



# Postgraduate Diploma Production in Lean Manufacturing Systems

» Modality: online

» Duration: 6 months

» Certificate: TECH Technological University

» Dedication: 16h/week

» Schedule: at your own pace

» Exams: online

» Target Group: University graduates, diploma and degree holders who have previously completed any of the degrees in the field of Social and Legal Sciences, Administration and Business Administration

Website: www.techtitute.com/us/school-of-business/postgraduate-diploma/postgraduate-diploma-lean-manufacturing-systems

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## 01 **Welcome**

Lean Manufacturing has positioned itself as an excellent tool for optimizing production processes in companies. Through its implementation, companies eliminate those activities that do not generate any type of value, creating products in a reduced time and with a minimum cost. Therefore, experts in the mastery of this organizational model are highly required by organizations to occupy reference positions, in order to improve their productive development. In view of this situation, TECH has designed this program, which improves the student's skills in the management of Lean work methodologies and strategies for waste reduction. 100% online and without leaving your home, you will fully boost your career prospects.









## tech 08 | Why Study at TECH?

## At TECH Technological University



#### **Innovation**

The university offers an online learning model that balances the latest educational technology with the most rigorous teaching methods. A unique method with the highest international recognition that will provide students with the keys to develop in a rapidly-evolving world, where innovation must be every entrepreneur's focus.

"Microsoft Europe Success Story" for incorporating an innovative interactive multi-video system in the programs.



## The Highest Standards

Admissions criteria at TECH are not economic. Students don't need to make a large investment to study at this university. However, in order to obtain a qualification from TECH, the student's intelligence and ability will be tested to their limits. The institution's academic standards are exceptionally high...

95%

of TECH students successfully complete their studies



### **Networking**

Professionals from countries all over the world attend TECH, allowing students to establish a large network of contacts that may prove useful to them in the future.

+100000

+200

executives prepared each year

different nationalities



### **Empowerment**

Students will grow hand in hand with the best companies and highly regarded and influential professionals. TECH has developed strategic partnerships and a valuable network of contacts with major economic players in 7 continents.

+500

collaborative agreements with leading companies



#### **Talent**

This program is a unique initiative to allow students to showcase their talent in the business world. An opportunity that will allow them to voice their concerns and share their business vision.

After completing this program, TECH helps students show the world their talent.



### **Multicultural Context**

While studying at TECH, students will enjoy a unique experience. Study in a multicultural context. In a program with a global vision, through which students can learn about the operating methods in different parts of the world, and gather the latest information that best adapts to their business idea.

TECH students represent more than 200 different nationalities.



## Learn with the best

In the classroom, TECH's teaching staff discuss how they have achieved success in their companies, working in a real, lively, and dynamic context. Teachers who are fully committed to offering a quality specialization that will allow students to advance in their career and stand out in the business world.

Teachers representing 20 different nationalities.



At TECH, you will have access to the most rigorous and up-to-date case analyses in academia"

## Why Study at TECH? | 09 tech

TECH strives for excellence and, to this end, boasts a series of characteristics that make this university unique:



### **Analysis**

TECH explores the student's critical side, their ability to question things, their problem-solving skills, as well as their interpersonal skills.



#### **Academic Excellence**

TECH offers students the best online learning methodology. The university combines the Relearning methodology (the most internationally recognized postgraduate learning methodology) with Harvard Business School case studies. A complex balance of traditional and state-of-the-art methods, within the most demanding academic framework.



## **Economy of Scale**

TECH is the world's largest online university. It currently boasts a portfolio of more than 10,000 university postgraduate programs. And in today's new economy, **volume + technology = a ground-breaking price**. This way, TECH ensures that studying is not as expensive for students as it would be at another university.





## tech 12 | Why Our Program?

This program will provide you with a multitude of professional and personal advantages, among which we highlight the following:



### A Strong Boost to Your Career

By studying at TECH, students will be able to take control of their future and develop their full potential. By completing this program, students will acquire the skills required to make a positive change in their career in a short period of time.

70% of students achieve positive career development in less than 2 years.



## Develop a strategic and global vision of the company

TECH offers an in-depth overview of general management to understand how each decision affects each of the company's different functional fields.

Our global vision of companies will improve your strategic vision.



## Consolidate the student's senior management skills

Studying at TECH means opening the doors to a wide range of professional opportunities for students to position themselves as senior executives, with a broad vision of the international environment.

