Professional Master's Degree

Textile Engineering

tech technological university

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Professional Master's Degree
Textile Engineering

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

Website: **www.techtitute.com/in/engineering/professional-master-degree/master-textile-engineering**

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01

Introduction

Textiles are used in industries as varied as automotive, aerospace and healthcare to create products that optimize the manufacture of quality and useful goods. Also, its high relevance to enable the production of carbon fiber composed rocket exhausts or the realization of orthopedic implants has highlighted the figure of Textile Engineers, a professional destined to these tasks who is highly demanded nowadays. Given this context, TECH has created this degree with which the student will learn the advanced textile structures of openwork, mesh and nonwoven fabrics and the techniques of application of composite materials in the aeronautical sector, all this, in a 100% online format and without leaving home.

Master, through this program, the advanced textile structures of openwork, mesh and non-woven fabrics that optimize the creation of top-quality products in sectors such as aerospace and automotive"

Textile Engineering has experienced over the last few years a notorious evolution closely linked to technological development and the consequent emergence of new design and production mechanisms. As a result, a number of materials and processes have emerged to efficiently create fire-resistant clothing used by firefighters and to produce artificial tendons used in surgical procedures. These benefits provided to different fields of society mean that the engineer specialized in textile creation has excellent professional prospects.

For this reason TECH has opted to design this academic program, through which the student will obtain the deepest and most up-to-date knowledge about Textile Engineering in order to specialize in a sector immersed in constant growth. Throughout this degree, you will learn the best preparation procedures for waterproof, water-repellent and flame-retardant finishes, and you will integrate in your work the new strategies to evaluate the quality of fabrics. You will also delve into the development of textile applications for different industries such as automotive, architecture and construction, and healthcare.

Since this degree is developed through a 100% online mode, the engineer will be able to manage their own study time in order to achieve a fully effective learning process. Excellent didactic materials such as complementary readings, explanatory videos and interactive summaries are also available. This means that you will get a 24-hour accessible education, fully adapted to your professional activities and your personal academic tastes.

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

- Case studies presented by experts in Textile Engineering and Textile Finishes
- The graphic, schematic and mainly practical contents of the program provide practical and technical information on those disciplines that are essential for professional practice
- Practical exercises where self-assessment can be used to improve learning
- Its special emphasis on innovative methodologies
- Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- Content that is accessible from any fixed or portable device with an Internet connection

Throughout this educational program, you will learn about new textile applications in the construction, automotive and healthcare industries"

This Professional Master's Degree will allow you to learn about the preparation procedures for waterproof, water-repellent and fire-resistant preparations which make possible the creation of clothing used by firefighters"

Enjoy a 100% online format that will allow you to study without the need to make uncomfortable trips to an academic center.

Balance this excellent education course with your professional and personal activities thanks to the teaching facilities that TECH offers.

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.

Its 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 an immersion education programmed to learn in real situations.

The design of this program focuses on Problem-Based Learning, by means of which the professional must try to solve the different professional practice situations that are presented throughout the academic course. For this purpose, students will be assisted by an innovative interactive video system created by renowned and experienced experts.

02

Objectives

This Professional Master's Degree has been designed to provide students with the most useful and up-to-date knowledge in the field of Textile Engineering. During this academic experience, students will be able to identify the most advanced strategies to undertake designs oriented to the field of fashion and the automotive industry, among others. All of your high-level learning will be ensured through the achievement of the following general and specific objectives.

Learn, with this program, the ins and outs of Textile Engineering oriented to the design and production of fashion collections and luxury garments"

General Objectives

- Classify the different types of fibers according to their nature
- Determine the main physical characteristics of textiles
- Acquire technical skills to recognize the quality of textiles
- Establish scientific and technical criteria for the selection of suitable materials for the development of textile articles in the fashion sector
- Identify and apply the sources of inspiration and the most innovative trends in the textile area
- Generate a transversal vision of textile structures with a multi-sectorial vision of their applications

Specific Objectives

Module 1. Fibers and Yarns for Textile Product Design

- Identify textile fibers according to their morphology
- Develop textile applications according to the basic characteristics of fibers
- Determine the processes to obtain fibers and the processes to produce yarns
- Analyze innovative fiber finishing processes and innovative yarn finishing processes

Module 2. Textile Structures of Openwork, Mesh and Non-Woven Fabrics

- Calculate and design textile structures related to the requirements of the textile industry
- Distinguish, apply and design processes according to the characteristics of different textile structures
- Be able to develop research and innovation in the field of textile structures
- Integrate knowledge to face the complexity of different textile structures
- Identify and analyze textile structures from a technical approach

Module 3. Preparation Processes in Finishing and Sizing, Dyeing and Printing

- Develop specialized knowledge of the application in preparation, bleaching and dyeing operations and in the application in sizing and finishing operations
- Analyze and distinguish the different processes that give specific characteristics to textiles
- Apply each specific process according to the nature of the textile itself and the characteristics and properties given to the textiles
- Professionalize in order to provide reproducibility criteria for the application of methods of sizing and finishing
- Promote a visual, tactile, organoleptic and practical evaluation of the effects of finishing and sizing on textiles
- Detect the influence of color on textiles and its importance at corporate and business level

Module 4. Characterization and Evaluation of Fabric Quality

- Develop the practical and technical foundations for interpreting textile quality results
- Examine the principal physical tests used for fabric characterization
- Identify and work with the operation of the main test measurement equipment
- Structuring of a self evaluation plan for the quality of fabrics
- Analyze and synthesize the regulations applicable to the evaluation of fabric quality
- Determine the quality and sustainability parameters of fabrics according to market requirements
- Substantiate and describe in a technical report the transversal knowledge

Module 5. Fashion Textile Product Design

- Analyze and develop a complete fashion collection with a technical look
- Implement textile product specifications
- Identify and apply sources of inspiration and trends
- Apply the foundations of integral design for fashion textile items
- Elaborate sequences for the creation of a fashion textile sample book
- Design fashion textile products from an integral point of view and with specific functions

Module 6. Pattern Making Techniques in the Fashion Industry

- Analyze and develop patterns for a complete fashion collection
- Develop the scaling according to the size chart
- Determine the tools used for pattern making and cutting tools
- Examine trends and innovations in pattern making technology and methodology

