

Postgraduate Certificate Alternative Internal Combustion Engines





Postgraduate Certificate Alternative Internal Combustion Engines

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

Website: www.techtitute.com/in/engineering/postgraduate-certificate/alternative-internal-combustion-engines

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01

Introduction

During the industrial revolution, engine engineering emerged as a technological milestone. Nowadays, the imperative need for more efficient and environmentally friendly propulsion systems poses an unprecedented technological challenge. Addressing this demand requires a deep understanding of engine classification and their thermodynamic cycles, together with the ability to perform life cycle and performance analysis. Under this context, this educational program stands as the solution to qualify professionals in these critical areas of engineering, preparing them to lead in the optimization of propulsion systems and to address the current challenges. All this, in a 100% online format and with the support of a teaching faculty of great prestige.



“

Specialize in Alternative Internal Combustion Engines and master the most advanced engineering techniques and procedures”

Automotive engineering has acquired a transcendental role in an area where efficiency and sustainability are becoming crucial imperatives in industry and transportation. The growing need to optimize engines in response to the scarcity of resources and the imperative to reduce environmental impact demands the acquisition of in-depth knowledge in this discipline. This educational plan is focused on professionals linked to engineering, who seek to develop their skills in Alternative Internal Combustion Engines.

The relevance of this educational program is unquestionable, as it plays an active role in improving competitiveness in various sectors, from automation to the naval and aerospace industry. The knowledge acquired not only enriches the profile of professionals, but will also translate into the ability to design and implement innovative solutions for present and future challenges in practice.

The learning experience in this Postgraduate Certificate is characterized by the constant support of experts in the field, who apply a teaching methodology based on *Relearning*. This strategy allows topics and concepts to be repeated or reformulated throughout the academic content, ensuring that students not only acquire knowledge, but also internalize it effectively and can apply it in practical contexts with a high level of competence.

This **Postgraduate Certificate in Alternative Internal Combustion Engines** 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 Aeronautical Engineering
- 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



Stand out in a booming sector and be at the forefront of engineering. Enroll now”

“

Develop solutions and confidently face challenges in the professional world. Stand out with your knowledge in Engine Engineering”

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 course. For this purpose, the students will be assisted by an innovative interactive video system created by renowned and experienced experts.

Lead the field of Engine Engineering. Transform your professional career with this Postgraduate Certificate.

Receive high-quality education, study online and get ready to advance while studying from anywhere in the world.



02

Objectives

The main objective of this Postgraduate Certificate is to carry out a complete analysis of the current status of Alternative Internal Combustion Engines. In this context, the identification of conventional engines of this type will be carried out and the various aspects that influence their life cycle will be explored in detail. In addition, during this educational program and under the guidance of real experts, the different performance terms will be established and examined in detail, which will allow the student to put into practice innovative techniques and procedures in this area.





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In TECH you will be guided by real experts, while you study with the most recognized and successful Relearning methodology”



General Objectives

- ♦ Analyze the state of the art of Alternative Internal Combustion Engines (ICE)
- ♦ Identify conventional Alternative Internal Combustion Engines (ICE)
- ♦ Examine the different aspects to be taken into account in the life cycle of Alternative Internal Combustion Engines (ICE)



This Postgraduate Certificate offers the most valued knowledge in today's industrial sector"





Specific Objectives

- Analyze the thermodynamic cycles involved in the operation of Alternative Internal Combustion Engines
- Concrete operation of conventional Alternative Internal Combustion Engines such as Otto or Diesel cycle
- Establish the different existing performance terms
- Identify the elements that make up Alternative Internal Combustion Engines