You will work on more than 100 real senior management cases.



## You will take on new responsibilities

The program will cover the latest trends, advances and strategies, so that students can carry out their professional work in a changing environment.

45% of graduates are promoted internally.



## Access to a powerful network of contacts

TECH connects its students to maximize opportunities. Students with the same concerns and desire to grow. Therefore, partnerships, customers or suppliers can be shared.

You will find a network of contacts that will be instrumental for professional development.



## Thoroughly develop business projects.

Students will acquire a deep strategic vision that will help them develop their own project, taking into account the different fields in companies.

20% of our students develop their own business idea.



## Improve soft skills and management skills

TECH helps students apply and develop the knowledge they have acquired, while improving their interpersonal skills in order to become leaders who make a difference.

Improve your communication and leadership skills and enhance your career.



## You will be part of an exclusive community

Students will be part of a community of elite executives, large companies, renowned institutions, and qualified teachers from the most prestigious universities in the world: the TECH Technological University community.

We give you the opportunity to study with a team of world-renowned teachers.





## tech 16 | Objectives

## TECH makes the goals of their students their own goals too Working together to achieve them

The Postgraduate Diploma in Production in Lean Manufacturing Systems will train the student to:



Integrate the Lean philosophy in the current context of Industry 4.0



Delve into the use of Standard Work to standardize processes and foster continuous improvement



Apply the Lean Manufacturing philosophy in logistics and office and service environments





Analyze the organizational differences between a traditional production system and a Lean system



Share best practices and experiences in the implementation of work cells and continuous improvement groups in different industries



Substantiate the concept of equipment efficiency and its impact on the income statement



Measure the Overall Equipment Effectiveness of equipment in any enterprise



09

Analyze the implications of equipment purchasing decisions and be able to optimize them

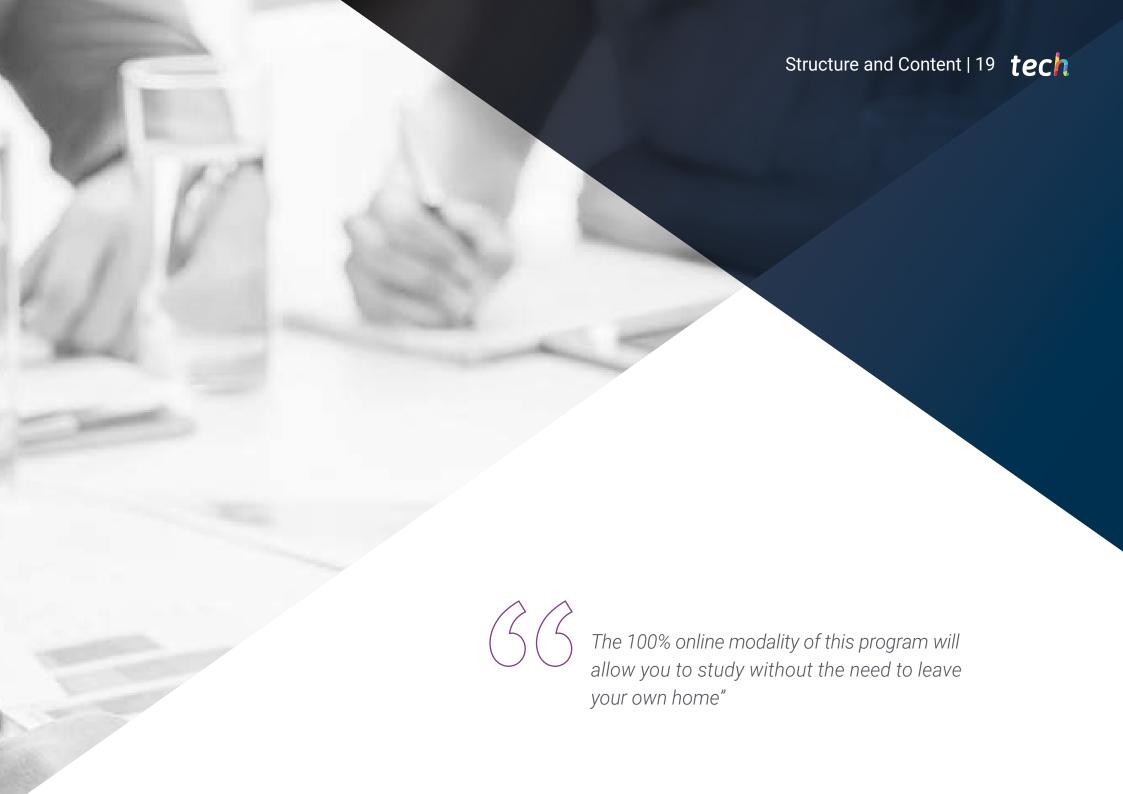


Know the techniques of inefficiency analysis in the equipment



Implement best practices in equipment safety management and equipment energy consumption management





