

# Postgraduate Diploma Enological Chemistry



## Postgraduate Diploma Enological Chemistry

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

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

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# 01

# Introduction

Today's wine industry is governed by scientific knowledge that helps to overcome the challenges of innovation and the problems associated with this sector's environment. This science is mostly understood as an art, but to master it, empirical techniques are not enough. Companies are in great demand for professionals who can deal with the development of winemaking through technology. The high level of knowledge required for winemaking clashes with the lack of specific qualifications in enology. For this reason, TECH has designed an academic program aimed at engineers and other professionals interested in deepening their knowledge of volatile compounds, phenolics and sensory characteristics of wine and grapes. All this, through a 100% online learning and the support of a team of experts in Viticulture, which will turn students into wine experts and prepare them for real business practice.



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*With this Postgraduate Diploma you will learn about general, inorganic and organic chemistry and its applications in the winemaking process in only 6 months"*

If in ancient times, the best wines appeared by chance and through trial and error processes, today the strong demand for this product requires a much more demanding and rapid production. These are protocols in which the grape base is also part of the final result and in which agriculture and technology are already working together. In this sense, it is essential to have specialists who can contribute to the improvement of wine quality and promote the consolidation of companies in a sector with great economic weight worldwide.

In its line of academic rigor, TECH has developed a program that is committed to scientific advances and their collaboration with wineries and viticulture in general. Aware of this new paradigm, specialists who are already working in this business area or are interested in joining this market, must have a specific update in the analytical techniques of grape and wine compounds, their microbiology and the importance of barrels in the aging of wines. An exhaustive training of 450 hours will be obtained by the registered specialist.

In addition, it is a 100% online program that allows students to combine their studies with other areas of their daily lives. In addition, TECH is backed by a team of experts in Enology who will not only share their theoretical knowledge with the students, but will also be able to transmit their own experiences in the real scenario. A unique experience that also offers a multitude of audiovisual materials in various formats and the possibility of downloading the reference guide so that, even after the Postgraduate Diploma, the professionals will have the contents on their electronic devices.

This **Postgraduate Diploma in Enological Chemistry** contains the most complete and up-to-date program on the market. The most important features include:

- ◆ Case studies presented by experts in 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



*Register now to learn more about the transformation of grapes according to the type of product to be produced, whether white, rosé or red wines"*

“

*Delve into the direct relationship between microbiological stability and the problems associated with the different types of wine and their deviations in the winemaking processes, thanks to a team of experts in the area"*

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 the aging of wines. Discover now its relationship with the product through this 100% online program with which you will be able to combine your work.*

*Thanks to TECH, you will learn about the new analytical possibilities to investigate the chemical composition of grapes and wine and you will differentiate yourself from other professionals in your sector.*



# 02

# Objectives

This Postgraduate Diploma in Enological Chemistry aims to expand and update the knowledge of engineering graduates so that they can master the new tools in the winemaking scenario and be able to propose alternatives to wine compositions to increase its quality. In just 6 months, TECH will provide students with knowledge in oenological microbiology through a method based 100% on downloadable contents, which will be available even without an Internet connection, once they have been deposited in their electronic equipment. In addition, the study has been designed in a dynamic way to project the students' performance and make the program an enriching experience.





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*Have you not yet mastered the aromatic contributions of barrels? Enter this field with a multitude of audiovisual materials integrated in a program that adapts to you"*



## 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
- ◆ Deepen in 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 oenological practices and treatments
- ◆ Be able to choose and carry out the necessary analyses for the control of raw materials, oenological 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



*Meet your objectives, analyze wine defects and be able to correctly associate them to each microbial group"*

03

# Course Management

TECH has developed this program together with a team of experts in Enology who have not only contributed their theoretical knowledge to the syllabus, but have also contributed their own experience in teaching. This is a teaching group that works to achieve the development of professionals with the latest scientific evidence in the chemical field of viticulture. This makes the Postgraduate Diploma an opportunity for those graduates in Engineering and other specialists interested in learning with the endorsement of professional figures who already occupy important positions in the wine business market.



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*The team of experts who teach this program will help you grow professionally and personally in an ever-changing sector, so that you will be up to date in innovation"*

## 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. 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

### 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 Oenology 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 Oenology from the University of Valladolid

### 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

# 04

## Structure and Content

The syllabus of this Postgraduate Diploma in Enological Chemistry has been designed in detail by professionals working in the field of Enological Engineering, Viticulture and Wine Microbiology. Thanks to their contribution and the incorporation of practical tools, students will have at their disposal audiovisual contents in different formats that will help them in their training. Likewise, the specialists will be able to contact the teachers through a direct communication channel through which they will be able to solve all their questions about the subject. This will make it easier for you to become an expert. In addition, being a 100% online modality, the pace of study is adapted to the personal and professional needs of the students.







