

Postgraduate Diploma

Industry 4.0 Digitalization in Quality and Safety Management





Postgraduate Diploma Industry 4.0 Digitalization in Quality and Safety Management

Course Modality: **Online**

Duration: **6 months.**

Certificate: **TECH Technological University**

Official N° of hours: **450 h.**

Website: www.techtute.com/us/nutrition/postgraduate-diploma/postgraduate-diploma-industry-digitalization-quality-safety-management

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01

Introduction

This program was created with the aim of providing nutrition professionals with the skills required to understand digitization processes in the food industry and how they improve food safety. In this sense, digitization can be a breakthrough in food safety and quality management systems, a current concern that forces the sector to comply with rigorous protocols at a global level. Therefore, it is imperative for today's nutritionists to increase their knowledge in the field, so they can develop their functions according to current approaches, which will lead to success in a highly demanded sector.





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Specialize with a popular qualification, expand your knowledge in nutrition and join the digitalization of the food sector and the management of quality and food safety”

The TECH Postgraduate Diploma in Industry 4.0 Digitalization in Quality and Safety Management is the most complete academic program available today because it is aimed at comprehensive food safety management. Thus, relevant concepts in food safety are developed, focusing on the production of raw materials of animal origin, and the differentiated quality seals are studied, as well as the audit and certification processes of food industries.

On the food crises that have occurred in recent decades at European and world level have demonstrated the need for systems to identify, locate and withdraw those products that could represent a food safety risk and a danger to the health of the population. Therefore, this training program provides a solid foundation of skills and abilities that will allow professionals to develop and implement traceability plans in various food sectors in the industry, adapted to a digital vision of the future.

In addition, the importance of the application of digital media and platforms in quality management systems in the food industry is described, with special emphasis on migration strategies from the traditional to the digital system.

This Postgraduate Diploma is taught by university professors and professionals from various disciplines in primary production, the use of analytical and instrumental techniques for quality control, the prevention of accidental and intentional contamination and fraud, *food safety/food integrity* and traceability (*food defense and food fraud/food authenticity*). They are experts in food legislation and regulations on quality and safety, validation of methodologies and processes, digitalization of quality management, new foods research and development and, finally, coordinating and executing R&D&I projects. All this is necessary to achieve complete and specialized knowledge, highly demanded by professionals in the food sector.

This is an educational project committed to preparing high-quality professionals to perform their duties with total guarantees, based on excellence. A program designed by professionals specialized in each specific subject, directed in this case to the digital spectrum in view of the future of the profession and the novelties that the current situation is facing.

This **Postgraduate Diploma in Industry 4.0 Digitalization in Quality and Safety Management** contient le programme scientifique le plus complet et le plus actuel du marché. Les principales caractéristiques sont les suivantes:

- Case studies presented by experts in food quality and safety
- 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
- The latest developments in Industry 4.0 Digitization in Quality and Safety Management
- Practical exercises where self-assessment can be used to improve learning
- Its special emphasis on innovative methodologies in industry 4.0 digitalization
- 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



Obtain digital specialization in the prevention of accidental and intentional pollution and food fraud as a safe bet for your future career”

“

This program is the best investment you can make if you are looking to specialize in Industry 4.0 Digitalization in Quality and Safety Management”

Would like to choose when and where to study? Are you in need of an educational program you can balance with your work life? This 100% online Postgraduate Diploma is everything you are looking for.

You are just one click away from enhancing your academic background and successfully positioning yourself in the profession.

The teaching staff includes professionals who belong to the field of Industry 4.0 Digitalization in Quality and Safety Management, and who bring to this program the experience of their work, in addition to recognized specialists from leading societies 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 immersive specialization programmed to learn in real situations.

This program is designed around Problem-Based Learning, whereby students must try to solve the different professional practice situations that arise throughout the program. To that end, professionals will be assisted by a novel interactive video system made by renowned and extensively experienced experts in Industry 4.0 Digitalization Quality and Safety Management.



