Professional Master's Degree
Mechanical Engineering

tech global university

Professional Master's Degree
Mechanical Engineering

- Modality: **online**
- Duration: **12 months**
- Certificate: **TECH Global University**
- Credits: **60 ECTS**
- Schedule: **at your own pace**
- Exams: **online**

Website: **www.techtitute.com/us/engineering/professional-master-degree/master-mechanical-engineering**

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01

Introduction

To work effectively in the processes involved in the analysis, development, design and manufacture of engines, mechanical systems or machines, the professional must be qualified, in an intensive and up-to-date manner, in the field of physical principles applied to working with mechanical systems, especially with regard to innovation and new technologies. This program is a highly qualified course, which gathers the most innovative knowledge in this field, with a broad and innovative vision, which will allow you to include new ways of working and intervening in Mechanical Engineering projects, with the quality of a specialist.

Learn to design, evaluate and manage mechanical engineering projects, incorporating the most relevant and interesting innovations in the sector"

TECH's Professional Master's Degree in Mechanical Engineering is a program specifically designed for professionals who need to strengthen their knowledge, both in the conventional aspects of their professional activity, as well as in the most innovative aspects.

It has an international focus, with content based on that of the most prestigious universities in the world and is aligned with the recommendations of professional associations such as ASME (American Society of Mechanical Engineers) and IMechE (Institution of Mechanical Engineers).

The use of the case method facilitates the learning of concepts, avoiding systematic memorization and repetitive performance of complex calculations.

The content of the program combines the traditional but necessary aspects of the profession with the most innovative aspects that are renewed in each edition.

We can highlight the aspects related to innovation management and Soft Skills, which accompany the different modules of the program, as well as the study of Industry 4.0 solutions, applied to Mechanical Engineering and the development of optimized processes of total quality, applied to all steps of mechanical design; without forgetting the use of simulation tools, freely available, which facilitate the performance of calculations, and allow to analyze solutions much solutions in much greater detail.

It should be noted that, as it is a 100% online program, the student is not conditioned by fixed schedules or the need to move to another physical location, but can access the contents at any time of the day, balancing their work or personal life with their academic life.

This **Professional Master's Degree in Mechanical Engineering,** contains the most complete and up-to-date scientific program on the market. The most important features include:

- The development of case studies presented by experts in Mechanical Engineering
- The graphic, schematic and eminently practical contents with which they are conceived, gather scientific 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 in Mechanical 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

The incursion of new technologies in Mechanical Engineering demands professionals with extensive digital skills"

This Professional Master's Degree may be the best investment you can make in the selection of a refresher program for two reasons: in addition to updating your knowledge in Mechanical Engineering, you will obtain a certificate from TECH Global University"

A complete didactic material, totally accessible, that will allow you to study with comfort, expanding your knowledge in the most stimulating way.

This program, 100% online, will allow you to combine your studies with your professional work. You choose where and when to train.

It includes, in its teaching staff, professionals belonging to the field of Mechanical Engineering, who pour into this training the experience of their work, in addition to recognized specialists, reference societies and prestigious universities.

The multimedia content, developed with the latest educational technology, will provide professionals with situated and contextual learning, i.e., a simulated environment that will provide immersive training, designed for training oneself 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 professional will be assisted by an innovative interactive video system, created by renowned and experienced experts in mechanical engineering.

02

Objectives

This program is aimed at facilitating the professionals' performance, so that they acquire and know the main novelties in this field, which will allow them to practice their profession adapting to the new requirements of the sector, with the advantages of innovation and the security of a complete training.

You will learn to integrate in your work the new ways of intervention, in all the fields of Mechanical Engineering, relying on the most outstanding innovation and new technologies, with a global quality objective"

General Objectives

- Train scientifically and technologically for the professional practice of Mechanical Engineering
- Gain complex knowledge of engineering project management and continuous process improvement
- Gain complex knowledge of the design of machine elements, engines, structures and installations, including the choice of materials, their method of manufacture and reliability, safety and environmental considerations
- Delve into the necessary knowledge of Industry 4.0, applied to Mechanical Engineering
- Delve into the necessary knowledge of advanced and innovative applications of Mechanical Engineering

An intensive and complete tour that will allow you to learn not only the theoretical part of the job, but also how to apply the knowledge in practice"

Specific Objectives

Module 1 Mechanical Engineering Project Management

- Master all aspects of Mechanical Engineering design
- Manage projects, following the steps accepted by international standards
- Apply the Soft Skills necessary for the successful management of engineering projects
- Analyze the regulations required to carry out engineering projects
- Develop patents, utility models and industrial designs

Module 2 Design of Mechanical Elements

- Evaluate the different theories of failure in order to apply them to each machine element
- Evaluate the different failure theories for their application to each machine element
- Design, analyze and evaluate machine components, using state-of-the-art design tools
- Evaluate the different alternatives for the design of machine elements

Module 3 Thermal, Hydraulic and Pneumatic Machines

- Master the principles of thermodynamics necessary for the development of machines
- Create heat transfer systems capable of delivering energy
- Analyze and evaluate different combustion processes
- Design hydraulic and hydrostatic systems, capable of generating, transmitting and storing energy
- Design pneumatic systems capable of transmitting and storing energy