Module 7. Manufacture of Textile Products for Fashion Use

- Analyze the methodology within the garment industry itself
- Establish and specify criteria for the organization and distribution of the garment industry
- Compile acquired fabric specifications, openwork and knitted fabrics in the garment sector
- Develop trends and innovations in sewing technology and methodology

Module 8. Development of Textile Applications for Different Industries. Multisectorial Approach

- Analyze the methodology for the use of textiles as reinforcements
- Deepen the techniques for the development of technical textiles
- Determine applications for the aeronautics sector
- Investigate applications for the automotive sector
- Examine innovations and new trends in technical textiles

Module 9. Development of Textile Applications for the Health Sector

- Analyze the methodology of the use of textiles for the hygiene, care and hospital sector
- Detect the applications of intelligent electronic textiles
- Determine the use of protection textiles
- Establish the requirements and use of healthcare and medical textiles

Module 10. Sustainability in the Textile Industry

- Analyze the nature of textiles and their polluting nature
- Investigate the most polluting practices in the sector
- Examine textile sector legislation linked to environmental needs
- Determine the requirements and limitations of new, more environmentally friendly textiles
- Evaluate new developments and trends in sustainability in the textile industry

Once you have completed this program, you will have a whole set of knowledge that will place you at the forefront of Textile Engineering"

03

Skills

This Professional Master's Degree has been created with the intention that the professional will be able to detect the current situation of Textile Engineering and to offer creative solutions to develop products oriented to different industries. Through an excellent 100% online platform and under the guidance of great experts in the field, the graduate will acquire a series of competencies that will allow them to perform with ease and face the new challenges that their profession entails.

Face the future challenges of Textile Engineering with confidence thanks to the skills you will acquire in this program"

General Skills

- Evaluate the basic characteristics of each type of fiber
- Analyze the textile structures according to their technical and commercial requirements
- Describe textile structures according to their quality and sustainability characteristics
- Communicate clear and concise conclusions in a specialized way in the field of textile structures
- Develop textile quality assessment reports from a technical approach
- Identify the basic physical characteristics that confer quality to textiles

Improve your skills in the field of Textile Engineering and achieve the professional boost you've been waiting for"

Specific Skills

- Propose new innovative applications in fibers and yarns according to the knowledge acquired
- Analyze the different characteristics of textile structures in order to know how to describe and detail them from a commercial point of view
- Establish practical and technical criteria for the selection of matters and materials suitable for the development of textile items in the fashion sector
- Detect the distinctions between textiles for different high-tech sectors
- Examine developments and trends in medical smart textiles and what is demanded of them

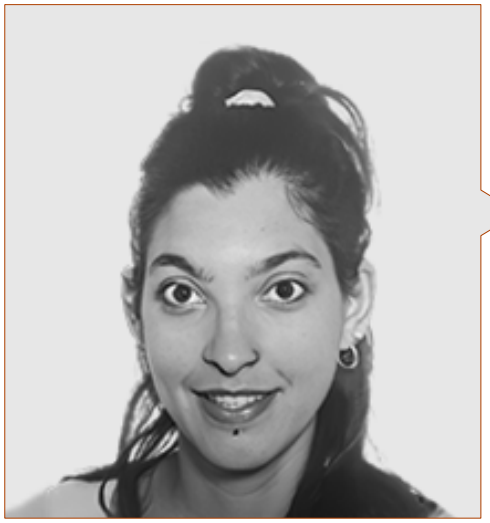
04

Course Management

In order to provide students with a first class education, this degree is directed and taught by specialists who have extensive experience in the field of Textile Engineering. These experts are the ones in charge of the elaboration of all the didactic resources that the student will have throughout this program. As a result, the contents you will receive will be fully applicable in your professional life.

This Professional Master's Degree is taught by active experts in the field of Textile Engineering, who will provide you with the most up-to-date teaching resources in this field"

Management



Dr. González López, Laura

- Expert in Textile and Paper Engineering
- Textile Innovation Production Manager at Waste Prevention SL
- Pattern and garment maker oriented to the automotive sector
- Researcher in the Tectex group
- Lecturer in undergraduate and postgraduate university studies
- D. in Textile and Paper Engineering from the Polytechnic University of Catalonia
- Graduate in Political Science and Administration from the Autonomous University of Barcelona
- PROFESSIONAL MASTER'S DEGREE in Textile and Paper Engineering

Professors

Mr. Martínez Estrada, Marc

- Engineer specialized in textile processes and technologies
- Product Engineer at Firstvision Technologies SL
- Researcher at RFEMC group
- Lecturer in undergraduate and postgraduate university studies related to Engineering
- Graduate in Industrial Technologies Engineering from the Polytechnic University of Catalonia
- Master's Degree in Industrial Engineering

Ms. Ruiz Caballero, Ainhoa

- Specialist in the sports textile industry
- Commercial team leader of technical textile products for extreme sports at McTrek Retail GmbH Aachen
- Technician specialized in textile products Hightech for high mountain at McTrek Outdoor Sports GmbH Aachen
- Degree in Political Science and Law from the Polytechnic University of Catalonia
- Master's Degree in European Union by the European Institute of Bilbao

Ms. Galí Pérez, Susan

- Expert in Industrial Pattern Making and Fashion
- Responsible of management and production of fashion and luxury garments collections at Yolancris
- Responsible for the management and production of fashion, accessories and children's wear collections at Mandragora
- Designer and dressmaker of lingerie and corsetry
- Handcrafted and tailor-made dressmaker
- Designer and producer of stage costumes for theater companies
- Lecturer in courses related to fashion
- Industrial and Fashion Pattern Making Technician
- Postgraduate in Advanced and Creative Patternmaking

A unique, key, and decisive educational experience to boost your professional development"

05

Structure and Content

The syllabus of this program is composed of 10 modules with which the engineer will delve into the most up-to-date ins and outs of Textile Engineering applied to different industries, with special emphasis on the fashion industry. The didactic materials accessible during the duration of this Professional Master's Degree are available in a variety of formats such as an explanatory video, an interactive summary and self-assessment tests. With this, TECH's goal is to offer to its students 100% online learning, based on the personal and academic requirements of each student.