02 Objectives

The program in Industry 4.0 Digitalization in Quality and Safety Management is aimed at facilitating professional performance by making use of the latest and most innovative advances in a booming sector. Moreover, students will develop the skills to succeed in a profession with great future prospects, as the program addresses the main digital interventions specialists carry out in food safety. This will allow students to improve and enhance their knowledge of digital frameworks, with the guarantee of performing the protocols as effectively and safely as possible.



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Update yourself and learn about the main advances in the sector. Succeed with TECH, you will become a much more capable nutritionist”



General Objectives

- ♦ Develop the basis for good hygiene and traceability practices in the production of raw materials
- ♦ Specify the applicable regulations concerning primary animal production, as well as the internal audit and certification systems
- ♦ Define sustainable development objectives
- ♦ Analyze the fundamentals, requirements, regulations and main tools used in the traceability of the different points of the food chain
- ♦ Analyze the system for establishing a relationship between the food product and the origin of its components, the manufacturing process and distribution
- ♦ Evaluate food industry processes to identify those items that do not meet specific requirements to ensure food safety and consumer health
- ♦ Develop the basis for the application of the different phases of the traceability system in food sector companies
- ♦ Analyze the advantages of digitalization in the currently established food safety and quality management processes
- ♦ Develop specialized knowledge of the different commercial platforms and internal IT tools for process management
- ♦ Define the importance of a migration process from a traditional to a digital system in Food Safety and Quality Management
- ♦ Establish strategies for the digitalization of protocols and documents related to the management of different Food Quality and Safety processes





Specific Objectives

Module 1. Traceability of Raw Materials and Consumables

- ◆ Compile the reference databases on applicable food safety regulations.
- ◆ Develop relevant aspects in the production of food of animal origin and its derivatives
- ◆ Establish the basis for animal welfare from breeding to slaughter
- ◆ Specify the mechanisms for internal auditing and certification of primary production
- ◆ Analyze foods of differentiated quality and the certification system for these products
- ◆ Assess the impact of the agri-food industry on the environment
- ◆ Examine the contribution of this industry to the sustainable development goals

Module 2. Logistics and Batch Traceability

- ◆ Define the background of logistics and traceability
- ◆ Examine the different types of traceability and scope of application
- ◆ Analyze the principles, requirements and measures of food legislation in the context of traceability
- ◆ Establishing the scope of application of traceability in its mandatory nature
- ◆ Analyze the different traceability and lot identification systems
- ◆ Identify and define the responsibility of the different actors in the food chain in terms of traceability

- ◆ Describe the structure and implementation of a traceability plan
- ◆ Identify and discover the main tools for the identification of batches
- ◆ Establish procedures for locating, immobilizing and recalling products in case of incidents
- ◆ Identify, analyze and explain the logistics process at each point of the food chain

Module 3. Digitization of the Quality Management System

- ◆ Examine the quality standards and food norms in force for the digitization of the different international reference bodies
- ◆ Identify the main commercial software and internal IT strategies that enable the management of specific food safety and quality processes
- ◆ Establish appropriate strategies to transfer traditional quality management processes to digital platforms
- ◆ Define the key points in the digitization process of a Hazard Analysis and Control Point Critical (HACCP) program
- ◆ Analyze alternatives for the implementation of prerequisite programs (PPR), HACCP plans and monitoring of standardized operating programs (SOP)
- ◆ Analyze the most appropriate protocols and strategies for digitization in risk communication
- ◆ Develop mechanisms for digitalizing the management of internal audits, recording corrective actions and monitoring continuous improvement programs

03

Course Management

This program is led by experts in food safety, quality control in the food industry, nutrition and food technology who have conducted in-depth research in the field. The teaching team has developed for this program the tools and variable relations techniques that future graduates must possess to conduct Industry 4.0 Digitalization in Quality and Safety Management. Nutritionist who enrol will improve their knowledge in the field and take a further step in their career, since this qualification is one of the most demanded today in the industry.





