Professional Master's Degree
Industrial Design

tech technological university

Professional Master's Degree
Industrial Design

- Modality: **online**
- Duration: **12 months**
- Certificate: **TECH Technological University**
- Dedication: **16h/week**
- Schedule: **at your own pace**
- Exams: **online**

Website: www.techtitute.com/us/design/professional-master-degree/master-industrial-design

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01

Introduction

Industry moves the world. The biggest economic powers on the planet are also industrial powers. And a lot of the big multinational countries are focused towards this sector. For this reason, industrial design is one of the most demanded areas at the professional level nowadays, and specialists in this area are highly regarded. In recent years this discipline has undergone a complete transformation, driven by new technologies and design devices, requiring experts in this field to adapt. With this program, the student will be able to know the latest advances in this field, deepening their understanding in aspects such as the design of mechanical elements or the bases of industrial production. All of this with the best multimedia teaching resources and through a 100% online teaching methodology which can be adapted to their personal circumstances.

With this program you will become a great specialist in Industrial Design, being able to opt for great professional opportunities in this important economic sector"

Industrial Design is a basic requirement for daily life. All types of vehicles, apparatus, tools and home appliances exist thanks to the labor of designers working in this field. Therefore, it is an essential area, and the large industrial companies that produce these elements and objects are constantly looking for professionals who can improve their designs and creations with objectives as diverse as improving the performance of these devices, saving costs or improving their aesthetics.

This Professional Master's Degree will therefore provide designers with the necessary elements to become a great specialist in this field. In this way, throughout the program, they will be able to delve deeper into issues such as technical representation systems, metallic and ceramic materials or design for manufacturing, especially in aspects such as polymers.

The designer will also be able to become a great expert in this area thanks to the program designed by TECH, which is developed through an online learning system that will be adapted to their personal and professional circumstances. This method has been created so that students don't have to commit themselves to fixed schedules nor travel to attend classes physically in an academic center. In addition, this program includes the best multimedia resource, videos, theoretical and practical activities, interactive summaries or master classes, among many others.

This **Professional Master's Degree in Industrial Design** contains the most complete and up-to-date educational program on the market. The most important features include:

- Practical cases presented by experts in Industrial Design
- 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
- 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

Industrial sectors need designers that improve the performance, cost and aesthetic of their products and this program will make you an expert that responds to the needs of the current professional market"

The 100% online methodology at TECH allows you to continue developing your professional work without interruptions, given that is completely adapted to your personal circumstances"

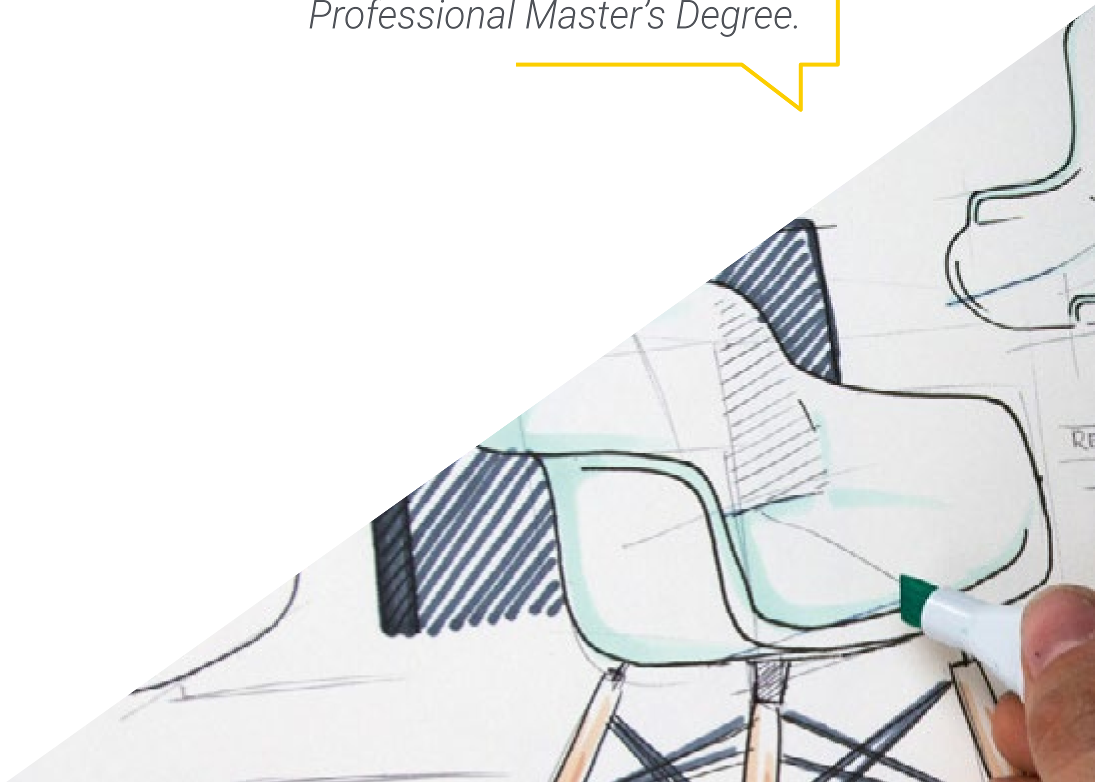
This program will allow you to learn the ins and outs of industrial production to improve your work as a designer specializing in this field.

The best teaching materials in the field of industrial design are available to you in this Professional Master's Degree.

The program's teaching staff includes professionals from the sector who contribute their work experience to this training 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 training programmed to train in real situations.

