

# Postgraduate Certificate Hazard Identification and Analysis in Chemical Industry





## Postgraduate Certificate Hazard Identification and Analysis in Chemical Industry

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

Website: [www.techtute.com/pk/engineering/postgraduate-certificate/hazard-identification-analysis-chemical-industry](http://www.techtute.com/pk/engineering/postgraduate-certificate/hazard-identification-analysis-chemical-industry)

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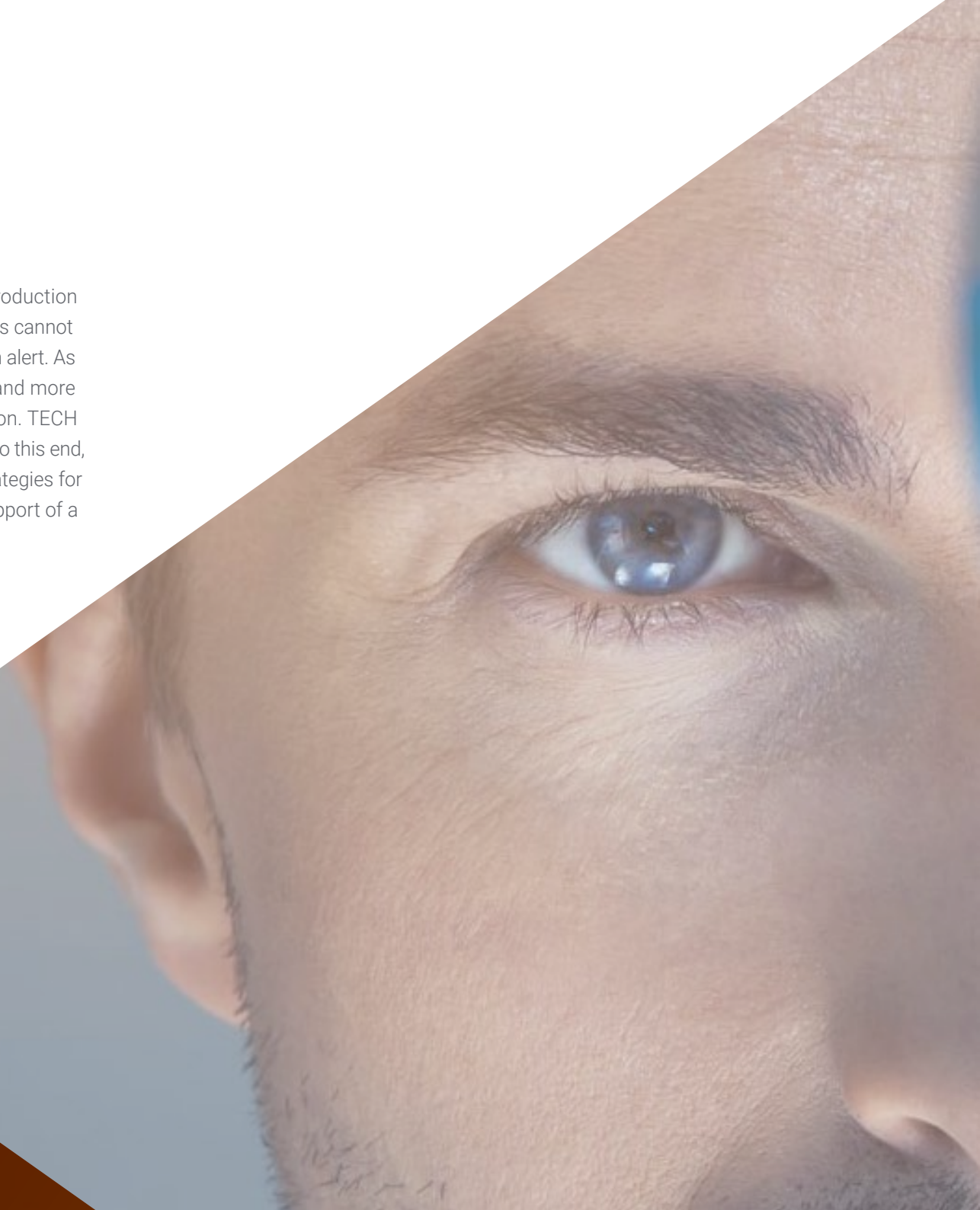
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# 01