Module 4 Structures and Installations

- Design, analyze and evaluate industrial and building structures
- Design, analyze and evaluate air conditioning, ventilation, sanitary water and sanitation installations in residential, industrial and tertiary buildings
- Design, analyze and evaluate fire safety installations in all types of buildings
- Design, analyze and evaluate special installations in all types of buildings
- Design, analyze and evaluate acoustic and thermal insulation installations in all types of buildings
- Design lighting, electrical power and control installations, which fall within the remit of mechanical engineers
- Perform energy certifications of buildings

Module 5 Advanced Dynamics

- Master the aspects of advanced machine dynamics
- Analyze and evaluate vibration and resonance phenomena in machine elements and structures
- Analyze and evaluate the dynamic behavior of vehicles
- Analyze and evaluate the dynamic behavior of electromechanical microsystems
- Analyze and evaluate the dynamic behavior of robots
- Analyze and evaluate the dynamic behavior of humans and other living beings
- Designing mechanical solutions inspired by living organisms

Module 6 Design for Manufacturing

- Designing machine elements with optimized manufacturing and assembly processes
- Analyze and evaluate different mold forming processes
- Analyze and evaluate different plastic deformation forming processes
- Analyze and evaluate different material loss forming processes
- Analyze and evaluate the different heat treatments on machine elements
- Analyze and evaluate paint and coating application systems
- Analyze and evaluate the forming processes of polymers and ceramic materials

- Analyze and evaluate the manufacturing processes of complex materials
- Analyze and evaluate the different additive manufacturing processes
- Create, analyze and evaluate robust manufacturing processes to ensure the quality of the finished product

Module 7 Materials

- Analyze and evaluate materials used in engineering based on their properties
- Analyze and evaluate metallic materials, both ferrous and non-ferrous
- Analyze and evaluate polymeric, ceramic and composite materials
- Analyze and evaluate materials used in additive manufacturing
- Know the principles of nanomaterials
- Understand, analyze and evaluate the processes of corrosion and degradation of materials
- Evaluate and analyze the different techniques for non-destructive testing of materials

Module 8 Mechanics 4.0

- Master the principles of Industry 4.0 and its applications in Mechanical Engineering
- Create, evaluate and analyze designs that combine mechanics and electronics
- Create, evaluate and analyze mechanical systems including sensing, detection, actuators, control systems and machine vision
- Create, evaluate and analyze digital twins of mechanical systems
- Evaluate and analyze applications of Internet of Things, Cloud Computing, Big Data, Machine Learning and Artificial Intelligence in Mechanical Engineering

Module 9 Design for Reliability, Safety and Environment

- Master the principles of reliability, availability, maintainability and safety (RAMS) engineering
- Evaluate and analyze the reliability of elements and systems, using both qualitative and quantitative systems
- Master the mathematics used in reliability analysis

- Design accelerated life testing and reliability improvement plans on mechanical components
- Analyze and evaluate safety risks in mechanical elements
- Analyze and evaluate risks to the environment in mechanical elements
- Apply the principles of circular economy to the design of mechanical systems
- Create maintenance plans, based on the Reliability Centered Maintenance (RCM) methodology, to ensure safety and reliability conditions

Module 10 Continuous Improvement of Operations

- Master the principles of continuous operations improvement
- Create, analyze and evaluate production systems based on the Lean Manufacturing methodology
- Create standardized processes
- Create visual management systems
- Develop systems for level production, just-in-time processes and quality assurance at the source
- Create machine efficiency improvement plans, based on the Total Productive Maintenance TPM methodology
- Develop work teams made up of excellent people
- In-depth knowledge of other continuous improvement theories, such as Six Sigma, World Class Manufacturing WCM and Theory of Constraints ToC
- Create change management programs

03

Skills

After passing the assessments of the Professional Master's Degree in Mechanical Engineering, the professional will have acquired the necessary skills for a quality, up-to-date praxis based on the most innovative didactic methodology.

This program will allow you to acquire the necessary skills to intervene in all areas of Mechanical Engineering, with the solvency of a specialist"

General Skills

- Gain complex knowledge of engineering project management and continuous process improvement
- Delve into the necessary knowledge of advanced and innovative applications of Mechanical Engineering

Improving your skills in the field of Mechanical Engineering will allow you to be more competitive. Continue your training and give your career a boost"

Specific Skills

- Manage projects following the steps accepted by international standards
- Develop patents, utility models and industrial designs
- Design, analyze and evaluate machine components, using state-of-the-art design tools
- Analyze and evaluate different combustion processes
- Design hydraulic and hydrostatic systems, capable of generating, transmitting and storing energy
- Design pneumatic systems capable of transmitting and storing energy of buildings
- Design, analyze and evaluate special installations in all types of buildings
- Design, analyze and evaluate acoustic and thermal insulation installations in all types of buildings
- Design lighting, electrical power and control installations which fall within the remit of mechanical engineers
- Perform energy certifications of buildings
- Master the aspects of advanced machine dynamics
- Analyze and evaluate safety risks in mechanical elements
- Analyze and evaluate risks to the environment in mechanical elements
- Apply the principles of circular economy to the design of mechanical systems
- Create maintenance plans, based on the maintenance methodology
- Create change management programs

04

Course Management

In our university we have professionals specialized in each area of knowledge, who pour their work experience into our training programs. A highly qualified faculty of professors who will provide the course with their real and direct experience in this profession.