## tech 20 | Structure and Content

## **Syllabus**

The Postgraduate Diploma in Production in Lean Manufacturing Systems has been developed with the premise of providing students with the skills required to optimize their production decision making in different business environments. In this way, through it, you will be fully prepared to face with solvency all the challenges that this business field presents on a daily basis.

Throughout 6 months of learning, the student will obtain an excellent didactic content of a theoretical-practical nature, which will allow them to acquire a remarkable global vision of this area and to closely analyze real business cases to enrich their professional skills. Theoretical-practical, which will allow them to acquire a notorious global vision of this area and to closely analyze real business cases to enrich their professional skills.

This Postgraduate Diploma delves in depth into the principles, characteristics and different applications of Lean Manufacturing, the distribution of production in this type of systems or the strategies of Total Productive Maintenance and Overall Equipment

Effectiveness. In this way, you will understand the keys to this model of work organization.

It is, therefore, a unique opportunity to acquire a series of competencies that will guarantee the student to stand out in the field of management and corporate management. You will also benefit from an exclusive teaching methodology and high quality didactic materials, designed by the best experts in the field of Lean Manufacturing.

This Postgraduate Diploma is developed over 6 months and is divided into 3 modules:

Module 1 Lean Manufacturing Principles and Context

Module 2 Evolution of production organization in a Lean system

Module 3 TPM (Total Productive Maintenance), OEE (Overall Equipment Effectiveness)



## Where, When and How is it Taught?

TECH offers the possibility of developing this Postgraduate Diploma in Lean Manufacturing Systems Production completely online. Throughout the 6 months of the educational program, you will be able to access all the contents of this program at any time, allowing you to self-manage your study time.

A unique, key, and decisive educational experience to boost your professional development and make the definitive leap.

## tech 22| Structure and Content

#### Module 1. Lean Manufacturing Principles and Context

#### 1.1. Lean Manufacturing

- 1.1.1. Lean Manufacturing Origin
- 1.1.2. Lean Manufacturing Principles
- 1.1.3. Benefits of Lean Manufacturing Methodology

## 1.2. Benefits of Lean Manufacturing Methodology Production philosophy at the Toyota plant

- 1.2.1. Toyota Production System (TPS)
- 1.2.2. Key principles of the TPS
- 1.2.3. The Pillars of TPS

#### 1.3. Precursors of Lean Manufacturing

- 1.3.1. Kiichiro Toyoda, Taiichi Ohno and Shigeo Shingo
- 1.3.2. Edward Deming
- 1.3.3. James Womack, Daniel Jones and Michael George

## 1.4. Lean Concept and its Application in Production

- 1.4.1. Value Identification and Value Stream Mapping
- 1.4.2. Creation of continuous flow and establishment of Pull Production
- 1.4.3. Pursuit of Perfection

## 1.5. Lean Manufacturing and Total Quality Management

- 1.5.1. Lean Manufacturing y Total Quality Management
- 1.5.2. Commonalities between Lean Manufacturing and Total Quality Management
- 1.5.3. Differences between Lean Manufacturing and Total Quality Management

#### 1.6. Lean Manufacturing y 6 Sigma

- 1.6.1. Lean Manufacturing y 6 Sigma
- 1.6.2. Commonalities between Lean Manufacturing and 6 Sigma
- 1.6.3. Differences between Lean Manufacturing and 6 Sigma

## 1.7. Lean Manufacturing and Process Reengineering

- 1.7.1. Lean Manufacturing and Process Reengineering
- 1.7.2. Commonalities between Lean Manufacturing and process reengineering
- 1.7.3. Differences between Lean Manufacturing and Process Reengineering

