

# Postgraduate Certificate Food Toxicology





## Postgraduate Certificate Food Toxicology

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/us/nutrition/postgraduate-certificate/food-toxicology](http://www.techtute.com/us/nutrition/postgraduate-certificate/food-toxicology)

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# 01

# Introduction

Thanks to the scientific study that many professionals have developed around the toxic elements found in food, it has been possible to prevent the human organism from being affected and to implement more balanced nutritional plans. Further research into these toxins is therefore essential and it is important to have experts in the concepts involved in this area. Therefore, this academic programme not only seeks to broaden the student's knowledge, but also to strengthen their skills and gain access to the best offers on the market. All this, through a 100% online methodology that will allow your students to have more control over their time.





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*Be part of the professionals of the future and contribute your knowledge to the study of the toxic components of food, thanks to this Postgraduate Certificate”*

Food Toxicology is an important branch within the health sciences, as it focuses on the identification, evaluation and control of risks associated with toxic substances in consumer products. In addition, it allows the implementation of prevention strategies, integrating them within a framework of consumer protection and the construction of balanced diets.

With this in mind, TECH has developed a Postgraduate Certificate program that is focused on training students on a wide range of topics, ranging from the most essential concepts of Food Toxicology, to the evaluation of food and its contaminants. The contents also provide an in-depth look at the historical evolution of this area and the processes of bio-transformation of toxics.

In addition, students will also learn about the different mechanisms of toxicity, genetic and environmental factors that modify them, with the aim of enhancing their skills in the management of the elements related to these and the application of effective strategies to mitigate their effects within the organism.

All this, thanks to the innovative Relearning methodology, which allows students to study from home and have greater time flexibility, as they will have access 24 hours a day to the multimedia resources they will find on the online campus. In addition, you will be able to strengthen your skills and increase your ability to make decisions, as you will analyse practical cases that will place you in a real-life scenario.

This **Postgraduate Certificate in Food Toxicology** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ◆ The development of case studies presented by experts in Food Toxicology The graphic, schematic and eminently practical content of the book provides scientific and practical information on those disciplines that are essential for professional practice
- ◆ Practical exercises where the self-assessment process can be carried out to improve learning
- ◆ Its special emphasis on innovative methodologies
- ◆ Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- ◆ Content that is accessible from any fixed or portable device with an Internet connection



*The main objective of TECH is your goals and with this programme, you will get the necessary tools to achieve them"*

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*Food Toxicology is a very important area of study and with this degree you will be a specialist in it"*

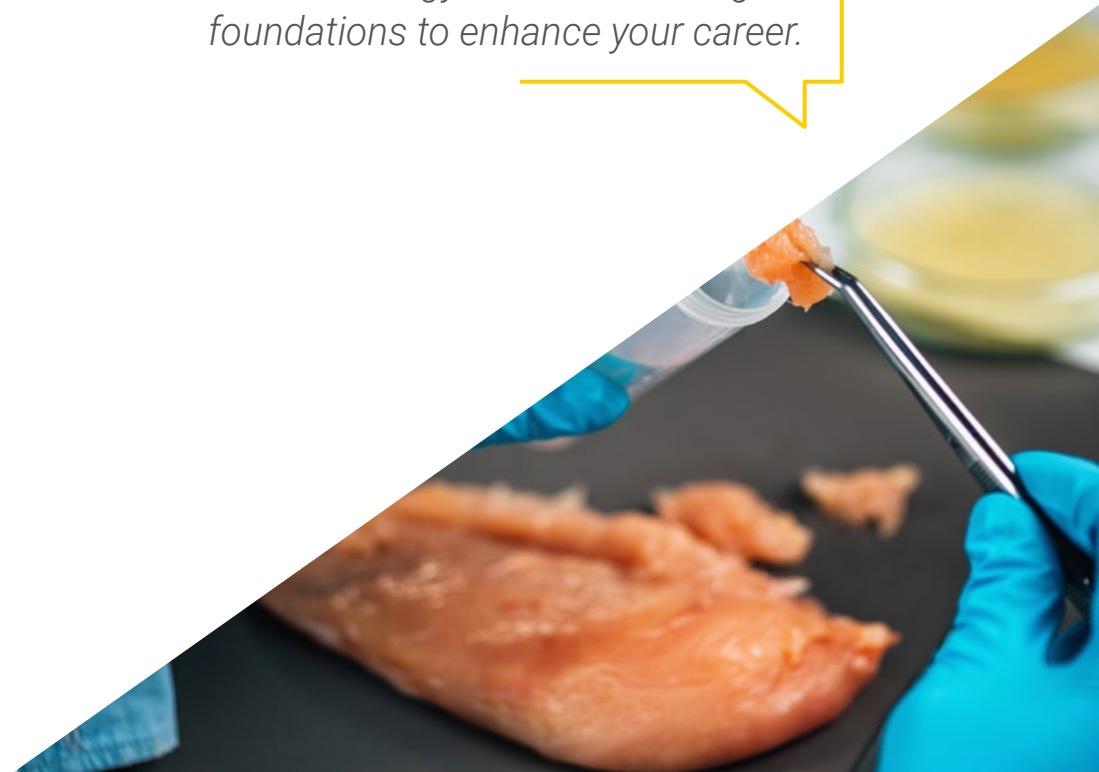
The program's teaching staff includes professionals from sector who contribute their work experience to this educational program, as well as renowned specialists from leading societies and prestigious universities.