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The most experienced and updated team in the food industry offers you their knowledge in digital key”

Management



Dr. Limón Garduza, Rocío Ivonne

- ♦ PhD in Agricultural Chemistry and Bromatology (Autonomous University of Madrid)
- ♦ Master's Degree in Food Biotechnology (MBTA) (University of Oviedo)
- ♦ Food Engineer, Bachelors Degree in Food Science, and Technology (CYTA)
- ♦ Expert in Food Quality Management ISO 22000
- ♦ Specialist in Food Quality and Safety, Mercamadrid Training Center (CFM)

Professors

Dr. Colina Coca, Clara

- ♦ Collaborating Professor at the UOC. Since 2018
- ♦ Doctorate in Nutrition, Food Science and Technology
- ♦ Master's Degree in Food Quality and Safety: APPCC Systems
- ♦ Postgraduate in Sports Nutrition

Dr. Velderrain Rodríguez, Gustavo Rubén

- ♦ D. in Science. Center for Research in Food and Development, A.C. (CIAD)
- ♦ Member of the National System of Researchers of CONACyT (Mexico)

Ms. Escandell Clapés, Érica

- ♦ Head of the Food Quality and Safety Department of the meat industry SUBIRATS GROUP (2015 – present)
- ♦ Bachelor's Degree in Food Science and Technology. (University of Vic)
- ♦ Master's Degree in Food Development and Innovation
- ♦ Diploma in Human Nutrition and Dietetics



Ms. Aranda Rodrigo, Eloísa

- Degree in Food Science and Technology
- It develops its activity in the food production environment, with laboratory analysis of water and food
- Training in Quality Management Systems, BRC, IFS and ISO 22000 Food Safety
- Experience in audits under ISO 9001 and ISO 17025 protocols

Dr. Moreno Fernández, Silvia

- Postdoctoral Researcher. Autonomous University of Madrid. Since 2019
- PhD in Food Science (Autonomous University of Madrid)
- Degree in Biology from the Complutense University of Madrid. Specialized in the development of new foods and the treatment of by-products in the food industry

04

Structure and Content

The demands of this program have led the professors to develop a curriculum focused on industry digitalization for nutritionists so they can count on content that conforms to current requirements in the sector. In this sense, mastering new technologies applied to food safety is decisive, as its influence on global food safety systems is extremely high. Thus, the content is designed in digital key with special emphasis on the latest commercial software for food safety management, the use of smart devices and the establishment of digital platforms to integrate teams responsible for HACCP programs, among others. In short, the best material to support students on their way to the specific management in this area of their profession.





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This Postgraduate Diploma in Industry 4.0 Digitalization in Quality and Safety Management contains the most complete and up-to-date scientific program on the market”

Module 1. Traceability of Raw Materials and Consumables

- 1.1. Basic Principles of Food Safety
 - 1.1.1. Main Objectives of Food Safety
 - 1.1.2. Basic Concepts
 - 1.1.3. Traceability Concept and Application in the Food Industry
- 1.2. General Hygiene Plan
 - 1.2.1. Basic Concepts
 - 1.2.2. Types of General Hygiene Plans
- 1.3. Primary Animal Food Production
 - 1.3.1. Basic Aspects and Animal Welfare
 - 1.3.2. Breeding and Feeding
 - 1.3.3. Transport of Live Animals
 - 1.3.4. Animal Slaughter
- 1.4. Primary Production of Animal Derivatives. Distribution of Raw Materials
 - 1.4.1. Milk Production
 - 1.4.2. Poultry Production
 - 1.4.3. Distribution of Raw Materials of Animal Origin
- 1.5. Primary Production of Plant-Based Foodstuffs
 - 1.5.1. Basic Aspects
 - 1.5.2. Types of Vegetable Crops
 - 1.5.3. Other Agricultural Products
- 1.6. Good Practices in Plant Production. Use of Phytosanitary Products
 - 1.6.1. Sources of Contamination of Vegetable Foods
 - 1.6.2. Transport of Raw Materials of Plant Origin and Risk Prevention
 - 1.6.3. Use of Phytosanitary Products
- 1.7. Water in the Agri-Food Industry
 - 1.7.1. Livestock
 - 1.7.2. Agriculture
 - 1.7.3. Aquaculture
 - 1.7.4. Water for Human Consumption in Industry
- 1.8. Audit and Certification of Primary Production
 - 1.8.1. Official Control Audit Systems
 - 1.8.2. Food Certifications



