Postgraduate Certificate

Additive Manufacturing Post-Processing and Surface Finishing

tech global university

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Postgraduate Certificate
Additive Manufacturing Post-Processing and Surface Finishing

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

Website: www.techtitute.com/us/design/postgraduate-certificate/additive-manufacturing-post-processing-surface-finishing

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01

Introduction to the Program

Additive Manufacturing Post-Processing and Surface Finishing have become increasingly important due to their direct impact on the quality and functionality of 3D-printed parts. In this context, it is essential that specialists master the most advanced techniques to optimize their results and provide customized solutions that adapt to the needs of companies. To help them with this task, TECH has created a pioneering university program focused on the latest trends in Additive Manufacturing Post-Processing and Surface Finishing. The program is delivered in a convenient 100% online format, giving students the freedom to set their own schedules and pace of study.

Thanks to this completely online Postgraduate Certificate, you will master the latest post-processing tools to optimize the finish of printed parts"

In Additive Manufacturing, post-processing and finishing processes play an essential role in optimizing the parts produced. These procedures allow designers to correct imperfections generated during 3D printing and improve both the mechanical and aesthetic properties of the final product. The importance of these processes lies in their ability to transform a functional part into a high-quality product that meets the specific requirements of each industry. It is therefore essential that specialists stay at the forefront of the most sophisticated methodologies to ensure maximum precision, efficiency, and durability. Only then will they be able to adapt their designs to changing market needs and maximize the value of each project.

In this context, TECH presents a cutting-edge Postgraduate Certificate in Additive Manufacturing Post-Processing and Surface Finishing. This academic program will address the optimization of parts through modern painting, varnishing, and texturing techniques. In turn, the course content will delve into the application of protective coatings, which are essential for improving the resistance of parts to external factors and extending their useful life. In addition, the syllabus will delve into multiple texturing techniques to improve both the appearance and functionality of surfaces. This will allow graduates to obtain advanced skills to create more durable, resistant, and suitable parts for various industrial applications.

In terms of methodology, the program is delivered 100% online, giving designers the opportunity to access the content from anywhere and at any time, adapting their studies to their schedules. In addition, TECH employs its revolutionary learning method: Relearning. This system consists of the repetition of key concepts to fix knowledge and facilitate lasting learning.

This **Postgraduate Certificate in Additive Manufacturing Post-Processing and Surface Finishing** 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 Post-Processing and Surface Finishing
- 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 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

You will learn the most ground-breaking strategies for reducing post-treatment time and improving workflow"

Incorporate into your daily practice the latest trends in Additive Manufacturing Post-Processing and Surface Finishing"

With TECH's revolutionary Relearning method, you will consolidate the key concepts offered on this educational program in a progressive and natural way.

You will achieve high-quality finishes by adjusting the design of the part to the specific requirements of different industries.

The teaching staff includes professionals from the field of Additive Manufacturing Post-Processing and Surface Finishing, 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.

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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.