This Professional Master's Degree has a program of studies designed by the best experts in the area of Textile Engineering, who will provide you with the most complete knowledge in this field"

Module 1. Fibers and Yarns for Textile Product Design

1.1. Textile Fibers
- 1.1.1. Nature of Textile Fibers
- 1.1.2. High performance fibers
- 1.1.3. Identification, classification and description of textile fibers
- 1.1.4. Physical and chemical morphology of textile fibers and their specific characteristics

1.2. Textile fiber obtaining methods
- 1.2.1. Methodology and specific technologies for the production of fibers according to their nature
- 1.2.2. Physical Method
- 1.2.3. Chemical Method

1.3. Industrial processes in yarn manufacturing
- 1.3.1. The carding process and the obtaining of nappa
- 1.3.1. The steps of drafting and determination of parameters
- 1.3.2. Spinning types in the industrial process

1.4. Innovations in the finishing process during fiber extraction
- 1.4.1. Types of fiber finishes and their function
- 1.4.2. Application and functionality of microcapsules in the spinning process
- 1.4.3. Innovations in the finishing process during fiber extraction

1.5. Innovations in the finishing process during yarn manufacturing
- 1.5.1. Application of finishes during the different industrial steps
- 1.5.2. Transformation of basic yarn characteristics with the application of finishes
- 1.5.3. Specific applications and techniques for intrinsically modified yarns

1.6. High performance fibers
- 1.6.1. Specifications and characteristics of high mechanical performance fibers
- 1.6.2. Specifications and characteristics of high thermal performance fibers
- 1.6.3. Innovations in the field of nanofibers and biofibers

1.7. Advanced techniques in spinning processes to obtain yarns. New fiber developments
- 1.7.1. Innovations in modified natural fiber yarns
- 1.7.2. New natural textile fibers of recent discovery and/or recovery of their use in industry
- 1.7.3. Technological innovations for the spinning of staple, regenerated and recovered fibers

1.8. Specific wool fiber processes and spinning processes
- 1.8.1. The wool cleaning process and its environmental problems
- 1.8.2. Spinning processes of wool fibers
- 1.8.3. Specific applications and techniques in the use of wool as fiber

1.9. Fancy yarns for fashion and home textile applications
- 1.9.1. Process of obtaining fancy yarns
- 1.9.2. Applications of fancy yarns in the fashion industry. Examples:
- 1.9.3. Applications of fancy yarns in the home textile sector. Examples:

1.10. Smart Yarns (Smart Yarns)
- 1.10.1. Types of smart yarns
- 1.10.2. Smart yarn applications in industrial sectors
- 1.10.3. High-performance technologies and applications with intelligent yarns

Module 2. Textile Structures of Openwork, Mesh and Non-Woven Fabrics

2.1. Textile structures
- 2.1.1. Basic characteristics. Technologies and methods
- 2.1.2. Mechanical characteristics. Methods and results
- 2.1.3. Chemical characteristics. Methods and results

2.2. Methods of obtaining openwork textile structures. Analysis
- 2.2.1. Looms and their design
- 2.2.2. Textile structures of openwork. Analysis and Design
- 2.2.3. Fabrics and Jacquard technology. Identification and analysis

2.3. Methods used to obtain mesh or knitted textile structures. Analysis
- 2.3.1. Processes and weaving looms. Identification and classification
- 2.3.2. Mesh fabrics. Characteristics and structural parameters
- 2.3.3. Mesh structures and range of technical applications according to the technology used. Identification

2.4. Methods used to obtain nonwoven fabrics. Analysis
- 2.4.1. Nonwoven fabrics. Key Features
- 2.4.2. Nonwoven fabric forming and processing technologies
- 2.4.3. Technical application ranges for nonwoven fabrics

2.5. Innovations in the industrial sector of weaving technologies
- 2.5.1. New machinery developments in the last decades for the design of openwork fabrics
- 2.5.2. Openwork fabrics. Multi-sectoral approach within the industry
- 2.5.3. Sustainability. Producers of openwork textiles, utilization of pre-consumer remnants

2.6. Innovations in the industrial sector of netting technologies
- 2.6.1. Changes and innovations in netting machinery
- 2.6.2. Hightech applications of mesh structures in highly complex industrial sectors
- 2.6.3. Adaptation of netting industries to environmental requirements

2.7. Development and technological innovation in the field of nonwovens
- 2.7.1. Development of highly specific machinery for the utilization of leftovers
- 2.7.2. Nonwovens as a solution for the adaptation and transformation of the textile industry
- 2.7.3. Hightech applications of nonwovens in complex and advanced technology sectors

2.8. Design of openwork textile structures
- 2.8.1. Parameter settings for designing openwork fabrics
- 2.8.2. Determination of applications for specific designs of openwork
- 2.8.3. Recirculating design of openwork textile structures
  - 2.8.3.1. Key aspects for reintroducing textiles back into the value chain

2.9. Design of textile mesh structures
- 2.9.1. Setting the parameters for designing mesh fabrics
- 2.9.2. Determination of applications for specific mesh designs
- 2.9.3. Recirculating design of textile mesh structures
  - 2.9.3.1. Key aspects for reintroducing textiles back into the value chain

2.10. Design of nonwoven fabrics
- 2.10.1. Parameter settings for designing nonwoven fabrics
- 2.10.2. Determination of applications for specific nonwoven fabrics designs
- 2.10.3. Recircular design of nonwoven fabrics
  - 2.10.3.1. Key aspects for reintroducing textiles back into the value chain

Module 3. Preparation Processes in Finishing and Sizing, Dyeing and Printing

3.1. Dyeing, finishing and printing preparation processes
- 3.1.1. Classification of textile finishing. Differentiation according to type
- 3.1.2. Ecofinishing operations within the production line for textile products of textile products
- 3.1.3. Processes for the preparation of fabrics intended for industrial garment manufacturing and associated sub-processes

3.2. Products and processes used in sizing. Classification
- 3.2.1. Washing and optical brightening agents
- 3.2.2. Additives, teas and softeners according to their nature
- 3.2.3. The gluing process and its function

3.3. Products and processes for crease-resistant, shrink-resistant and stain-resistant coatings
- 3.3.1. Processes on cotton, viscose and wool fabrics
- 3.3.2. Water- and oil-repellent (stain-resistant) finishes
- 3.3.3. Coating Wash and Wear

3.4. Waterproof, water-repellent and flame-retardant coatings
- 3.4.1. Waterproof coatings on textile substrates. Applications
- 3.4.2. Water repellent coatings on textile substrates. Applications
- 3.4.3. Waterproof coatings on textile substrates. Applications

3.5. Antiseptic and anti-static preparations
- 3.5.1. Fungicide and anti-mildew preservatives. Products
- 3.5.2. Insecticide preservatives. Products
- 3.5.3. Anti-static agents. Classification