- 1.9. Foods of Differentiated Quality
 - 1.9.1. Protected Designation of Origin (PDO)
 - 1.9.2. Protected Geographical Indication (PGI)
 - 1.9.3. Traditional Specialty Guaranteed (TSG)
 - 1.9.4. Optional Quality Terms
 - 1.9.5. Use of Plant Varieties and Animal Breeds
 - 1.9.6. Organic Agriculture and Livestock
- 1.10. Food Industry and Environment
 - 1.10.1. Sustainable Development Goals (SDGs)
 - 1.10.2. Solutions Proposed by the Agri-Food Industry
 - 1.10.3. Genetically Modified Organisms as a Path to Sustainable Development

Module 2. Logistics and Batch Traceability

- 2.1. Introduction to Traceability
 - 2.1.1. Background to the Traceability System
 - 2.1.2. Traceability Concept
 - 2.1.3. Types of Traceability
 - 2.1.4. Information Systems
 - 2.1.5. Advantages of Traceability
- 2.2. Legal Framework for Traceability. Part I
 - 2.2.1. Introduction
 - 2.2.2. Horizontal Legislation Related to Traceability
 - 2.2.3. Vertical Legislation Related to Traceability
- 2.3. Legal Framework for Traceability. Part II
 - 2.3.1. Mandatory Application of the Traceability System
 - 2.3.2. Objectives of the Traceability System
 - 2.3.3. Legal Responsibilities
 - 2.3.4. Penalty Regime
- 2.4. Implementation of the Traceability Plan
 - 2.4.1. Introduction
 - 2.4.2. Previous Stages
 - 2.4.3. Traceability Plan
 - 2.4.4. Product Identification System
 - 2.4.5. System Test Methods

- 2.5. Product Identification Tools
 - 2.5.1. Hand Tools
 - 2.5.2. Automated Tools
 - 2.5.2.1. EAN Bar Code
 - 2.5.2.2. RFID// EPC
 - 2.5.3. Records
 - 2.5.3.1. Registration of Identification of Raw Materials and other Materials
 - 2.5.3.2. Registration of Food Processing
 - 2.5.3.3. Final Product Identification Record
 - 2.5.3.4. Recording of the Results of Checks Performed
 - 2.5.3.5. Record Keeping Period
- 2.6. Incident Management, Product Recall and Reclamation and Customer Complaints
 - 2.6.1. Incident Management Plan
 - 2.6.2. Manage Customer Complaints
- 2.7. Supply Chain
 - 2.7.1. Definition
 - 2.7.2. Supply Chain Steps
 - 2.7.3. Supply Chain Trends
- 2.8. Logistics
 - 2.8.1. The Logistical Process
 - 2.8.2. Supply Chain vs. Logistics
 - 2.8.3. Containers
 - 2.8.4. Packaging
- 2.9. Modes and means of Transportation
 - 2.9.1. Transportation Concept
 - 2.9.2. Modes of Transport, Advantages and Disadvantages
- 2.10. Food Product Logistics
 - 2.10.1. Cold Chain
 - 2.10.2. Perishable Products
 - 2.10.3. Non-Perishable Products

Module 3. Digitization of the Quality Management System

- 3.1. Quality Standards and Risk Analysis in the Food Industry
 - 3.1.1. Current Food Safety and Quality Standards
 - 3.1.2. Main Risk Factors in Food Products
- 3.2. The "Age of Digitization" and Its Influence on Global Food Safety Systems
 - 3.2.1. Codex Alimentarius Global Food Safety Initiative
 - 3.2.2. Hazard Analysis and Critical Control Point (HACCP)
 - 3.2.3. ISO 22000
- 3.3. Commercial Software for Food Safety Management
 - 3.3.1. Use of Smart Devices
 - 3.3.2. Business Software for Specific Management Processes
- 3.4. Establishment of Digital Platforms for the Integration of a Team Responsible for the Development of the HACCP Program
 - 3.4.1. Stage 1. Preparation and Planning
 - 3.4.2. Stage 2. Implementation of Prerequisite Programs for Hazards and Critical Control Points of the HACCP program
 - 3.4.3. Stage 3. Execution of the Plan
 - 3.4.4. Stage 4. HACCP Verification and Maintenance
- 3.5. Digitization of Pre-requisite Programs (PPR) in the Food Industry - From Traditional to Digital Systems
 - 3.5.1. Primary Production Processes
 - 3.5.1.1. Good Hygiene Practices (GHP)
 - 3.5.1.2. Good Manufacturing Practices (GMP)
 - 3.5.2. Strategic Processes
 - 3.5.3. Operational Processes
 - 3.5.4. Support Processes