## 1.8. Lean Manufacturing and Theory of Constraints (TOC)

- 1.8.1. Lean Manufacturing and Theory of Constraints (TOC)
- 1.8.2. Commonalities between Lean Manufacturing and Theory of Constraints (TOC)
- 1.8.3. Differences between Lean Manufacturing Theory of Constraints (TOC)

## 1.9. Lean Manufacturing Integration with Industry 4.0

- 1.9.1. Evolution of Lean Manufacturing in the Industry 4.0 era
- 1.9.2. Integration of Lean Manufacturing with Industry 4.0
- 1.9.3. Future of Lean Manufacturing in the era of Industry 4.0

## 1.10. Applications of the Lean philosophy in other areas: Lean Logistics, Lean Office, Lean Service

- 1.10.1. Lean Logistics, Lean Office, Lean Service.
  Applications
- 1.10.2. Lean Logistics applications
- 1.10.3. Lean Office applications
- 1.10.4. Lean Service

#### Module 2. Evolution of production organization in a Lean system

- 2.1. The organization of production in a Lean system
- 2.1.1. The Organization of Production. Key Concepts
- 2.1.2. Company Structure and Organization
- 2.1.3. Production systems and work organization
- 2.2. Organizational differences between a traditional production system and a Lean system
- 2.2.1. Types of organizational structure
- 2.2.2. Organizational differences between a traditional system and a Lean system
- 2.2.3. Organizational advantages of the Lean system
- 2.3. Concept of "Work Cells" and their impact on efficiency and continuous improvement
- 2.3.1. Advantages of "Work Cells"
- 2.3.2. Structure/ Types of "Work Cells"
- 2.3.3. Management routines "Work Cells" to impact efficiency and continuous improvement
- 2.4. Implementation of "Continuous Improvement Teams" (Kaizen Teams) to ensure a focus on continuous improvement and problem solving
- 2.4.1. Incorporation of the Kaizen Teams Concept in the organization
- 2.4.2. Activities and methodology
- 2.4.3. Kaizen Teams Roles and Responsibilities

- 2.5. Importance of "Autonomy and Accountability" in the evolution towards a lean system and the improvement of efficiency and quality
- 2.5.1. Self-managed and agile teams as a key to organizational evolution
- 2.5.2. The development of people as an added value to the Lean organization
- 2.5.3. Structure for leading "Autonomy and accountability" towards a Lean system
- 2.6. Use of Standard Work to standardize processes and encourage continuous improvement
- 2.6.1. Standard Work. Key Elements
- 2.6.2. Benefits of Standard Work as an object of continuous improvement
- 2.6.3. Implementation of Standard Work in organizations
- 2.7. Systems for promoting polyvalence and training in lean organizations: The polyvalence matrix
- 2.7.1. Polyvalence Promotion and Training Systems in Lean Organizations: The Polyvalence Matrix
- 2.7.2. Advantages of a multipurpose system
- 2.7.3. Implementation of the polyvalence promotion system
- 2.8. Evolution of production organization through waste elimination and continuous improvement
- 2.8.1. Analysis of non-value-adding activities as a basic Lean practice
- 2.8.2. Waste elimination/reduction strategy
- 2.8.3. Implementing a waste elimination/reduction model

- 2.9. Implementation of Work Cells and continuous improvement groups in different industries. Practical Examples
- 2.9.1. Implementation of Work Cells in the Automotive Sector
- 2.9.2. Implementation of work cells in the textile sector
- 2.9.3. Implementation of Work Cells in the Food Sector

- 2.10. Importance of the evolution of the production organization towards a Lean system
- 2.10.1. Main aspects in the evolution towards a Lean system
- 2.10.2. Improved productivity and production organization
- 2.10.3. Utility of the Lean System for the evolution of the production organization

