

# Postgraduate Diploma Enological Chemistry





## Postgraduate Diploma Enological Chemistry

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Global University
- » Credits: 18 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/us/nutrition/postgraduate-diploma/postgraduate-diploma-enological-chemistry](http://www.techtute.com/us/nutrition/postgraduate-diploma/postgraduate-diploma-enological-chemistry)

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# 01

# Introduction

Winemaking has always been a highly delicate production process and has always been based on the quality of the grapes. However, the frenetic pace of the market and environmental changes have forced the search for alternatives that do not always benefit the nutritional health of the final product. Nutrition experts who analyze the wine product must be aware of the intervention of chemistry in the production processes, but the high level of knowledge required for winemaking clashes with the lack of specific degrees in Enology. For this reason, TECH has developed a 100% online program aimed at graduates in Nutrition and other interested professionals, which will allow them to delve into enological microbiology. All this, through an academic program whose flexibility allows students to combine their personal and professional life with an exhaustive digital study.





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*With this Postgraduate Diploma you will learn about Enological Chemistry and its implications in the final product of the vineyards in only 6 months"*

The speed of industrial processes clashes directly with the quality of the products, since artisanal production has always shown greater advantages in most agri-food products. An example of this is organic and ecological agriculture. The purpose of these systems is to respect the genes of the plantations and to exalt the innate properties of the fruits so that they are reflected in the final product.

In this line, the nature of the grape depends on aspects such as berry size, sugar, total acidity and pH of the wine, among other elements. For this reason, nutritional specialists working in this area must pay attention to the planting process from its first phase and understand the importance of having a well-balanced soil, a key aspect to obtain a quality grape. For this reason, TECH has designed a program that aims to broaden the theoretical and practical knowledge of graduates in Nutrition and other professionals interested in grapevine compounds so that they can master their parameters, using adapted analytical techniques.

It is a 100% online program that allows an intensive monitoring of the subject, being the student the one who chooses the pace of study, time and place. In addition, TECH has called on a team of experts who will transmit all their knowledge in the real scenario of action so that the specialists not only have theoretical notions, but also enter into practice from the advice of experts versed in Enological Chemistry. An academic opportunity that stands out from the rest by providing a multitude of audiovisual materials in various formats and by offering a reference guide that can be downloaded, so that students can have it even after completing the program.

This **Postgraduate Diploma in Enological Chemistry** 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 nutrition, gastronomy and chemistry
- Enological Engineering and Viticulture
- The graphic, schematic, and practical contents with which they are created, provide practical information on the disciplines that are essential for professional practice
- Practical exercises where self-assessment can be used 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



*Sign up now to delve into specific analyses for the control of raw materials and access new possibilities for scientific study”*

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*Delve into the methods of counting microorganisms and microscopic identification of microbial groups to become an expert in chemical analysis of wine properties”*

