

# Postgraduate Diploma Drone Maintenance, Design and Engineering



## Postgraduate Diploma Drone Maintenance, Design and Engineering

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

Website: [www.techtute.com/pk/engineering/postgraduate-diploma/postgraduate-diploma-drone-maintenance-design-engineering](http://www.techtute.com/pk/engineering/postgraduate-diploma/postgraduate-diploma-drone-maintenance-design-engineering)

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# 01

# Introduction

This program brings students closer to the field of Drone Maintenance, Design and Engineering, with an up-to-date and quality program. A comprehensive specialization program that seeks to train students to be successful in their profession as future drone pilots or experts.

A unique opportunity to acquire in-depth knowledge and stand out in what will be a highly demanded profession of the future.





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*If you are looking for a quality Postgraduate Diploma that will help you specialize in one of the fields with the most professional prospects, this is your best option”*





The emergence of drones has changed the world of aeronautics. Drone technology is advancing at great speed, evolving much faster even than mobile technology. This technology has advanced so much that, nowadays, there are drones with more than 20 hours of flight autonomy.

Moreover, the advance of drones implies a growing need for pilots to specialize in their use. Flying a drone for entertainment purposes is not the same as flying a high value drone for specialized operations. That is why this intensive training is so vital, as it will provide professionals with the specialization that they need.

This program is aimed at those interested in attaining a higher level of knowledge of Drone Maintenance, Design and Engineering. The main objective of this Postgraduate Diploma is for students to specialize their knowledge in simulated work environments and conditions in a rigorous and realistic manner so that they can later apply it in the real world.

Additionally, as it is a 100% online Postgraduate Diploma, students are not constrained by fixed timetables or the need to commute to another physical location, rather, can access the contents at any time of the day, balancing their professional or personal life with their studies.

This **Postgraduate Diploma in Drone Maintenance, Design and Engineering** contains the most comprehensive and up-to-date academic program on the market. The most important features include:

- ◆ Practical cases presented by experts in Drone Maintenance, Design and Engineering
- ◆ The graphic, schematic, and eminently 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
- ◆ Special emphasis on innovative methodologies in Drone Maintenance, Design and Engineering
- ◆ 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



*Do not miss the opportunity to take this Postgraduate Diploma in Drone Maintenance, Design and Engineering at TECH. It's the perfect opportunity to advance your career"*



*This Postgraduate Diploma is the best investment you can make when choosing a refresher program to update your existing knowledge of Drone Maintenance, Design and Engineering”*

The teaching staff includes professionals in the field of Drone Maintenance, Design and Engineering, who bring their experience to this program, as well as renowned specialists from leading societies and prestigious universities.

Its multimedia content, elaborated with the latest educational technology, will provide professionals with a situated and contextual learning, that is to say, a simulated environment that will provide an immersive specialization programmed to train 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, students will have the help of an innovative, interactive video system made by recognized and extensively experienced experts in Drone Maintenance, Design and Engineering.

*This specialization comes with the best didactic material, providing you with a contextual approach that will facilitate your learning.*

*This 100% online Postgraduate Diploma will allow you to balance your professional life with your studies. You choose where and when to train.*



# 02 Objectives

The Postgraduate Diploma in Drone Maintenance, Design and Engineering is designed to facilitate professional performance in the field to acquire knowledge of the main developments in the sector.





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*Our goal is to make you the best professional in your sector. And for this we have the best methodology and content"*



## General Objectives

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- ◆ Specify and establish a joint vision of unmanned aviation in the world and, more specifically, in Europe and the USA
- ◆ Delimit the roles of different types of pilots: professional and sport pilots
- ◆ Characterize unmanned aerial platforms from a pragmatic point of view
- ◆ Apply inspection, checks, adjustments and substitution procedures in assemblies, elements, parts and indication systems to perform scheduled and corrective maintenance, both in an unmanned aerial platform and in the necessary accessory elements, such as ground stations, or accessories such as the payloads
- ◆ Select the procedures established in the maintenance manuals to store elements, parts and systems, including energy sources
- ◆ Apply the procedures established in maintenance manuals to perform weighing operations and aircraft payload calculations
- ◆ Analyze the management and organization models used in aeronautical maintenance
- ◆ Apply warehouse management techniques for stock control
- ◆ Perform the actions derived from the procedures established by the company to perform operations in manufacturing and assembly processes
- ◆ Evaluate situations of occupational risk prevention and environmental protection, proposing and applying individual and collective prevention and protection measures according to the applicable regulations in work processes, to ensure safe environments
- ◆ Identify and propose the professional actions necessary to respond to universal accessibility and "design for all"