## tech 24| Structure and Content

Module 3. TPM (Total Productive Maintenance), OEE (Overall Equipment Effectiveness)							
	TPM Total Productive Maintenance TPM Total Productive Maintenance. Fundamentals Emergence, objectives and benefits TPM Pillars	3.2.1. 3.2.2. 3.2.3.	Problem Identification and Problem Solving Techniques Identification of efficiency problems Solving efficiency problems	3.3.1. 3.3.2.	Techniques to Reduce Downtime in the Production Process, Maintenance Planning and Programming Production planning and maintenance Autonomous Maintenance SMED	3.4.1. 3.4.2. 3.4.3.	Management and Purchasing. Decision Criteria Technical requirements and specifications Costs and investment
	Preventative Maintenance Prevention of equipment failures Installation of the equipment: Maintainability criteria Preventative Maintenance Example of a preventive maintenance plan in the railway industry	3.6.1.	Sensorization of equipment	3.7.1.	Safety Improvement Techniques in the Production Process, Identification and Elimination of Hazards in the Workplace Identification of hazards in the workplace Risk assessment and protection measures Emergency Planning	3.8.1. 3.8.2. 3.8.3.	Guidance for the Implementation of TPM in the Organization, Planning, Training and Implementation of Maintenance Systems  The 14 steps for TPM implementation Implementation planning TPM training and maintenance
3.9.1. 3.9.2. 3.9.3.	9 1	3.10. Examples of TPM implementation 3.10.1. Example of application in the railway sector 3.10.2. Examples in the pharmaceutical sector 3.10.3. Example of application in the sector					





Enjoy a wide variety of textual and multimedia learning formats and choose the ones that best suit your study circumstances"



This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning.** 

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.







## TECH Business School uses the Case Study to contextualize all content

Our program offers a revolutionary approach to developing skills and knowledge. Our goal is to strengthen skills in a changing, competitive, and highly demanding environment.





This program prepares you to face business challenges in uncertain environments and achieve business success.



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

## A learning method that is different and innovative

This TECH program is an intensive educational program, created from scratch to present executives with challenges and business decisions at the highest level, whether at the national or international level. This methodology promotes personal and professional growth, representing a significant step towards success. The case method, a technique that lays the foundation for this content, ensures that the most current economic, social and business reality is taken into account.



You will learn, through collaborative activities and real cases, how to solve complex situations in real business environments"

The case method has been the most widely used learning system among the world's leading business schools for as long as they have existed. The case method was developed in 1912 so that law students would not only learn the law based on theoretical content. It consisted of presenting students with real-life, complex situations for them to make informed decisions and value judgments on how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

What should a professional do in a given situation? This is the question we face in the case method, an action-oriented learning method. Throughout the program, the studies will be presented with multiple real cases. They must integrate all their knowledge, research, argue and defend their ideas and decisions.

## Relearning Methodology

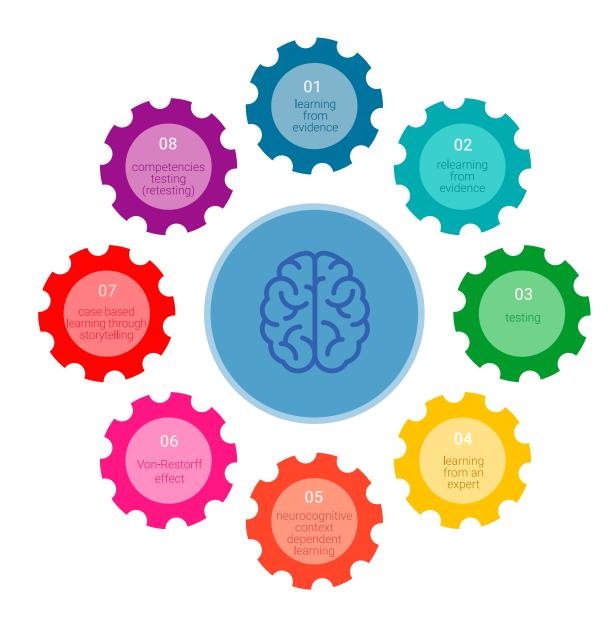
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines different teaching elements in each lesson.

We enhance the Case Study with the best 100% online teaching method: Relearning.

Our online system will allow you to organize your time and learning pace, adapting it to your schedule. You will be able to access the contents from any device with an internet connection.

At TECH you will learn using a cutting-edge methodology designed to train the executives of the future. This method, at the forefront of international teaching, is called Relearning.

Our online business school is the only one in the world licensed to incorporate this successful method. In 2019, we managed to improve our students' overall satisfaction levels (teaching quality, quality of materials, course structure, objectives...) based on the best online university indicators.



## Methodology | 31 **tech**

In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically. With this methodology we have trained more than 650,000 university graduates with unprecedented success in fields as diverse as biochemistry, genetics, surgery, international law, management skills, sports science, philosophy, law, engineering, journalism, history, markets, and financial instruments. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

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

From the latest scientific evidence in the field of neuroscience, not only do we know how to organize information, ideas, images and memories, but we know that the place and context where we have learned something is fundamental for us to be able to remember it and store it in the hippocampus, to retain it in our long-term memory.