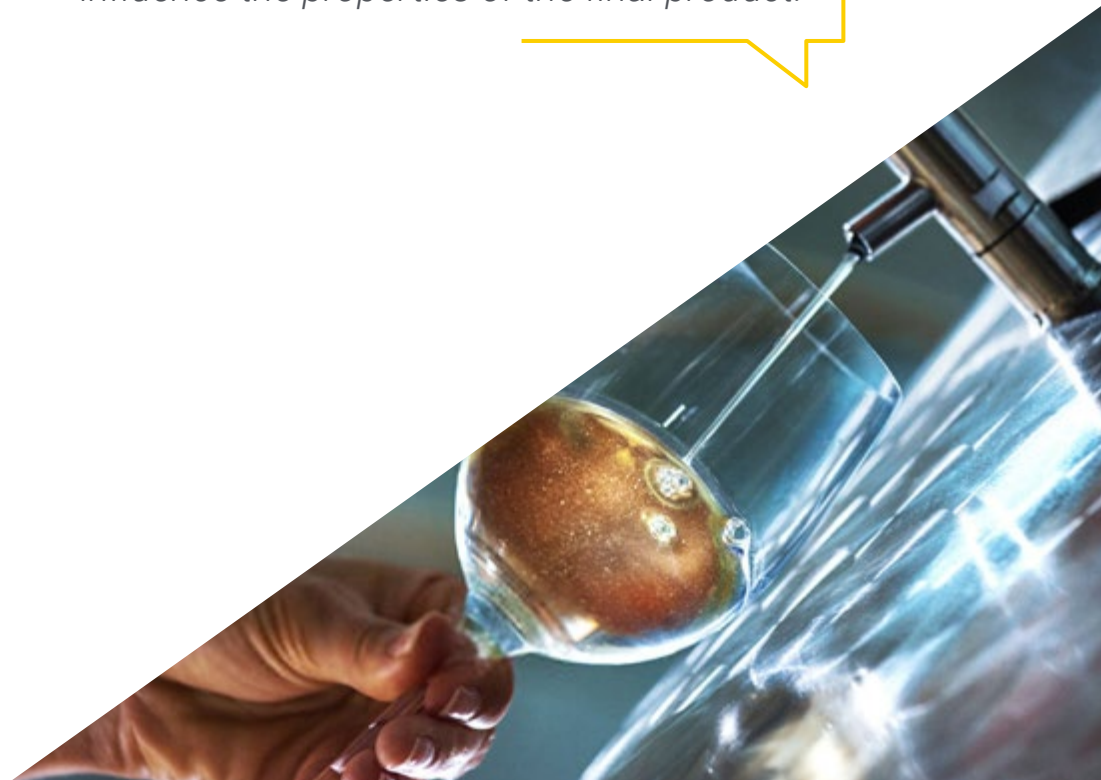
The program's teaching staff includes professionals from the sector who contribute their work experience to this educational program, as well as renowned specialists from leading societies and prestigious universities.

Its multimedia content, developed with the latest educational technology, will provide the professionals 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 professionals must try to solve the different professional practice situations that are presented throughout the academic course. For this purpose, the students will be assisted by an innovative interactive video system created by renowned experts.

*The oak barrel plays a fundamental role in its interaction with the wine. Get to know all the ins and outs of this stage of winemaking thanks to a fully digital titration.*

*Thanks to TECH, you will be able to identify errors in the elaboration of barrels that can influence the properties of the final product.*



# 02 Objectives

This Postgraduate Diploma in Enological Chemistry aims to improve the analytical skills and theoretical and practical competences of Nutrition graduates and other professionals interested in the area. In this sense, TECH has developed a didactic content that will provide the professionals with a basic understanding of the composition of grapes and wine and will help them to make decisions on enological practices and treatments. Thanks to the audiovisual content and the possibility of downloading the reference guide, the students will have all the tools at their disposal from the first module in order to complete this Postgraduate Diploma with guaranteed success. In this way, the program will enable students to intervene in the agri-food industry and develop safely in this field.





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*Do you want to dedicate yourself to the wine industry as an expert nutritionist in this field? You will be able to achieve this by following a totally flexible study that TECH has designed to suit you and your needs”*



## General Objectives

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- Provide the widest possible range of viticultural knowledge
- Show the student the importance of viticulture for the production of great wines
- Inculcate the need for environmental protection based on sustainability
- Substantiate the enological importance of these compounds both in the winemaking stages and in the final product
- Examine the microorganisms associated with the winemaking process, their nutritional requirements, and the beneficial or detrimental properties they can contribute to the wine
- Provide knowledge for the production of white wines
- Determine the wide range of existing possibilities in order to choose the most appropriate processes for a given terroir, grape variety and wine style
- Develop to the maximum the most advanced enology so that the student can produce top quality white wines
- Turn the student into an expert in red winemaking
- Determine the varieties used or with potential in the vinification of sparkling wines
- Examine the viticultural elements that affect winemaking
- Generate specialized knowledge about the expedition Preparation of wines for consumption
- Establish the importance of winemaking for this group of great wines
- Substantiate the need to protect these heritage treasures as part of our culture
- Broaden knowledge of fining and elimination of the various components that can depreciate the wine
- Broaden the knowledge of barrel construction
- Present the importance of barrel toasting
- Delve into the sensory analysis of wine Aspects to evaluate and how to carry it out
- Identify the organoleptic alterations of the wine