3.6. Matting, fulling and charring operations
- 3.6.1. Process and products for matting
- 3.6.2. Fulling process and products
- 3.6.3. Charring process and products

3.7. Complementary operations to finishing
- 3.7.1. Drying operations
- 3.7.2. Transitory and permanent tissue widening operations
- 3.7.3. Condensation operations

3.8. Chemical and mechanical finishing
- 3.8.1. Modifying, additive, waterproof, water-repellent, flame-retardant, fire-retardant, antiseptic and antiseptic finishes
- 3.8.2. Fabric finishing
  - 3.8.2.1. Calendering, palmering, pressing, steaming, decatizing, harnessing, shearing, shrink finishing, pleating, folding and Pilling elimination
- 3.8.3. Differences between sizing and finishing of protein fibers, cellulosic fibers and synthetic fibers

3.9. Processes and operations in dyeing
- 3.9.1. Preparation of substrates for dyeing
- 3.9.2. Dyeing products and processes depending on the fiber being treated
- 3.9.3. Environmental impact of dyeing processes and improvement innovations

3.10. Processes and operations in textile printing
- 3.10.1. Types of textile printing
- 3.10.2. Adequacy of textile printing according to textile substrate
- 3.10.3. Printing innovations over the last decades

Module 4. Characterization and Evaluation of Fabric Quality

4.1. Structure and Properties of Fabrics
- 4.1.1. Fabrics as anisotropic materials
- 4.1.2. Continuous models
  - 4.1.2.1. Fabrics as a continuous material without regard to microstructure
- 4.1.3. Discontinued models
  - 4.1.3.1. Fabric analysis based on the information of its components

4.2. Categories of fabric properties
- 4.2.1. Textile substrate structural parameters
- 4.2.2. Functional parameters on the properties of fabric utilization
- 4.2.3. Parameters of manufacturability suitable for industrial manufacturing operations

4.3. Behavior of textiles against fluids
- 4.3.1. Specific properties with respect to air permeability
- 4.3.2. Resistance to water infiltration
  - 4.3.2.1. Tests under hydrostatic pressure and water resistance
- 4.3.3. Water steam permeability and moisture resistance of fabrics

4.4. Performance of textiles in use
- 4.4.1. Pilling effect on the surface of the tissues and evaluation methods
- 4.4.2. Spinning parameters and fabric parameters. Effects on the wear behavior of fabrics
- 4.4.3. Abrasion and wrinkle resistance. Methods of Analysis
- 4.4.4. Thermal conductivity of fabrics and evaluation tests

4.5. Fabric manufacturability. The success of industrial manufacturing operations
- 4.5.1. Textile manufacturability evaluation equipment and tests
- 4.5.2. Behavior of textiles when cut, sewn and ironed
- 4.5.3. Seam strength. Tensile and tearing methods

4.6. Other measures of seam behavior in fabrics
- 4.6.1. Global standards applicable in the determination of seams
- 4.6.2. Burst strength and measurement tests
- 4.6.3. Fabric compression force and its influence on the human body

4.7. Fabric Hand. Interpretation by changing socio-cultural patterns
- 4.7.1. Subjective measurement of textiles
- 4.7.2. Evaluation according to geographic and interpretation variability
- 4.7.3. Kawabata method. Objective evaluation of a traditionally subjective technique

4.8. Mechanical properties of fabrics
- 4.8.1. Tensile strength, measuring equipment and parameters
- 4.8.2. Flexural strength and its measurements
- 4.8.3. Surface analysis. Coefficient of friction and roughness
- 4.8.4. Thickness and grammage calculations

4.9. Static sag of fabrics
- 4.9.1. Principles and objectives of the test
- 4.9.2. Types of drapometers for measurement
- 4.9.3. Analytical study of the fall. Indicators

4.10. Other textile analysis methods
- 4.10.1. Compression module and voluminosity of fabrics
- 4.10.2. Thermal module. Fabric-human body heat transfer
- 4.10.3. Deformation of fabrics. Flexural module

Module 5. Fashion Textile Product Design

5.1. Textile sector change. Fashion trends
- 5.1.1. 19th Century The golden century of textiles in the West
- 5.1.2. 20th Century The decline and the influence of the world wars on fashion and the textile industry
- 5.1.3. 21st Century Globalization and the evolution of the textile sector. Limitations and new adjacent challenges

5.2. Fashion Advanced methods
- 5.2.1. Western vision of fashion
- 5.2.2. Breaking stereotypes and transgression. Openness to new fashion methods and concepts
- 5.2.3. 21st century societies and the adaptability of fashion to new customs and uses

5.3. Sociology of fashion
- 5.3.1. The role of fashion in society
- 5.3.2. Contributions of fashion to human behavior
- 5.3.3. The role of fashion as an agent of social stratification

5.4. Materials for the design of textile products in the fashion sector
- 5.4.1. Classification of textile materials according to the specifications and properties for each product
- 5.4.2. Trimmings and beadwork. Characteristics and limitations
- 5.4.3. Fashion accessories. Selection criteria beyond the aesthetic function

5.5. Fashion design. Technical approach
- 5.5.1. Elementary components of a fashion collection
- 5.5.2. Distinction and classification of fashion collections. Fashion at different scales
- 5.5.3. Determining factors in a fashion collection destined for production

5.6. Technical data sheets for a fashion collection
- 5.6.1. Artistic package
  - 5.6.1.1. Sketching, styling, Moodboards, collection inspiration and colors
- 5.6.2. Technical design package
  - 5.6.2.1. Descriptive drawing and technical drawing data sheets: measurements and seams
- 5.6.3. Pattern package
  - 5.6.3.1. Basic pattern data sheets: transformation, industrialization and scaling

5.7. Comprehension and development of collection production
- 5.7.1. Determination and measurement of the pattern
- 5.7.2. Technical aspects of cutting and its multiple systems
- 5.7.3. Preparation for tailoring
  - 5.7.3.1. Sewing symbology data sheets, list of phases and production chart

5.8. The production of a fashion collection. Preparation and validation
- 5.8.1. Development and validation of prototypes, modifications and specifications
- 5.8.2. Staging and Shooting. Important Aspects
- 5.8.3. Collection evaluation and conclusion of the fashion Book