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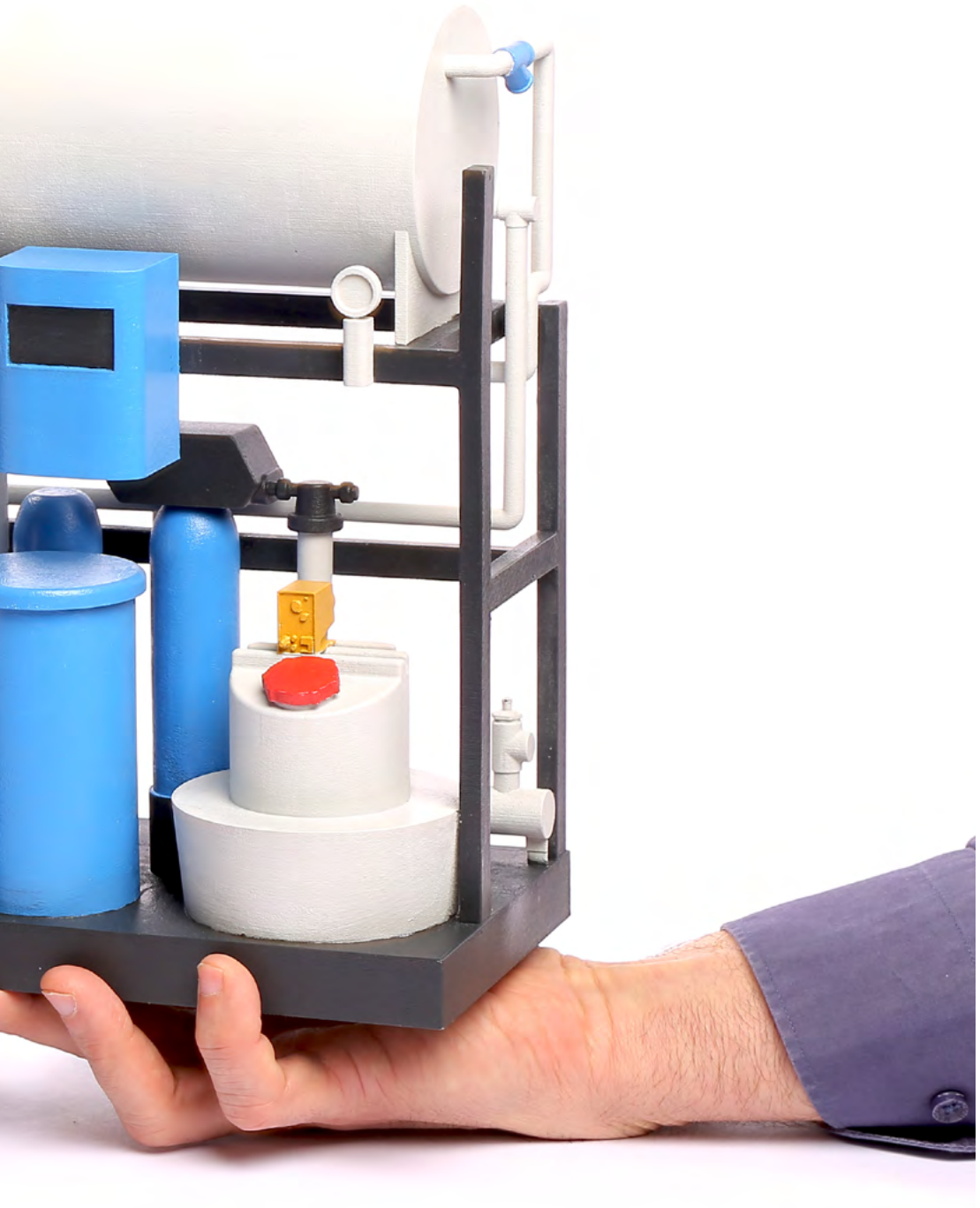
Syllabus

This academic program will cover the most advanced Post-Processing and Surface Finishing Techniques in Additive Manufacturing to improve the quality and functionality of the parts produced. It will also delve into post-printing assembly methods, offering practical solutions for joining 3D-printed parts, which will optimize the performance of complex structures. In addition, the use of adhesives and welding will be explored, essential tools for ensuring the strength and durability of parts. Design for assembly and assembly simplification will also be highlighted, enabling professionals to improve efficiency in their production processes.

You will implement cutting-edge methods to increase the strength of printed parts, improving their performance in applications that require high durability and resistance"