## Specific Objectives

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### Module 1. Grape and Wine Compounds. Analytical Techniques

- ♦ Examine the basics of general, inorganic and organic chemistry and their applications in the winemaking process
- ♦ Be able to organize and control the transformation of grapes into wine according to the type of product to be elaborated
- ♦ Be able to use the knowledge acquired on the composition of grapes and wine and their evolution in making decisions on enological practices and treatments
- ♦ Be able to choose and carry out the necessary analyses for the control of raw materials, enological products, intermediate products of the winemaking process and final products
- ♦ Discover new analytical possibilities to know in depth the chemical composition of grapes and wine

### Module 2. Enological Microbiology

- ♦ Acquire a global knowledge of enological microbiology
- ♦ Analyze wine defects and correctly attribute them to each microbial group
- ♦ Fundamentally understand the concept of microbiological stability and be aware of the problems associated with different types of wine and the deviations they can have depending on the time of winemaking
- ♦ Examine the mechanism of action of antimicrobial compounds and how to control spoilage microorganisms
- ♦ Develop good cellar practices for cleaning and disinfection
- ♦ Establish methods for counting microorganisms and microscopic identification of each microbial group

### Module 3. Importance of the Oak Barrel in Wine Aging

- ♦ Be able to identify and understand the different stages of barrel manufacturing
- ♦ Illustrate the elements of differentiation between the different manufacturers
- ♦ Be aware that the barrel is not only an aromatic contribution, but also an element of wine stabilization
- ♦ Analyze the composition of oak
- ♦ Determine the difference between French, American, and Eastern European oak
- ♦ Examine the phenomena of interaction between the oak barrel and the wine
- ♦ Understand the importance of ellagitannins
- ♦ Be able to understand the concept of grain



*Achieve your goals now, thanks to a program that will allow you to develop new analytical possibilities to gain in-depth knowledge of the chemical composition of grapes and wine"*

# 03

# Course Management

TECH has conducted an intensive search for professionals based on the wine industry and its food analysis, so that students acquire all the theoretical and practical knowledge with the endorsement of experts with years of experience. It is a teaching group that will be available through a direct communication channel with the specialists, so that they can ask any questions they may have about the subject. This makes the Postgraduate Diploma a qualification that has all the guarantees and has been designed for those graduates in Nutrition who wish to be educated under the best quality and the latest digital tools.



“

*With this team of experts you will understand the importance of the oak barrel in the aging of wines”*

## Management



### Ms. Clavero Arranz, Ana

- ♦ General Manager of Bodegas Cepa 21
- ♦ Chief Executive Officer of Grupo Bodegas Emilio Moro
- ♦ Chief Financial Officer of Grupo Bodegas Emilio Moro
- ♦ Head of Administration at Bodegas Cepa 21
- ♦ Administration Technician at Bodegas Convento San Francisco
- ♦ Professional Master's Degree in Business Administration and Management from the University of Valladolid
- ♦ Professional Master's Degree in Financial Management from ESIC
- ♦ Executive Coach by ICF
- ♦ Digital Immersion Program for CEOs (ICEX)
- ♦ Executive Development Program by IESE

## Professors

### Ms. Masa Guerra, Rocío

- ♦ Winemaker at Bodegas Protos
- ♦ Assistant winemaker at Matarromera Winery
- ♦ Responsible for incoming grapes at Bodega Emilio Moro
- ♦ Responsible for quality at BRC and winemaker at Viñedos Real Rubio
- ♦ Winemaking Assistant at Bodega Solar Viejo
- ♦ Winery and vineyard manager at Ébano Viñedos y Bodegas
- ♦ Assistant winemaker and laboratory technician at Bodega El Soto
- ♦ Degree in Enology from the Escuela Técnica Superior de Ingenierías Agrarias de Palencia (Palencia School of Agricultural Engineering)
- ♦ MBA in Wine Business Management from the Business School of the Chamber of Commerce of Valladolid