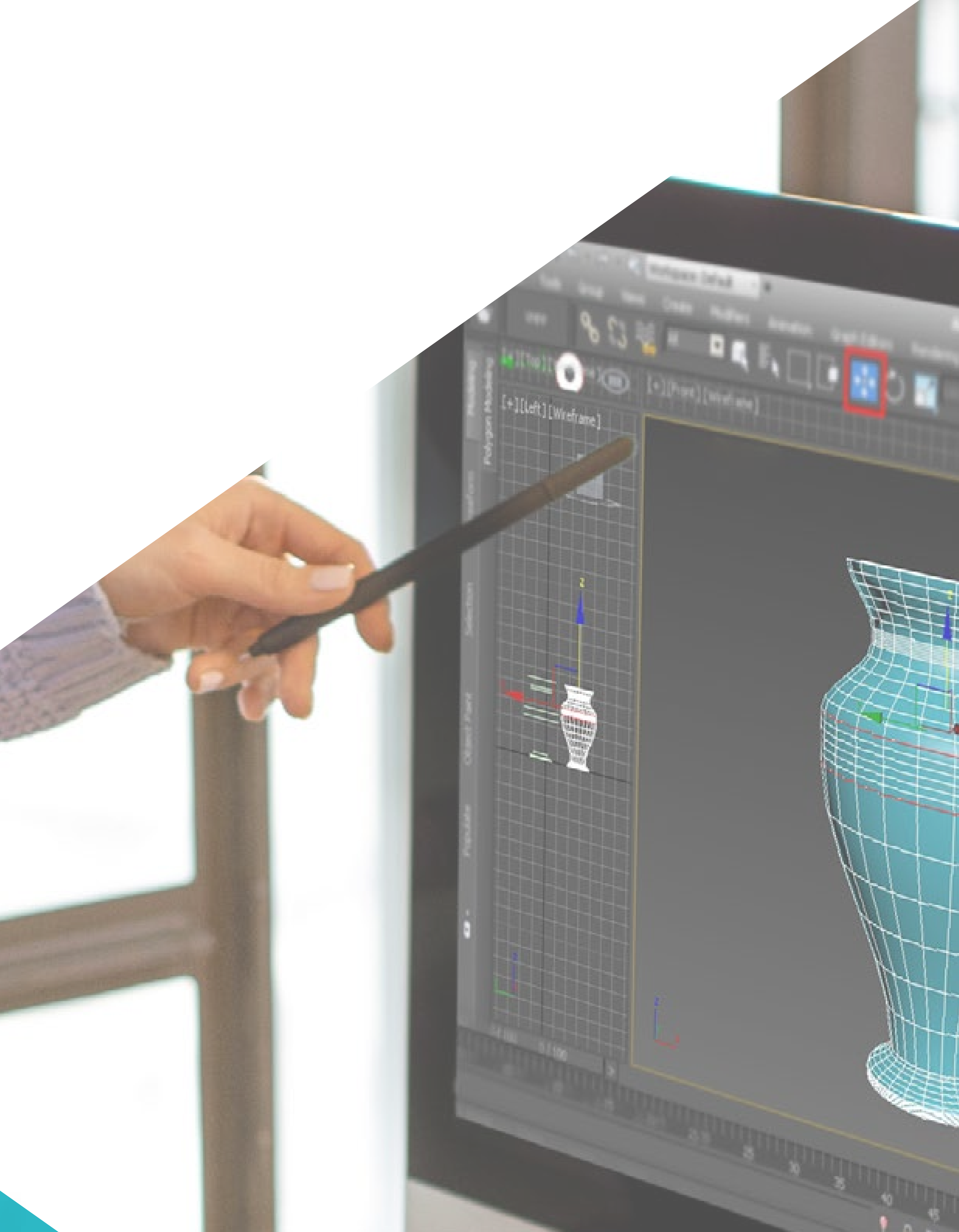
This program is designed around Problem Based Learning, whereby the professional must try to solve the different professional practice situations that arise during the academic year. For this purpose, the student will be assisted by an innovative interactive video system created by renowned and experienced experts.



02

Objectives

The main objective of this Professional Master's Degree in Industrial Design is to gather the most advanced and innovative knowledge in this creative area in order to bring it to the professional in a simple way and completely adapted to their circumstances. In order to achieve this goal, TECH has a flexible teaching methodology that allows the student to choose the time and place to study, and offers the student the most advanced educational technology with the most innovative and effective didactic resources.



Reach all your professional and life goals thanks to the boost you will get from this specialized program"

General Objectives

- Know how to synthesize one's interests through observation and critical thinking, translating them into artistic creations.
- Learn to plan, develop and present artistic productions appropriately, using effective production strategies and with their own creative contributions
- Acquire theoretical and practical methodological knowledge necessary for the realization of technical projects
- Analyze and evaluate materials used in engineering based on their properties
- Deepen knowledge in the innovation and technology transfer processes for the development of new products and processes and the establishment of a new state of the art

This is the opportunity you have been looking for to gain access to large industrial companies in your area"

Specific Objectives

Module 1. Fundamentals of Design

- Connect and correlate the different areas of design, fields of application and professional branches
- Know the processes of ideation, creativity and experimentation and know how to apply them to projects.
- Integrate language and semantics in the ideation processes of a project, relating them to its objectives and use values.

Module 2. Fundamentals of Creativity

- Know how to synthesize one's interests through observation and critical thinking, translating them into artistic creations
- Get rid of the fear of artistic block and use techniques to combat it
- Investigating oneself, one's own emotional space and what is around, in such a way that an analysis of these elements is carried out in order to use them in favor of one's own creativity

Module 3. Technical Representation Systems

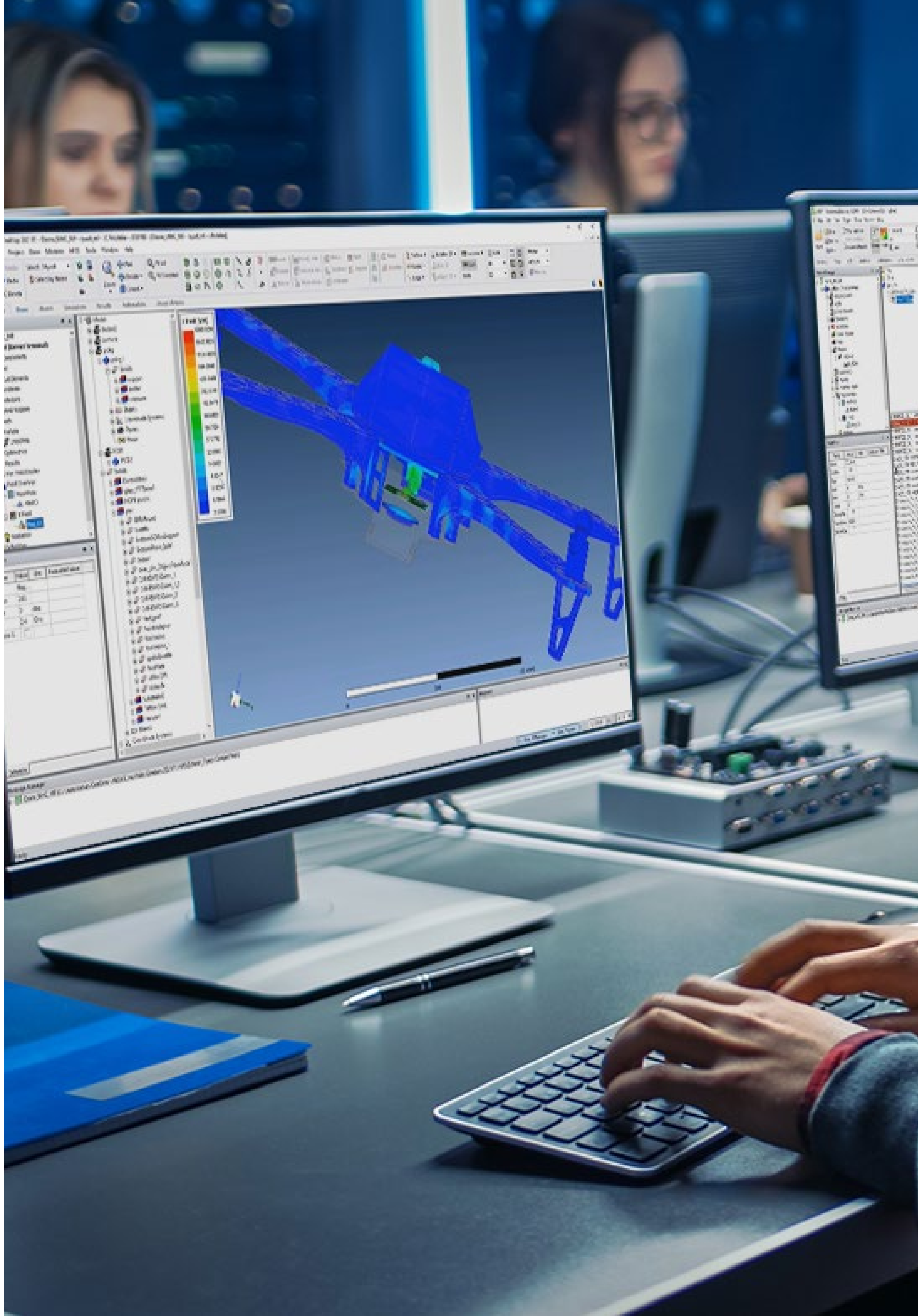
- Use knowledge of representation systems as a tool in the search for solutions to design problems
- Develop conception and spatial vision, obtaining new tools that encourage the promotion and generation of ideas.
- Learn to represent objects in the dihedral, axonometric and conic systems as a means of conveying an idea for their realization