A teaching staff of highly competent professionals will support you in this process of professional growth: an opportunity to learn directly from the best"

Management

Mr. Asiain Sastre, Jorge

- Industrial-Mechanical Technical Engineer University of Salamanca
- Director and Co-Founder of AlterEvo Ltd. Professor of Mechanical Engineering
- Chartered Engineer member of Institution of Mechanical Engineers (CEng MIMechE)
- Master's Degree in Automotive Engineering
- MBA

Professors

Mr. Berdún Barbero, Daniel

- Superior Industrial Engineering School of Industrial Engineering
- Technical Office Manager at INSTER

Mr. De Lama Burgos, Carlos

- Technical Advisor at the Association of Industrial Technical Engineers of Madrid
- Technical and legal advice in the field of industrial engineering
- Industrial Safety
- Professor at the School of Architecture, Engineering and Design, European University, Madrid

Mr. Panero, David

- Mechanical Engineer in the Mechanical Design Department, HoribaAutomotive Test Systems, Madrid, Spain
- Double Master's Degree in Mechatronics Engineering and Industrial Technologies Engineering

Ms. Prieto Díaz, Beatriz

- Mechanical Engineer at Riegos y Electricidad Salamanca, SL
- Degree in Mechanical Engineering. University of Salamanca
- Master's Degree in Industrial Mechanics. Carlos III University of Madrid

Mr. Iglesias Alonso, Luis

- Certification Engineer in charge of Electrical Safety, Batteries and Electromagnetic Compatibility at SCANIA
- Vice President of the Technical Commission for Production and New Product Launching, Spanish Association of Automotive Professionals (ASEPA)
- Foundation of Eleanor Homologaciones. Currently performing supervisory duties

05

Structure and Content

The structure of the contents has been designed by the best professionals in the Mechanical Engineering sector, with extensive experience and recognized prestige in the profession, and aware of the benefits that the latest educational technology can bring to higher education.

We have the most complete and up-to-date program on the market. We strive for excellence and for you to achieve it too"

Module 1 Mechanical Engineering Project Management

1.1. Design Process
1.2. Research and Innovation
  1.2.1. Technological Creativity
  1.2.2. Fundamentals of Design Thinking
1.3. Modeling and Simulation
  1.3.1. 3D Design
  1.3.2. BIM Methodology
  1.3.3. Finite Elements
  1.3.4. 3D Printing
1.4. Project Management
  1.4.1. Start
  1.4.2. Planning
  1.4.3. Implementation
  1.4.4. Control
  1.4.5. Closure
1.5. Problem Solving
  1.5.1. 8D Methodology
1.6. Leadership and Conflict Resolution
1.7. Organization and Communication
1.8. Project Drafting
1.9. Intellectual Property
  1.9.1. Patents
  1.9.2. Utility Models
  1.9.3. Industrial Design

Module 2 Design of Mechanical Elements

2.1. Theories of Failure
  2.1.1. Static Failure Theories
  2.1.2. Dynamic Failure Theories
  2.1.3. Fatigue
2.2. Tribology and Lubrication
  2.2.1. Friction
  2.2.2. Wear and Tear
  2.2.3. Lubricants
2.3. Propshaft Design
  2.3.1. Shafts and Axles
  2.3.2. Keyways and Splined Shafts
  2.3.3. Flywheels
2.4. Rigid Transmission Design
  2.4.1. Cams
  2.4.2. Spur Gears
  2.4.3. Bevel Gears
  2.4.4. Helical Gears
  2.4.5. Worm Screws
2.5. Flexible Transmission Design
  2.5.1. Chain Drives
  2.5.2. Belt Drives
2.6. Bearing Design
  2.6.1. Friction Bearings
  2.6.2. Roller Bearings
2.7. Design of Brakes, Clutches and Couplings
  2.7.1. Brakes
  2.7.2. Clutches
  2.7.3. Couplings
2.8. Mechanical Spring Design
2.9. Design of Non-Permanent Joints
  2.9.1. Bolted Joints
  2.9.2. Riveted Joints

2.10. Design of Permanent Connections
- 2.10.1. Welded Joints
- 2.10.2. Adhesive Joints

Module 3 Thermal, Hydraulic and Pneumatic Machines

3.1. Principles of Thermodynamics
3.2. Heat Transfer
3.3. Thermodynamic Cycles
- 3.3.1. Steam Cycles
- 3.3.2. Air Cycles
- 3.3.3. Refrigeration Cycles