### Ms. Arranz Núñez, Beatriz

- ♦ Winemaker in Viñas del Jaro
- ♦ Assistant Winemaker at Viña Buena
- ♦ Winemaker at Familia A. De La Cal Winery
- ♦ Attendees Winemaker at Viña Cancura
- ♦ Winery worker at Vitalpe
- ♦ Winemaker trainer at the Business Development Institute
- ♦ Winemaker and guide at the Valladolid Provincial Wine Museum
- ♦ Overseer of the Superior Council of the Ribera del Duero D.O
- ♦ Degree in Enology from the University of Valladolid

### Mr. Carracedo Esguevillas, Daniel

- ♦ Deputy winemaker at Viñas del Jaro
- ♦ Laboratory Manager at Viñas del Jaro
- ♦ Assistant Winemaker at Bodegas y Viñedos de Cal Grau
- ♦ Graduates in Enology from the University of Valladolid

### Ms. Molina González, Silvia

- ♦ Operations Manager of Cepa 21 Winery
- ♦ Technical Manager at Bodegas Cepa 21
- ♦ Winemaker at Emilio Moro Winery
- ♦ Hostess for events and commercial promotions for New Line Events
- ♦ Event hostess and commercial promotions for Prodereg Agency
- ♦ Graduate in Oenology and Agricultural and Food Industries Engineering from the University of Valladolid
- ♦ Specialization in Leadership and Teamwork by the Technical School of Agricultural Engineering of Palencia



*A unique, key, and decisive educational experience to boost your professional development"*

# 04

## Structure and Content

The content of this Postgraduate Diploma in Enological Chemistry has been meticulously designed by professionals working in the field of wine microbiology and its gastronomic study. A team selected to transmit all their theoretical and practical knowledge to the students through a complete and rigorous program. In addition, TECH applies the innovative Relearning methodology, which exempts the student from cumbersome hours of study. A system that will allow you to become an expert, delving into the elements that influence the nutritional composition of wine in a simple and gradual way. In this way, the 100% online study is adapted to the work and personal needs of the specialists.





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*TECH has developed a comprehensive program with which you will examine the mechanism of action of antimicrobial compounds and control spoilage microorganisms”*

## Module 1. Grape and Wine Compounds. Analytical Techniques

- 1.1. Components of the Grape and their Distribution in the Grape Bunch
  - 1.1.1. Vegetative and Reproductive Cycle of the Grapevine
  - 1.1.2. Morphological Description and Composition of the Bunch
  - 1.1.3. Chemical Composition of the Fruit
- 1.2. Chemical Composition of Must and Wine
  - 1.2.1. Sugars
  - 1.2.2. Organic acids
  - 1.2.3. Nitrogen Compounds
  - 1.2.4. Minerals
  - 1.2.5. Polyphenols
  - 1.2.6. Vitamins
  - 1.2.7. Volatile Compounds
- 1.3. Organic Acids
  - 1.3.1. Organic Acids
  - 1.3.2. Main Acids in Grapes
  - 1.3.3. Main Acids in Fermentation
- 1.4. Polyphenols
  - 1.4.1. Non-Flavonoid Compounds
  - 1.4.2. Flavonoids
  - 1.4.3. Modifications of Phenolic Compounds During Ripening
- 1.5. Sugars
  - 1.5.1. Structure and Classification
  - 1.5.2. Glucose and Fructose
  - 1.5.3. Other Sugars
  - 1.5.4. Chemical Properties
  - 1.5.5. Pectins
- 1.6. Nitrogen Compounds
  - 1.6.1. Total Nitrogen and Assimilable Nitrogen
  - 1.6.2. Amino Acids
  - 1.6.3. Proteins
  - 1.6.4. Other Forms of Nitrogen