In this way, and in what is called neurocognitive context-dependent e-learning, the different elements in our program are connected to the context where the individual carries out their professional activity.

This program offers the best educational material, prepared with professionals in mind:



#### **Study Material**

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.



#### **Classes**

There is scientific evidence suggesting that observing third-party experts can be useful.

Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.



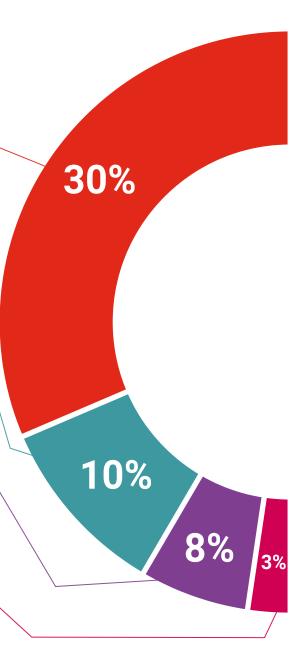
### **Management Skills Exercises**

They will carry out activities to develop specific executive competencies in each thematic area. Practices and dynamics to acquire and develop the skills and abilities that a high-level manager needs to develop in the context of the globalization we live in.



#### **Additional Reading**

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





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



#### **Interactive Summaries**

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

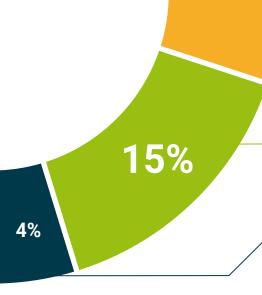


This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".

### **Testing & Retesting**

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

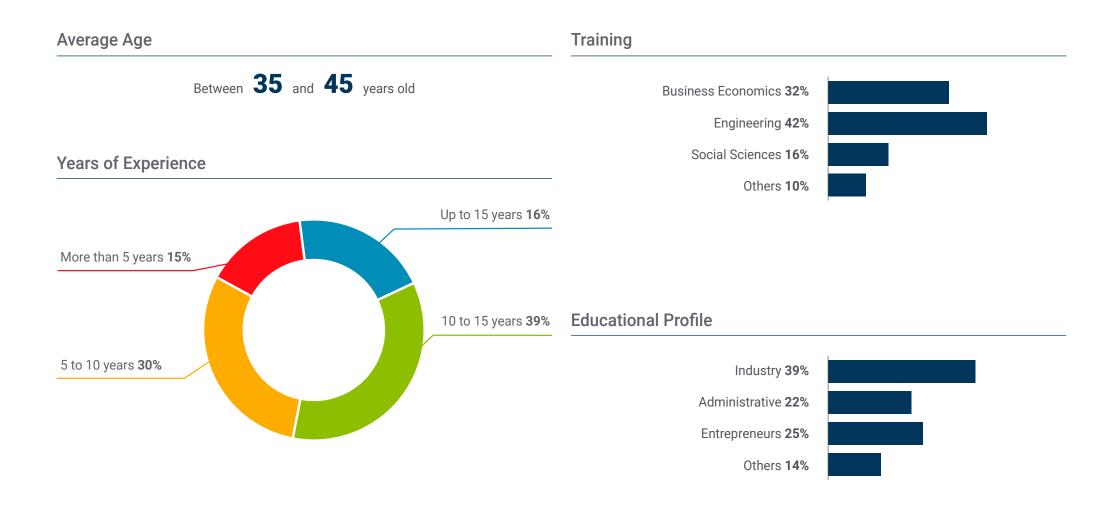


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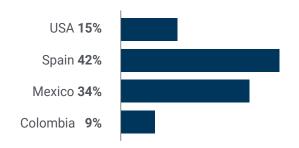