3.4. Combustion Processes
3.5. Thermal Machines
- 3.5.1. Steam Turbine
- 3.5.2. Combustion Engines
- 3.5.3. Gas Turbines
- 3.5.4. Stirling Engine

3.6. Fluid Mechanics
- 3.6.1. Multidimensional Fluid Mechanics
- 3.6.2. Laminar Flow
- 3.6.3. Turbulent Flow

3.7. Hydraulic Systems and Hydrostatics
- 3.7.1. Distribution Networks
- 3.7.2. Hydraulic System Elements
- 3.7.3. Cavitation and Water hammer

3.8. Hydraulic Machines
- 3.8.1. Positive Displacement Pumps
- 3.8.2. Rotary Pumps
- 3.8.3. Cavitation
- 3.8.4. Coupling of Hydraulic Installations

3.9. Turbomachines
- 3.9.1. Action Turbines
- 3.9.2. Reaction Turbines

3.10. Pneumatics
- 3.10.1. Compressed Air Production
- 3.10.2. Compressed Air Preparation
- 3.10.3. Elements of a Pneumatic System
- 3.10.4. Vacuum Generators
- 3.10.5. Actuators

Module 4 Structures and Installations

4.1. Structural Calculations
- 4.1.1. Beam Calculation
- 4.1.2. Column Calculations
- 4.1.3. Gantry Calculations
- 4.1.4. Foundations
- 4.1.5. Preloaded Structures

4.2. Low Voltage Electrical Installations
4.3. Air Conditioning and Ventilation Installations
- 4.3.1. Heating Installations
- 4.3.2. Air Conditioning Installations
- 4.3.3. Ventilation Systems

4.4. Sanitary Water Installations and Sewage Systems
- 4.4.1. Water Installations
- 4.4.2. Domestic Hot Water Systems - DHW
- 4.4.3. Sanitation Networks

4.5. Fire Safety Installations
- 4.5.1. Portable Extinguishing Systems
- 4.5.2. Detection and Alarm Systems
- 4.5.3. Automatic Extinguishing Systems
- 4.5.4. BIEs, Dry Columns and Hydrants

4.6. Communication, Home Automation and Security Installations
4.7. Thermal and Acoustic Insulation
4.8. Steam, Compressed Air and Medical Gases Installations
- 4.8.1. Steam Installations
- 4.8.2. Compressed Air Installations
- 4.8.3. Medical Gas Installations

4.9. Gas and Liquid Fuels Installations
- 4.9.1. Natural Gas Installations
- 4.9.2. Liquefied Petroleum Gas Installations
- 4.9.3. Liquid Hydrocarbon Facilities

4.10. Energy Certifications
- 4.10.1. Energy Demand Control
- 4.10.2. Renewable Energy Contribution
- 4.10.3. Energy Audits
- 4.10.4. ISO 50001 Energy Certification

Module 5 Advanced Dynamics

5.1. Advanced Machine Dynamics

5.2. Vibrations and Resonance

5.3. Longitudinal Vehicle Dynamics
- 5.3.1. Vehicle Performance
- 5.3.2. Vehicle Braking

5.4. Transverse Vehicle Dynamics
- 5.4.1. Steering Geometry
- 5.4.2. Circulation in Curves

5.5. Railroad Dynamics
- 5.5.1. Traction Efforts
- 5.5.2. Braking Efforts

5.6. Dynamics of Mechanical Microsystems

5.7. Robot Kinematics
- 5.7.1. Direct Kinematic Problem
- 5.7.2. Inverse Kinematic Problem

5.8. Robot Dynamics

5.9. Biomimicry

5.10. Dynamics of Human Movement

Module 6 Design for Manufacturing

6.1. Design for Manufacturing and Assembly
6.2. Forming by Molding
  6.2.1. Foundry
  6.2.2. Injection
6.3. Forming by Deformation
  6.3.1. Plastic Deformation
  6.3.2. Stamping
  6.3.3. Forge
  6.3.4. Extrusion
6.4. Conformation due to Loss of Material
  6.4.1. Abrasion
  6.4.2. By Chip Removal
6.5. Heat Treatment
  6.5.1. Quenching
  6.5.2. Tempering
  6.5.3. Annealing
  6.5.4. Standardization
  6.5.5. Thermochemical Treatments
6.6. Application of Paints and Coatings
  6.6.1. Electrochemical Treatments
  6.6.2. Electrolytic Treatments
  6.6.3. Paints, Lacquers and Varnishes
6.7. Forming of Polymers and Ceramic Materials
6.8. Manufacture of Composite Parts
6.9. Additive Manufacturing
  6.9.1. Powder Bed Fusion
  6.9.2. Direct Energy Deposition
  6.9.3. Binder Jetting
  6.9.4. Bound Extrusion Power
6.10. Robust Engineering
  6.10.1. Taguchi Method
  6.10.2. Experiment Design
  6.10.3. Statistical Process Control