- 1.7. Aromas and Other Volatile Compounds
    - 1.7.1. Varietal Aroma
    - 1.7.2. Volatile Components of the Pre-Fermentative Stage
    - 1.7.3. Volatile Components of the Fermentative Stage
    - 1.7.4. Volatile Constituents of Wine During Storage
  - 1.8. Enzymes
    - 1.8.1. Polyphenoloxidases
    - 1.8.2. Aldehyde and C6 Alcohol Forming Enzymes
    - 1.8.3. Glycohydrolase Enzymes
    - 1.8.4. Proteolytic Enzymes
  - 1.9. Classical Enological Analysis
    - 1.9.1. Acid Analysis Methods
    - 1.9.2. Sugar Analysis Methods
    - 1.9.3. Methods of Alcohol Analysis
    - 1.9.4. Methods of Polyphenol Analysis
    - 1.9.5. Methods of Wine Additive Analysis
  - 1.10. Advanced Enological Analysis
    - 1.10.1. Liquid Chromatography: Enological Applications
    - 1.10.2. Gas Chromatography: Enological Applications
    - 1.10.3. Electronic Organoleptic Analysis
- Module 2. Enological Microbiology**
- 2.1. Yeast
    - 2.1.1. Yeast Strains in Winemaking
    - 2.1.2. Nutritional Requirements
    - 2.1.3. Nitrogen
    - 2.1.4. Growth Factors
    - 2.1.5. Survival
    - 2.1.6. Metabolism
    - 2.1.7. Glucose, Sulfhydryl, Glycosidases, Hand Proteins, Aromatic Compounds
  - 2.2. Lactic Acid Bacteria
    - 2.2.1. Types of Lactic Acid Bacteria in Winemaking
    - 2.2.2. Nutritional Requirements and Factors Affecting Growth and Viability in Wine
    - 2.2.3. Metabolism
    - 2.2.4. Sugars, Organic Acids, Nitrogenous Compounds, Glycerol Degradation, Aromatic Compounds
  - 2.3. Acetic Acid Bacteria
    - 2.3.1. Yeast Strains in Winemaking
    - 2.3.2. Nutritional Requirements
    - 2.3.3. Nitrogen, Growth Factors and Survival
    - 2.3.4. Metabolism
    - 2.3.5. Glucose, Hydrogen Sulfide, Glycosidases, Hand Proteins and Aromatic Compounds
  - 2.4. Fungi and Other Microorganisms
    - 2.4.1. Common Strains in Wine
    - 2.4.2. Nutritional Requirements
    - 2.4.3. Nitrogen, Growth Factors and Survival
    - 2.4.4. Metabolism
    - 2.4.5. Glucose, Mycotoxins and Aromatic Compounds
  - 2.5. Microbial Ecology During Winemaking
    - 2.5.1. Saccharomyces and Non-Saccharomyces Yeasts in Grape/Must, ALF and Post ALF
    - 2.5.2. Dekkera/Brettanomyces in Grapes/Must, ALF and Post ALF
    - 2.5.3. Lactic Acid Bacteria in Grapes/Must, ALF, MLF and Post MLF
    - 2.5.4. Microbial Interactions
    - 2.5.5. Saccharomyces/Oenococcus, Saccharomyces/Lactobacillus, Oenococcus/Pediococcus/Lactobacillus
  - 2.6. Importance of Malolactic Fermentation (MLF)
    - 2.6.1. Advantages of MLF
    - 2.6.2. Spontaneous vs. Directed MLF
    - 2.6.3. Starter Cultures
    - 2.6.4. Co-Inoculation vs. Sequential MLF
    - 2.6.5. Climate Change and Microbiological Stability

- 2.7. Wine Alterations
  - 2.7.1. Wine Altering Microorganisms
  - 2.7.2. Acetobacter, Dekkera/Brettanomyces, Veil/Biofilm Yeasts, Saccharomyces, Zygosaccharomyces
  - 2.7.3. Defects in Wines Associated with Microorganisms
  - 2.7.4. Volatile Acidity, Ethyl Carbamate, Mouse Aroma, Post MLF Lactic Bacteria Growth
  - 2.7.5. Geranium Aroma, Biogenic Amines, Acrolein, Mannitol, Viscosities, Tartaric Turnaround
- 2.8. Control of the Growth of Microorganisms
  - 2.8.1. Microbicidal Substances: Sulfur Dioxide, Dimethyl Dicarbonate, Lysozyme
  - 2.8.2. Microbiostatic Substances: Sorbic Acid, Chitosan, Fumaric Acid and Others
  - 2.8.3. Removal of Microorganisms by Physical Methods: Nominal, Absolute and Tangential Filtration
- 2.9. Biological Cleaning and Disinfection in the Winery
  - 2.9.1. Detergents, Cleaners and Surfactants: Alkali, Acids, Surfactants
  - 2.9.2. Disinfectants: Iodine, Quaternary Ammonium Compounds, Sulfur Dioxide, Peroxides and Chlorine
  - 2.9.3. Derivatives, Ozone, Hot Water and Steam
- 2.10. Microbiological Analysis of Wine
  - 2.10.1. Microscopic Observation
  - 2.10.2. Microscopic Yeast Count: Thoma Chamber and Methylene Blue
  - 2.10.3. Bacteria Microscopic Count: Petroff's Chamber
  - 2.10.4. Plate Count of Microorganisms: Classical Technique of Serial Dilutions and Membrane Filtration Technique
  - 2.10.5. Rapid Bacterial/Yeast Classification Tests
  - 2.10.6. Other Techniques