- ◆ Identify and apply quality parameters in the work and activities performed during the learning process to assess the culture of assessment and quality and to monitor and improve quality management procedures
- ◆ Specify the operations aeronautical operators perform Detail the internal and management operations of this "small airline" in relation to the aeronautical authority
- ◆ Use procedures related to entrepreneurial culture, business and professional initiative to carry out basic small company management or start a new business
- ◆ Recognize the rights and duties of an active agent in society, taking into account the legal framework that regulates social and working conditions, in order to participate as a democratic citizen



*Get trained in the world's leading private Spanish-speaking online university"*



## Specific Objectives

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### Module 1. Occupational Risk Prevention with Drones

- ◆ Delve into work hygiene and ergonomics
- ◆ Adapt personal equipment to the specific needs of each use
- ◆ Detail the procedures to be followed in case of an accident
- ◆ Identify the possible dangers of outdoor and drone work to present prevention measures

### Module 2. R&D&I: Aircraft Features

- ◆ Recognize the importance of unmanned aerial platform performance for aerial activity
- ◆ Develop basic skills and aptitudes in the knowledge of the origin of Remotely Piloted Aircraft System (RPAS) performance
- ◆ Recognize essential features in unmanned aircrafts to perform safe flights in different scenarios
- ◆ Identify required features in unmanned aircrafts to perform safe flights with different configurations; and other influencing factors
- ◆ Detail the forces and energies that act on aircrafts in the different phases of flight







### **Module 3. Design and Engineering I: Specific Knowledge of Drones**

- ◆ Delve into the basic principles of flight from the laws of physics, specifically from aerodynamics
- ◆ Develop aptitude in the knowledge of basic unmanned aircrafts components, how they function and their potential
- ◆ Learn about the components and equipment requirements in unmanned aircrafts
- ◆ Delve into the importance of maintenance, as well as its obligatory nature and limitations

### **Module 4. Design and Engineering II: Advanced Drone Maintenance**

- ◆ Ensure that all operations comply with flight safety
- ◆ Raise awareness of the importance and the obligation to carry out aircraft maintenance according to the operator's instructions
- ◆ Raise awareness of the importance and mandatory nature of aircraft maintenance according to the manufacturer's instructions.
- ◆ Delve into the most important items in aircraft maintenance to observe them and act in each scenario
- ◆ Acquire the necessary knowledge to act on the maintenance of unmanned aerial platforms depending on each MTOM
- ◆ Interpret the administrative registration models and fill them in according to current legislation
- ◆ Act according to good and respectful environmental practices



# 03

# Course Management

In keeping with the total quality standard of this Postgraduate Diploma, TECH is proud to provide students with a teaching staff of the highest level, chosen for their proven experience. Professionals from different areas and fields of expertise that make up a complete, multidisciplinary team. A unique opportunity to learn from the best.





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*Our university employs the best professionals in all areas who share their knowledge to help you”*

## Management



### Mr. Pliego Gallardo, Ángel Alberto

- Airline Transport Pilot ATPL (A)
- PPL (A), ULM, RPAS Pilot
- RPAS theoretical and practical instructor and examiner
- University Professor UNEATLANTICO
- University Diploma, Secretary of State for Universities and Research
- Professor of Aircraft Maintenance European Social Fund Course (TMVV0004PO) FEMPA 2019
- EP Teacher, University of Alicante
- CAP in Technology, University of Alicante
- EASA Authorized Operator
- EASA Authorized RPAS Manufacturer



### Mr. Bazán González, Gerardo

- Electronic Engineer
- Specialist in aerial works, Spain and Latin America
- Expert in Large Accounts and Institutional
- RPAS Pilot



### **Mr. Saiz Moro, Víctor**

- Industrial Technical Engineer
- RPAS Pilot
- RPAS theoretical and practical instructor
- EASA Authorized Operator
- EASA Authorized RPAS Manufacturer
- Specialist and expert in aeronautical consultancy