Module 1. Additive Manufacturing Post-Processing and Surface Finishing

1.1. Post-Processing Techniques: Cutting, Sanding, Polishing
  1.1.1. Automated Methods for Improving Surface Finish
  1.1.2. Polishing Tools and Equipment for Printed Parts
  1.1.3. Comparison of Techniques According to Material Type
1.2. Surface Finishes: Painting, Varnishing, and Texturizing
  1.2.1. Application of Protective Coatings
  1.2.2. Texturing Techniques to Improve Appearance
  1.2.3. Use of Paint and Varnishes to Improve Aesthetic Finish
1.3. Heat Treatment and Hardening of Parts
  1.3.1. Annealing Processes to Improve Strength
  1.3.2. Applications of Heat Treatment in Printed Metals
  1.3.3. Key Factors for Successful Hardening
1.4. Post-Printing Assembly Techniques
  1.4.1. Methods for Joining 3D Printed Parts
  1.4.2. Use of Adhesives and Welding in Complex Parts
  1.4.3. Design for Assembly and Simplification of Assembly
1.5. Support Removal Methods
  1.5.1. Mechanical and Chemical Techniques for Removing Supports
  1.5.2. Design Optimization to Facilitate Removal
  1.5.3. Reducing the Impact of Supports in Post-Processing
1.6. Post-Processing for Metallic Materials
  1.6.1. Polishing and Sanding of 3D Printed Metal Parts
  1.6.2. Specific Treatments to Improve Mechanical Properties
