

Postgraduate Certificate Aircraft Propulsion Plants



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

Website: www.techtute.com/us/engineering/postgraduate-certificate/aircraft-propulsion-plants

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01

Introduction

The aviation sector is one of the most dynamic and constantly growing worldwide, as more and more passengers and tons of cargo are transported by air. Given this demand, it is essential to have highly qualified specialists in the field of air propulsion. In this context, this TECH program was created to offer complete training in the design, manufacture and maintenance of aircraft propulsion plants. Thus, engineers taking this academic program will obtain the necessary knowledge to master the most advanced techniques and technologies in this field. In addition, it is taught in a 100% online format, which allows students to organize their study time according to their needs.





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A 100% online Postgraduate Certificate with which you will enter the future of aerial communications through the most effective methodology, the Relearning”

The aeronautical industry is in a process of constant growth and, therefore, it is necessary to have highly qualified and updated professionals in the field of air propulsion in order to maintain and improve the efficiency and safety of flights. The need for specialized training in this field is becoming increasingly evident due to the evolution of the technologies used in the manufacture and maintenance of aircraft and the requirement to reduce pollutant emissions from engines.

In this context, this TECH academic program becomes an ideal option for those who wish to specialize in this field and advance their professional career in the aeronautical industry. In it, engineers are offered the opportunity to acquire advanced knowledge in this field, deepening the study of the latest techniques and technologies in the design, manufacture and maintenance of aircraft propulsion plants, allowing them to face the challenges of the aeronautical industry with confidence and skill.

What's more, this program is delivered in a completely online format and with the Relearning methodology. This allows students to access academic resources at any time and place, adapting to their needs and schedules. In such a way that this methodology helps to integrate knowledge in a natural and progressive way, so that graduates can understand and apply concepts more effectively.

To offer an optimal learning experience, the program is designed to be accessible from any digital device with an Internet connection. In this way, engineers can study at their own time and place. The distance learning mode is available through TECH's virtual platform, making this program a flexible and high quality academic option for those seeking to enhance their career in the aviation industry.

This **Postgraduate Certificate in Aircraft Propulsion Plants** contains the most complete and up-to-date program on the market. The most important features include:

- ◆ Development of case studies 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



TECH adapts to you and that's why it has created a completely flexible university program with content available 24 hours a day"

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The multimedia pills will be your great allies in this learning process. Access them, whenever and wherever you want with this totally online teaching”

The program's teaching staff includes professionals from 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.

An academic program that provides you with the most advanced knowledge in the turboshaft operating model.

Enroll in a program that allows you to delve into the thermodynamic analysis of the turbojet.



02

Objectives

To ensure that the graduates of this program have a greater understanding of Aircraft Propulsion Plants, TECH ensures that a series of pre-established objectives are met in all the modules that make up the syllabus of this program. This means that the students will delve into topics of great relevance such as conservation equations and delve into the thermodynamic analysis of the engine. All this through a course adapted to your needs and presented in a comfortable and accessible 100% online format.





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Afterburners, air intakes and nozzles, combustion chambers, ...reach your most ambitious professional goals by acquiring the most advanced knowledge in your sector thanks to TECH”



General Objectives

- ◆ Provide the professionals with the specific and necessary knowledge to perform, with a critical and informed opinion, in any phase of planning, design, manufacture, construction or operation in the various companies of the aviation sector
- ◆ Identify the problems in aeronautical designs and projects in order to know how to propose effective, viable and sustainable overall solutions
- ◆ Acquire the fundamental knowledge of existing technologies and innovations under development in transport systems, in order to be able to conduct research, development and innovation studies in aeronautical companies and technology centers
- ◆ Analyze the main conditioning factors involved in the aeronautical activity and how to efficiently apply the latest techniques used in the aviation sector today
- ◆ Acquire a specialized approach and be able to monitor the management of any aeronautical department, as well as to execute the general management and the technical management of designs and projects
- ◆ Delve into the knowledge of the different critical aeronautical areas according to their different relevant actors, as well as achieve the knowledge, understanding and ability to apply the applicable aeronautical or non-aeronautical legislation and regulations





Specific Objectives

- ◆ Fundamentals of the history of the development of aircraft engines
- ◆ Analyze the most important components of these propulsion plants
- ◆ Generate mathematical models for the calculation of the different engines
- ◆ Evaluate engine performance with these models and perform a comparative analysis
- ◆ Identify the most important problems and advantages of each powerplant
- ◆ Present the basis for the future evolution of these engines

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Get up to date on conservation equations and propulsive efficiency thanks to the didactic tools provided by this Postgraduate Certificate”



03

Course Management

TECH has a philosophy that focuses on providing quality education to all its students. Therefore, this academic program has a management and faculty carefully selected for their extensive professional experience in the field of aviation. In this way, TECH guarantees that graduates will obtain advanced learning from true experts in the field. Thus, the students who enroll in this academic program will be able to use their experience and practice in the current context to update themselves in Aircraft Propulsion Plants in an efficient way.