Module 4. Materials
- Know the principles of nanomaterials
- Understand, analyze and evaluate the processes of corrosion and degradation of materials.
- Evaluate and analyze the different techniques of non-destructive tests on materials

Module 5. Design of Mechanical Elements
- Master all the aspects of design in mechanical engineering
- Develop patents, utility models and industrial design
- Evaluate the different fail theories for their application in each element of the machines
- Design, analyze and evaluate the components of the machines which are using the most modern design tools
- Evaluate the different alternatives for the design of machine elements

Module 6. Design for Manufacturing
- Identify the productive phases and stages of a project
- Achieve a sufficient level of knowledge related to the specific techniques and objectives in the area of production
- Analyze production from a strategic perspective

Module 7. Product Design and Development
- Establish all the actors to be taken into account in the design and development process of a new product for its correct performance in terms of quality, time, cost, resources, communications and risks
- Carry out in-depth analysis of the phases related to the development of the manufacturing process until the moment the product is available according to the initial requirements
- Achieve a detailed understanding of the product validation process to ensure that it meets all expected quality requirements



Module 8. Design Materials

- Work with the most appropriate materials in each case in the field of product design
- Explain and describe the main families of materials, their manufacturing, types, properties, etc.

Module 9. Industrial Production

- Know the basic physical principles and execution of the different manufacturing processes
- Know the most common instruments used for longitudinal measurements in mechanical manufacturing, including constructive and metrological characteristics
- Adapt to the methodology and definition of requirements according to the application for which the procedure is intended
- Elaborate approximations of the abstract world of the project to the real world, by means of two-dimensional and virtual graphic presentation in three dimensions, using specific software

Module 10. Ethics and Business

- Acquire an integrated and global vision of the practice of design, understanding the social, ethical and professional responsibility of design and its role in society
- Know and apply the terminology and methodology specific to the professional environment

This is the opportunity you have been looking for to gain access to large industrial companies in your area"

03
Skills

This Professional Master's Degree in Industrial Design will allow the professional to acquire and develop numerous skills in this creative area. Thus, the program focuses on industrial production, analyzing the materials used, the modeling and processing techniques and the creative procedures necessary to work in this important professional area. This degree, therefore, is essential for those designers who wish to enter this field and broaden their career prospects in one of today's most booming industrial fields.

Develop all the necessary skills to become a great expert in industrial design thanks to this program"

General Skills

- Analyze available prototyping options for proper evaluation of the initial design
- Have basic knowledge of the normative, legal, organizational structures and work patterns in the artistic, intellectual, economic, technological and political contexts, analyzing their potential for development from the point of view of design
- Develop skills and abilities to express oneself in the technical environment with precision, clarity and objectivity in graphic solutions
- Understand 3-D models and visualize figures or parts from any point of view
- Directly deal with the representation of three-dimensional entities on the plane, improving the sense of perception
- Deepen knowledge in the techniques, phases and tools related to the conceptual design that precedes the final design of the product, as well as the transformation of the customer's requirements into technical specifications that the product will have to comply with

Specific Skills

- Give an in-depth breakdown of the design process of a new product from CAD design through failure analysis and creating planes to agreement that the design meets requirements
- Use software tools associated with each of the phases of digital rapid prototyping and reverse engineering
- 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 ISO model of fits and tolerances, including the nomenclature and calculation of the different parameters
- Know the constructive characteristics of the most common machine tools and the basic aspects of machining technology, including cutting theories and machining mechanics

This Professional Master's Degree will open the doors to numerous industrial companies that will want to count on your skills to develop their new products"

05
Structure and Content

The contents of this Professional Master's Degree in Industrial Design have been created by international recognised experts in this creative area, who have ensured they include the latest innovations in the sector in this program. Thus, this program, which has been structured in 10 specialized modules, will delve into important issues such as the design of mechanical elements, especially parts such as brakes, clutches and couplings, the design and development of products or the different manufacturing processes.

You will not find more complete and up-to-date contents in the field of Industrial Design"

Module 1. Fundamentals of Design

1.1. History of Design
 1.1.1. The Industrial Revolution
 1.1.2. The Stages of Design
 1.1.3. Architecture
 1.1.4. Chicago School
1.2. Styles and Movements of Design
 1.2.1. Decorative Design
 1.2.2. Modernist Movement
 1.2.3. Art Deco
 1.2.4. Industrial Design
 1.2.5. Bauhaus
 1.2.6. World War II
 1.2.7. Transavantgarde
 1.2.8. Contemporary Design
1.3. Designers and Trends
 1.3.1. Interior Designers
 1.3.2. Graphic Designers
 1.3.3. Industrial or Product Designers
 1.3.4. Fashion Designers
1.4. Project Design Methodology
 1.4.1. Bruno Munari
 1.4.2. Gui Bonsiepe
 1.4.3. J. Christopher Jones
 1.4.4. L. Bruce Archer
 1.4.5. Guillermo González Ruiz
 1.4.6. Jorge Frascara
 1.4.7. Bernd Löbach
 1.4.8. Joan Costa
 1.4.9. Norberto Cháves
1.5. The Language of Design
 1.5.1. Objects and the Subject
 1.5.2. Semiotics of Objects
 1.5.3. The Object Layout and its Connotation
 1.5.4. Globalization of the Signs
 1.5.5. Proposal
1.6. Design and its Aesthetic-Formal Dimension
 1.6.1. Visual Elements
  1.6.1.1. Shape
  1.6.1.2. Measurement
  1.6.1.3. Color
  1.6.1.4. Texture
 1.6.2. Relationship Elements
  1.6.2.1. Management
  1.6.2.2. Position
  1.6.2.3. Spatial
  1.6.2.4. Severity
 1.6.3. Practical Elements
  1.6.3.1. Representation
  1.6.3.2. Meaning
  1.6.3.3. Function
 1.6.4. Framework of Reference
1.7. Analytical Methods of Design
 1.7.1. Pragmatic Design
 1.7.2. Analog Design
 1.7.3. Iconic Design
 1.7.4. Canonical Design
 1.7.5. Main Authors and Their Methodology
1.8. Design and Semantics
 1.8.1. Semantics
 1.8.2. Meaning

1.8.3. Denotative Meaning and Connotative Meaning
1.8.4. Lexis
1.8.5. Lexical Field and Lexical Family
1.8.6. Semantic Relationships
1.8.7. Semantic Change
1.8.8. Causes of Semantic Changes

1.9. Design and Pragmatics
1.9.1. Practical Consequences, Abduction and Semiotics
1.9.2. Mediation, Body and Emotions
1.9.3. Learning, Experiencing and Closure
1.9.4. Identity, Social Relations and Objects

1.10. Current Context of Design
1.10.1. Current Problems of Design
1.10.2. Current Themes of Design
1.10.3. Methodological Contributions

Module 2. Fundamentals of Creativity

2.1. Creative Introduction
2.1.1. Style in Art
2.1.2. Educate Your Gaze
2.1.3. Can Anyone Be Creative?
2.1.4. Pictorial Languages
2.1.5. What Do I Need? Materials