5.9. The production of a fashion collection. Key Criteria
- 5.9.1. Determination of the production order. Selection Criteria
- 5.9.2. Selection criteria Limitations and production monitoring criteria
- 5.9.3. External production. Relevant issues and criteria

5.10. Preparing the collection for sale
- 5.10.1. Determination of final results
- 5.10.2. Criteria for labeling and packaging selection
- 5.10.3. Distribution logistics. Logical approaches

Module 6. Pattern Making Techniques in the Fashion Industry

6.1. Pattern-making methods
- 6.1.1. Pattern making on mannequins. Tailor-made pattern making
- 6.1.2. Industrial pattern making. Pattern making techniques according to different academies
- 6.1.3. Specific pattern making. Corsetry, tailoring, lingerie and knitwear

6.2. Pattern making techniques on mannequins
- 6.2.1. Elaboration of patterns according to the Moulage technique
- 6.2.2. Pattern making according to Deppari's technique
- 6.2.3. Pattern making according to the Eometric Technique

6.3. Men's industrial pattern making
- 6.3.1. Determination of measurements and distribution of sizes according to size charts
- 6.3.2. Elaboration of basic patterns: body, sleeves, pants and outerwear
- 6.3.3. Transformation and industrialization techniques of male patterns

6.4. Industrial pattern making for women
- 6.4.1. Determination of measurements and distribution of sizes according to size charts
- 6.4.2. Elaboration of basic patterns: body, sleeves, skirt, pants and outerwear
- 6.4.3. Techniques of transformation and industrialization of female patterns

6.5. Industrial pattern making for children
- 6.5.1. Determination of measurements and distribution of sizes according to size charts
- 6.5.2. Elaboration of basic patterns for babies and children from 0 to 12 years old
- 6.5.3. Techniques for the transformation and industrialization of children's patterns

6.6. Digitalization and scaling of patterns
- 6.6.1. Automatic pattern digitizing systems
- 6.6.2. Manual and industrial systems for pattern scaling
- 6.6.3. Calculation and distribution of measurements in the standard scaling process

6.7. Sizing theory
- 6.7.1. Sizing according to the type of fabrics
- 6.7.2. Manual and automatic methodologies for sizing
- 6.7.3. Sizing calculation according to fabric performance parameters

6.8. Cutting methodologies and systems
- 6.8.1. Fabric cutting. Production plan
- 6.8.2. Manual and automatic tools for the fabric cutting process
- 6.8.3. Preparation and distribution of cutting packs prior to the manufacturing process

6.9. Production systems in the garment industry
- 6.9.1. Manual production systems in the garment industry
- 6.9.2. Automatic and synchronized production systems in the garment industry
- 6.9.3. Unit production systems in the garment industry

6.10. Quality control in the garment industry
- 6.10.1. Study of the technical quality control method
- 6.10.2. International standards and protocols of action
- 6.10.3. Principles of quality control in clothing manufacturing

Module 7. Manufacture of Textile Products for Fashion Use

7.1. The garment industry
- 7.1.1. Structure of the garment industry
- 7.1.2. Classification of sectors within the garment industry
- 7.1.3. Products and industrial organization in the garment industry. Types

7.2. The sewing process. Types of seams
- 7.2.1. Classification of seams according to typology
- 7.2.2. Conventional seams with traditional machinery
- 7.2.3. New types of textile joints. Technological Advances

7.3. Conventional sewing. Machinery and needle types
- 7.3.1. Classification of sewing machinery according to applications and processes
- 7.3.2. Needle typology. Classification, definition and uses according to garment type
- 7.3.3. Preparation and finishing machinery in garment making

7.4. Materials in the manufacturing process
- 7.4.1. Stitches and sewing symbologies in the textile manufacturing process
- 7.4.2. List of phases and time calculations
- 7.4.3. Process replicability. Quality control principles

7.5. Organization and management of the cutting and sewing industry
- 7.5.1. Management principles within the industry
- 7.5.2. Design, marketing and financial department. Functionality and tasks
- 7.5.3. Production and operations departments. Functionality and tasks

7.6. Finishing in fashion garments
- 7.6.1. Cleaning and ironing operations. Typology
- 7.6.2. Distinction, design and methods in labeling operations and certifications
- 7.6.3. Packaging. Criteria and innovations in the packaging and wrapping of garments

7.7. Manufacture of conventional fashion garments
- 7.7.1. Methodology of the knitwear manufacturing process
- 7.7.2. Methodology of the manufacturing process in openwork fabrics
- 7.7.3. Methodology of the sewing process in other specific fabrics
  - 7.7.3.1. Non-woven fabrics, quilted fabrics, linings, and printed fabrics

7.8. Manufacture of specific or luxury garments
- 7.8.1. Methodology of the knitwear manufacturing process
- 7.8.2. Methodology of the manufacturing process in openwork fabrics
- 7.8.3. Methodology of the sewing process in other specific fabrics
  - 7.8.3.1. Non-woven fabrics, quilted fabrics, linings, and printed fabrics

7.9. Manufacture of knitted garments
- 7.9.1. Methodology of the knitwear manufacturing process
- 7.9.2. Methodology of the manufacturing process in openwork fabrics
- 7.9.3. Methodology of the sewing process in other specific fabrics
  - 7.9.3.1. Non woven fabrics, quilting, lining, and printing

7.10. Fast Fashion vs. Slow Fashion, Sectoral transformation. Paradigm shift in the garment industry
- 7.10.1. Organization of the garment industry focused on Fast Fashion
- 7.10.2. Organization of the garment industry according to Slow Fashion
- 7.10.3. Industry adaptation to the new paradigm. Challenges, limitations and proposals

Module 8. Development of Textile Applications for Different Industries. Multisectorial Approach

8.1. Textiles in the construction sector
- 8.1.1. Fiber-reinforced cements
- 8.1.2. Fiberglass applications in construction
- 8.1.3. The uses of synthetic fibers and ceramics in construction

8.2. Use of textiles in architecture and construction
- 8.2.1. Cements reinforced with textile structures
- 8.2.2. Applications of mesh structures in construction
- 8.2.3. Textile architecture and tensile structures. Tensile materials

8.3. Nonwoven structures used in the construction industry
- 8.3.1. Use of nonwoven fabrics for construction purposes. Methodology and technique
- 8.3.2. The incorporation of nonwoven fabrics in construction. Limitations and problems
- 8.3.3. Applications of nonwoven fabrics intended for construction and public works