### Module 3. Importance of the Oak Barrel in Wine Aging

- 3.1. Importance of Oak for Barrel Manufacturing
  - 3.1.1. Use of the Barrel History
  - 3.1.2. Knowledge about Cooperage Wood
  - 3.1.3. Use of Barrels in Dry White Wines
  - 3.1.4. Use of Barrels in Red Wines
- 3.2. Oak
  - 3.2.1. Morphology and Anatomy
  - 3.2.2. Botanical Differentiation and Origins
  - 3.2.3. Notion of Grain and Porosity
- 3.3. Wood Selection
  - 3.3.1. Selection in the Forest
  - 3.3.2. Selection at the Sawmill
  - 3.3.3. Selection in the Cooperage
- 3.4. Drying and Seasoning of the Wood
  - 3.4.1. Drying the Wood
  - 3.4.2. Seasoning the Wood
  - 3.4.3. Importance of Microorganisms During Drying
- 3.5. Barrel Manufacturing
  - 3.5.1. The Transformation of the Staves
  - 3.5.2. Assembly of the Staves
  - 3.5.3. The Toasting of the Barrel
  - 3.5.4. Manufacture of the Barrel Tops
  - 3.5.5. Finishing the Barrel
- 3.6. Aromatic Contributions of Oak Barrels
  - 3.6.1. Aromatic Contributions of French Oak
  - 3.6.2. Aromatic Contributions of American Oak
  - 3.6.3. Aromatic Contributions of Eastern European oak
- 3.7. Oak Tannin
  - 3.7.1. The Elagitannins
  - 3.7.2. Enological Interest
  - 3.7.3. Importance of Tannin in the Structure of Wine
  - 3.7.4. Kinetics of Tannin Release from the Barrel in Time

- 3.8. The Barrel, an Impermeable and Porous Container
  - 3.8.1. Impermeability of the Barrel
  - 3.8.2. Porosity of the Barrel
  - 3.8.3. Importance of the Barrel in the Aging Process
- 3.9. The Good Use of Oak Barrels
  - 3.9.1. Reception of New Barrels
  - 3.9.2. Maintenance of the Barrels Over Time
  - 3.9.3. Repair of Leaks
- 3.10. The Second Life of Oak Barrels
  - 3.10.1. The Interest of the Second-Hand Barrel
  - 3.10.2. The Use of Second-Hand Barrels for Spirits
  - 3.10.3. Alternatives to Enological Use