2.2. Perception as the First Creative Act
2.2.1. What Do You See? What Do You Hear? What Do You Feel?
2.2.2. Perceive, Observe, Attentively Examine
2.2.3. Portrait and Self-Portrait: Cristina Núñez
2.2.4. Case Study: Photodialogue Diving Into Oneself

2.3. Facing the Blank Page
2.3.1. Drawing Without Fear
2.3.2. The Sketchbook as a Tool
2.3.3. The Book of an Artist: What Is It?
2.3.4. References

2.4. Creating Our Artist's Book
2.4.1. Analysis and Play: Pencils and Markers
2.4.2. Tricks to Release the Hand
2.4.3. First Lines
2.4.4. Dip Pen

2.5. Creating Our Artist's Book II
2.5.1. The Stain
2.5.2. Waxes. Experimentation
2.5.3. Natural Pigments

2.6. Creating Our Artist's Book III
2.6.1. Collage and Photo Montage
2.6.2. Traditional Tools
2.6.3. Online Tools: Pinterest
2.6.4. Experimentation With the Composition of Images

2.7. Do Without Thinking
2.7.1. What Do We Achieve By Doing Without Thinking?
2.7.2. Imporvise: Henri Michaux
2.7.3. *Action Painting*

2.8. Critics as Artists
2.8.1. Constructive Criticism
2.8.2. Manifesto on Creative Criticism

2.9. Creative Block
2.9.1. What Is A Block?
2.9.2. Expand Your Limits
2.9.3. Case Study: Get Your Hands Dirty

2.10. Studying Our Artist's Book
2.10.1. Emotions and Their Management in the Creative Field
2.10.2. Your Own World in a Notebook
2.10.3. What Have I Felt? Self-Analysis
2.10.4. Case Study: Criticising Myself

Module 3. Technical Representation Systems

3.1. Introduction to Flat Geometry
- 3.1.1. The Fundamental Material and Its Use
- 3.1.2. Fundamental Tracings in the Plane
- 3.1.3. Polygons. Metric Ratios
- 3.1.4. Standardization, Lines, Writing and Formats
- 3.1.5. Standardized Dimensioning
- 3.1.6. Scales
- 3.1.7. Technical Representation Systems
  - 3.1.7.1. Types of Projection
    - 3.1.7.1.1. Conical Projection
    - 3.1.7.1.2. Orthogonal Cylindrical Projection
    - 3.1.7.1.3. Oblique Cylindrical Projection
  - 3.1.7.2. Classes of Representation Systems
    - 3.1.7.2.1. Measuring Systems
    - 3.1.7.2.2. Perspective Systems

3.2. Fundamental Tracings in the Drawing
- 3.2.1. Fundamental Geometrical Elements
- 3.2.2. Perpendicularity
- 3.2.3. Parallelism
- 3.2.4. Operations With Segments
- 3.2.5. Angles
- 3.2.6. Circumferences
- 3.2.7. Geometric Places

3.3. Geometric Transformations
- 3.3.1. Isometric
  - 3.3.1.1. Equality
  - 3.3.1.2. Translation
  - 3.3.1.3. Symmetry
  - 3.3.1.4. Turn
- 3.3.2. Isomorphic
  - 3.3.2.1. Homothecary
  - 3.3.2.2. Similarities
- 3.3.3. Anamorphic
  - 3.3.3.1. Equivalents
  - 3.3.3.2. Investments
- 3.3.4. Projective
  - 3.3.4.1. Homology
  - 3.3.4.2. Affine Homology or Affinity

3.4. Polygons
- 3.4.1. Polygon Lines
  - 3.4.1.1. Definition and Types
- 3.4.2. Triangles
  - 3.4.2.1. Elements and Classification
  - 3.4.2.2. Construction of Triangles
  - 3.4.2.3. Notable Lines and Points
- 3.4.3. Quadrilaterals
  - 3.4.3.1. Elements and Classification
  - 3.4.3.2. Parallelograms
- 3.4.4. Regular Polygons
  - 3.4.4.1. Definition
  - 3.4.4.2. Construction
- 3.4.5. Perimeters and Areas
  - 3.4.5.1. Definition. Measuring Areas
  - 3.4.5.2. Surface Units
- 3.4.6. Polygon Areas
  - 3.4.6.1. Quadrilateral Areas
  - 3.4.6.2. Triangle Areas
  - 3.4.6.3. Regular Polygon Areas
  - 3.4.6.4. Irregular Areas

- 3.5. Tangents and Links. Technical and Conic Curves
    - 3.5.1. Tangents, Links and Polarity
        - 3.5.1.1. Tangents
            - 3.5.1.1.1. Tangency Theorems
            - 3.5.1.1.2. Drawings of Tangent Lines
            - 3.5.1.1.3. Straight and Curved Links
        - 3.5.1.2. Polarity at the Circumference
            - 3.5.1.2.1. Drawings of Tangent Lines
    - 3.5.2. Technical Curves
        - 3.5.2.1. Ovals
        - 3.5.2.2. Ovoids
        - 3.5.2.3. Spirals
    - 3.5.3. Conical Curves
        - 3.5.3.1. Ellipse
        - 3.5.3.2. Parabola
        - 3.5.3.3. Hyperbola
- 3.6. Dihedral System
    - 3.6.1. General aspects
        - 3.6.1.1. Point and Line
        - 3.6.1.2. The Plane. Intersections
        - 3.6.1.3. Parallelism, Perpendicularity and Distances
        - 3.6.1.4. Plane Changes
        - 3.6.1.5. Turns
        - 3.6.1.6. Reductions
        - 3.6.1.7. Angles
    - 3.6.2. Curves and Surfaces
        - 3.6.2.1. Curves
        - 3.6.2.2. Surfaces
        - 3.6.2.3. Polyhedra
        - 3.6.2.4. Pyramids
        - 3.6.2.5. Pryzm
        - 3.6.2.6. Cone
        - 3.6.2.7. Cylinder
        - 3.6.2.8. Revolution Surfaces
        - 3.6.2.9. Intersection of Surfaces
    - 3.6.3. Shade
        - 3.6.3.1. General aspects
- 3.7. System Boundary
    - 3.7.1. Point, Line and Plane
    - 3.7.2. Intersections and Reductions
        - 3.7.2.1. Reductions
        - 3.7.2.2. Applications
    - 3.7.3. Parallelism, Perpendicularity, Distance and Angles
        - 3.7.3.1. Perpendicularity
        - 3.7.3.2. Distances
        - 3.7.3.3. Angles
    - 3.7.4. Line, Surfaces and Terrains
        - 3.7.4.1. Terrains
    - 3.7.5. Applications
- 3.8. Axonometric System
    - 3.8.1. Orthogonal Axonometry: Point, Line and Plane
    - 3.8.2. Orthogonal Axonometry: Intersections, Reductions and Perpendicularity
        - 3.8.2.1. Reductions
        - 3.8.2.2. Perpendicularity
        - 3.8.2.3. Flat Shapes
    - 3.8.3. Orthogonal Axonometry: Body Perspective
        - 3.8.3.1. Representation of Bodies
    - 3.8.4. Oblique Axonometry: Abatisms, Perpendicularity
        - 3.8.4.1. Frontal Perspective
        - 3.8.4.2. Reduction and Perpendicularity
        - 3.8.4.3. Flat Figures
    - 3.8.5. Oblique Axonometry: Body Perspective
        - 3.8.5.1. Shade