# Introduction

International WHO reports indicate that cities in the vicinity of chemical production plants report a higher number of annual cancer deaths. Although researchers cannot establish a cause-and-effect relationship, these figures put the community on alert. As a result, there is an increasing demand for better risk protection methods and more rigid regulations, as well as specialists to contribute to their implementation. TECH students will find a unique opportunity to update their skills in this program. To this end, the program delves into the main means of protection and maintenance strategies for the Chemical Industry. All this from a 100% online platform and with the support of a prestigious faculty.



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*This 100% online program guarantees you all the competences to plan a comprehensive emergency strategy for accidents in the Chemical Industry"*

The city of Bhopal, in the United States, witnessed one of the worst chemical-industrial incidents in history. Due to insufficient safety measures and lack of maintenance, a pesticide company released a toxic cloud of methyl isocyanate gas. Between 15 and 20,000 people, neighbors of the company, were killed in the event. The disaster became a symbol of the importance of protective measures and risk minimization in the Chemical Industry. The tragedy generated greater awareness in society about the handling of substances. At the same time, it highlighted the need for stricter regulations and this became a demand for local and international legislators.

With TECH, engineers will update their theoretical and practical knowledge about the tools and methods of hazard reduction in Chemical development plants. For this purpose, they will have this Postgraduate Certificate in 100% online mode, with innovative content on the subject. First, specialists will examine the key issues in the use of barriers and control systems. They will also analyze quantitative methods to prevent disasters and strategies to plan in advance to face disasters. In the same way, they will delve into the means to control the impact of a chemical release on the environment and surrounding populations.

Furthermore, this program is characterized by the implementation of an exclusive and cutting-edge methodology: Relearning. Through this learning system, the students will approach complex concepts through repetition and will be able to appreciate their practical applications in a more precise and direct way. Therefore, graduates will be able to implement the acquired competencies in their practice in a fast, efficient, and flexible manner. On the other hand, thanks to the online mode of study, you will not be subject to tight schedules or unnecessary travel.

The **Postgraduate Certificate in Hazard Identification and Analysis in Chemical Industry** contains the most complete and up-to-date program on the market. The most important features include:

- ◆ The development of practical cases presented by experts in Chemistry Engineering
- ◆ 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
- ◆ 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



*This TECH program can make you an expert in managing environmental risks from chemical contamination"*

“

*This syllabus will delve into the stages and strategies for communicating the results of a chemical incident investigation"*

The program's teaching staff includes professionals from the field who contribute their work experience to this educational program, as well as renowned 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 education programmed to learn in real situations.

This program is designed around Problem-Based Learning, whereby the professional must try to solve the different professional practice situations that arise during the educational year. For this purpose, the students will be assisted by an innovative interactive video system created by renowned and experienced experts.

*A Postgraduate Certificate that you can access with the help of any device connected to the Internet and in the location of your choice.*

*You will delve into the protocols for the prevention of emergencies in the Chemical Industry with this 6-week program.*



# 02

# Objectives

This Postgraduate Certificate will provide participants with solid knowledge of industrial safety, identification, and prevention of risks in the chemical sector. In this way, engineers will delve into international regulations to prevent hazards, develop skills in structured and quantitative methods of risk analysis, and promote a culture of environmental protection. In addition, it will train graduates on emergency strategies, accident investigation, and continuous improvement.