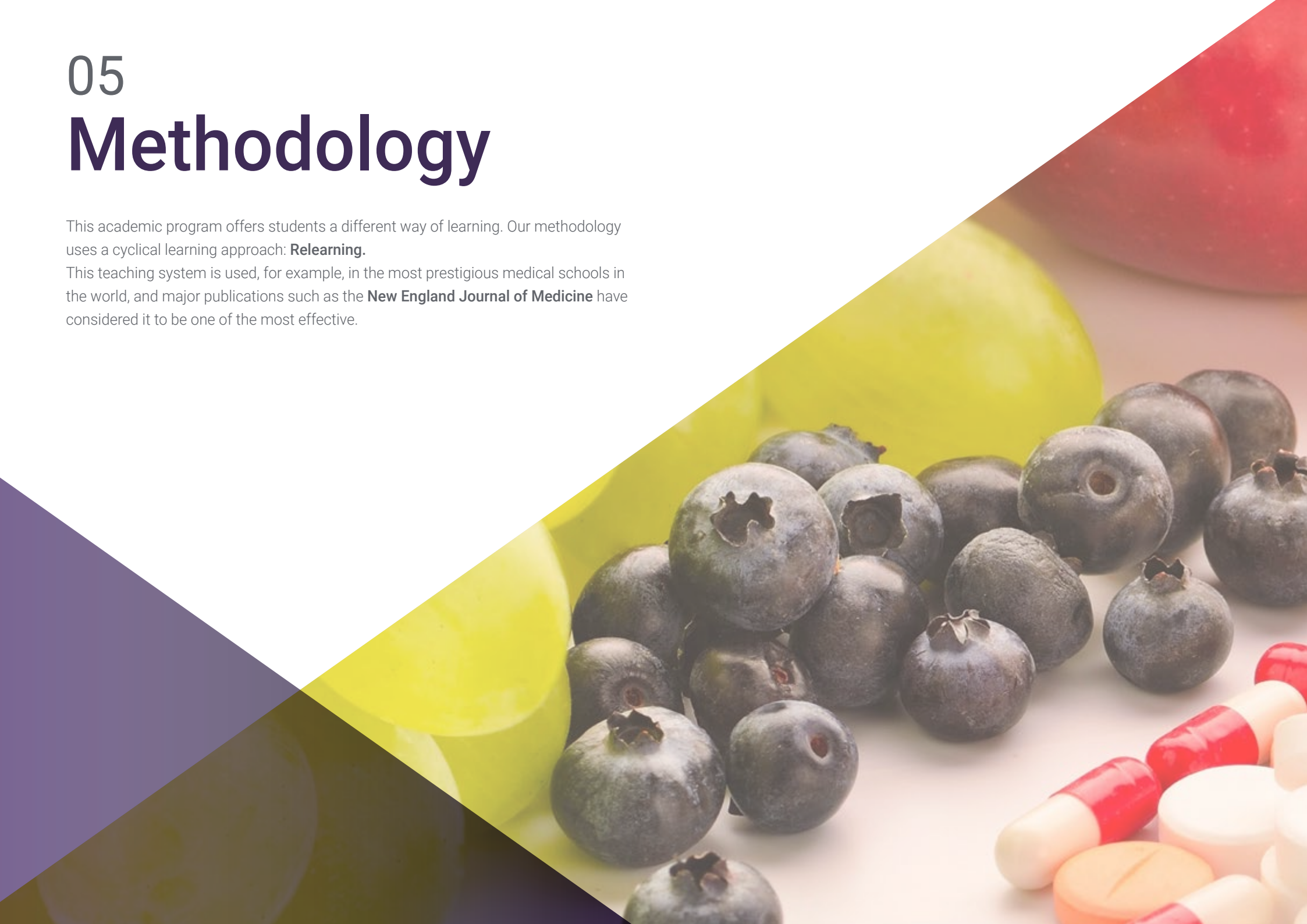


*A program designed for professionals like you, who understand the future of Enology, taking into account the nutritional processes that enrich the final product”*