3.9. Conical System
- 3.9.1. Conical or Central Projection
  - 3.9.1.1. Intersections
  - 3.9.1.2. Parallelisms
  - 3.9.1.3. Reductions
  - 3.9.1.4. Perpendicularity
  - 3.9.1.5. Angles
- 3.9.2. Lineal Perspective
  - 3.9.2.1. Auxiliary Constructions
- 3.9.3. Lines and Surfaces Perspective
  - 3.9.3.1. Practical Perspective
- 3.9.4. Perspective Methods
  - 3.9.4.1. Tilted Frame
- 3.9.5. Prospective Restitutions
  - 3.9.5.1. Reflexes
  - 3.9.5.2. Shade

3.10. The Sketch
- 3.10.1. Objectives of the Sketch
- 3.10.2. Proportion
- 3.10.3. Skectch Process
- 3.10.4. Point of View
- 3.10.5. Labeling and Graphic Symbols
- 3.10.6. Measurement

Module 4. Materials

4.1. Properties of the Materials
- 4.1.1. Mechanical Properties
- 4.1.2. Electrical Properties
- 4.1.3. Optic Properties
- 4.1.4. Magnetic Properties

4.2. Metallic Materials I. Ferrous
4.3. Metallic Materials II. Non- Ferrous
4.4. Polymeric Materials
4.4.1. Thermoplastics
4.4.2. Thermosetting Plastics
4.5. Ceramic Materials
4.6. Compound Materials
4.7. Biomaterials
4.8. Nanomaterials
4.9. Corrosion and Degradation of Materials
4.9.1. Types of Corrosion
4.9.2. Oxidation of Metals
4.9.3. Corrosion Control
4.10. Non-Destructive Tests
4.10.1. Visual Inspections and Endoscopies
4.10.2. Ultrasound
4.10.3. Radiographies
4.10.4. Eddy Currents
4.10.5. Magnetic Particles
4.10.6. Penetrating Liquids
4.10.7. Infra Red Thermography

Module 5. Design of Mechanical Elements

5.1. Fail Theories
5.1.1. Static Fail Theories
5.1.2. Dynamic Fail Theories
5.1.3. Fatigue
5.2. Tribology and Lubrication
5.2.1. Friction
5.2.2. Wear and Tear
5.2.3. Lubricants

5.3. Design of Transmission Trees
    5.3.1. Trees and Axis
    5.3.2. Keyways and Splined Shafts
    5.3.3. Flywheels
5.4. Design of Rigid Transmissions
    5.4.1. Levers
    5.4.2. Spur Gears
    5.4.3. Bevel Gears
    5.4.4. Helical Gears
    5.4.5. Worm Screws
5.5. Design of Flexible Transmissions
    5.5.1. Chain Transmissions
    5.5.2. Belt Drives
5.6. Design of Bearings
    5.6.1. Friction Bearings
    5.6.2. Ball Bearings
5.7. Design of Brakes, Clutches and Couplings
    5.7.1. Brakes
    5.7.2. Clutches
    5.7.3. Couplings
5.8. Mechanical Spring Design
5.9. Design of Non-Permanent Joints
    5.9.1. Bolted Joints
    5.9.2. Riveted Joints
5.10. Design of Permanent Joints
    5.10.1. Soldered Joints
    5.10.2. Adhesive Joints

Module 6. Design for Manufacturing

6.1. Design for Manufacturing and Assembling
6.2. Forming by Molding
    6.2.1. Casting
    6.2.2. Injection
6.3. Forming by Deformation
    6.3.1. Plastic Deformation
    6.3.2. Printed
    6.3.3. Forge
    6.3.4. Extrusion
6.4. Forming by Loss of Material
    6.4.1. By Abrasion
    6.4.2. By Chip Removal
6.5. Thermal Treatments
    6.5.1. Tempering
    6.5.2. Annealing
    6.5.3. Anodizing
    6.5.4. Standardization
    6.5.5. Thermochemical Treatments
6.6. Application of Paints and Coverings
    6.6.1. Electrochemical Treatments
    6.6.2. Electrolyte 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. *Power Bed Fusion*
    6.9.2. *Direct Energy Deposition*
    6.9.3. *Binder Jetting*
    6.9.4. *Bound Power Extrusion*
6.10. Robust Engineering
    6.10.1. Taguchi Method
    6.10.2. Experiment Design
    6.10.3. Statistical Control of Processes

Module 7. Product Design and Development

7.1. QFD (*Quality Function Deployment*) in Product Design and Development
 7.1.1. From the Voice of the Customer to Technical Requirements
 7.1.2. The House of Quality/Phases for its Development
 7.1.3. Advantages and Limitations
7.2. *Design Thinking*
 7.2.1. Design, Need, Technology and Strategy
 7.2.2. Stages of the Process
 7.2.3. Tools and Techniques Used
7.3. Concurrent Engineering
 7.3.1. Fundamentals of Concurrent Engineering
 7.3.2. Methodology of Concurrent Engineering
 7.3.3. Tools Used
7.4. Programming. Planning and Definition
 7.4.1. Requirements. Quality Management
 7.4.2. Development Phases. Time Management
 7.4.3. Materials, Feasibility, Processes. Cost Management
 7.4.4. Project Equipment. Human Resources Management
 7.4.5. Information. Communication Management
 7.4.6. Risk Analysis. Risk Management
7.5. Products. Their Design (CAD) and Development
 7.5.1. Information Management/ PLM/ Product Life Cycle
 7.5.2. Modes and Effects of Product Failure
 7.5.3. CAD Construction. Review
 7.5.4. Product and Manufacturing Plans
 7.5.5. Design Verification
7.6. Prototypes. Their Development
 7.6.1. Rapid Prototyping
 7.6.2. Control Plan
 7.6.3. Experiment Design
 7.6.4. The Analysis of Measurement Systems
7.7. Produtive Process. Design and Development
 7.7.1. Modes and Effects of Process Failure
 7.7.2. Design and Construction of Manufacturing Tools
 7.7.3. Design and Construction of Control Tools (Gauges)
 7.7.4. Adjustment Phase
 7.7.5. Production Start-Up
 7.7.6. Initial Evaluation of the Process
7.8. Product and Process. Its Validation
 7.8.1. Evaluation of Measurement Systems
 7.8.2. Validation Tests
 7.8.3. Statistical Process Control (SPC)
 7.8.4. Product Certification
7.9. Change Management. Improvement and Corrective Actions
 7.9.1. Type of Change
 7.9.2. Variability Analysis, Improvement
 7.9.3. Lessons Learned and Practices Tested
 7.9.4. Process of Change
7.10. Innovation and Technology Transfer
 7.10.1. Intellectual Property
 7.10.2. Innovation
 7.10.3. Technological Transfer

Module 8. Design Materials

8.1. Material as Inspiration
 8.1.1. The Search for Materials
 8.1.2. Classification
 8.1.3. Material and its Context
8.2. Design Materials
 8.2.1. Common Uses
 8.2.2. Contraindications
 8.2.3. Combination of Materials