## tech 36 | Our Students' Profiles



## **Geographical Distribution**



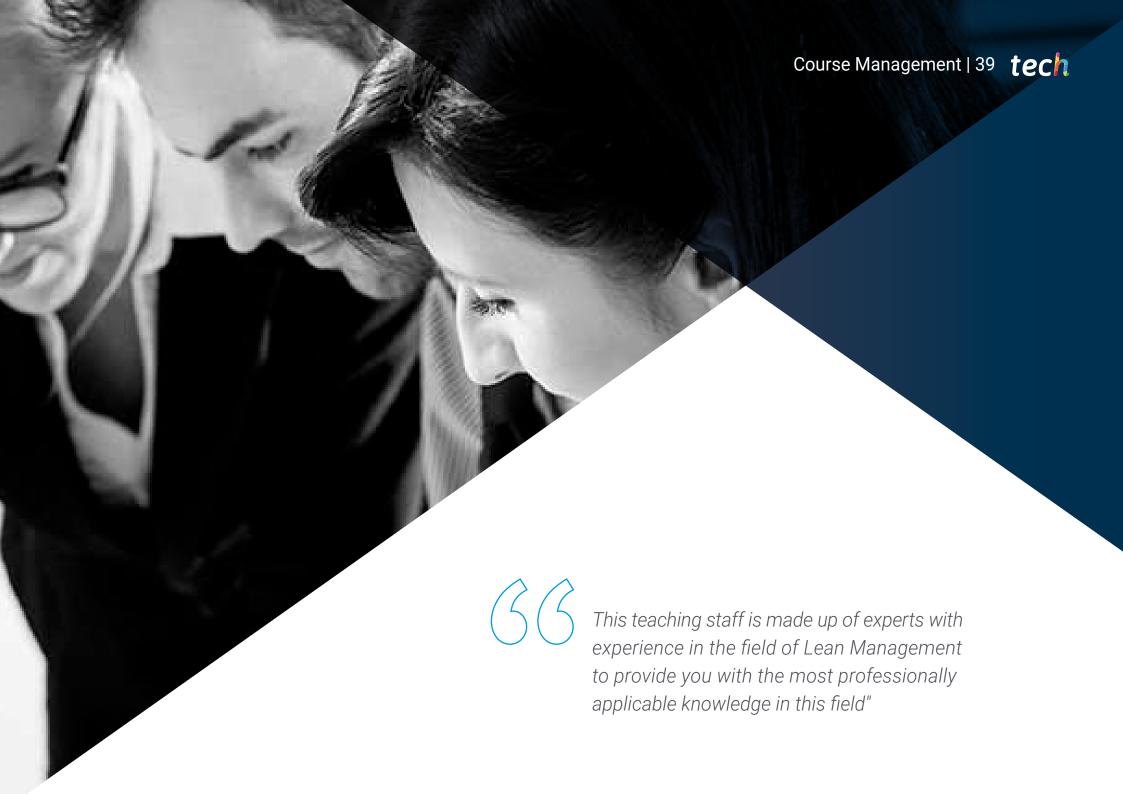


# **Richard Morales**

CEO of an industrial company

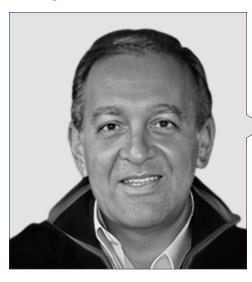
"For several years now, I have had a strong interest in the world of Lean Manufacturing, so I decided to take this program to improve my skills in this area. I especially highlight the quality of its contents, completely aligned with the needs of today's professional market".





# tech 40 | Course Management

#### Management



#### Mr. Jover Miravitlles, Luis

- President and Founding Partner Grupo Quarck, S.L. Founding Partner
- Senior Partner in LOGIXS
- Vice President of €-Corp. S.L
- IQS Executive Education Director
- Associate Professor at IE Business School
- Coordinator of the Master's Degree in Integral Business Management at the Universidad Iberoamericana in Mexico City
- Advisor to the employers' association Cecot
- Chemical Engineer at the Chemical Institute of Sarria (IQS)
- Master in Business Administration MBA IESE
- Member of the Hispack organizing committee

#### **Professors**

#### Mr. Gustavo, Vitriago Pérez

- Project Manager in Euroports
- Software Implementation Consultant at Software Tecnic Tecnocim
- Senior Consultant at ACTIO Consulting Group
- Lean Six Sigma Consultant
- Senior Consultant in Business Performance Consulting
- Continuous Improvement Specialist & Auditor at Esteban Ikeda/JC
- Bachelor of Science in Naval Sciences Naval Administration and Logistics
- Master's Degree in Integral Logistics by Johnson Controls International
- Master in Automated Production and Robotics by the Polytechnic University of Catalunya
- Black Belt Certification Training Six Sigma by Kanban University

#### Ms. Díaz Pizarro, Cristina

- Assistant Branch Manager, Banco Santander
- Double Degree in Business Administration and Tourism Management from the University of Extremadura
- University Degree in Neuromarketing from Ineaf Business School
- MIFID II Certification In Financial Advice by Santander Financial Institute
- Real Estate Credit Products Specialist by Santander Financial Institute







# tech 44 | Impact on Your Career

Are you ready to take the leap? Excellent professional development awaits you.