## **Professors**

### **Mr. Fernández Moure, Rafael L.**

- ♦ Airport Security Specialist
- ♦ Expert in Airport Security
- ♦ RPAS Pilot RPAS Instructor



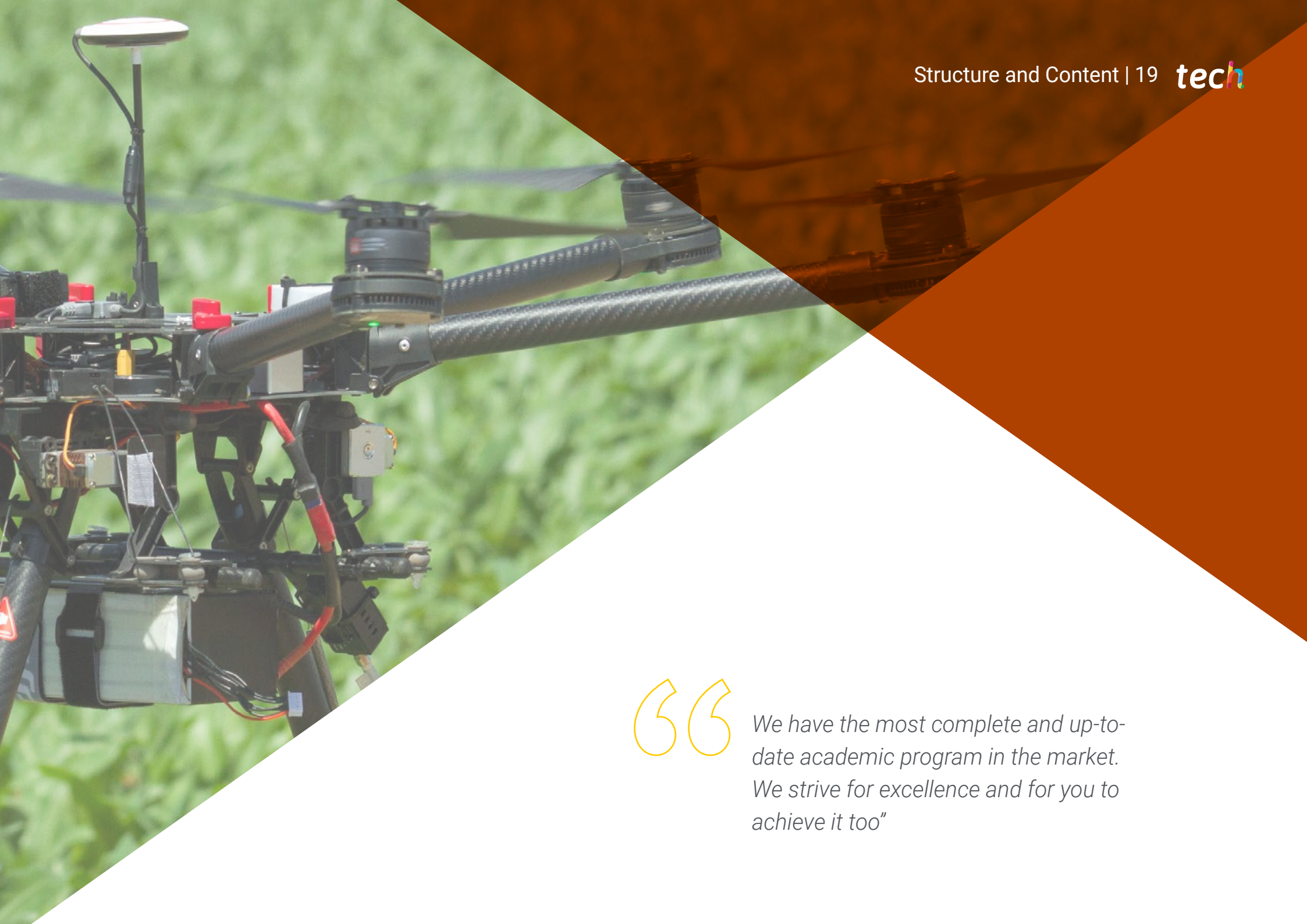
04

# Structure and Content

The structure of the contents has been designed by the best professionals in the from the engineering sector, with extensive experience and recognized prestige in the profession.