Module 7 Materials

7.1. Material Properties
  7.1.1. Mechanical Properties
  7.1.2. Electrical Properties
  7.1.3. Optical Properties
  7.1.4. Magnetic Properties
7.2. I-Ferrous Metallic Materials
7.3. II-Ferrous Metallic Materials
7.4. Polymeric Materials
  7.4.1. Thermoplastics
  7.4.2. Thermosetting Plastics
7.5. Ceramic Materials
7.6. Composite Materials
7.7. Biomaterials
7.8. Nanomaterials
7.9. Corrosion and Degradation of Materials
  7.9.1. Types of Corrosion
  7.9.2. Oxidation of Metals
  7.9.3. Corrosion Control
7.10. Non-Destructive Testing
  7.10.1. Visual Inspections and Endoscopies
  7.10.2. Ultrasound
  7.10.3. X-rays
  7.10.4. Foucault's Currents (Eddy Currents)
  7.10.5. Magnetic Particles
  7.10.6. Penetrating Liquids
  7.10.7. Infrared Thermography

Module 8 Mechanics 4.0

8.1. Introduction to Industry 4.0
8.2. Principles of Mechatronics
8.3. Sensorization and Detection
  8.3.1. Range Detection
  8.3.2. Proximity Detection
  8.3.3. Contact Sensors
  8.3.4. Force Detection
8.4. Actuators
8.5. Control Systems
8.6. Artificial Vision
  8.6.1. Vision Sensors
  8.6.2. Integrated Vision Systems
  8.6.3. Advanced Vision Systems
8.7. Digital Twins
8.8. The Internet of Things
  8.8.1. Hardware
  8.8.2. Software and Connectivity
  8.8.3. Rules
  8.8.4. Services
8.9. Cloud Computing and Big Data
  8.9.1. Storage Technology
  8.9.2. Analysis Techniques
8.10. Machine Learning and Artificial Intelligence

Module 9 Design for Reliability, Safety and Environment

9.1. RAMS Engineering Fundamentals
  9.1.1. Reliability, Maintainability and Availability Functions
  9.1.2. Failure Curves
  9.1.3. Statistical Distributions
9.2. Reliability of Elements
9.3. System Reliability
  9.3.1. Reliability Block Diagrams-RBD
9.4. Reliability Analysis I-Qualitative Methods
  9.4.1. Failure Mode and Effects Analysis-FMEA
9.5. Reliability Analysis II- Quantitative Methods
  9.5.1. Fault Tree Analysis-FTA
9.6. Improved Reliability and Accelerated Life Testing
  9.6.1. Reliability Improvement Plans
  9.6.2. Accelerated Life Assays-HASS/HALT
9.7. Machine Safety
  9.7.1. Security Management Programs
9.8. Risk Analysis
  9.8.1. Risk Matrix
  9.8.2. ALARP
  9.8.3. Operational Hazard Studies-HAZOP
  9.8.4. Safety Level-SIL
  9.8.5. Event Tree Analysis-ETA
  9.8.6. Root Cause Analysis-RCA
9.9. Environment and Circular Economy
  9.9.1. Environmental Management
  9.9.2. Fundamentals of Circular Economy
9.10. Reliability-Centered Maintenance-RCM
  9.10.1. SAE Standard JA1011
  9.10.2. Failure Management Policies

Module 10 Continuous Improvement of Operations

10.1. Development of Continuous Improvement Processes
- 10.1.1. Overall Equipment Efficiency-OEE
- 10.1.2. The 7 Wastes
- 10.1.3. Value Stream Mapping-VSM
- 10.1.4. Kaizen Events

10.2. Process Standardization

10.3. Visual Management
- 10.3.1. Kanban
- 10.3.2. Andon

10.4. Levelling Production-Heijunka
- 10.4.1. Takt-Time

10.5. Just In Time-JIT
- 10.5.1. 5S
- 10.5.2. Quick Tool Changes-SMED

10.6. Quality at the Source-Jidoka
- 10.6.1. Poka-yokes

10.7. Total Productive Maintenance-TPM
- 10.7.1. The 16 Major Losses
- 10.7.2. TPM Pillars

10.8. Development of Excellent People
- 10.8.1. Theory X and Theory Y
- 10.8.2. Teal Organizations
- 10.8.3. Spotify Model

10.9. Other Theories of Continuous Improvement
- 10.9.1. Six Sigma
- 10.9.2. World Class Manufacturing WCM
- 10.9.3. Theory of Constraints ToC