8.3. Art and Innovation
 8.3.1. Materials in Art
 8.3.2. New Materials
 8.3.3. Compound Materials
8.4. Physical
 8.4.1. Basic Concepts
 8.4.2. Properties of the Materials
 8.4.3. Mechanical Tests
8.5. Technology
 8.5.1. Intelligent Materials
 8.5.2. Dynamic Materials
 8.5.3. The Future in Materials
8.6. Sustainability
 8.6.1. Procurement
 8.6.2. Use
 8.6.3. Final Management
8.7. Biomimicry
 8.7.1. Reflection
 8.7.2. Transparency
 8.7.3. Other techniques
8.8. Innovation
 8.8.1. Success Stories
 8.8.2. Research in Materials
 8.8.3. Sources of Research
8.9. Risk Prevention
 8.9.1. Safety Factor
 8.9.2. Fire
 8.9.3. Breakage
 8.9.4. Other Risks
8.10. Regulations and Legislation
 8.10.1. Regulations According to Application
 8.10.2. Regulations According to Sector
 8.10.3. Regulations According to Location

Module 9. Industrial Production

9.1. Manufacturing Technology
 9.1.1. Introduction
 9.1.2. Evolution of Manufacturing
 9.1.3. Classification of the Manufacturing Processes
9.2. Solids Cutting
 9.2.1. Handling of Panels and Sheets
 9.2.2. Continuous Flow Manufacturing
9.3. Manufacture of Thin and Hollow Shapes
 9.3.1. Rotomolding
 9.3.2. Blowing
 9.3.3. Comparison
9.4. Manufacturing by Consolidation
 9.4.1. Complex Techniques
 9.4.2. Advanced Techniques
 9.4.3. Textures and Superficial Finishings
9.5. Quality Controls
 9.5.1. Metrology
 9.5.2. Adjustments
 9.5.3. Tolerances
9.6. Assembly and Packaging
 9.6.1. Constructive Systems
 9.6.2. Assembly Processes
 9.6.3. Design Considerations for Assembly
9.7. Post Fabrication Logistics
 9.7.1. Storage
 9.7.2. Expedition
 9.7.3. Residuals
 9.7.4. Post-Sales Service
 9.7.5. Final Management
9.8. Introduction to Numerical Control
 9.8.1. Introduction to CAM Systems

9.8.2. CAM Solution Architectures
9.8.3. Functional Design of CAM Systems
9.8.4. Automation of Manufacturing Processes and NC Scheduling
9.8.5. CAD-CAM Integration Systems

9.9. Inverse Engineering
9.9.1. Digitalization of Complex Geometries
9.9.2. Geometry Processing
9.9.3. Compatability and Edition

9.10. *Lean Manufacturing*
9.10.1. Lean Thinking
9.10.2. Waste in the Company
9.10.3. The 5 S'

Module 10. Ethics and Business

10.1. Methodology
10.1.1. Document Sources and Research Techniques
10.1.2. Bibliographic Quotes and Research Ethics
10.1.3. Methodological Strategies and Academic Writing

10.2. The Field of Morality: Ethics and Morals
10.2.1. Ethics and morals
10.2.2. Ethical Material and Formal Ethics
10.2.3. Rationality and Morality
10.2.4. Virtue, Goodness and Justice

10.3. Applied Ethics
10.3.1. Public Dimension of Applied Ethics
10.3.2. Ethical Codes and Responsibilities
10.3.3. Autonomy and Self-Regulation

10.4. Deontological Ethics Applied to Design
10.4.1. Ethical Requirements and Principles of Design Practice
10.4.2. Ethical Decision Making
10.4.3. Relationships and Ethical Professional Skills

10.5. Corporate Social Responsibility
10.5.1. Ethical Sense of the Company
10.5.2. Code of Conduct
10.5.3. Globalization and Multiculturalism
10.5.4. Non-Discrimination
10.5.5. Sustainability and the Environment

10.6. Introduction to Commercial Law
10.6.1. Concept of Commercial Law
10.6.2. Economic Activity and Commercial Law
10.6.3. Significance of the Theory of the Sources of Business Law

10.7. The Company
10.7.1. Economic Notion of the Business and the Entrepreneur
10.7.2. Legal Regime of the Company

10.8. The Entrepreneur
10.8.1. Concept and Characteristic Notes of the Entrepreneur
10.8.2. Personalistic and Capitalistic Companies (Stock Corporations and Limited Liability Companies)
10.8.3. Acquisition of Entrepreneur Status
10.8.4. Corporate Responsibility

10.9. Competency Regulation
10.9.1. Competition Law
10.9.2. Illicit or Disloyal Competition
10.9.3. Competitive Strategy

10.10. Intellectual and Industrial Property Rights
10.10.1. Intellectual Property
10.10.2. Industrial Property
10.10.3. Modalities of Protection for Creations and Inventions

This program at TECH will take you closer to your objective of becoming a highly-demanded industrial designer in this sector"

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"

At TECH we use the Case Method

Our program offers a revolutionary method of skills and knowledge development. Our goal is to strengthen skills in a changing, competitive, and highly demanding environment.

At TECH, you will experience a way of learning that is shaking the foundations of traditional universities around the world"

We are the first online university to combine Harvard Business School case studies with a 100% online learning system based on repetition.

The student will learn, through collaborative activities and real cases, how to solve complex situations in real business environments.

A learning method that is different and innovative

This intensive Design program at TECH Technological University will prepare you to face all the challenges in this area, both nationally and internationally. We are committed to promoting your personal and professional growth, the best way to strive for success, that is why at TECH you will use Harvard *case studies*, with which we have a strategic agreement that allows us to provide our students with material from the best university the world.

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 by 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 we face 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

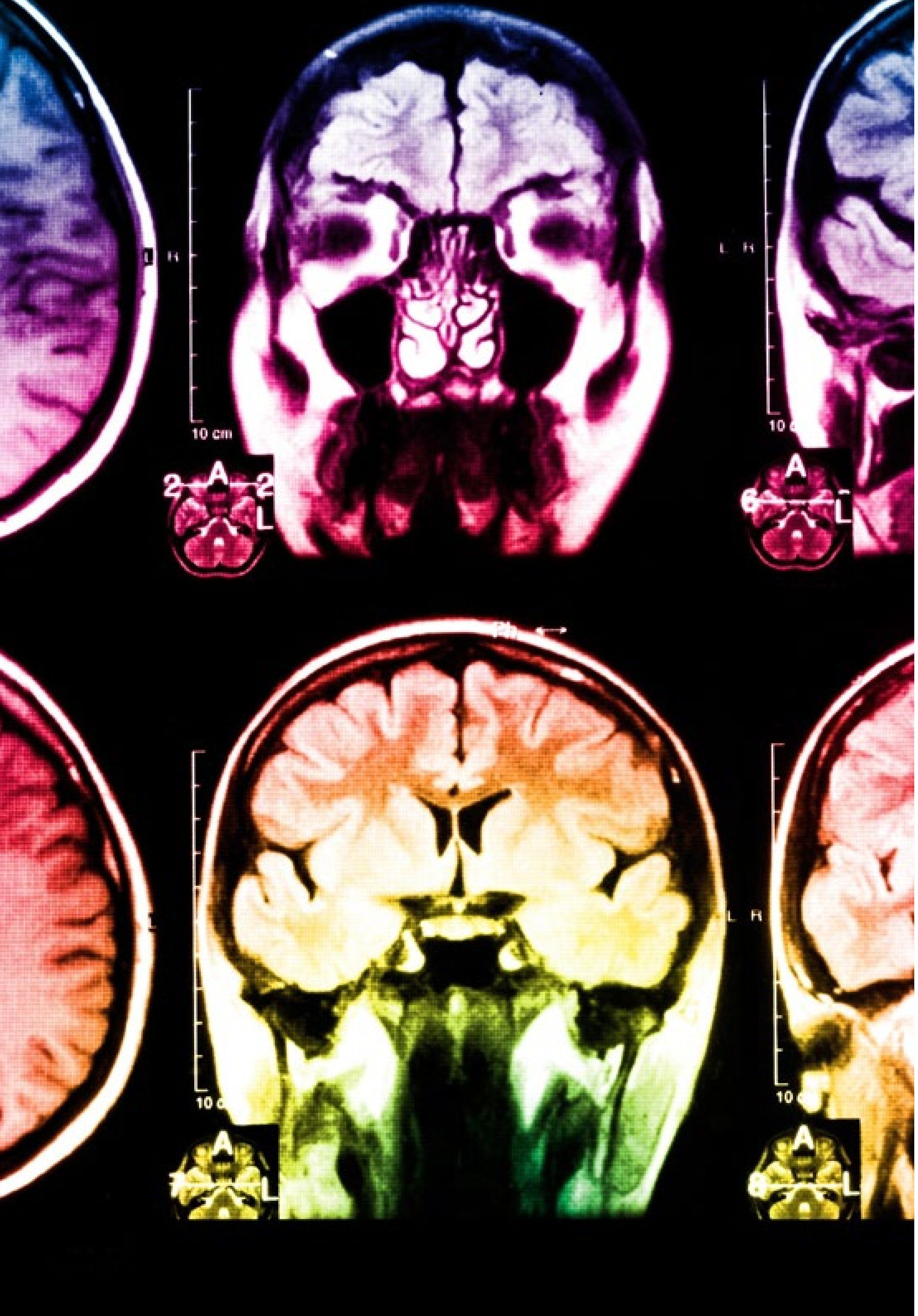
Our university is the first in the world to combine the Harvard University *case studies method* with a 100% online learning system based on repetition, combining 8 different didactic elements in each lesson.

