Postgraduate Certificate
Computer Structure and Technology

tech technological university

Postgraduate Certificate

Computer Structure
and Technology

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

Website: **www.techtitute.com/in/information-technology/postgraduate-certificate/computer-structure-technology**

Index

01

Introduction

IT Engineers and other professionals who wish to work in this broad field need to know the basics to help them understand more complex situations. Understand the structure of computers is essential for delve into the IT field. This program will allow professionals to acquire the necessary knowledge to develop their work in the IT field.

IT professionals must continue their specialization to adapt to new developments in this field"

The teaching team of this Postgraduate Certificate in Computer Structure and Technology will made a careful selection of each of the topics of this program in order to offer the students a study opportunity as complete as possible and always related to current events.

The program of this Postgraduate Certificate focuses on the history of computers to introduce students to arithmetic or classical concepts of logic design. The basic operation of a computer, the internal and external memory or the input and output ports, as well as the structure of the processor are key elements of this specialization. In addition, aspects such as the design and evolution of computers or the different processors will also be covered in this program.

This Postgraduate Certificate provides students with specific tools and skills to successfully develop their professional activity in the broad environment of Computer Structure and Technology; it also works with key skills such as knowledge of the reality and daily practice in different IT areas and develops responsibility in the monitoring and supervision of their work, as well as specific skills within this field.

Additionally, as it is a 100% online program, the student is not constrained by fixed schedules or the need to move to another physical location, but can access the contents at any time of the day, balancing their professional or personal life with their academic life.

This **Postgraduate Certificate in Computer Structure and Technology** contains the most complete and up-to-date program on the market. Its most outstanding features are:

- Development of case studies presented by experts in IT Engineering
- The graphic, schematic, and 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
- Its special emphasis on innovative methodologies in Computer Structure and Technology
- Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- Content that is accessible from any fixed or portable electronic device with an Internet connection

This Postgraduate Certificate is the best investment you can make when choosing a refresher program to get up to date with the existing knowledge of Computer Structure and Technology"

This program comes with the best educational material, providing you with a contextual approach that will facilitate your learning.

Don't miss the opportunity to study this program in Design Methodology with TECH. It's the perfect opportunity to advance your career"

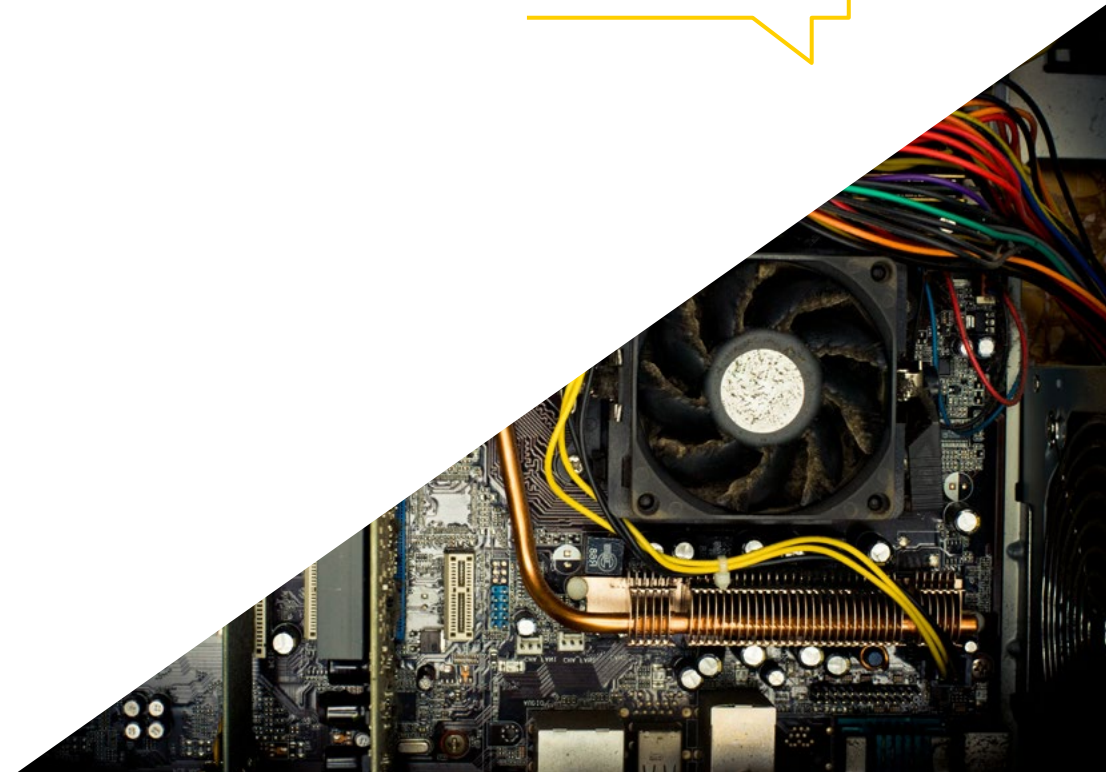*This 100% online Postgraduate Certificate will allow you to balance your studies with your professional work while increasing your knowledge in this field.*

The teaching staff includes a team of professionals from the field of design, who bring their experience to this specialization 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 immersive education programmed to learn in real situations.

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

02
Objectives

The Postgraduate Certificate in Computer Structure and Technology is designed to facilitate the performance of the professionals in this field to enable them to master the main developments in this IT field.