10.10. Change Management

06

Methodology

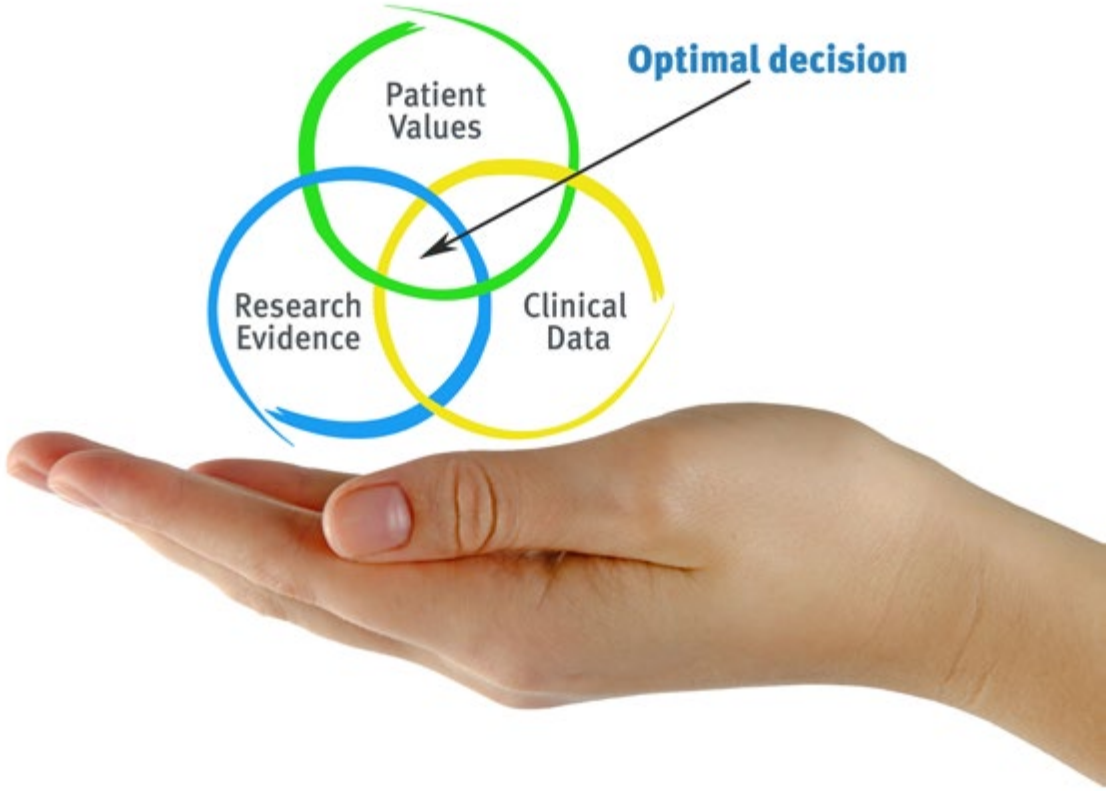
This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning.**
This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** 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.

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

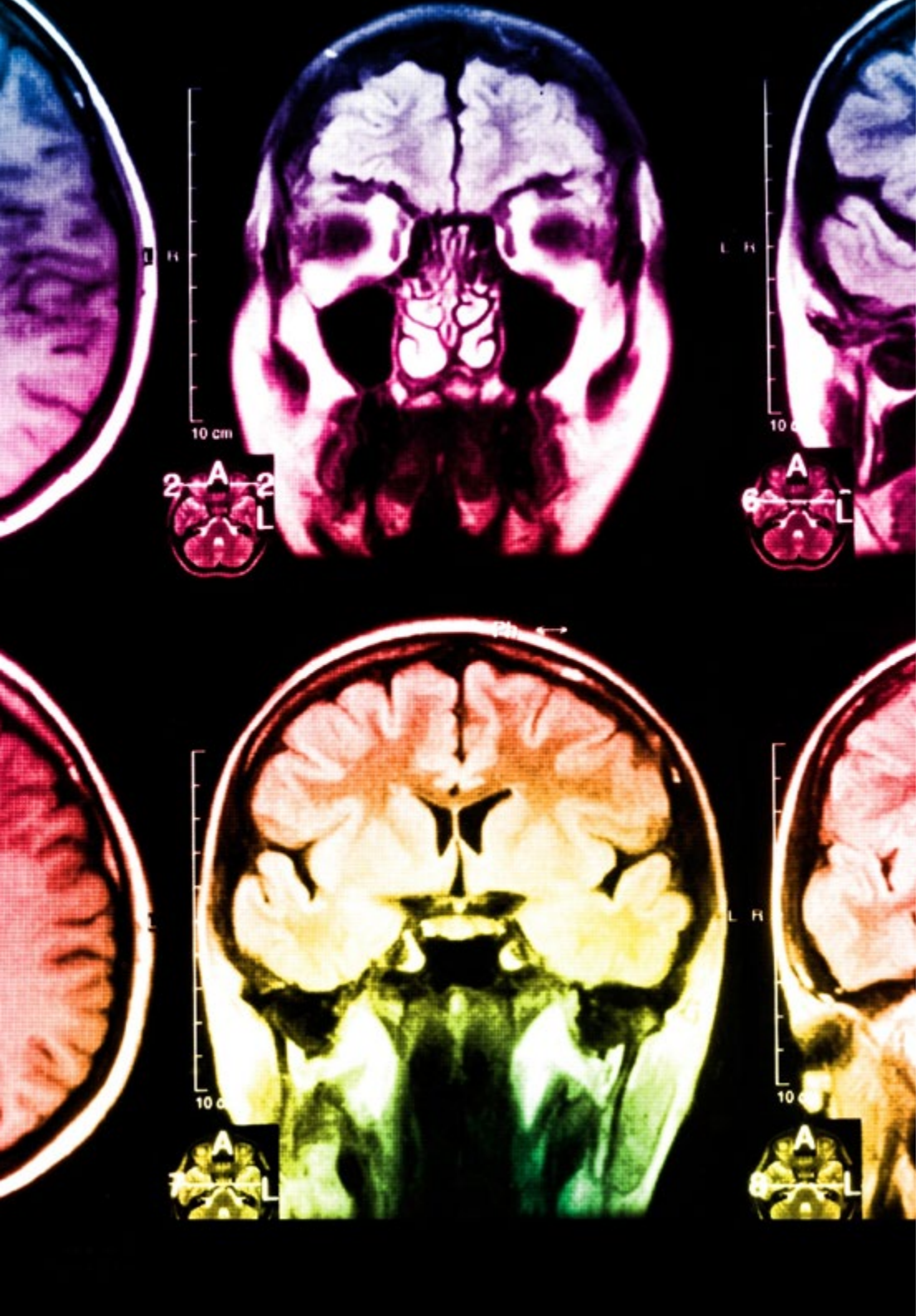
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 8 different teaching elements in each lesson.