“

*All your professional and personal goals of improvement will be achieved with this 100% online TECH Postgraduate Certificate”*



## General Objectives

- ◆ Apply fundamental concepts in the design of chemical products and processes
- ◆ Raise awareness of the importance of sustainability in terms of economy, environment, and society
- ◆ Evaluate the applicability and potential advantages of new technologies
- ◆ Develop a comprehensive view of modern chemical engineering
- ◆ Analyze optimization techniques and simulation of chemical processes
- ◆ Implement simulation techniques to common unit operations in the chemical industry

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*An opportunity to update your theoretical knowledge and practical skills from anywhere and at any time”*





## Specific Objectives

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- ◆ Provide a comprehensive understanding of industrial safety in the chemical sector
- ◆ Prepare emergency plans and accident investigations in the chemical industry
- ◆ Substantiate environmental protection measures based on the environmental risks of the chemical industry
- ◆ Determine the importance of industrial safety based on its historical evolution
- ◆ Promote safety culture in the industrial environment
- ◆ Use qualitative methods for risk analysis in the chemical industry
- ◆ Risk assessment in the chemical industry using quantitative methods of analysis
- ◆ Compile methods and equipment for worker protection
- ◆ Specify the classification of chemical products and their storage

03

# Course Management

TECH faculty are the ideal choice to teach this program due to their vast experience and expertise in the field of Chemical Industry safety. Their very high qualification is based on a combination of their research work and professional background. In this way, they have achieved a holistic understanding of the challenges and solutions in this field. In addition, they have actively participated in the development of the study materials for this program. Thanks to this, the students will have access to a solid scientific-educational base through multimedia resources and other complementary content.





“

*The entire faculty of this program has mastered the fundamentals of safety and accident culture in the Chemical Industry”*

## Management



### Dr. Barroso Martín, Isabel

- ♦ Expert in Inorganic Chemistry, Crystallography and Mineralogy
- ♦ Postdoctoral researcher of the I Own Research and Transfer Plan of the University of Málaga
- ♦ Research Staff at the University of Málaga
- ♦ ORACLE Programmer in CMV Consultants Accenture
- ♦ PhD in Sciences from the University of Málaga
- ♦ Master's Degree in Applied Chemistry - specialization in materials characterization - from the University of Málaga
- ♦ Master's Degree in SE, High School, Vocational Training, and Language Teaching - specializing in Physics and Chemistry University of Malaga



## Professors

### D. Barroso Martín, Santiago

- ◆ Legal Advisor in Paralegal at Vicox Legal
- ◆ Legal Content Editor at Engineering and Advanced Integration S.A. / BABEL
- ◆ Administrative Lawyer at the Illustrious College of Lawyers of Málaga
- ◆ Paralegal Advisor at Garcia de la Vega Attorneys
- ◆ Law Degree from the University of Málaga
- ◆ Master's Degree in Corporate Legal Consultancy (MAJE) from the University of Málaga
- ◆ Expert Master's Degree in Labor, Tax and Accounting Consulting by Help T Pyme

### Dr. Jiménez Gómez, Carmen Pilar

- ◆ Technical support staff at the Central Research Services of the University of Málaga
- ◆ Laboratory technician assistant at Acerinox
- ◆ Laboratory technician in Axaragua
- ◆ Predoctoral fellow at the Department of Inorganic Chemistry, Crystallography, and Mineralogy of the University of Málaga
- ◆ PhD in Chemical Sciences from the University of Málaga
- ◆ Chemical Engineer from the University of Málaga
- ◆ Direction of Final Degree Project in Chemical Engineering (2016)
- ◆ Teaching collaborator in different degrees: Chemical Engineering, Energy Engineering, and Industrial Organization Engineering at the University of Málaga

# 04

## Structure and Content

This program ranges from industrial safety and risk prevention to emergency strategies and environmental protection. In this way, this Postgraduate Certificate addresses hazard identification methods, quantitative analysis, worker safety, and environmental protection measures. In this way, the students will delve into international regulations, inherent safety design, among other fundamental points. It also addresses accident investigation and the need to promote sustainable projects. For this purpose, the Postgraduate Certificate is supported by the best learning methodology in a 100% online modality.