8.4. Composed materials: high potential as reinforcements in architecture and construction
- 8.4.1. Composed materials at a global level. Situation and outlook
- 8.4.2. Types of composed materials. Definition and Classification
- 8.4.3. Composed materials destined for construction. Specific Applications

8.5. The construction sector, link with the textile sector. News and trends
- 8.5.1. Trends in production and markets
- 8.5.2. Technological advances in the sector and in the implementation of 4.0 industry
- 8.5.3. Prospects for improvement in the sector
  - 8.5.3.1. Solutions to the climate crisis, new needs and requirements

8.6. Development of textiles for the aeronautics and aerospace sector
- 8.6.1. Global analysis of the aeronautical and aerospace sector
  - 8.6.1.1. The market for textiles in the aeronautical and aerospace sector
- 8.6.2. Application of composed materials in the aeronautical and aerospace sector
- 8.6.3. Thermoplastics and carbon fibers for the aeronautical and aerospace sector

8.7. Development of textiles for the automotive sector
- 8.7.1. Global analysis of the automotive sector
  - 8.7.1.1. The textile market within the automotive sector
- 8.7.2. Application of textile materials within the automotive industry
- 8.7.3. New developments in textile structures and nonwoven fabrics for the automotive sector

8.8. Home textiles. Use of textiles in interior design
- 8.8.1. Global analysis of the interior design industry
  - 8.8.1.1. The textile market within the interior design industry
- 8.8.2. Indoor and outdoor textile applications
- 8.8.3. Advanced trends in interior decoration and interior design with textiles

8.9. Geotextiles and geomembranes
- 8.9.1. The geotextile and geomembrane manufacturing industry. Global analysis
  - 8.9.1.1. The textile market within the geotextile and geomembrane manufacturing industry
- 8.9.2. Applications of geomembranes and geotextiles
- 8.9.3. Innovations in the field of geotextiles and geomembranes

8.10. Trends in the transversality of the textile sector. New approaches and new markets
- 8.10.1. Analysis of industrial sectors using textiles
- 8.10.2. Analysis of textile products with use and application in different industrial sectors. Problems and limitations of the textile sector in this field
- 8.10.3. Innovations and adaptability of the textile sector to the new demands and needs of the market

Module 9. Development of Textile Applications for the Health Sector

9.1. Classification of textiles according to their use in the healthcare sector
- 9.1.1. Textile structures for care and hygiene
- 9.1.2. Textile structures intended for the protection of healthcare professionals
- 9.1.3. Antibacterial, antimicrobial textile structures for main use in operating rooms and post-operative rooms

9.2. Traditional uses of textiles in the healthcare sector
- 9.2.1. Presence of textiles in medicine
- 9.2.2. Adaptations and innovations of textiles according to needs in the medical sector
- 9.2.3. Textiles for medical use. Vision for the future

9.3. Textile structures for surgical uses
- 9.3.1. Special yarns
- 9.3.2. Special fibers
- 9.3.3. Special coatings

9.4. Smart fabrics. Uses in the social and health care field
- 9.4.1. Classification of vulnerable social and health groups
- 9.4.2. Socio-health centers. Uses, needs and concerns
- 9.4.3. Smart textile solutions for caregiving

9.5. Textile sensors for healthcare applications
- 9.5.1. Electronic smart textiles and their use in health care
- 9.5.2. Limitations of electronic smart fabrics
- 9.5.3. Use of e-textiles for the healthcare environment

9.6. Medicine and textiles. Medical applications
- 9.6.1. Textile applications as medicine. Uses and requirements
- 9.6.2. Real examples of medicines in textile format
- 9.6.3. Innovations in the use of new textiles as medicines

9.7. Technologies and development of textile structures and nonwoven fabrics for hygiene and care purposes
- 9.7.1. Textile structures according to technology used
- 9.7.2. Classification of textile structures according to their uses in the hygienic and care field
- 9.7.3. Correct recycling of textile structures focused on care and hygiene

9.8. Development of nonwoven fabrics for healthcare applications
- 9.8.1. Development of antibacterial and antimicrobial nonwovens for the healthcare sector
- 9.8.2. Nonwoven fabrics for operating room and postoperative use
- 9.8.3. Development of drug-releasing membranes

9.9. Protective fabrics in the healthcare field
- 9.9.1. COVID-19 phenomenon and the search for protective textile materials
- 9.9.2. Traditional protective fabrics in the healthcare field
- 9.9.3. Innovations in protective fabrics in the healthcare field. Post-COVID reflections

9.10. Materials and trends in medicine using textiles
- 9.10.1. New fibers and their use in medicine
- 9.10.2. Therapeutic and rehabilitation textiles
- 9.10.3. Biomaterials and regenerative medicine

Module 10. Sustainability in the Textile Industry

10.1. Sustainability in the textile industry. Consumption and recycling
- 10.1.1. The energy consumption of textiles
- 10.1.2. Water consumption in the development of textiles
- 10.1.3. Properties, durability and recycling issues

10.2. Environmental impact of textiles
- 10.2.1. Environmental impact during the production process
- 10.2.2. Environmental impact during the use of textiles
- 10.2.3. Environmental impact during the post-consumer phase

10.3. Environmental impact of the fashion industry
- 10.3.1. Excess production and high stocks. Problems
- 10.3.2. Compulsive consumption of clothing in society and the problem of recycling
- 10.3.3. Lack of legislation and selective collection of post-consumer textiles

10.4. Application of new criteria in consumption and post-consumption of textiles
- 10.4.1. The textile problem
- 10.4.2. International regulations
- 10.4.3. New trends and challenges post 2025. Forecast

10.5. Sustainable development and circular economy
- 10.5.1. Implementation of circular economy
- 10.5.2. Critical services, barriers and risks for the transition from linear to circular
- 10.5.3. Sustainable development goals

10.6. Environmental footprints of different textile compositions
- 10.6.1. The environmental footprint of polyester
- 10.6.2. Organic cotton as a solution to environmental problems
- 10.6.3. Coarse fibers as new, resistant and biodegradable materials

10.7. Sustainable applications from the use of new fibers
- 10.7.1. PLA or polylactic acid as a plastic substitute
- 10.7.2. New applications from coconut and coconut fiber
- 10.7.3. The potential of corn fibers

10.8. Biomaterials to minimize environmental impact
- 10.8.1. Properties and characterization of biomaterials
- 10.8.2. Use of biomaterials in the textile industry
- 10.8.3. Biomaterials limitations