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*We have the most complete and up-to-date academic program in the market. We strive for excellence and for you to achieve it too”*

## Module 1. Occupational Risk Prevention with Drones

- 1.1. Equipment and Machinery
  - 1.1.1. Equipment
  - 1.1.2. Machinery
- 1.2. Dangerous Goods Regulation (DGR)
  - 1.2.1. Dangerous Goods
  - 1.2.2. Classification and Action in Accidents and Incidents Involving Dangerous Goods
- 1.3. Hygiene and Ergonomics
  - 1.3.1. Hygiene
  - 1.3.2. Ergonomics
- 1.4. PPE
  - 1.4.1. PPE
  - 1.4.2. Use
- 1.5. Emergency Situations
  - 1.5.1. Self-Protection Plans
  - 1.5.2. Actions in Emergency Cases
- 1.6. Procedures in the Event of Industrial Accidents
  - 1.6.1. Procedures in the Event of Industrial Accidents
  - 1.6.2. Accident and Incident Investigations
- 1.7. Health Surveillance
  - 1.7.1. Company Obligations
  - 1.7.2. Emergency Planning
- 1.8. Outdoor Work
  - 1.8.1. Outdoor Work Hazards
  - 1.8.2. Preventive Measures for Outdoor Work
- 1.9. Work with Drones
  - 1.9.1. Outdoor Drone Work Hazards
  - 1.9.2. Preventive Measures for Drone Work





## Module 2. R&D&I: Aircraft Performance

- 2.1. Fixed-Wing Aircrafts I
  - 2.1.1. Energies Acting on the Aircraft
  - 2.1.2. Forces Acting on the Aircraft
- 2.2. Fixed-Wing Aircrafts II
  - 2.2.1. Glide ratio
  - 2.2.2. Stability: Aircraft Axes
  - 2.2.3. Center of Gravity and Center of Pressures
  - 2.2.4. Stall and Auger
- 2.3. Rotary-Wing Aircrafts I
  - 2.3.1. Energies Acting on the Aircraft
  - 2.3.2. Forces Acting on the Aircraft
- 2.4. Rotary-Wing Aircrafts II
  - 2.4.1. Rotor Systems
  - 2.4.2. Induced Oscillations:
    - 2.4.2.1. Pilot-Induced Oscillation (PIO)
    - 2.4.2.2. Mass-Induced Oscillation (MIO)
    - 2.4.2.3. Aircraft-Induced Oscillation (AIO)
- 2.5. RPAS Flying Methodology
  - 2.5.1. Preflight: Safety Checklist
  - 2.5.2. Take Off and Ascent
  - 2.5.3. Cruise
  - 2.5.4. Descent and Landing
  - 2.5.5. After Landing
- 2.6. Flight Profiles and Operation Features
  - 2.6.1. Object
  - 2.6.2. Operation Features
  - 2.6.3. Flight Preparation: What Does it Involve?
  - 2.6.4. Normal Operation
  - 2.6.5. Situations Arising from Abnormal and Emergency Situations
  - 2.6.6. Flight Operations Analysis and Closure
  - 2.6.7. Methodology to Elaborate Flight Profiles

- 2.7. Flight Planning: Risk Assessment
  - 2.7.1. Risk factors
  - 2.7.2. Implementation
- 2.8. Methodology to Elaborate Emergency Alert Systems (EAS) for Declarative Operations I
  - 2.8.1. General Methodology
- 2.9. Methodology to Elaborate EAS for Declarative Operations II
  - 2.9.1. SORA Methodology

### Module 3. Design and Engineering I: Specific Knowledge of Drones

- 3.1. Aircraft Classification for Pilots and Engineers
  - 3.1.1. Generic
- 3.2. Flight Principles for Pilots and Engineers
  - 3.2.1. Exogenous Principles
    - 3.2.1.1. Bernoulli's Theorem, Venturi's Effect, Action and Reaction Principle
  - 3.2.2. Endogenous Principles
    - 3.2.2.1. Plane, Airfoil, Angle of Attack, Boundary Layer, Performance
- 3.3. RPAS Requirements for Pilots and Engineers
  - 3.3.1. Identification, Registration and Airworthiness
  - 3.3.2. Registration: Registration, Types and Special Certificates
  - 3.3.3. Requirements
- 3.4. Design and Engineering: Aircraft Characterization
  - 3.4.1. Aircraft Cell
  - 3.4.2. On-Board Equipment
  - 3.4.3. Eagle-6 Characterization
- 3.5. Basic Maintenance Theory for Pilots and Engineers
  - 3.5.1. Purpose, Scope and Applicable Regulations
  - 3.5.2. Contents
- 3.6. Aircraft Component Design and Engineering Tools
  - 3.6.1. Components
  - 3.6.2. Tools
- 3.7. Basic Maintenance Practice for Pilots and Engineers
  - 3.7.1. Limitations