Its 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 education programmed to learn in real situations.

The design of this program focuses on Problem-Based Learning, by means of which the professional must try to solve the different professional practice situations that are presented throughout the academic course. For this purpose, the student will be assisted by an innovative interactive video system created by renowned experts.

*Can you imagine learning from home and working at the same time to apply everything you learn? With this program, that will no longer be an idea. Start now.*

*Your motivation to grow as a professional, the latest content and the best learning methodology will be the strongest foundations to enhance your career.*



# 02 Objectives

The fundamental purpose of this Postgraduate Certificate is to equip the student with the essential tools to effectively identify the negative effects on the body caused by toxins in food. This will give students the opportunity to update their knowledge in this field and improve their skills to deal with the concepts and effects generated by certain substances, using multimedia materials specially designed by recognised professionals in this area.







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*By mastering the assessment and characterisation of toxic substances in food, you will be able to implement strategies to counteract their effects"*



## General Objectives

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- ◆ Identify and understand biology as an experimental science through the application of the scientific method
- ◆ Explain key principles and how to apply them to population growth and the sustainable exploitation of natural resources
- ◆ Know and apply the procedures for toxicity assessment
- ◆ Contribute to consumer protection within the framework of food safety

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*Do you want to grow professionally?  
With this programme that goal will be  
achieved and you will raise your economic  
expectations to the next level"*





## Specific Objectives

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- ◆ Critically appraise and know how to use and apply sources of information related to nutrition, food, lifestyles and health related issues
- ◆ Examine the microbiology, parasitology and toxicology of foods
- ◆ Identify the different toxicokinetic processes (absorption, distribution, metabolism and excretion), as well as the general mechanisms of toxic action
- ◆ Recognize the sources of exposure, pathophysiology, toxic effects, and action mechanism of toxic substances present in food
- ◆ Apply strategies for toxicological risk assessment and identification of potentially toxic substances in food
- ◆ Know the most commonly used methods for the analysis of toxins in foodstuffs

# 03

## Structure and Content

The contents that form part of the academic itinerary of this Postgraduate Certificate have been developed by professional experts in Food Toxicology. In this way, students will be able to acquire specialised and up-to-date knowledge about the toxic components in food that can affect our bodies. This, through the study of multimedia resources and the analysis of case studies, will enable students to enhance their professional skills.





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*Master the most recurrent toxicological concepts within the food industry and apply them with great professionalism in your working environment"*

