

Postgraduate Certificate

Technical-Economic Analysis of Hydrogen Projects



Postgraduate Certificate Technical-Economic Analysis of Hydrogen Projects

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

Website: www.techtute.com/us/engineering/postgraduate-certificate/technical-economic-analysis-hydrogen-projects

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01

Introduction

There is currently a great push for initiatives that favor the so-called "green economy", focused mainly on productive actions that reduce greenhouse gas emissions and promote renewable energies.

This momentum is palpable in large companies that are committed to the use and creation of hydrogen projects, but it requires, however, a prior techno-economic study essential to determine its feasibility. For this, it is necessary that professionals have knowledge to perform appropriate analysis and lead to optimal results.

In this line, TECH offers this 100% online program, in which the graduate will obtain advanced learning on the study of the profitability for the production, storage, transport, distribution and end uses of hydrogen. To do this, you will have a quality multimedia content, developed by a specialist engineer with extensive experience in the sector.



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This Postgraduate Certificate will provide you with the knowledge of Technical-Economic Analysis necessary for you to succeed with your hydrogen project"

The possibilities of hydrogen are multiple and many sectors such as industry or mobility are taking advantage of this energy vector to develop projects that considerably reduce CO2 emissions into the atmosphere. A "green" alternative, which is currently an ideal option to replace fossil fuels or traditional energy sources.

In this scenario of innovation and study, large companies around the world are investing millions in launching projects, which in turn are boosting the hydrogen sector. However, before taking such a step, it is essential to carry out an accurate study on the technical and economic feasibility of such projects. It is for this reason that engineering professionals who wish to advance in this field, know the methods of profitability analysis of a project in this field. Given this need, TECH has designed this Postgraduate Certificate in Technical-Economic Analysis of Hydrogen Projects, taught exclusively online, by a leading expert in management and management with extensive experience in this industry.

A program that will allow students to determine which is the most appropriate structuring to carry out an analysis in this field, the different sources of financing or use project finance to check the economic results. All this without ignoring the viability barriers that this type of project may face today and in the future.

To this end, this academic institution provides innovative pedagogical tools that will lead you to delve into the income and costs of the project, the calculation of cash flows and profitability indicators. In addition, thanks to the *Relearning* system you will be able to reduce the long hours of study so frequent in other teaching methods.

It is also an ideal educational option for those who wish to obtain a university program that is compatible with their professional and/or personal responsibilities. In order to take this Postgraduate Certificate, students only need an electronic device with an Internet connection to view the syllabus hosted in the Virtual Campus. This is an excellent opportunity for professionals to progress in their careers through high-level education.

This **Postgraduate Certificate in Technical-Economic Analysis of Hydrogen Project** contains the most complete and up-to-date program on the market. The most important features include:

- ◆ Case studies presented by engineering experts
- ◆ The graphic, schematic and practical contents of the book provide technical 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



Enroll in a Postgraduate Certificate that you can access 24 hours a day, 7 days a week from an electronic device with an Internet connection"

“ *This program will lead you to determine the best structure and method of financing your project in a booming hydrogen sector*”

The program's teaching staff includes professionals in the sector who contribute their work experience to this 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 academic year. For this purpose, the students will be assisted by an innovative interactive video system created by renowned and experienced experts.

A 100% online program that gives you the flexibility you need to combine your professional responsibilities with quality education.

You will be able to delve more easily into the concepts of CAPEX and OPEX and their relevance in electrolysis projects.

H2

02

Objectives

The hydrogen sector requires highly skilled engineering professionals who not only master the technical concepts, but are also capable of leading major projects in this sector. This is why this program provides an intensive learning, which will lead you to perform effectively and with the necessary tools, the technical-economic analysis essential to know the feasibility of any initiative in this field.