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A team of experts has designed a cutting-edge syllabus for you to succeed in the aeronautical industry. Don't think twice and take advantage of this unique opportunity to achieve your career goals”

Management



D. Torrejón Plaza, Pablo

- ♦ Engineering Technician at ENAIRE
- ♦ Head of the Regulatory Unit of the National Airports Autonomous Organization
- ♦ Head of the Analysis Section of the National Airports Autonomous Organization Cabinet of the General Director
- ♦ Head of the Operations Section, Head of the Airport Security Office and Service Executive at Tenerife Sur Airport
- ♦ Head of the Procedures and Organization Section in the Office of the General Director of Aena Airports
- ♦ Head of the Programming Department and in the Office of the President of Aena
- ♦ Head of the Institutional Coordination and Parliamentary Affairs Division
- ♦ Associate Professor and Collaborator in the Aeronautical Management Degree at the Universidad Autónoma de Madrid
- ♦ Head of the Regulatory Unit of the National Airports Autonomous Organization
- ♦ Head of the Analysis Section of the National Airports Autonomous Organization Cabinet of the General Director
- ♦ Head of the Operations Section, Head of the Airport Security Office and Service Executive at Tenerife Sur Airport
- ♦ Master's Degree in Airport Systems from the Polytechnic University of Madrid
- ♦ Master in Organizational Management in Knowledge Economy from the Universitat Oberta de Catalunya (Open University of Catalonia)
- ♦ Master's Degree in Executive MBA from the Instituto de Empresa in Madrid
- ♦ Aerospace Engineer from the University of León
- ♦ Aeronautical Technical Engineer by Universidad Politécnica de Madrid
- ♦ Aeronautical Manager from the Autonomous University of Madrid
- ♦ Honorary decoration "Alférez Policía Nacional del Perú Mariano Santos Mateos gran General de la Policía Nacional del Perú" for exceptional services in aeronautical consultancy and training



Professors

Dr. Arias Pérez, Juan Ramón

- ◆ Aeronautical engineering researcher
- ◆ Principal investigator of public and private projects such as *Homogeneous Charge Compression Ignition for Aeronautical Engines (UPM)*, *Development of advanced cooling systems for onboard electronics (Airbus EYY)*, *GALOPE: Transversal Galoping effects to produce Electricity (Repsol)* or *Advanced Cooling Systems for onboard electronics (Indra)*
- ◆ Associate Professor in the Fluid Mechanics and Aerospace Propulsion Department of the ETSI Aeronautics and Space
- ◆ Associate Professor in the Department of Motopropulsion and Thermofluidodynamics of the ETSI Aeronautics and Space
- ◆ PhD in Aeronautical Engineering from the Polytechnic University of Madrid
- ◆ Aeronautical Engineer from the Polytechnic University of Madrid

04

Structure and Content

The content of this Postgraduate Certificate has been designed to provide the engineering professionals with the most recent advances in the field of aviation, including the principles of aircraft propulsion, alternative aeronautical engines and their environmental aspects. And to guarantee student learning, access is also provided to a virtual library full of first-rate content, which is available 24 hours a day from any device with an Internet connection. In this way, the graduates will be able to access updated and relevant information at any time and from anywhere.





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Specialize now with this Postgraduate Certificate in Aircraft Propulsion Plants, the most complete and updated of the online academic market and train yourself with the best theoretical and practical content”

Module 1. Aircraft Propulsion Plants

- 1.1. Principles of Aircraft Propulsion
 - 1.1.1. History of Aircraft Propulsion
 - 1.1.2. Conservation equations. Thrust definition
 - 1.1.3. Propulsive efficiency
- 1.2. Systems of Aircraft Propulsion
 - 1.2.1. Types of propulsion systems
 - 1.2.2. Comparative Analysis
 - 1.2.3. Applications
- 1.3. Propeller Propulsion
 - 1.3.1. Propeller actions
 - 1.3.2. Reciprocating Engine Architecture
 - 1.3.3. Turbocharging
- 1.4. Aeronautical Reciprocating Engines
 - 1.4.1. Engine Thermodynamic Analysis
 - 1.4.2. Power Control
 - 1.4.3. Performance
- 1.5. Basic Elements of Reaction Engines
 - 1.5.1. Turbomachines Compressor and Turbine
 - 1.5.2. Combustion chambers
 - 1.5.3. Air intakes and nozzles
 - 1.5.4. Thermodynamic Analysis of the Turboreactor
- 1.6. Turbojets
 - 1.6.1. Turboreactor operating model
 - 1.6.2. Performance
 - 1.6.3. Afterburners





- 1.7. Turbofan
 - 1.7.1. Why the evolution from turbojet to turbofan?
 - 1.7.2. Operating model of the turbofan
 - 1.7.3. Performance
- 1.8. Turboprop and turboshaft
 - 1.8.1. Architecture of turboprops and turboshafts
 - 1.8.2. Operating model of the turbofan
 - 1.8.3. Performance
- 1.9. Rocket Engines and other high speed plants
 - 1.9.1. Propulsion in Special Conditions
 - 1.9.2. The ideal rocket engine
 - 1.9.3. Ramjets and other applications
- 1.10. Environmental aspects of aircraft engines
 - 1.10.1. Aircraft engine pollution
 - 1.10.2. Use of Alternative Fuels
 - 1.10.3. Electric propulsion

“*And all this with the best learning materials at the forefront of technology and pedagogy. Only at TECH”*

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 Aircraft Propulsion Plants 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 Aircraft Propulsion Plants** 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** diploma issued by **TECH Technological University** via tracked delivery*.

The diploma 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 Aircraft Propulsion Plants**

Official N° of hours: **150 h.**



*Apostille Convention. In the event that the student wishes to have their paper diploma 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 quality
development language
virtual classroom



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