03

Course Management

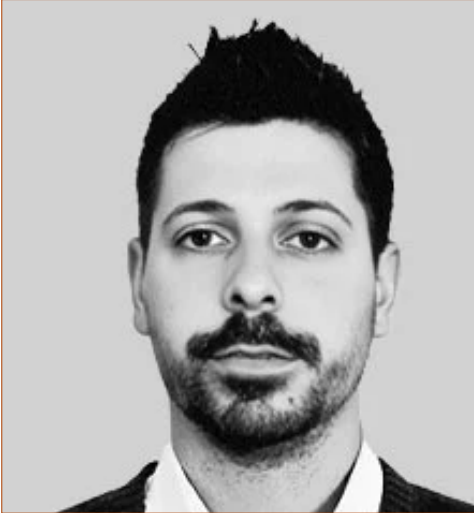
This study plan focused on Alternative Internal Combustion Engines is distinguished by its exceptional faculty composed of highly trained experts in Engineering, allowing students the possibility to immerse themselves in a world where the intricacies of Structures and Systems of Engine Components are explored in a deep and enriching way. All this, through the best teaching resources and the most advanced educational technology in the academic sector.



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Travel through the most enriching academic journey with the greatest experts in Alternative Internal Combustion Engines. Study at the world's best online university according to Forbes”

Management



Mr. Del Pino Luengo, Isatsi

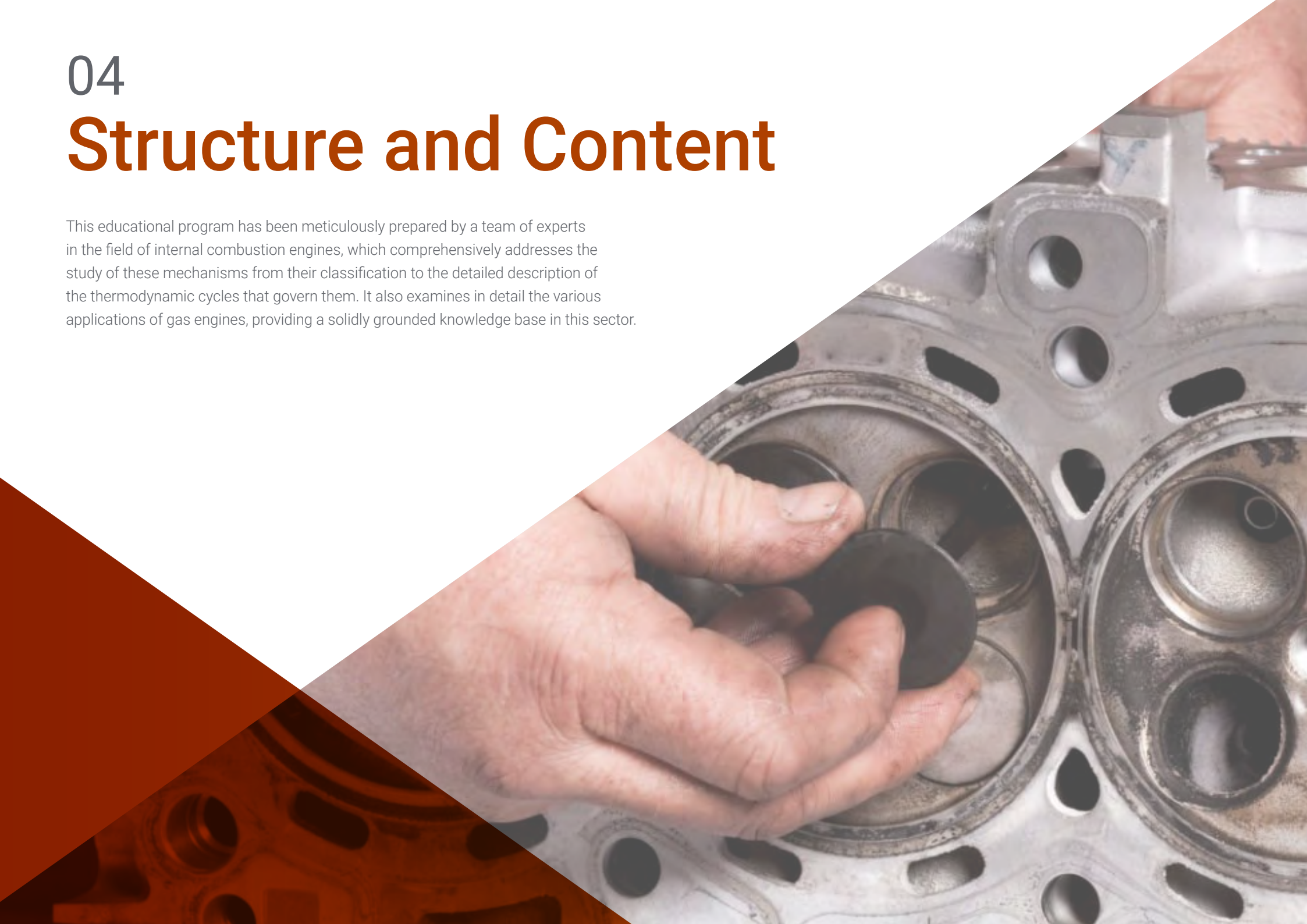
- Airbus Defence & Space CC295 FWSAR program certification and airworthiness technical manager
- Airworthiness and certification engineer for the engine section in charge of the MTR390 program at the National Institute for Aerospace Technology (NIAT)
- Airworthiness engineer and certification for the VSTOL section by the National Institute for Aerospace Technology (NIAT).
- Aeronautical design and certification engineer for the life extension project of the Spanish Navy AB212 helicopters (PEVH AB212) at Babcock MCSE
- Design and Certification Engineer in the DOA department at Babcock MCSE
- Fleet Technical Office Engineer AS 350 B3/ BELL 212/ SA 330 J.Babcock MCSE
- Qualifying Master's Degree in Aeronautical Engineering from the University of León
- Aeronautical Technical Engineer in Aeromotors, Polytechnic University of Madrid