  1.6.3. Comparison of Post-Processing Techniques for Different Metals
1.7. Use of Soluble Materials for Supports
  1.7.1. Advantages of Using Water-Soluble Supports
  1.7.2. Materials Compatible with Dual Extruder Printers
  1.7.3. Reducing Post-Processing Time with Soluble Supports



1.8. Automation of Post-Processing: Advanced Systems
  1.8.1. Automated Machines for Sanding and Polishing
  1.8.2. Ultrasonic Cleaning Systems for Dust and Residue Removal
  1.8.3. Use of Robots in Post-Processing of Large Parts
1.9. Quality Control in Printed Parts
  1.9.1. Visual and Tactile Inspection Techniques
  1.9.2. 3D Measurement and Scanning Tools for Accuracy Verification
  1.9.3. Test Methods for Validating Strength and Durability
1.10. Post-Processing to Improve Functionality
  1.10.1. Additional Treatments to Improve Mechanical Properties
  1.10.2. Surface Finishes to Improve Functionality in Specific Parts
  1.10.3. Wear Reduction Through Special Coatings

You will have access to a digital platform enriched with various multimedia resources such as explanatory videos, specialized readings, and interactive summaries"

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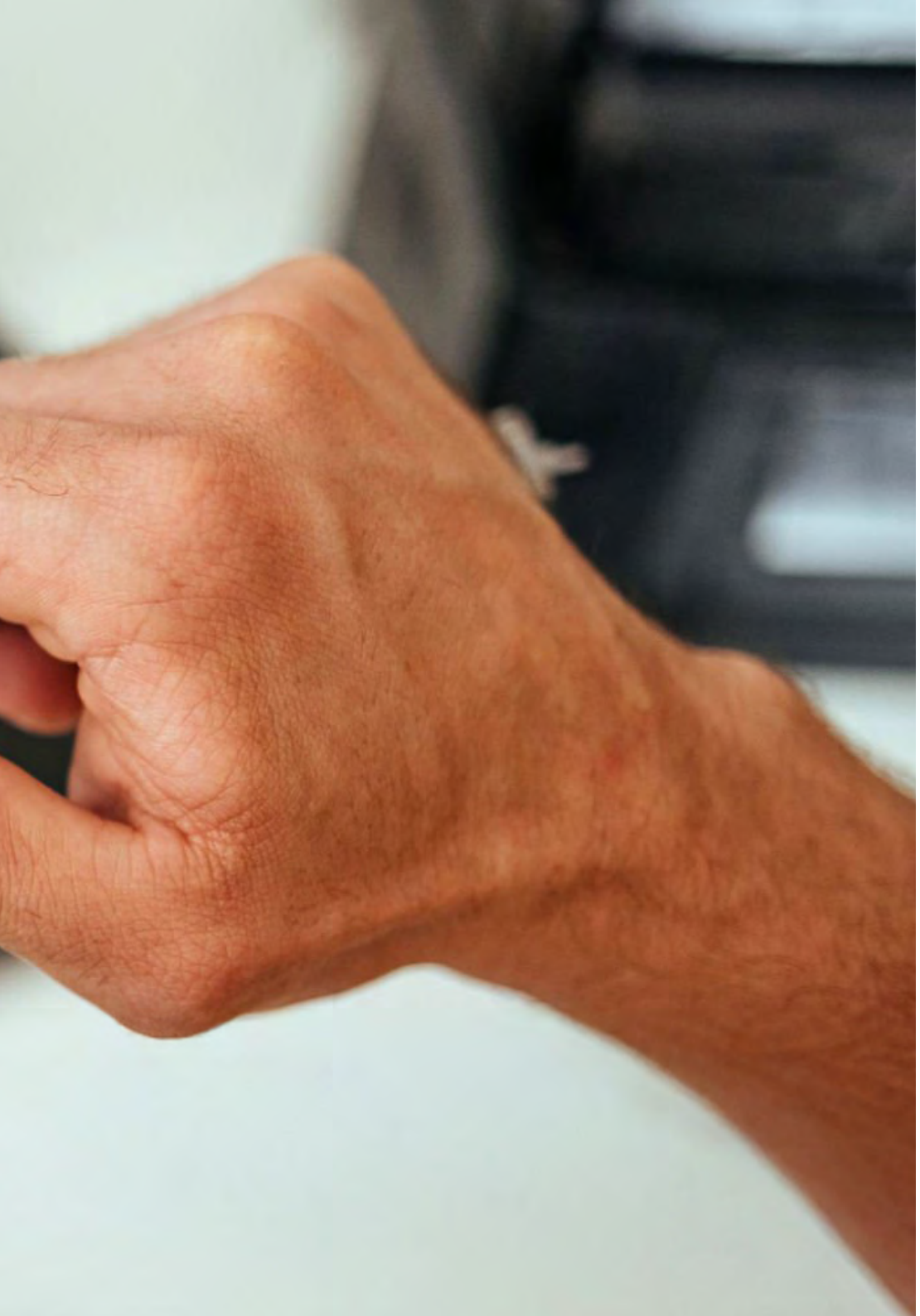
Teaching Objectives