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The case studies will allow you to master Project Finance and successfully develop any initiative in the hydrogen sector”



General Objectives

- ◆ Delve into the performance of technical-economic analyses
- ◆ Assess Hydrogen Project Feasibility
- ◆ Elaborate Technical-Economic and Feasibility Analysis of Hydrogen Projects



With this program you will be able to investigate the existing financing alternatives, so that your hydrogen project can be executed with solvency"





Specific Objectives

- ◆ Develop expertise on technical-economic and feasibility analysis of hydrogen projects
- ◆ Determine the structuring of hydrogen projects and their financing
- ◆ Analyze the keys to electricity supply for green hydrogen production
- ◆ Enhance the ability to choose the most suitable financing tool
- ◆ Delve into the knowledge of *Project Finance* focused on the development of hydrogen projects
- ◆ Characterize and identify project costs and revenues, as well cash flows and profitability indicators
- ◆ Learn how to develop a feasibility analysis and its different scenarios

03

Structure and Content

The study plan, developed by a professional with experience in hydrogen project management, will allow the graduate to obtain an advanced and intensive knowledge on the Technical-Economic Analysis of Hydrogen Projects. For this purpose, TECH provides a syllabus with a theoretical and dynamic content, thanks to multimedia resources. In addition, in order to provide students with an education that has a direct application in their daily performance, this program has case studies, which will show them the most effective tools and methods to carry out an essential evaluation in order to know the profitability of the projects.