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*This program accompanies its syllabus with materials in various formats such as complementary readings, explanatory videos and interactive summaries”*

## Module 1. Industrial Safety in the Chemical Sector

- 1.1. Safety in the Chemical Industry
  - 1.1.1. Safety in the Chemical Industry
  - 1.1.2. Accidents in the Chemical Industry
  - 1.1.3. International Safety Regulations in the Chemical Industry
  - 1.1.4. Safety Culture in the Industry
- 1.2. Risk Prevention in Process Plants
  - 1.2.1. Inherent Safety Design to Minimize Risk
  - 1.2.2. Use of Safety Barriers and Control Systems
  - 1.2.3. Maintenance of Safety Systems in the Life Cycle of the Chemical Plant
- 1.3. Structured Hazard Identification Methods
  - 1.3.1. HAZOP Hazard and Operability Analysis
  - 1.3.2. LOPA Risk and Operability Analysis with Layers of Protection
  - 1.3.3. Comparison and Combination of Structured Methods
- 1.4. Quantitative Methods of Hazard Analysis
  - 1.4.1. Diagrams of Events
  - 1.4.2. Diagrams of Failures
  - 1.4.3. Consequence Analysis and Risk Estimation
- 1.5. Workers Safety in the Chemical Industry
  - 1.5.1. Safety in the Workplace
  - 1.5.2. Protective Measures in the Handling of Chemical Products
  - 1.5.3. Worker Safety Training and Coaching
- 1.6. Use of Chemical Products
  - 1.6.1. Incompatibilities in Chemical Products Storage
  - 1.6.2. Handling of Chemical Substances
  - 1.6.3. Safety in the Use of Hazardous Chemicals
- 1.7. Emergency Strategies
  - 1.7.1. Integral Emergency Planning in the Chemical Industry
  - 1.7.2. Development of Emergency Scenarios
  - 1.7.3. Development of Emergency Plan Simulations
  - 1.7.4. Crisis Management and Continuity



- 1.8. Environmental Risks in Chemical Industry
  - 1.8.1. Air Pollution Sources and Air Pollutant Dispersion Mechanisms
  - 1.8.2. Sources of Soil Contamination and Their Impact on Biodiversity
  - 1.8.3. Sources of Water Resources Contamination and Their Impact on Water Availability
- 1.9. Environmental Protection Measures
  - 1.9.1. Air Pollution Control
  - 1.9.2. Soil Contamination Control
  - 1.9.3. Water Resources Contamination Control
- 1.10. Investigating Accidents
  - 1.10.1. Accident Investigation Methodologies
  - 1.10.2. Stages in Accidents Investigation
  - 1.10.3. Human and Organizational Error Analysis
  - 1.10.4. Communication and Continuous Improvement

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*Do not miss this Postgraduate Certificate and enroll now in this program focused on risk analysis of chemical plants"*