This university program will enable professionals to strengthen their ability to address the challenges of post-processing. Therefore, it will deepen their mastery of specialized techniques, such as the efficient assembly of printed parts, the integration of different components using adhesives and welding, and design optimization to facilitate assembly. With these skills, professionals will be able to effectively address the complexities of producing high-precision parts, improving the quality and functionality of the final products. This approach will enable them to apply more efficient and detailed solutions in advanced industrial projects.

You will select the most appropriate post-processing techniques according to the specific design requirements and material of the printed parts"

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

- Address the best post-processing technique for each of the technologies and materials
- Develop skills to improve the quality, precision, and resistance of parts through polishing, heat treatment, painting, and other finishing techniques

You will develop key skills to understand how each technology works in Additive Manufacturing and its application in advanced post-processing processes"

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.

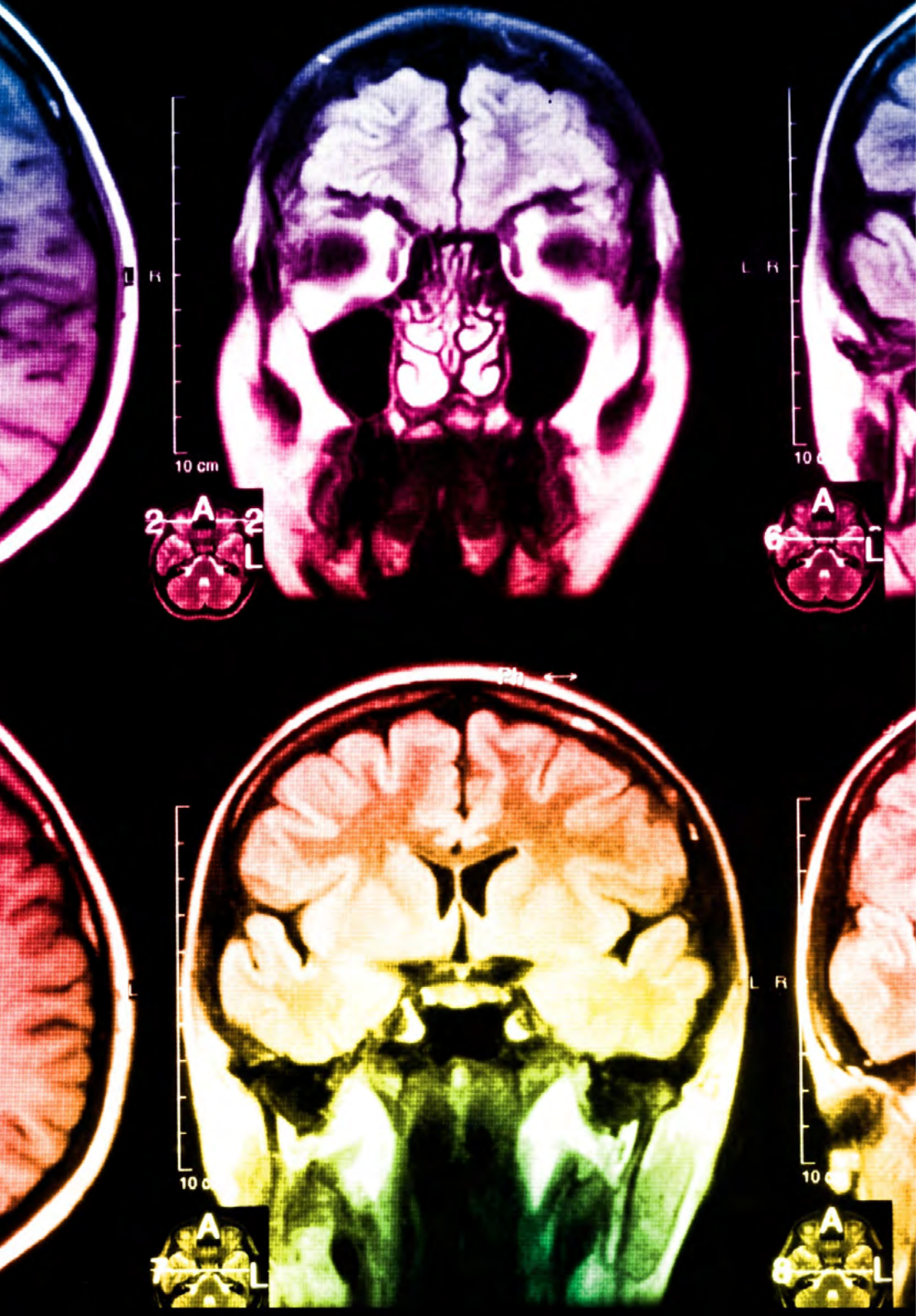
In order to facilitate tutor-student contact as much as possible, you will have a wide range of communication possibilities, both in real time and delayed (internal messaging, telephone answering service, email contact with the technical secretary, chat and videoconferences).

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.