10.9. Sustainability of Fast Fashion
- 10.9.1. The logistics and value chain of the Fast Fashion model
- 10.9.2. Optimization, operations control and cost minimization
- 10.9.3. Environmental and Social Impacts of Fast Fashion Methods

10.10. Sustainability of Slow Fashion
- 10.10.1. The potential of second-hand fashion
- 10.10.2. Local consumption and local production. New consumption and production
- 10.10.3. New slow fashion trends. Synergies and limitations

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

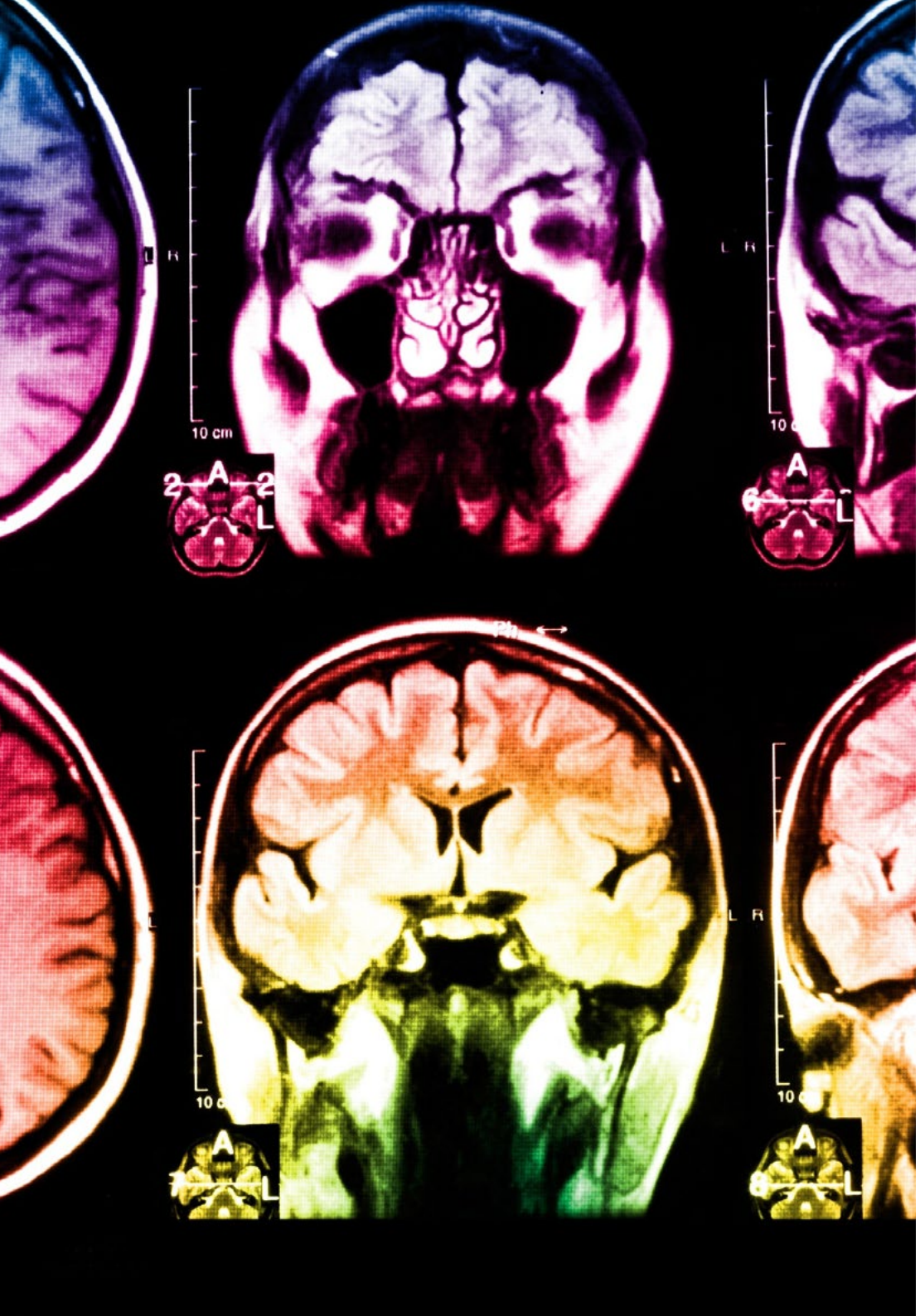
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 8 different teaching elements in each lesson.

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 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.

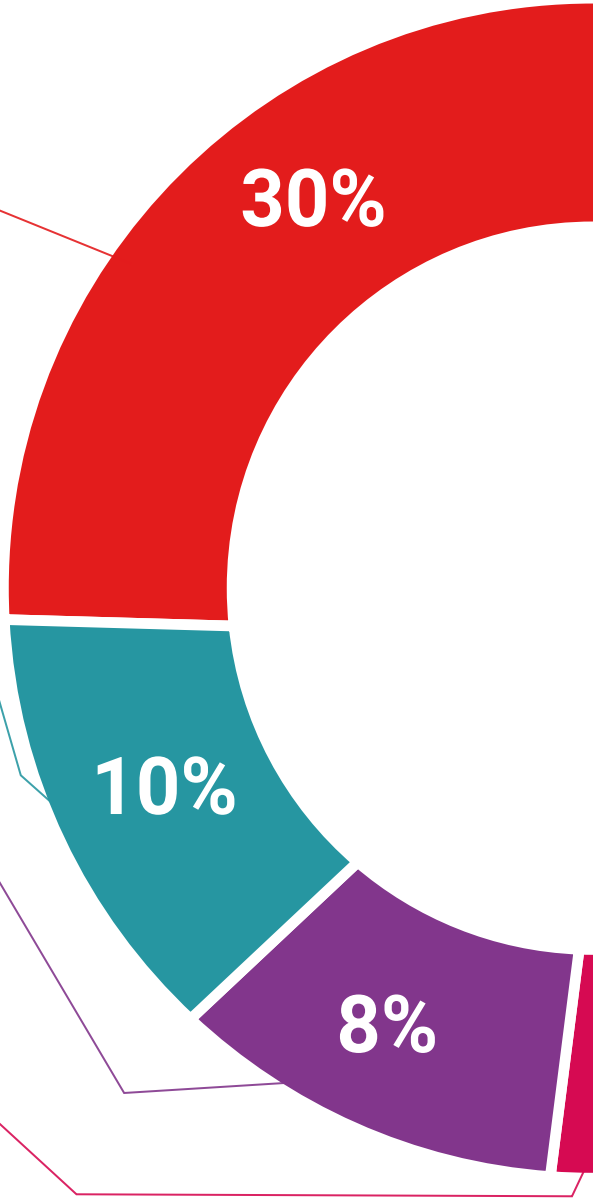
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