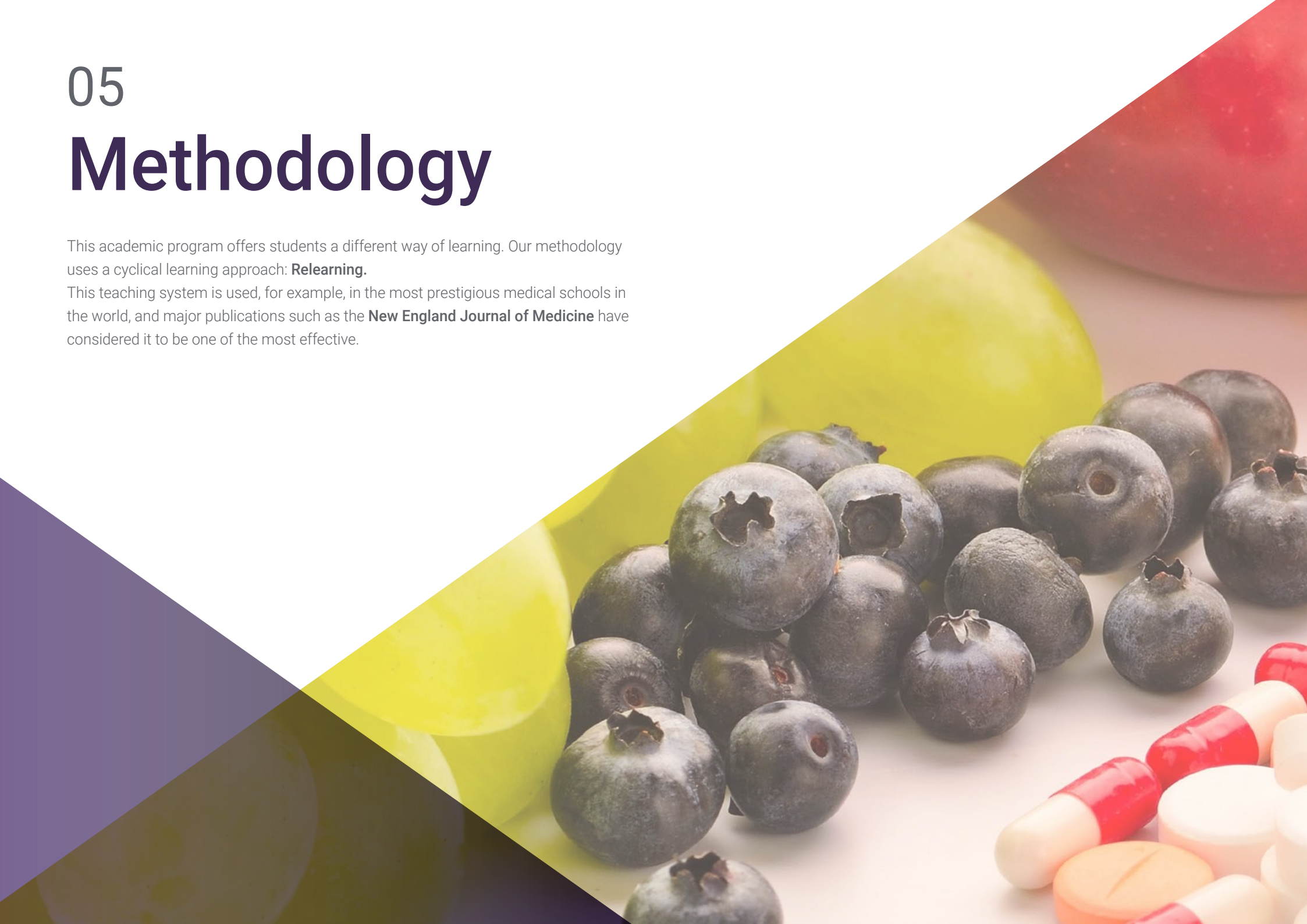
- 3.6. Platforms for Monitoring "Standard Operating Procedures (SOPs)"
 - 3.6.1. Training of Personnel in the Documentation of Specific SOPs
 - 3.6.2. Channels of Communication and Monitoring of SOP Documentation
- 3.7. Protocols for Document Management and Communication Between Departments
 - 3.7.1. Traceability Document Management
 - 3.7.1.1. Procurement Protocols
 - 3.7.1.2. Traceability of Raw Material Receipt Protocols
 - 3.7.1.3. Traceability of Warehouse Protocols
 - 3.7.1.4. Process Area Protocols
 - 3.7.1.5. Traceability of Hygiene Protocols
 - 3.7.1.6. Product Quality Protocols
 - 3.7.2. Implementation of Alternative Communication Channels
 - 3.7.2.1. Use of Storage Clouds and Restricted Access Folders
 - 3.7.2.2. Coding of Documents for Data Protection
- 3.8. Digital Documentation and Protocols for Audits and Inspections
 - 3.8.1. Management of Internal Audits
 - 3.8.2. Registration of Corrective Actions
 - 3.8.3. Application of the "Deming cycle"
 - 3.8.4. Management of Continuous Improvement Programs
- 3.9. Strategies for Proper Risk Communication
 - 3.9.1. Risk Management and Communication Protocols
 - 3.9.2. Effective Communication Strategies
 - 3.9.3. Public Information and Use of Social Networks
- 3.10. Case Studies of Digitization and Its Advantages in Reducing Risks in the Food Industry
 - 3.10.1. Food Safety Risks
 - 3.10.2. Food Fraud Risks
 - 3.10.3. Food Defence Risks