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"*

## 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.



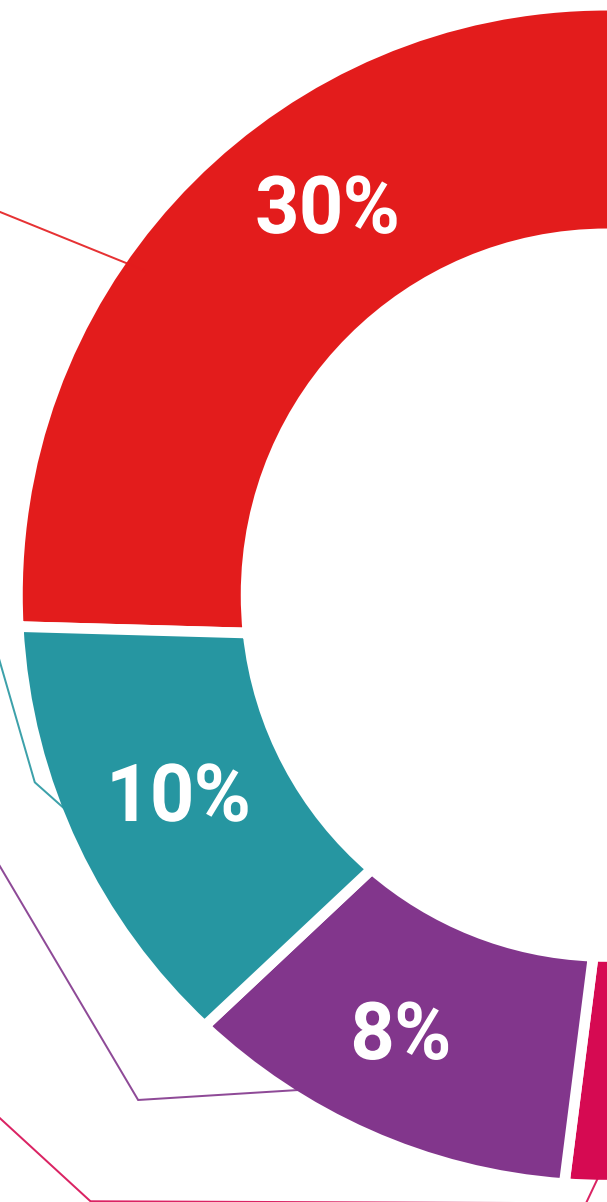
### Practising Skills and Abilities

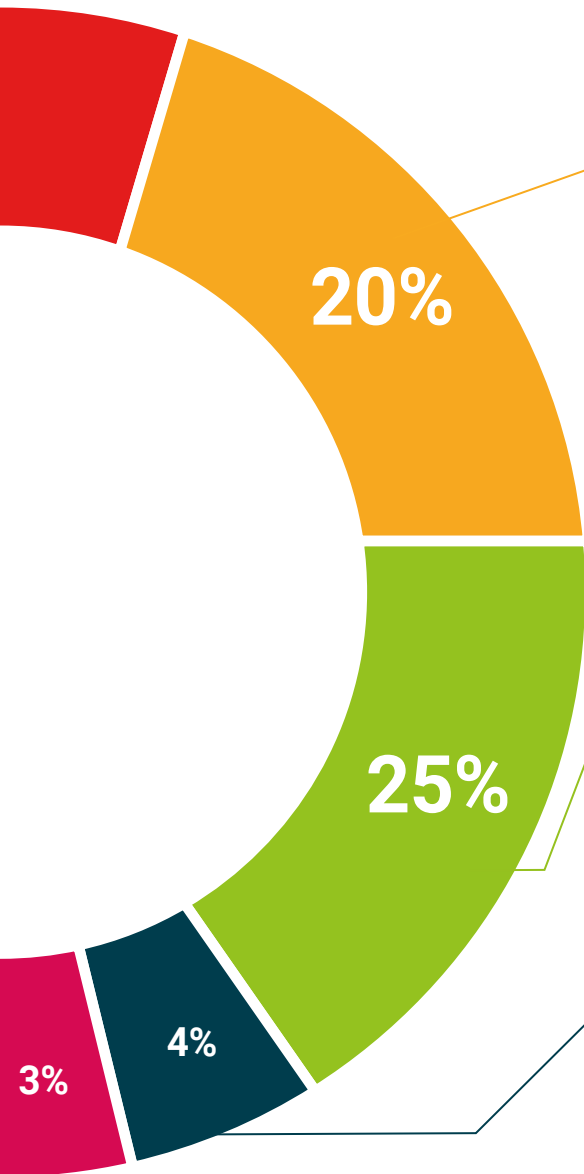
They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.



### 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 Certificate in Hazard Identification and Analysis in Chemical Industry 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 Hazard Identification and Analysis in Chemical Industry** contains the most complete and up-to-date program on the market.

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

The certificate 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 Hazard Identification and Analysis in Industry**

Official N° of Hours: **150 h.**



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



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