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 relearn). 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 elearning, 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.

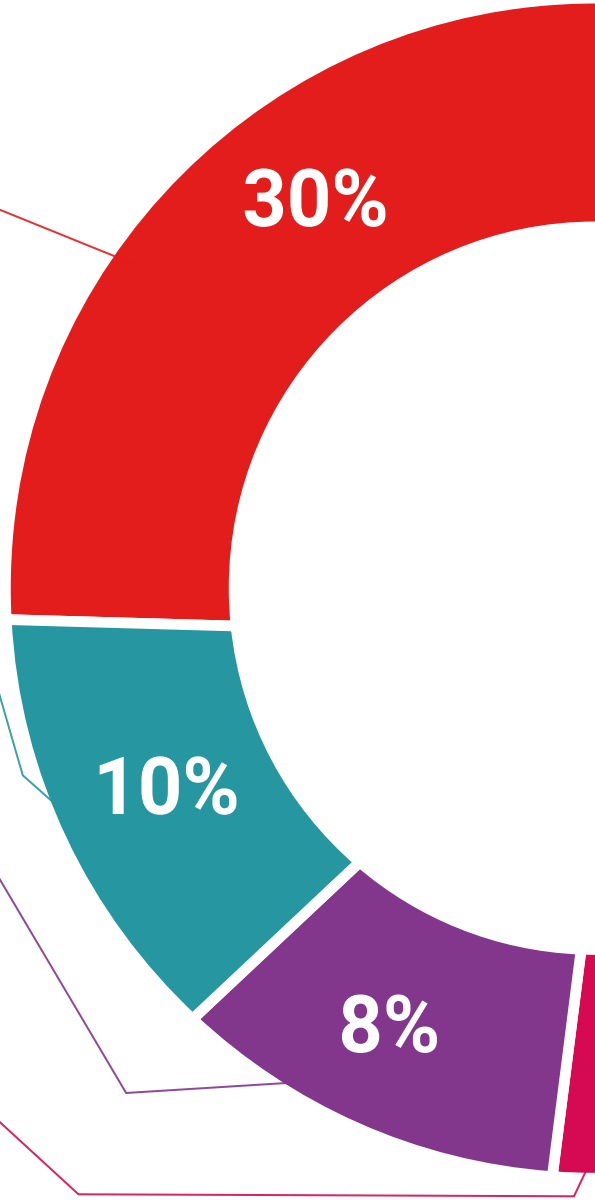
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