We enhance Harvard *case studies* 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 university 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. With this methodology we have 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, markets, and financial 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.

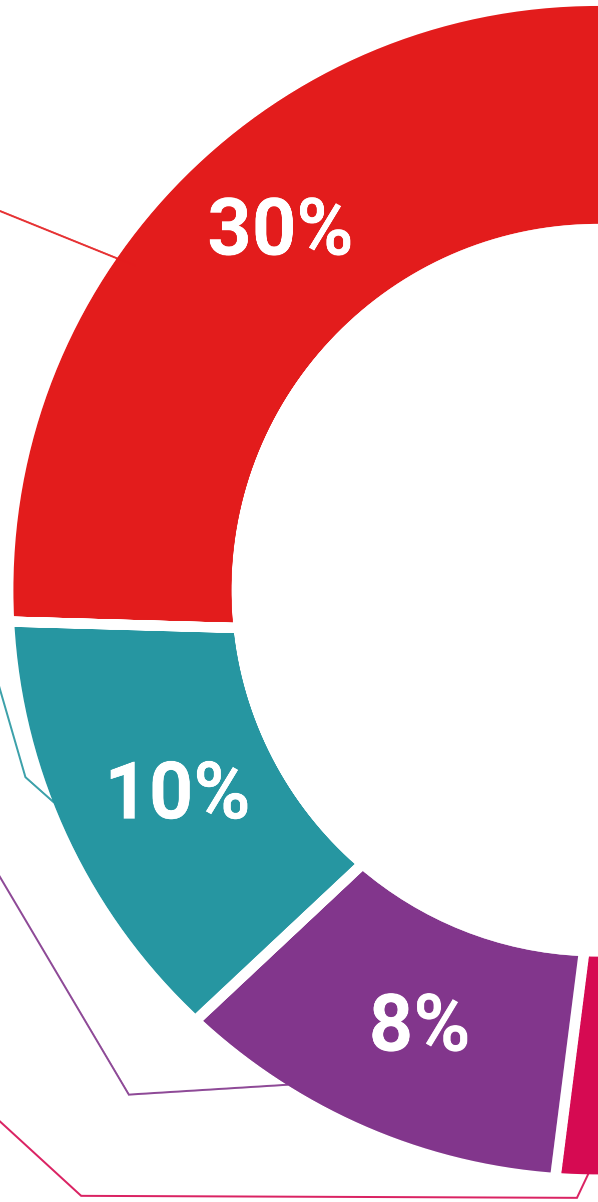
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

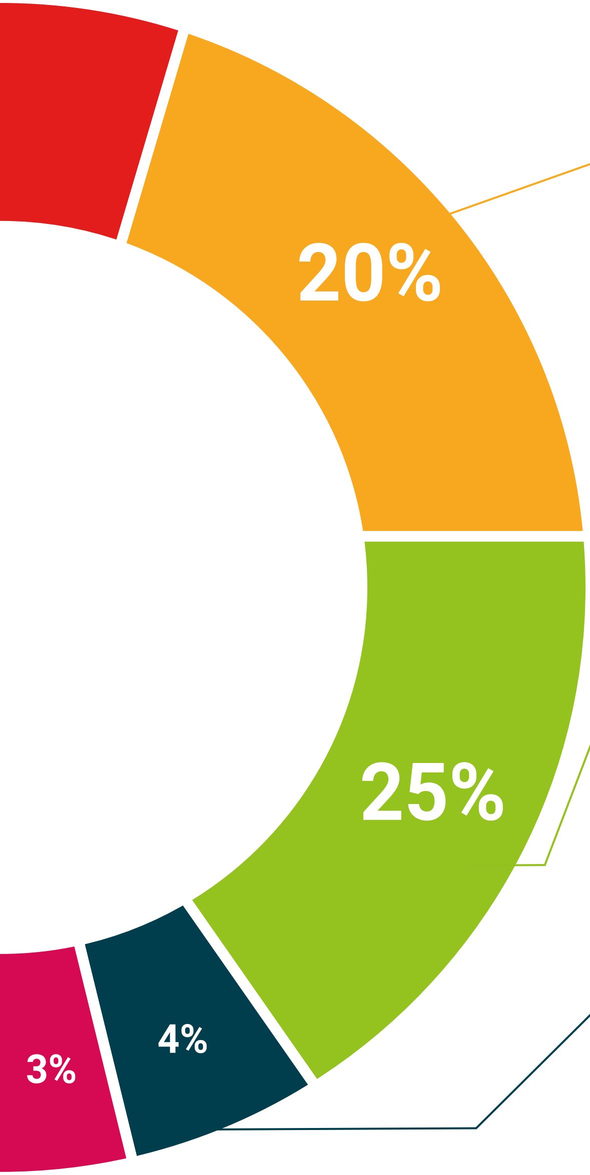
Practising Skills and Abilities

They will carry out activities to develop specific competencies and skills in each thematic area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization we live in.

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

They will complete a selection of the best case studies in the field used at Harvard. Cases that are presented, analyzed, and supervised by the best senior management 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 multimedia content presentation training Exclusive system was awarded by Microsoft as a "European Success Story".