05

Methodology

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.





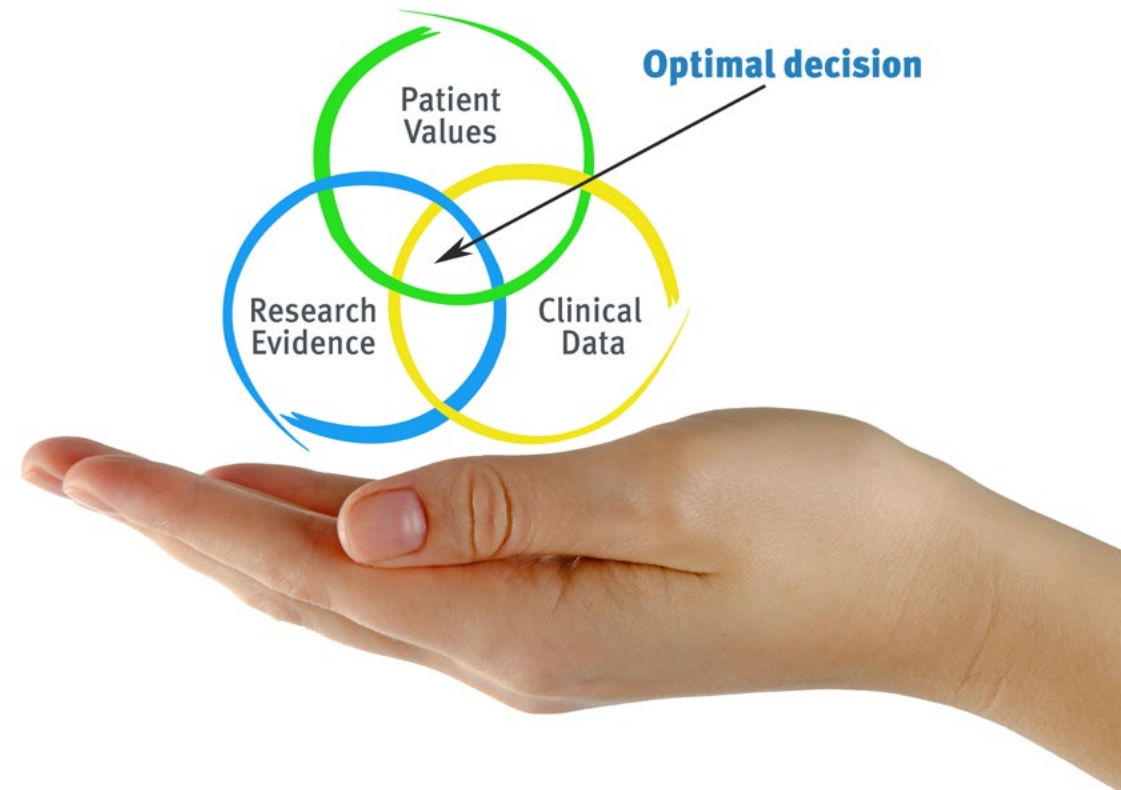
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Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"