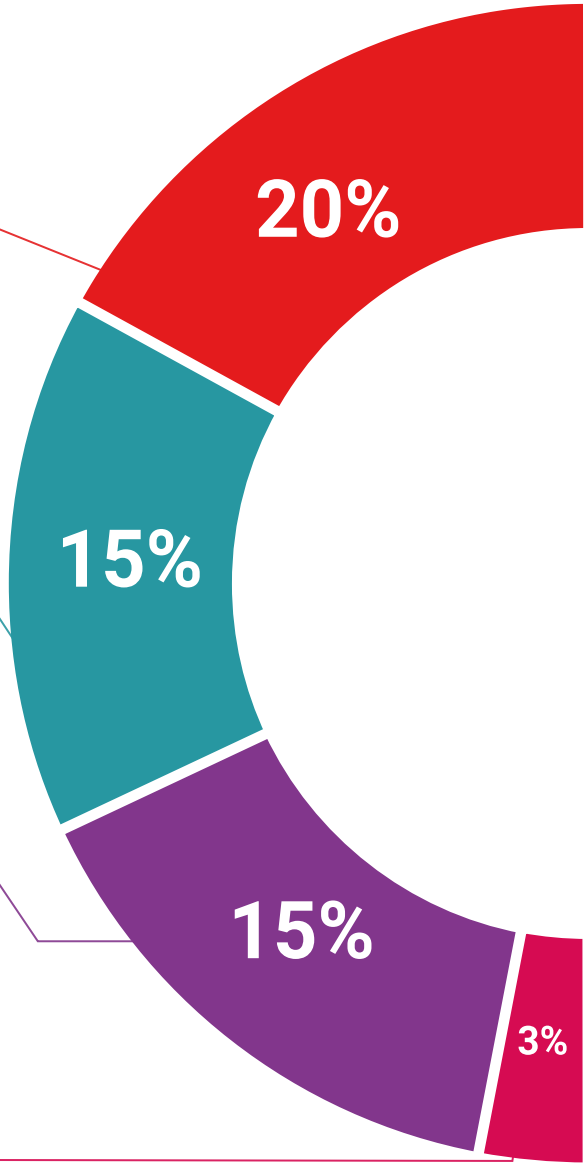
Interactive Summaries

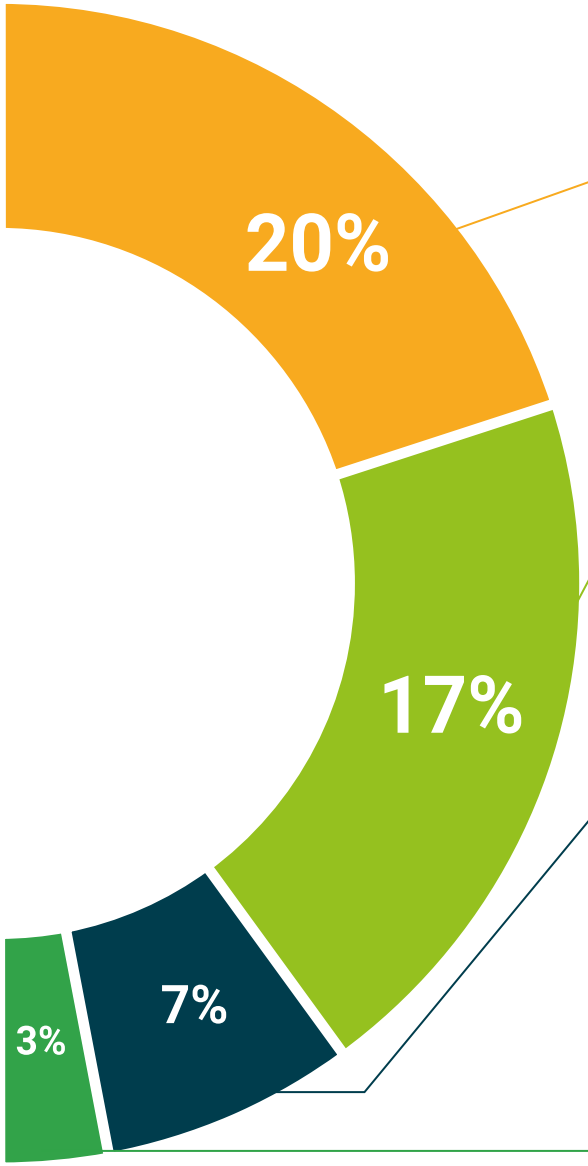
We present the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

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.





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.