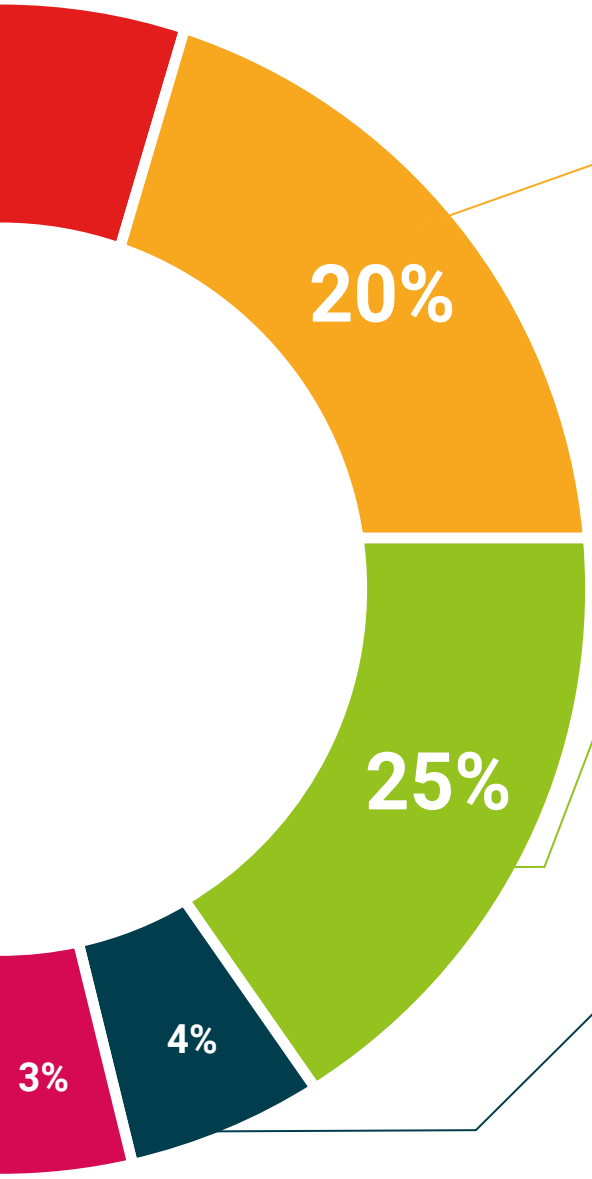
Practising Skills and Abilities

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.

07

Certificate

The Professional Master's Degree in Textile Engineering guarantees students, in addition to the most rigorous and up-to-date education, access to a Professional Master's Degree diploma issued by TECH Technological University.

Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork"

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

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

The certificate issued by **TECH Technological University** will reflect the qualification obtained in the Professional Master's Degree, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Professional Master's Degree in Textile Engineering**

Official Nº of Hours: **1,500 h.**


tech technological university

Awards the following

CERTIFICATE

to

Mr./Ms. _____, with identification number _____.

For having successfully passed and accredited the following program

PROFESSIONAL MASTER'S DEGREE

in

Textile Engineering

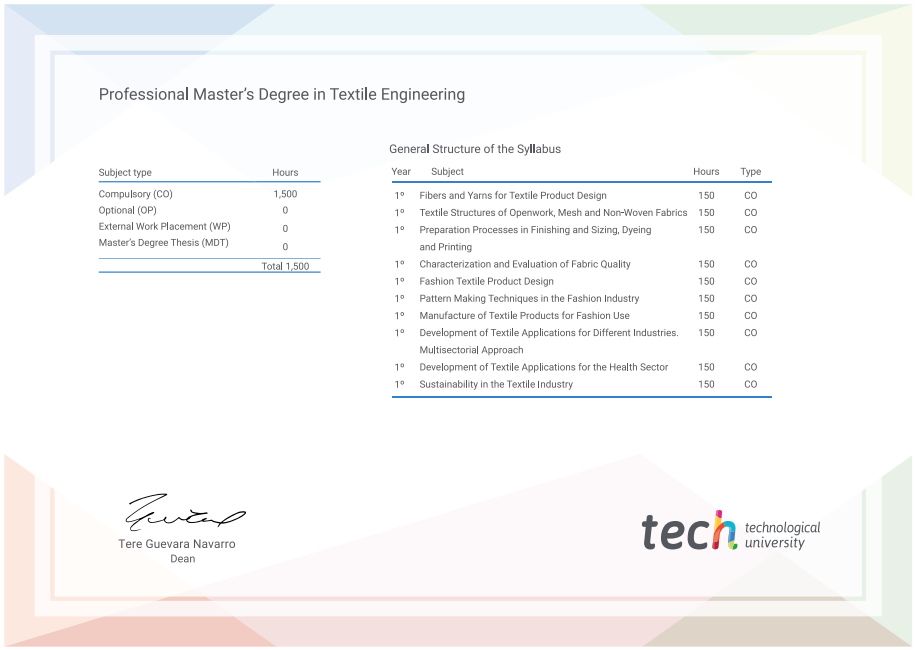
This is a qualification awarded by this University, equivalent to 1,500 hours, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

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 Textile Engineering

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	Fibers and Yarns for Textile Product Design	150	CO
1º	Textile Structures of Openwork, Mesh and Non-Woven Fabrics	150	CO
1º	Preparation Processes in Finishing and Sizing, Dyeing and Printing	150	CO
1º	Characterization and Evaluation of Fabric Quality	150	CO
1º	Fashion Textile Product Design	150	CO
1º	Pattern Making Techniques in the Fashion Industry	150	CO
1º	Manufacture of Textile Products for Fashion Use	150	CO
1º	Development of Textile Applications for Different Industries. Multisectorial Approach	150	CO
1º	Development of Textile Applications for the Health Sector	150	CO
1º	Sustainability in the Textile Industry	150	CO

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*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.

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Professional Master's Degree

Textile Engineering

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

Professional Master's Degree

Textile Engineering

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