At TECH we use the Case Method

In a given situation, what should a professional do? Throughout the program, students will face multiple simulated clinical cases, based on real patients, in which they will have to do research, establish hypotheses, and ultimately resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method. Specialists learn better, faster, and more sustainably over time.

With TECH, nutritionists can experience a way of learning that is shaking the foundations of traditional universities around the world.



According to Dr. Gérvas, the clinical case is the annotated presentation of a patient, or group of patients, which becomes a "case", an example or model that illustrates some peculiar clinical component, either because of its teaching power or because of its uniqueness or rarity. It is essential that the case is based on current professional life, trying to recreate the real conditions of professional nutritional practice.

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Did you know that this method was developed in 1912, at Harvard, for law students? The case method consisted of presenting students with real-life, complex situations for them to make decisions and justify their decisions on how to solve them. In 1924, Harvard adopted it as a standard teaching method”

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

1. Nutritionists who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity through exercises to evaluate real situations and the application of knowledge.
2. Learning is solidly translated into practical skills that allow the nutritionist to better integrate knowledge into clinical practice.
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.



Relearning Methodology

At TECH we enhance the case method with the best 100% online teaching methodology available: Relearning.

This university is the first in the world to combine the study of clinical cases with a 100% online learning system based on repetition, combining a minimum of 8 different elements in each lesson, a real revolution with respect to the mere study and analysis of cases.

The nutritionist will learn through real cases and by solving complex situations in simulated learning environments. These simulations are developed using state-of-the-art software to facilitate immersive learning.



At the forefront of world teaching, the Relearning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best online university (Columbia University).

With this methodology, more than 45,000 nutritionists have been trained with unprecedented success in all clinical specialties regardless of the surgical load. 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 training, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation for success.

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.

The overall score obtained by TECH's learning system is 8.01, according to the highest international standards.



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.



Nutrition Techniques and Procedures on Video

TECH brings students closer to the latest techniques, the latest educational advances and to the forefront of current nutritional counselling techniques and procedures. All of this in direct contact with students and explained in detail so as to aid their assimilation and understanding. And best of all, you can watch the videos as many times as you like.



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".



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.





Expert-Led Case Studies and Case Analysis

Effective learning ought to be contextual. Therefore, TECH presents real cases in which the expert will guide students, focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.



Testing & Retesting

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.



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.



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 Certificate

The Postgraduate Diploma in Industry 4.0 Digitalization in Quality and Safety Management guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma issued by TECH Technological University.





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

This **Postgraduate Diploma in Industry 4.0 Digitalization in Quality and Safety Management** contains the most complete and up-to-date scientific program on the market.

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

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

Title: **Postgraduate Diploma in Industry 4.0 Digitalization in Quality and Safety Management**

Official N° of hours: **450 h.**



*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.

future

health confidence people

education information tutors

guarantee accreditation teaching

institutions technology learning

community commitment

personalized service innovation

knowledge present quality

online training

development languages

virtual classroom

tech technological
university

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Postgraduate Diploma

Industry 4.0 Digitalization in Quality and Safety Management