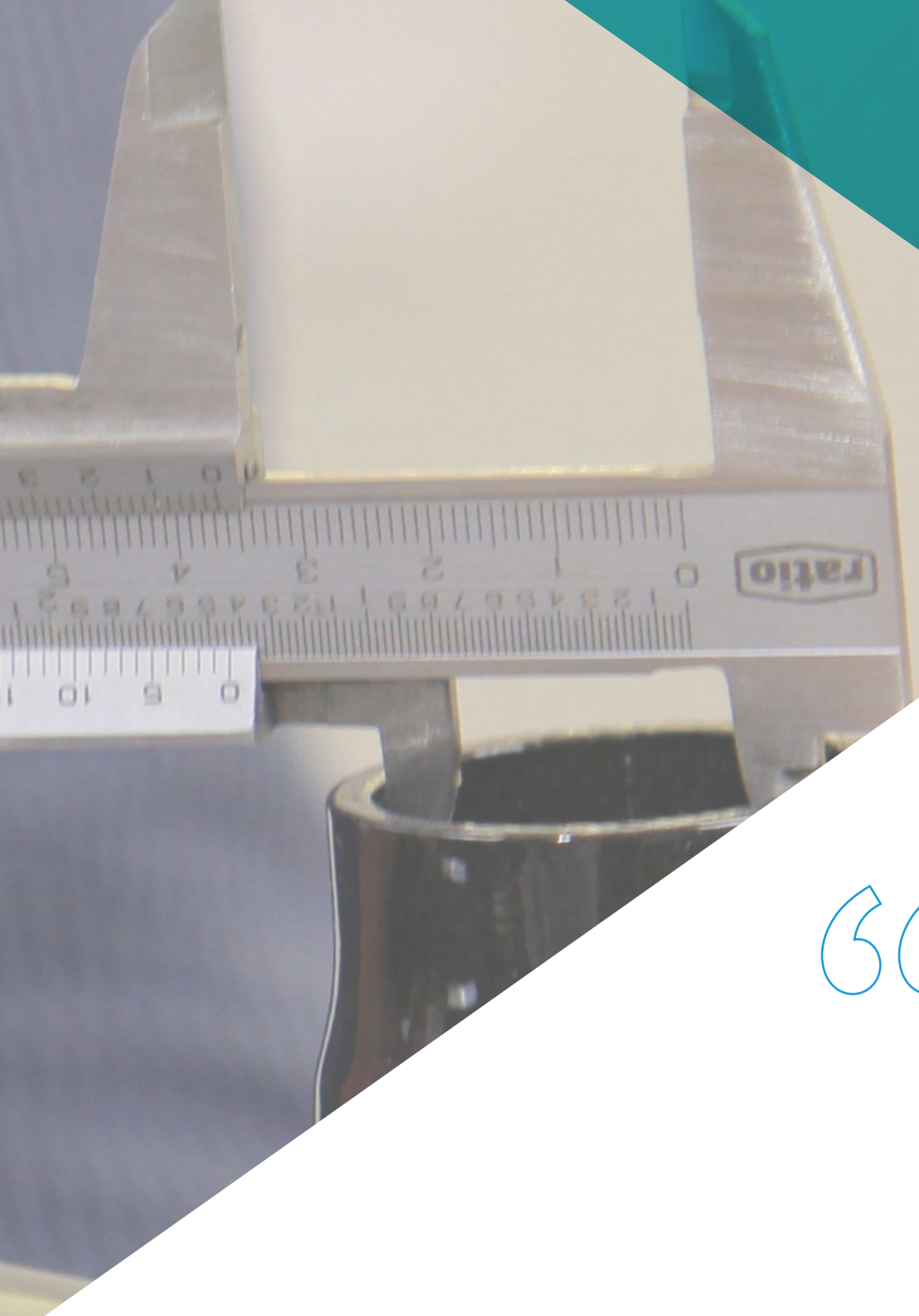
Quick Action Guides

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

TECH University offers cutting-edge university programs tailored to the latest trends in design and digital manufacturing. To this end, it has highly qualified experts, selected for their extensive experience in developing innovative solutions that have optimized both functionality and aesthetics in various projects. These industry-experienced professionals provide knowledge applied to the creation of high-quality products. This allows professionals to expand their capabilities in Design, leading high-impact projects in sectors that require creative and technological solutions.



The diversity of talents and knowledge of the teaching staff, specialized in Additive Manufacturing, will create a dynamic learning environment"

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. Tutó Cabedo, Xavier

- Director of Engineering and Design at Industria Digital
- Founder of Kxdesigners
- Master's Degree in Design Research and Management from TFRAF at ISEC
- Bachelor's Degree in Design Engineering from ELISAVA University School

07

Certificate

This Postgraduate Certificate in Additive Manufacturing Post-Processing and Surface Finishing 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 Additive Manufacturing Post-Processing and Surface Finishing** 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 Post-Processing and Surface Finishing**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**


tech global university

Mr./Ms. _____, with identification document _____
has successfully passed and obtained the title of:

Postgraduate Certificate in Additive Manufacturing Post-Processing and Surface Finishing

This is a private qualification of 180 hours of duration equivalent to 6 ECTS, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH Global University is a university officially recognized by the Government of Andorra on the 31st of January of 2024, which belongs to the European Higher Education Area (EHEA).

In Andorra la Vella, on the 28th of February of 2024

Dr. Pedro Navarro Illana
Dean

Unique TECH Code: AFWORD23S techtitute.com/certificates

*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.

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