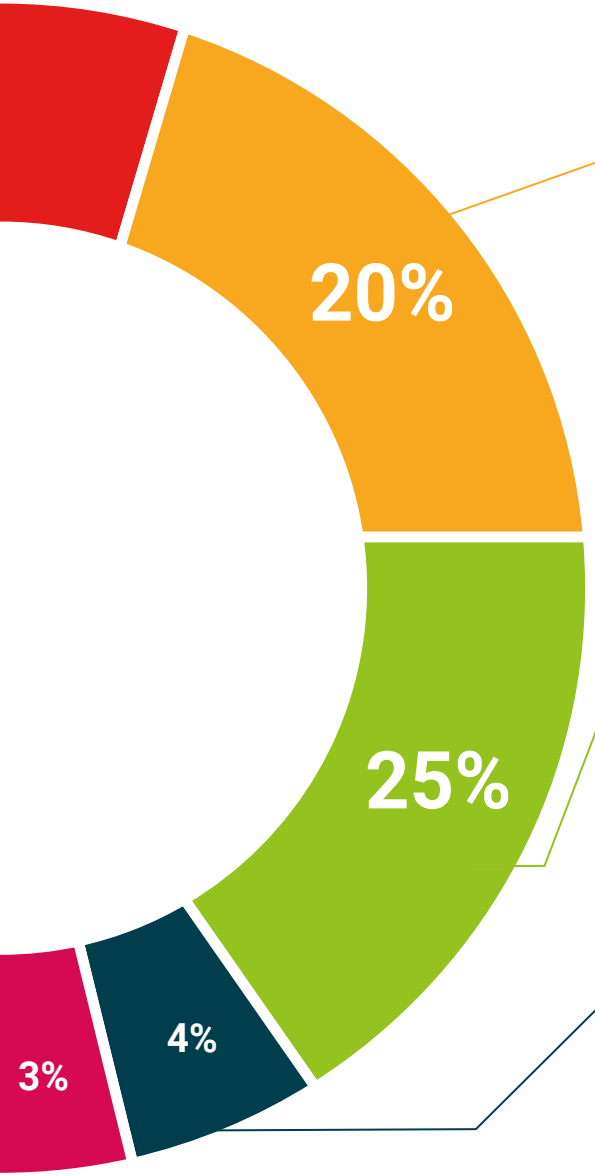
Practising Skills and Abilities

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.

07

Certificate

The Professional Master's Degree in Mechanical Engineering guarantees you, in addition to the most rigorous and updated training, access to a Professional Master's Degree issued by TECH Global University.

Successfully complete this program and receive your university degree without travel or laborious paperwork"

This program will allow you to obtain your **Professional Master's Degree diploma in Mechanical Engineering** 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: **Professional Master's Degree in Mechanical Engineering**

Modality: **online**

Duration: **12 months**

Accreditation: **60 ECTS**

tech global university

Mr./Ms. _____, with identification document _____
has successfully passed and obtained the title of:

Professional Master's Degree in Mechanical Engineering

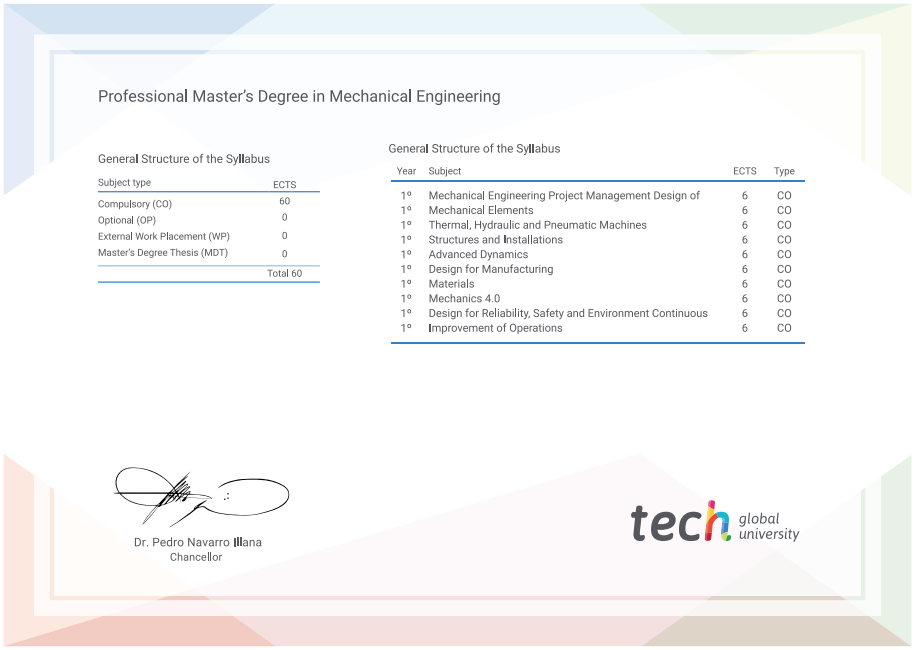
This is a program of 1,500 hours of duration equivalent to 60 ECTS, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH Global University is a university officially recognized by the Government of Andorra on the 31st of January of 2024, which belongs to the European Higher Education Area (EHEA).

In Andorra la Vella, on the 28th of February of 2024

Dr. Pedro Navarro Illana
Chancellor

This qualification must always be accompanied by the university degree issued by the competent authority to practice professionally in each country. Unique TECH Code: AFWORD23S techtitute.com/certificates



Professional Master's Degree in Mechanical Engineering

General Structure of the Syllabus

Subject type	ECTS
Compulsory (CO)	60
Optional (OP)	0
External Work Placement (WP)	0
Master's Degree Thesis (MDT)	0
	Total 60

General Structure of the Syllabus

Year	Subject	ECTS	Type
1º	Mechanical Engineering Project Management Design of	6	CO
1º	Mechanical Elements	6	CO
1º	Thermal, Hydraulic and Pneumatic Machines	6	CO
1º	Structures and Installations	6	CO
1º	Advanced Dynamics	6	CO
1º	Design for Manufacturing	6	CO
1º	Materials	6	CO
1º	Mechanics 4.0	6	CO
1º	Design for Reliability, Safety and Environment Continuous	6	CO
1º	Improvement of Operations	6	CO

Dr. Pedro Navarro Illana
Chancellor

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

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Professional Master's Degree
Mechanical Engineering

- Modality: **online**
- Duration: **12 months**
- Certificate: **TECH Global University**
- Credits: **60 ECTS**
- Schedule: **at your own pace**
- Exams: **online**

Professional Master's Degree
Mechanical Engineering

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