Production in Lean Manufacturing Systems The main objective is to promote your personal and professional growth. Helping you achieve success.

If you want to improve yourself, make a positive change at a professional level, and network with the best, then this is the place for you.

The high professional quality that you will acquire with this Postgraduate Certificate program will increase the possibilities of accessing a considerable salary increase.

A Postgraduate Diploma that will become the key that will open the door to a promising future in the area of criminal management through Corporate Compliance.

### **Time of Change**

During the program

15%

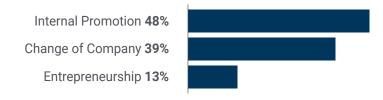
During the first year

66%

After 2 years

22%

### Type of change



## Salary increase

This program represents a salary increase of more than 27% for our students

\$ 70.000

A salary increase of

**27**%

Salary after **\$ 88.900** 





# tech 48 | Benefits for Your Company

Developing and retaining talent in companies is the best long-term investment.



#### Growth of talent and intellectual capital

The professional will introduce the company to new concepts, strategies, and perspectives that can bring about significant changes in the organization.



# Retaining high-potential executives to avoid talent drain

This program strengthens the link between the company and the professional and opens new avenues for professional growth within the company.



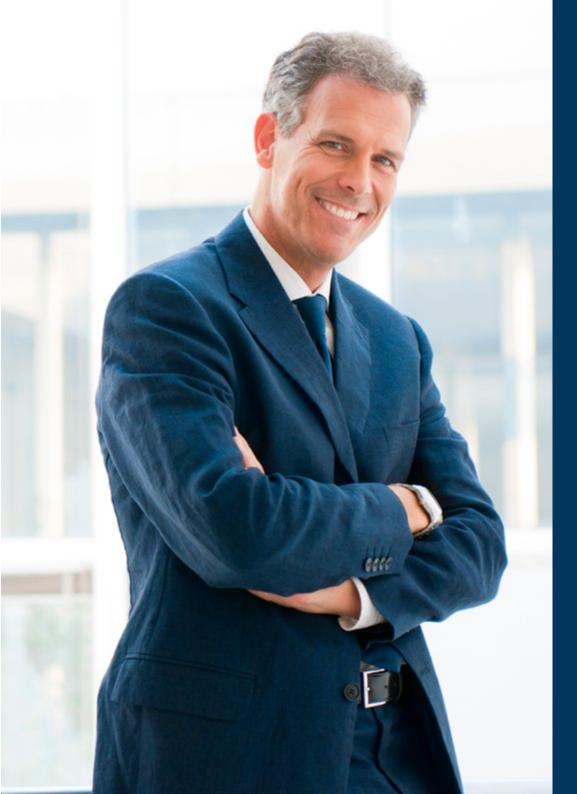
## **Building agents of change**

You will be able to make decisions in times of uncertainty and crisis, helping the organization overcome obstacles.



## Increased international expansion possibilities

Thanks to this program, the company will come into contact with the main markets in the world economy.





## **Project Development**

The professional can work on a real project or develop new projects in the field of R & D or business development of your company.



## **Increased competitiveness**

This program will equip students with the skills to take on new challenges and drive the organization forward.





## tech 52 | Certificate

This **Postgraduate Diploma in Production in Lean Manufacturing Systems** contains the most complete and up-to-date program on the market.

After the student has passed the assessments, they will receive their corresponding **Postgraduate Certificate** issued by **TECH Technological University** via tracked delivery\*.

The diploma issued by **TECH Technological University** will reflect the qualification obtained in the Postgraduate Certificate, and meets the requirements commonly demanded by labor exchanges, competitive examinations and professional career evaluation committees.

Title: Postgraduate Diploma in Production in Lean Manufacturing Systems Official N° of Hours: **450 h.** 



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



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