Additive Manufacturing is implemented in different industries
- ♦ Evaluate the benefits and limitations of the technology in each industry, considering aspects such as cost, time, and quality



Delve into the advantages of Additive Manufacturing for food customization and adapt diets to the nutritional needs of individuals”

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.



“

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.

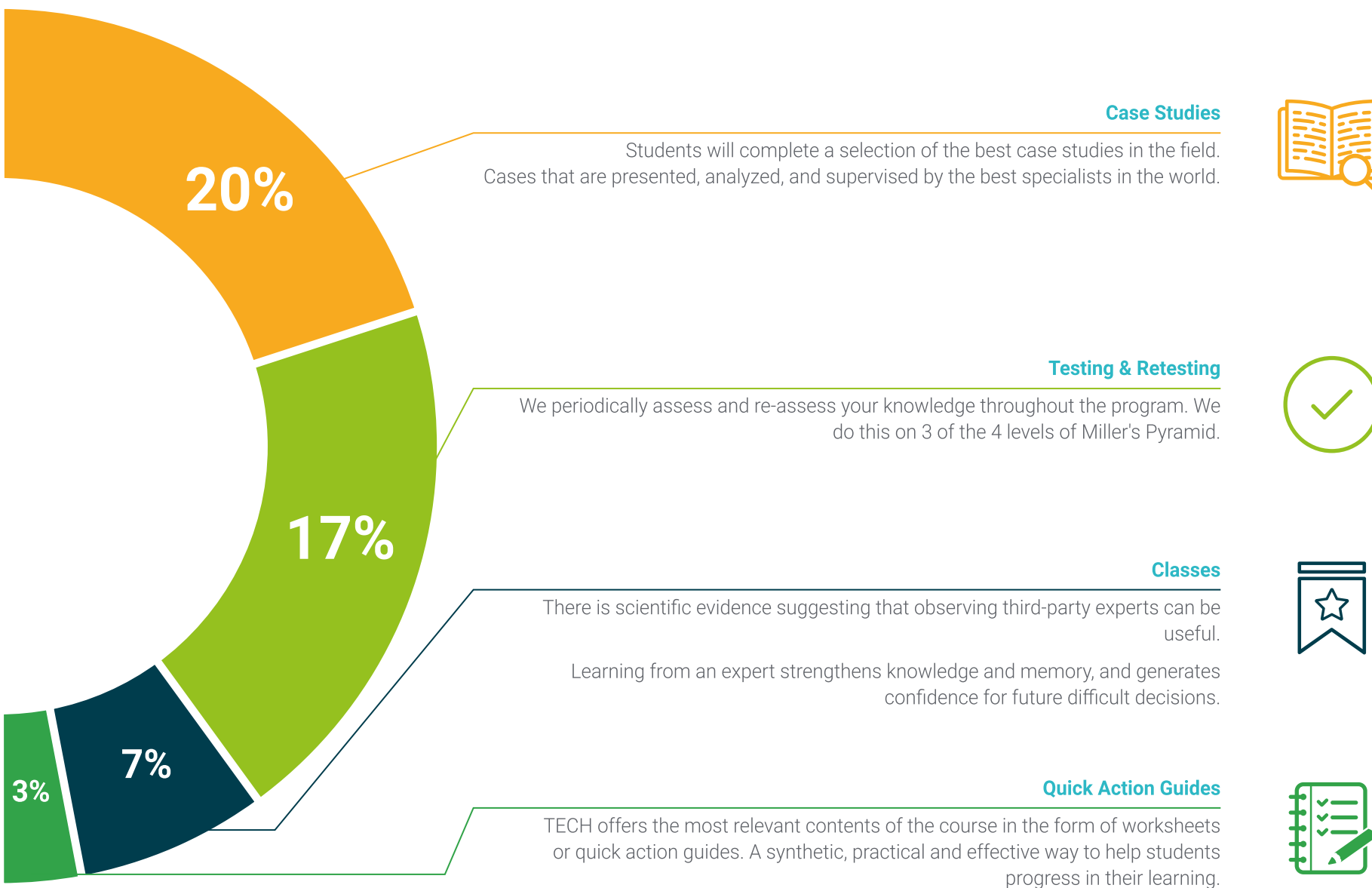
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



Additional Reading

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





06

Teaching Staff

TECH's philosophy is to offer the most complete and up-to-date university programs in the academic landscape. For this reason, it carries out a meticulous process to build its teaching staff. Thanks to this, the current Postgraduate Certificate brings together the best experts in the field of Additive Manufacturing and 3D Printing. These professionals have developed a variety of teaching materials that stand out both for their quality and their adaptation to the demands of the labor market. Thereby, graduates have the guarantees they need to enjoy an immersive experience that will considerably broaden their professional horizons.



“

The teaching staff for this Postgraduate Certificate is made up of true experts in Additive Manufacturing and 3D Printing, who will provide you with the most professionally applicable knowledge in this field”

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

Ms. Contreras, Lucía

- Creative Strategist and Social Media Manager at 3Dnatives
- Head of Influencer Communications at Bebee
- Web Content Editor at Needme
- Master's Degree in Design and Art Direction from CICE
- Bachelor's Degree in Audiovisual Communication from the Complutense University of Madrid



07 Certificate

This Postgraduate Certificate in Industry-Specific Applications of Additive Manufacturing 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 Industry-Specific Applications of Additive Manufacturing** 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 Industry-Specific Applications of Additive Manufacturing**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**





Postgraduate Certificate Industry-Specific Applications of Additive Manufacturing

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

Postgraduate Certificate

Industry-Specific Applications of Additive Manufacturing