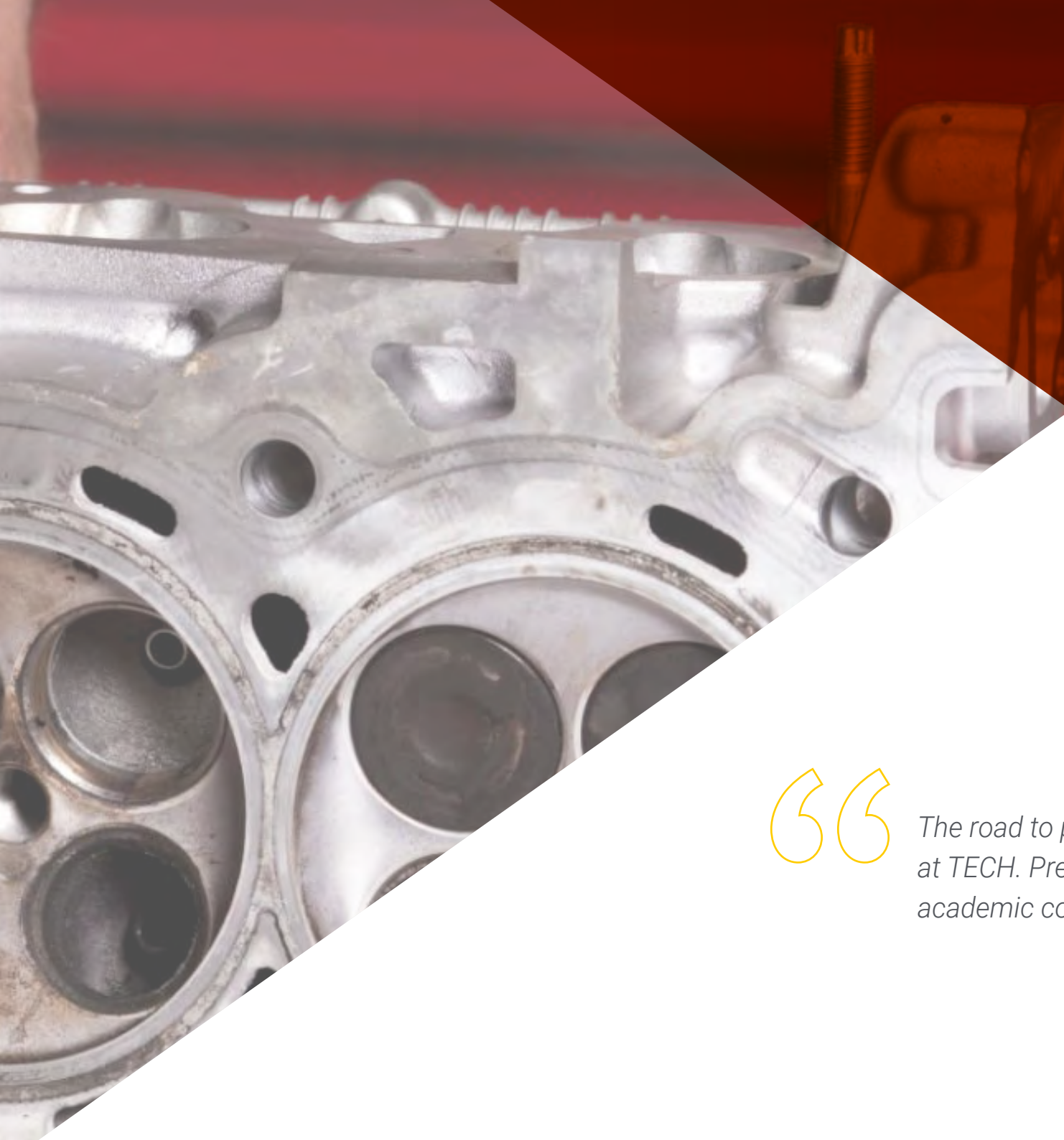


04

Structure and Content

This educational program has been meticulously prepared by a team of experts in the field of internal combustion engines, which comprehensively addresses the study of these mechanisms from their classification to the detailed description of the thermodynamic cycles that govern them. It also examines in detail the various applications of gas engines, providing a solidly grounded knowledge base in this sector.