## Module 1. Food Toxicology

- 1.1. Introduction to Food Toxicology
  - 1.1.1. Introduction to Food Toxicology: Evolution Over Time
  - 1.1.2. Toxicological concepts
    - 1.1.2.1. Types of poisoning. Types of poisoning
    - 1.1.2.2. Classification of Harmful substances Substances
  - 1.1.3. Dose-Effect and Dose-Response Relationships: Degrees of Uncertainty
- 1.2. Toxicokinetics
  - 1.2.1. Toxic Action Stages
  - 1.2.2. Exposure Phase Xenobiotics Routes of Entry
    - 1.2.2.1. Mechanisms for the Passage of Toxins Through Biological Membranes
  - 1.2.3. Absorption Phase
  - 1.2.4. Distribution Phase, Fixation and Excretion of Toxins
  - 1.2.5. Toxicokinetic Phase: Compartmental Models and Toxin Biotransformation
- 1.3. Toxin Biotransformation Processes
  - 1.3.1. Phase I Reactions: Oxidation, Reduction, Hydrolysis and Hydration
  - 1.3.2. Phase 2 Reactions: Sulfation, Glucuronidation, Methylation, Acetylation and Conjugation with Glutathione and Amino Acids
  - 1.3.3. Toxicity Mechanisms and Factors that Modify Them
- 1.4. Toxicity Mechanisms and Associated Factors
  - 1.4.1. Apoptosis and necrosis
  - 1.4.2. Mechanisms of Non-Specific and Specific Toxicity: Reversible and Irreversible Reactions
  - 1.4.3. Immune Mechanisms: Food Allergies
  - 1.4.4. Genetic and Environmental Factors
- 1.5. Toxicological assessment
  - 1.5.1. Toxicological Assessment Procedures: General Effects Studies
    - 1.5.1.1. Acute Toxicity
    - 1.5.1.2. Chronic and Subchronic Toxicity
  - 1.5.2. Study of Specific Effects; Carcinogenesis, Mutagenesis, Teratogenesis, and Effects on Reproduction
  - 1.5.3. Alternative Methods: Biological Substrates and Toxicity Indicators
- 1.6. Natural Food Toxins
  - 1.6.1. Seafood
    - 1.6.1.1. Shellfish Poisoning
    - 1.6.1.2. Fish poisoning
  - 1.6.2. Natural Vegetable Products
  - 1.6.3. Anti-nutritional substances
  - 1.6.4. Intoxication by Higher Fungi
- 1.7. Chemical Contaminants in Food I
  - 1.7.1. Inorganic Chemical Contaminants
    - 1.7.1.1. Lead, Mercury, Arsenic, Cadmium and Aluminum
    - 1.7.1.2. Toxic effects of Chlorides, Fluorides, Nitrates and Nitrites
  - 1.7.2. Mycotoxins: Foods Most Commonly Implicated as Sources of Exposure
    - 1.7.2.1. Preventive Methods and Treatments
  - 1.7.3. Pesticide Contamination: Classification and Toxicity
    - 1.7.3.1. Organochlorines: Dioxins, Furans and Polychlorinated Biphenyls
    - 1.7.3.2. Organophosphates: Carbamates and Bipyridyl Salts
- 1.8. Chemical Contaminants in Food II
  - 1.8.1. Veterinary Drug Residues
    - 1.8.1.1. Main Toxic Effects
    - 1.8.1.2. Harmful substances Risk Assessment
  - 1.8.2. Food Additives: Definition and Classification
  - 1.8.3. Dietary Supplements: Vitamins, Minerals, and Other Supplements
    - 1.8.3.1. Adverse Effects
    - 1.8.3.2. Toxic By-Products

- 1.9. Biological Contamination
  - 1.9.1. Toxic Effects of Biological Contaminants
  - 1.9.2. Food poisoning
    - 1.9.2.1. Botulism
    - 1.9.2.2. Chinese Restaurant Diarrhea: *Bacillus cereus*
    - 1.9.2.3. Toxic Shock Syndrome: *Staphylococcus aureus*
  - 1.9.3. Food-borne infections
    - 1.9.3.1. Salmonellosis
    - 1.9.3.2. Listeriosis
    - 1.9.3.3. Toxinfection by *E.coli*
- 1.10. Risk Assessment and Food Carcinogens
  - 1.10.1. Types of Food carcinogens
  - 1.10.2. Toxicology Risk Analysis
  - 1.10.3. Toxicology Risk Evaluation
  - 1.10.4. Toxicological Risk Characterization and Management