“TECH has incorporated the Relearning methodology in its programs so that you don't have to spend hours memorizing and easily assimilate the contents”

## 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

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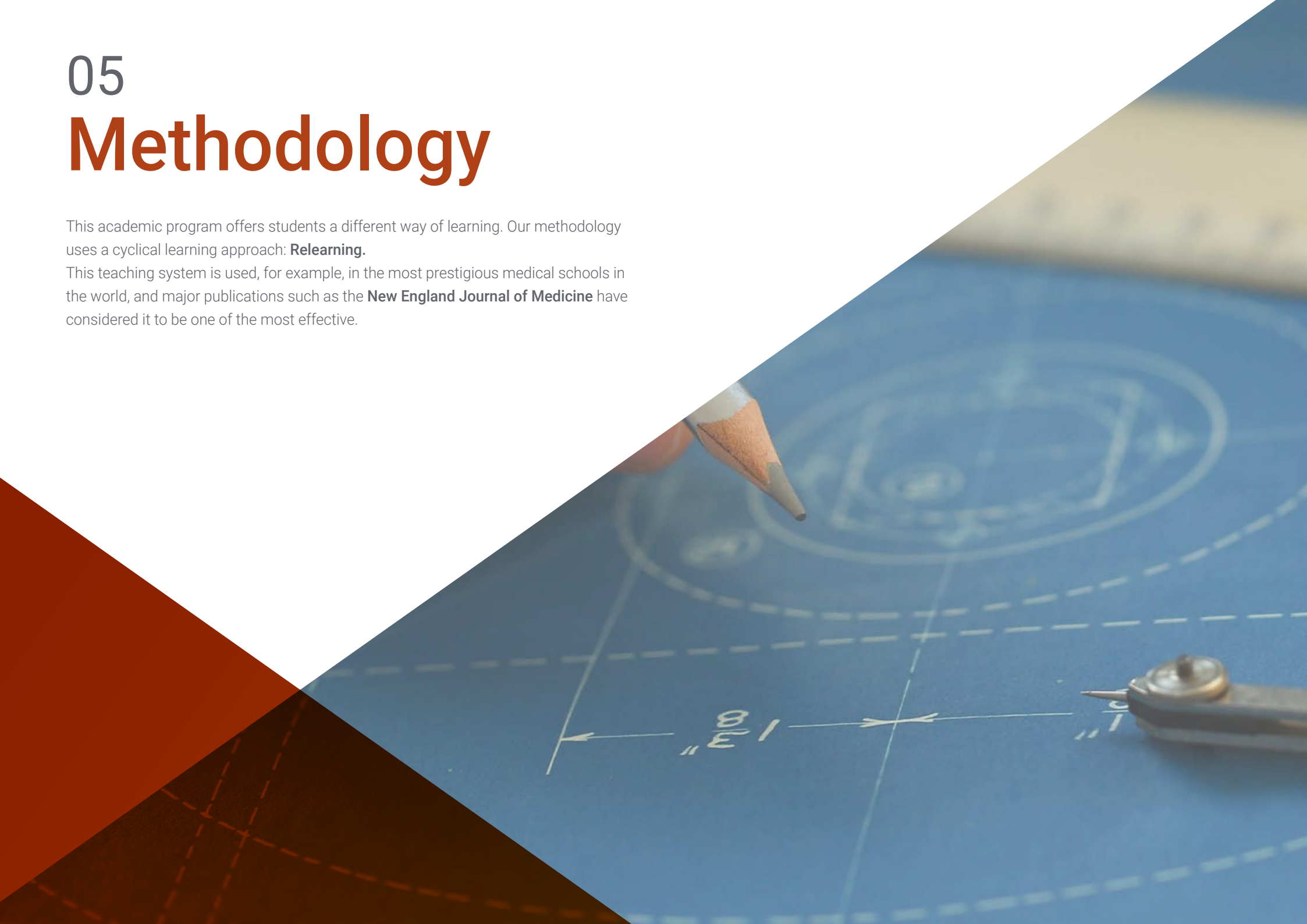
*A program designed for professionals like you, who understand the future of Enology by applying artificial intelligence and new technological trends"*

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.





“

*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"*

## 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.

“

*At TECH, you will experience a learning methodology that is shaking the foundations of traditional universities around the world”*



*You will have access to a learning system based on repetition, with natural and progressive teaching throughout the entire syllabus.*





*The student will learn to solve complex situations in real business environments through collaborative activities and real cases.*

### A learning method that is different and innovative

This TECH program is an intensive educational program, created from scratch, which presents the most demanding challenges and decisions in this field, both nationally and internationally. 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 professional reality is taken into account.

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

The case method is the most widely used learning system in the best faculties in the world. 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 that you are presented with in the case method, an action-oriented learning method. Throughout the program, the studies will be presented with multiple real cases. They will have to combine all their knowledge and research, and 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 8 different teaching elements in each lesson.

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

*In 2019, we obtained the best learning results of all online universities in the world.*

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 university is the only one in the world authorized to employ 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.



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.

This methodology has 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, and financial markets and 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 training, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation for 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.



### Practising Skills and Abilities

They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.



### 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.





#### Case Studies

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 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

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.



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 Diploma issued by TECH Technological University.



“

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

This **Postgraduate Diploma in Enological Chemistry** 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 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 professional career evaluation committees.

Title: **Postgraduate Diploma in Enological Chemistry**

Official N° of Hours: **450 h.**





future  
health confidence people  
education information tutors  
guarantee accreditation teaching  
institutions technology learning  
community commitment  
personalized service innovation  
knowledge present quality  
development language  
virtual classroom



## Postgraduate Diploma Enological Chemistry

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

# Postgraduate Diploma Enological Chemistry