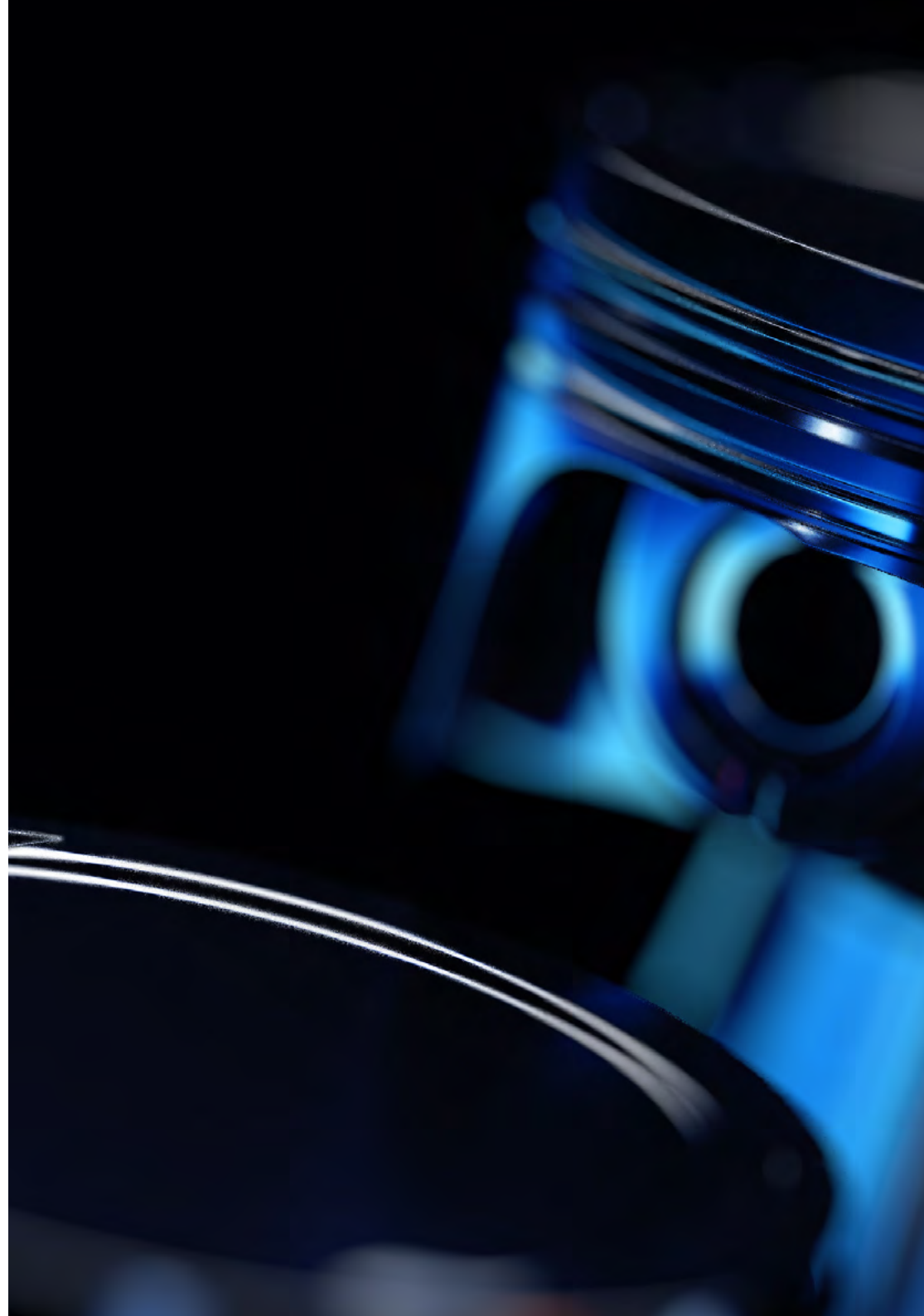


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The road to professional excellence begins at TECH. Prepare yourself with the best academic content in Engine Engineering”

Module 1. Alternative Internal Combustion Engines

- 1.1. Alternative Internal Combustion Engines: State of the Art
 - 1.1.1. Alternative Internal Combustion Engines (ICE)
 - 1.1.2. Innovation and Singularity: Distinctive features of Alternative ICE
 - 1.1.3. Alternative ICE Classification Scheme
- 1.2. Thermodynamic Cycles in Reciprocating Internal Combustion Engines
 - 1.2.1. Parameters
 - 1.2.2. Duty Cycles
 - 1.2.3. Theoretical and Actual Cycles
- 1.3. Structure and Systems of Alternative Internal Combustion Engine Components:
 - 1.3.1. Engine Block
 - 1.3.2. Carter
 - 1.3.3. Engine Systems
- 1.4. Combustion and Transmission in Reciprocating Internal Combustion Engine Components
 - 1.4.1. Cylinders
 - 1.4.2. Stock
 - 1.4.3. Crankshaft
- 1.5. Otto Cycle Gasoline Engines
 - 1.5.1. Gasoline Engine Operation
 - 1.5.2. Intake, Compression, Expansion and Exhaust Processes
 - 1.5.3. Advantages of Gasoline Otto cycle engines
- 1.6. Diesel Cycle Engines
 - 1.6.1. Diesel Cycle Engine Operation
 - 1.6.2. Combustion Process
 - 1.6.3. Benefits of Diesel Engines



- 1.7. Gas Engines
 - 1.7.1. Liquefied Petroleum Gas (LPG) Engines
 - 1.7.2. Compressed Natural Gas (CNG) Engines
 - 1.7.3. Gas Engine Applications
- 1.8. Bifuel and Flexfuel Engines
 - 1.8.1. Bifuel Engines
 - 1.8.2. Flexfuel Engines
 - 1.8.3. Bifuel and Flexfuel Engine Applications
- 1.9. Other Conventional Engines
 - 1.9.1. Reciprocating Piston Rotary Engines
 - 1.9.2. Turbocharging Systems in Reciprocating Engines
 - 1.9.3. Rotary Engines and Turbocharging Systems Applications
- 1.10. Applicability of Alternative Internal Combustion Engines
 - 1.10.1. (AICE) in Industry and Transportation
 - 1.10.2. Applications in the Industry
 - 1.10.3. Transportation Applications
 - 1.10.4. Other Applications



Be part of the best prepared community of professionals, choose to be guided by true experts in engineering"

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.

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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.



06

Certificate

The Postgraduate Certificate in Alternative Internal Combustion Engines 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 Alternative Internal Combustion Engines** 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 Alternative Internal Combustion Engines**

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.

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



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- » Schedule: at your own pace
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Postgraduate Certificate Alternative Internal Combustion Engines