- 3.8. Types of Basic Maintenance Checks for Pilots and Engineers
  - 3.8.1. Initial Check
  - 3.8.2. Periodic Checks
- 3.9. Basic Aircraft and Ground Station Maintenance for Pilots and Engineers
  - 3.9.1. Preflight
  - 3.9.2. Postflight
- 3.10. Use of Lithium Polymer Batteries
  - 3.10.1. Charging, Use and Storage
  - 3.10.2. Basic Calculation of Battery Autonomy

### Module 4. Module 5. Design and Engineering II: Advanced Drone Maintenance

- 4.1. Maintenance Introduction and Objectives for Engineers
  - 4.1.1. Introduction
  - 4.1.2. Objectives
    - 4.1.2.1. Avoid Stops due to Mechanical Failures
    - 4.1.2.2. Avoid Malfunctions Caused by Insufficient Maintenance
    - 4.1.2.3. Conservation
    - 4.1.2.4. Scope and Useful Life of Productive Assets
    - 4.1.2.5. Innovation, Technification and Automation of the Process
    - 4.1.2.6. Company Cost Reduction
    - 4.1.2.7. Department Integration: Maintenance, Operations and R&D
- 4.2. Factors and Typologies for Engineers
  - 4.2.1. Factors
    - 4.2.1.1. Company Resources
    - 4.2.1.2. Organization, Structure and Responsibilities
    - 4.2.1.3. Training
    - 4.2.1.4. Implementation and Management
    - 4.2.1.5. Coordination
  - 4.2.2. Typology
    - 4.2.2.1. Classification
    - 4.2.2.2. Preventive Maintenance
    - 4.2.2.3. Corrective Maintenance
    - 4.2.2.4. Predictive Maintenance

- 4.3. Preventative Maintenance Plan for Engineers
  - 4.3.1. Advantages
  - 4.3.2. Phases
  - 4.3.3. Program
  - 4.3.4. Commitment to Safety, Quality and Environment
- 4.4. Planned Maintenance Program: Eagle-6 for Pilots and Engineers
- 4.5. Maintenance Control Systems
  - 4.5.1. Maintenance Theory
  - 4.5.2. Maintenance Organization
  - 4.5.3. Maintenance Process Control
  - 4.5.4. Elements Related to the Concept of Control
  - 4.5.5. Requirements for Proper Control
  - 4.5.6. Applied Control techniques
  - 4.5.7. Corporate Maintenance Management Process
  - 4.5.8. Administration and Control
  - 4.5.9. Maintenance Control in Organizations
- 4.6. Aircraft and Equipment Ground Operations
  - 4.6.1. Assembly and Calibration Forecast
  - 4.6.2. Start-Up: Pre, In and Postflight
- 4.7. Technological Aircraft Facilities for Engineers
  - 4.7.1. Mechanics
  - 4.7.2. Hydraulics
  - 4.7.3. Pneumatics
- 4.8. Electrical Installation for Engineers
  - 4.8.1. Definition
  - 4.8.2. Technology: Drone Taxonomy
  - 4.8.3. Electronics
- 4.9. Document Management Systems for Pilots and Engineers
  - 4.9.1. Definition
  - 4.9.2. General and Specific Documentation
  - 4.9.3. Mandatory Documentation
- 4.11. Technical Documentation in Different Operational Scenarios



*This specialization will allow you to comfortably advance in your career "*



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.*





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

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 Drone Maintenance, Design and Engineering guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma 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 Diploma in Drone Maintenance, Design and Engineering** contains the most complete and up-to-date program 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 certificate 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 from career evaluation committees.

Title: **Postgraduate Diploma in Drone Maintenance, Design and Engineering**

Official N° of hours: **600 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 language  
virtual classroom



## Postgraduate Diploma Drone Maintenance, Design and Engineering

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

# Postgraduate Diploma

## Drone Maintenance, Design and Engineering