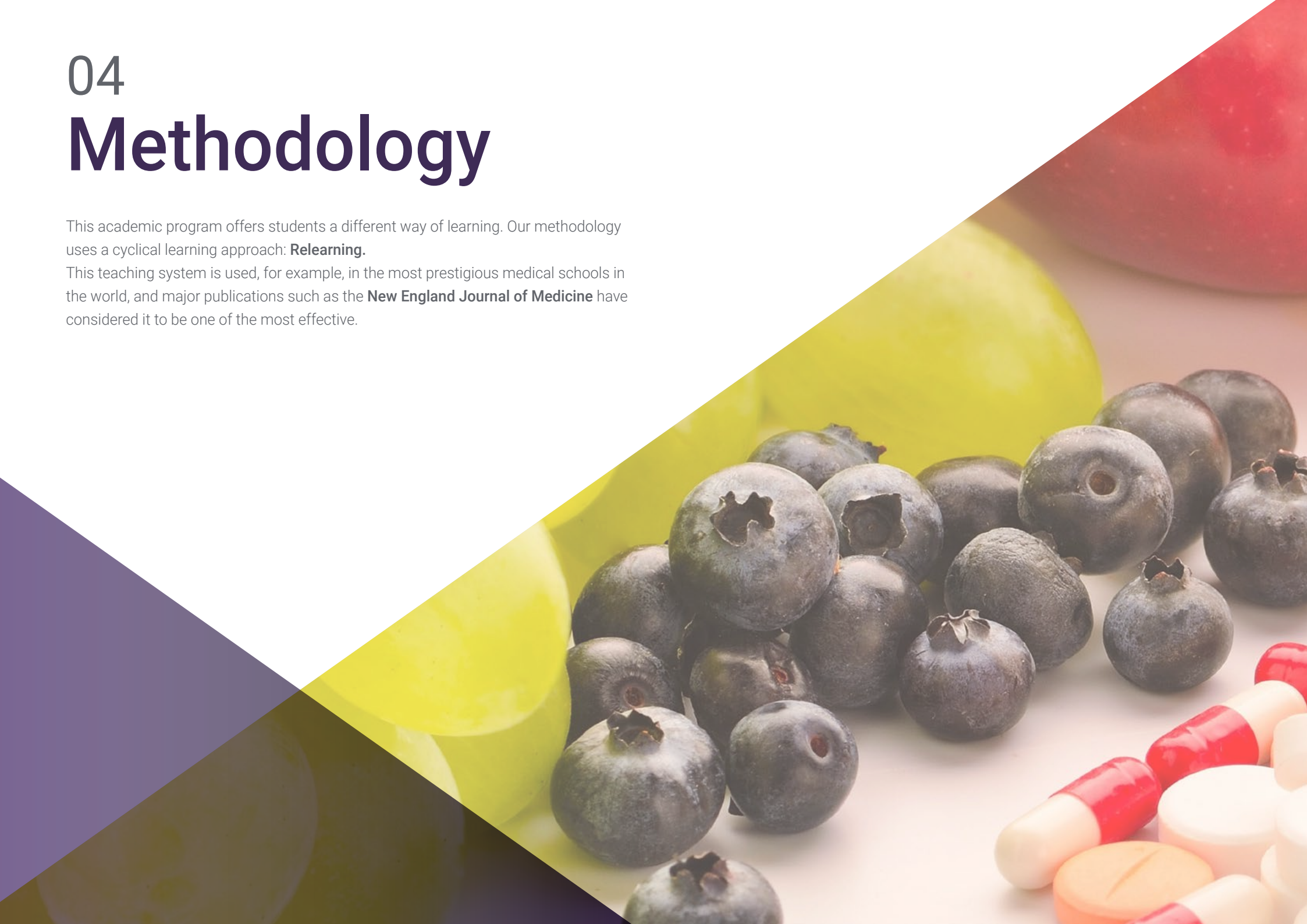
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*This is the best programme for you to broaden your knowledge of Food Toxicology and increase the study section of your CV"*

# 04 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

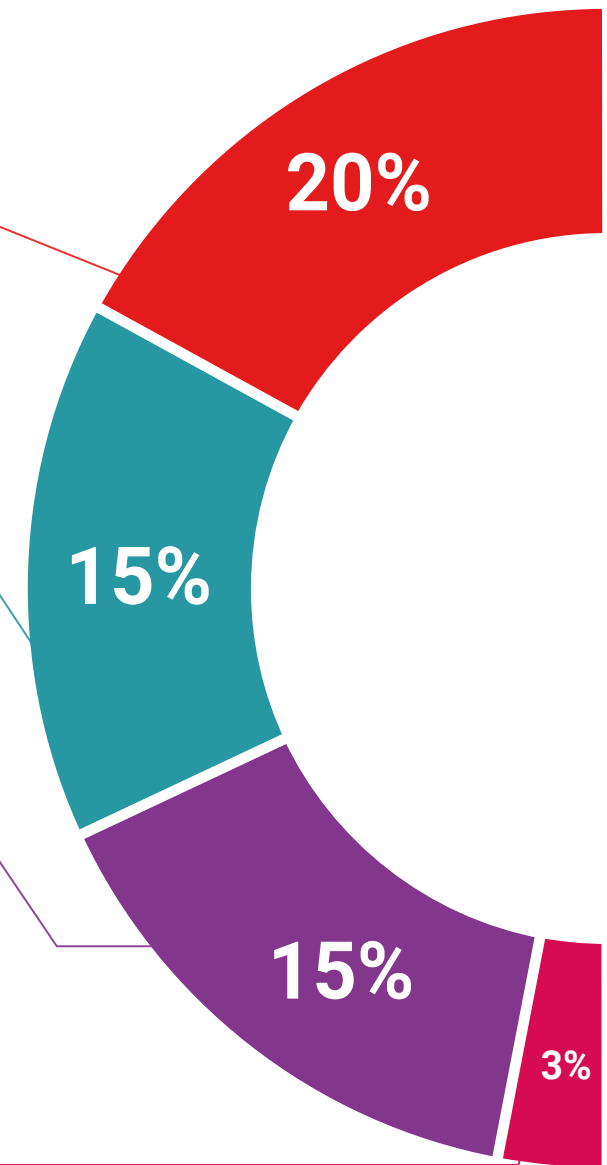
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

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.



05

# Certificate

The Postgraduate Certificate in Food Toxicology guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate 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 Certificate in Food Toxicology** contains the most complete and up-to-date scientific 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 Certificate in Food Toxicology**

Official N° of Hours: **150 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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