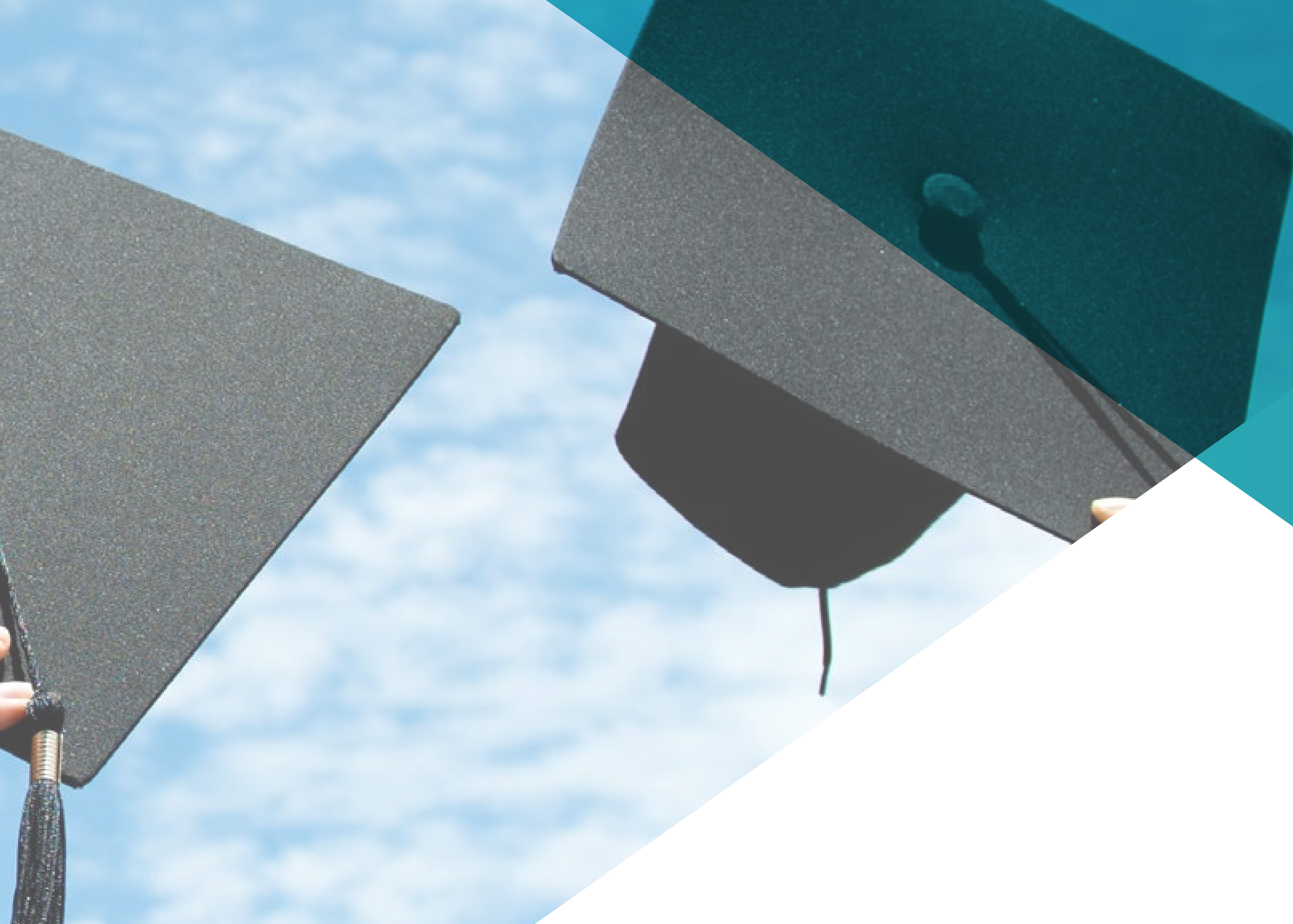
Testing & Retesting

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 your goals.

07

Certificate

The Professional Master's Degree in Industrial Design guarantees, in addition to the most rigorous and up-to-dat training, access to a Professional Master's Degree issued by TECH Technological University.



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

This **Professional Master's Degree in Industrial Design** contains the most complete and up-to-date program on the market.

After passing the assessments, the student will receive their corresponding **Professional Master's Degree** issued by **TECH Technological University** via tracked delivery*.

The diploma issued by **TECH Technological University** will express the qualification obtained in the Professional Master's Degree, and will meet the requirements commonly demanded by job exchanges, competitive examinations, and professional career evaluation committees.

Title: **Professional Master's Degree in Industrial Design**

Official Nº of Hours: **1,500 hours.**


tech technological university

Awards the following

DIPLOMA

to

Mr./Ms. _______________, with identification number ___________.

For having successfully passed and accredited the following program

PROFESSIONAL MASTER'S DEGREE

in

Industrial Design

This is a qualification awarded by this University, equivalent to 1,500 hours, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

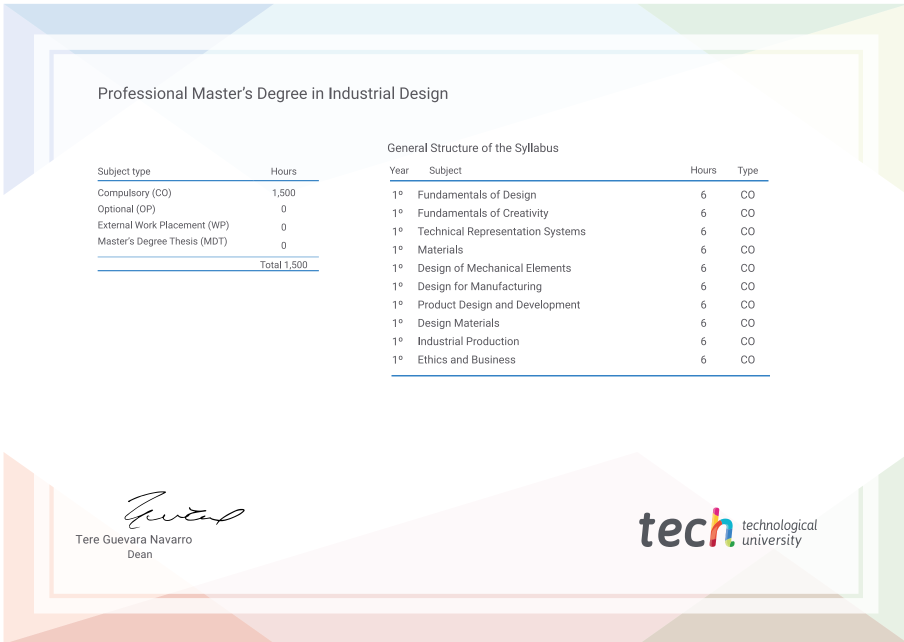
TECH is a Private Institution of Higher Education recognized by the Ministry of Public Education as of June 28, 2018.

June 17, 2020

Tere Guevara Navarro
Dean

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 Industrial Design

Subject type	Hours
Compulsory (CO)	1,500
Optional (OP)	0
External Work Placement (WP)	0
Master's Degree Thesis (MDT)	0
	Total 1,500

General Structure of the Syllabus

Year	Subject	Hours	Type
1º	Fundamentals of Design	6	CO
1º	Fundamentals of Creativity	6	CO
1º	Technical Representation Systems	6	CO
1º	Materials	6	CO
1º	Design of Mechanical Elements	6	CO
1º	Design for Manufacturing	6	CO
1º	Product Design and Development	6	CO
1º	Design Materials	6	CO
1º	Industrial Production	6	CO
1º	Ethics and Business	6	CO

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Dean

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*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.

Professional Master's Degree
Industrial Design

- » Modality: **online**
- » Duration: **12 months**
- » Certificate: **TECH Technological University**
- » Dedication: **16h/week**
- » Schedule: **at your own pace**
- » Exams: **online**

Professional Master's Degree
Industrial Design

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