# 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

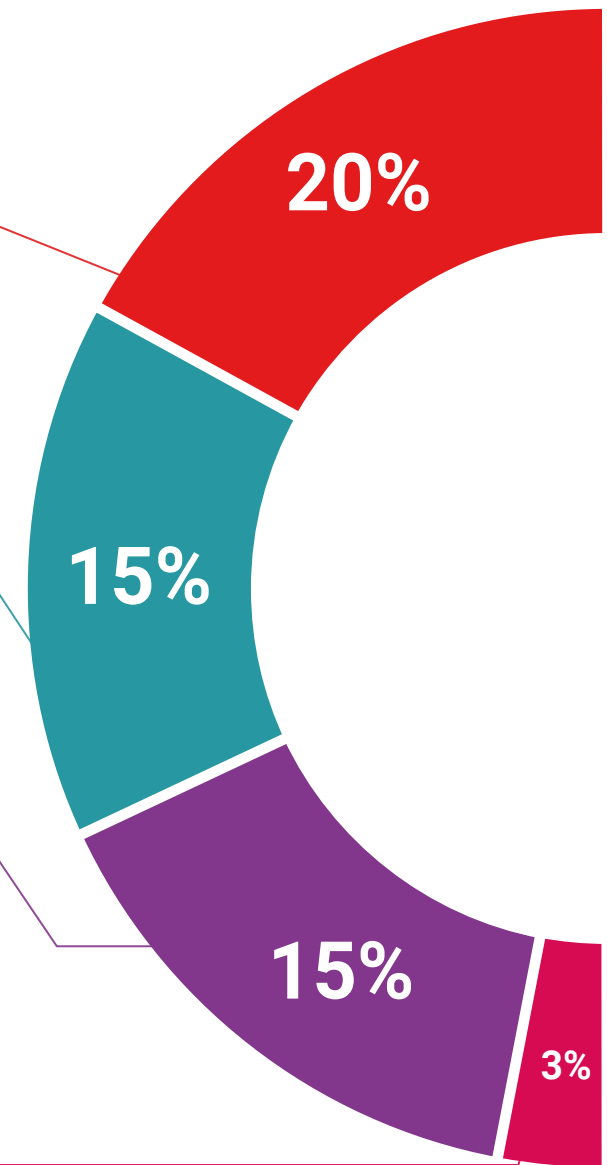
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

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 Enological Chemistry guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Global University.



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

This program will allow you to obtain your **Postgraduate Diploma in Enological Chemistry** 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.

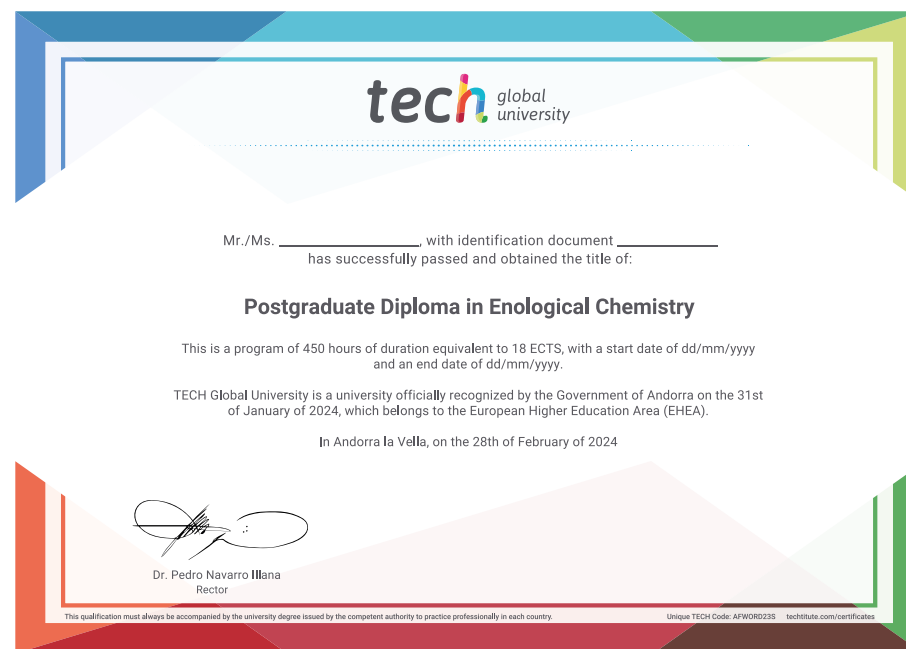
This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Diploma in Enological Chemistry**

Modality: **online**

Duration: **6 months**

Accreditation: **18 ECTS**





future

health confidence people

education information tutors

guarantee accreditation teaching

institutions technology learning

community commitment

personalized service innovation

knowledge present quality

online training

development language

virtual classroom

**tech** global  
university

## Postgraduate Diploma Enological Chemistry

- » Modality: **online**
- » Duration: **6 months**
- » Certificate: **TECH Global University**
- » Credits: **18 ECTS**
- » Schedule: **at your own pace**
- » Exams: **online**

# Postgraduate Diploma Enological Chemistry