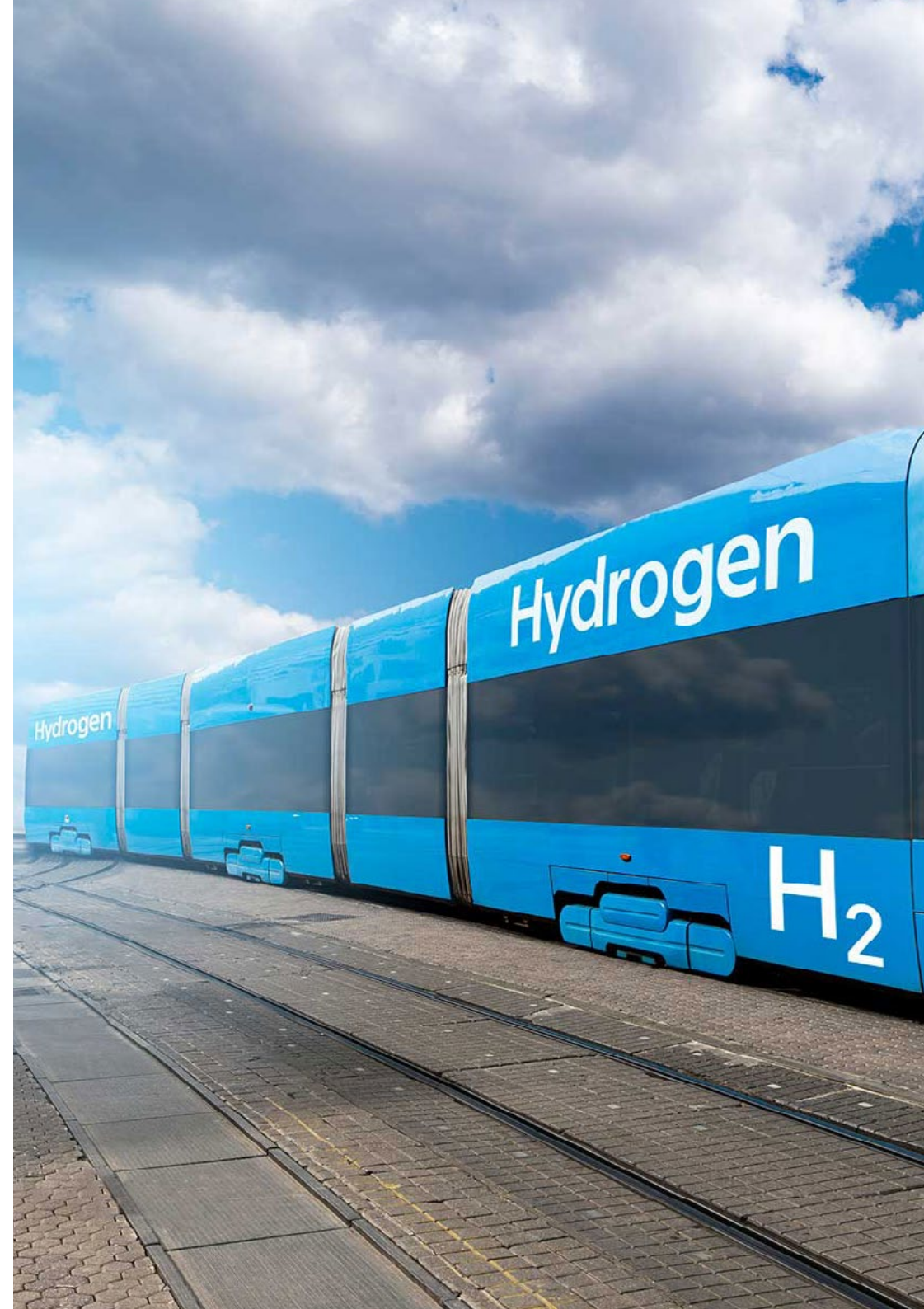


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A curriculum with a theoretical-practical vision that will allow you to rigorously analyze the viability of hydrogen projects"

Module 1. Technical-Economic and Feasibility Analysis of Hydrogen Projects

- 1.1. Green Hydrogen Power Supply
 - 1.1.1. The Keys to PPAs (Power Purchase Agreement)
 - 1.1.2. Self-Consumption with Green Hydrogen
 - 1.1.3. Hydrogen Production in Off-Grid Configuration
- 1.2. Technical and Economic Modeling of Electrolysis Plants
 - 1.2.1. Definition of Production Plant Requirements
 - 1.2.2. CAPEX (Capital Expenditure)
 - 1.2.3. OPEX (Operational Expenditure)
- 1.3. Technical and Economic Modeling of Storage Facilities according to Formats (GH2, LH2, Green Ammonia, Methanol, LOHC).
 - 1.3.1. Technical Assessment of Different Storage Facilities
 - 1.3.2. Cost Analysis
 - 1.3.3. Selection Criteria
- 1.4. Technical and Economic Modeling of Hydrogen Transportation, Distribution, and End-Use Assets
 - 1.4.1. Transportation and Distribution Cost Assessment
 - 1.4.2. Technical Limitations of Current Hydrogen Transportation and Distribution Methods
 - 1.4.3. Selection Criteria
- 1.5. Structuring of Hydrogen Projects. Financing Alternatives
 - 1.5.1. Keys to the Choice of Financing
 - 1.5.2. Private Equity Financing
 - 1.5.3. Public Funding
- 1.6. Identification and Characterization of Project Revenues and Costs
 - 1.6.1. Revenues
 - 1.6.2. Costs
 - 1.6.3. Joint Assessment



- 1.7. Calculation of Cash Flows and Project Profitability Indicators (IRR, NPV, others)
 - 1.7.1. Cash Flow
 - 1.7.2. Profitability Indicators
 - 1.7.3. Case Study
- 1.8. Feasibility Analysis and Scenarios
 - 1.8.1. Scenario Design
 - 1.8.2. Scenario Analysis
 - 1.8.3. Scenario Analysis
- 1.9. Use Case based on Project Finance
 - 1.9.1. Relevant Figures of the SPV (Special Purpose Vehicle)
 - 1.9.2. Development Process
 - 1.9.3. Conclusions
- 1.10. Assessment of Barriers to Project Feasibility and Future Prospects
 - 1.10.1. Existing Barriers to Hydrogen Project Feasibility
 - 1.10.2. Assessment of the Current Situation
 - 1.10.3. Future Perspectives



This Postgraduate Certificate will allow you to learn about LCOH, an essential concept for analyzing the profitability of hydrogen projects"



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"

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.

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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.



05

Certificate

The Postgraduate Certificate in Technical-Economic Analysis of Hydrogen Projects 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 Certificate in Hydrogen Energy Applications** 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 Certificate in Technical-Economic Analysis of Hydrogen Projects**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**



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



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