"

This is the best option to learn about the latest advances in Computer Structure and Technology"

General Objective

◆ Prepare scientifically and technologically, as well as to develop the professional practice of Computer Structure and Technology, with a transversal and versatile approach adapted to the new technologies and innovations in this field

" *Take the opportunity to learn about the latest advances in this field in order to apply it to your daily practice"*
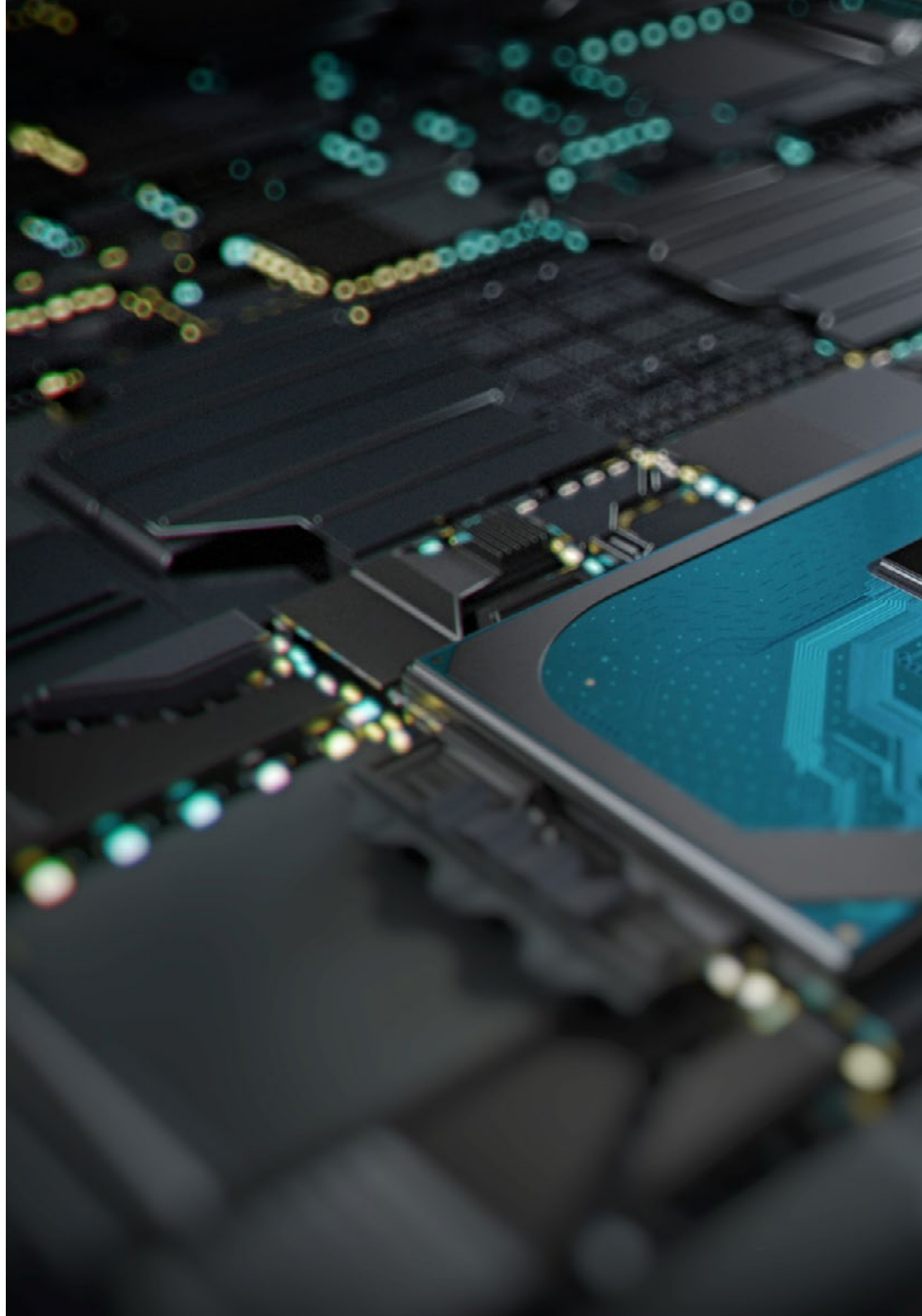
Specific Objectives

- Know the history of computers, as well as the main types of existing organizations and architectures
- Acquire the necessary knowledge to understand computer arithmetic and the basics of logic design
- Understand the operation and composition of a computer, from the different devices that compose it to the ways of interacting between and with them
- Learn the different types of memory (internal memory, cache memory and external memory), as well as the operation of input/output devices
- Understand the structure and operation of processors, as well as the operation of control units and micro-operations
- Learn the basics of machine instructions, types, assembly language and addressing
- Learn the fundamentals of computer design and evolution, including parallel architectures and levels of parallelism
- Understand how different ways of assessing the performance of a computer work, as well as the use of performance testing programs
- Understand the operation of the memory hierarchy, the different types of storage and input/output issues
- Learn the characteristics of different types of processors, such as segmented, superscalar, VLIW and vector processors
- Understand the operation of parallel computers, their motivation, performance and architecture
- Know the characteristics of computer interconnection networks and of multiprocessors

03
Structure and Content

The structure of the contents has been designed by the best professionals in the field of Computer Structure and Technology, with extensive experience and recognized prestige in the profession.
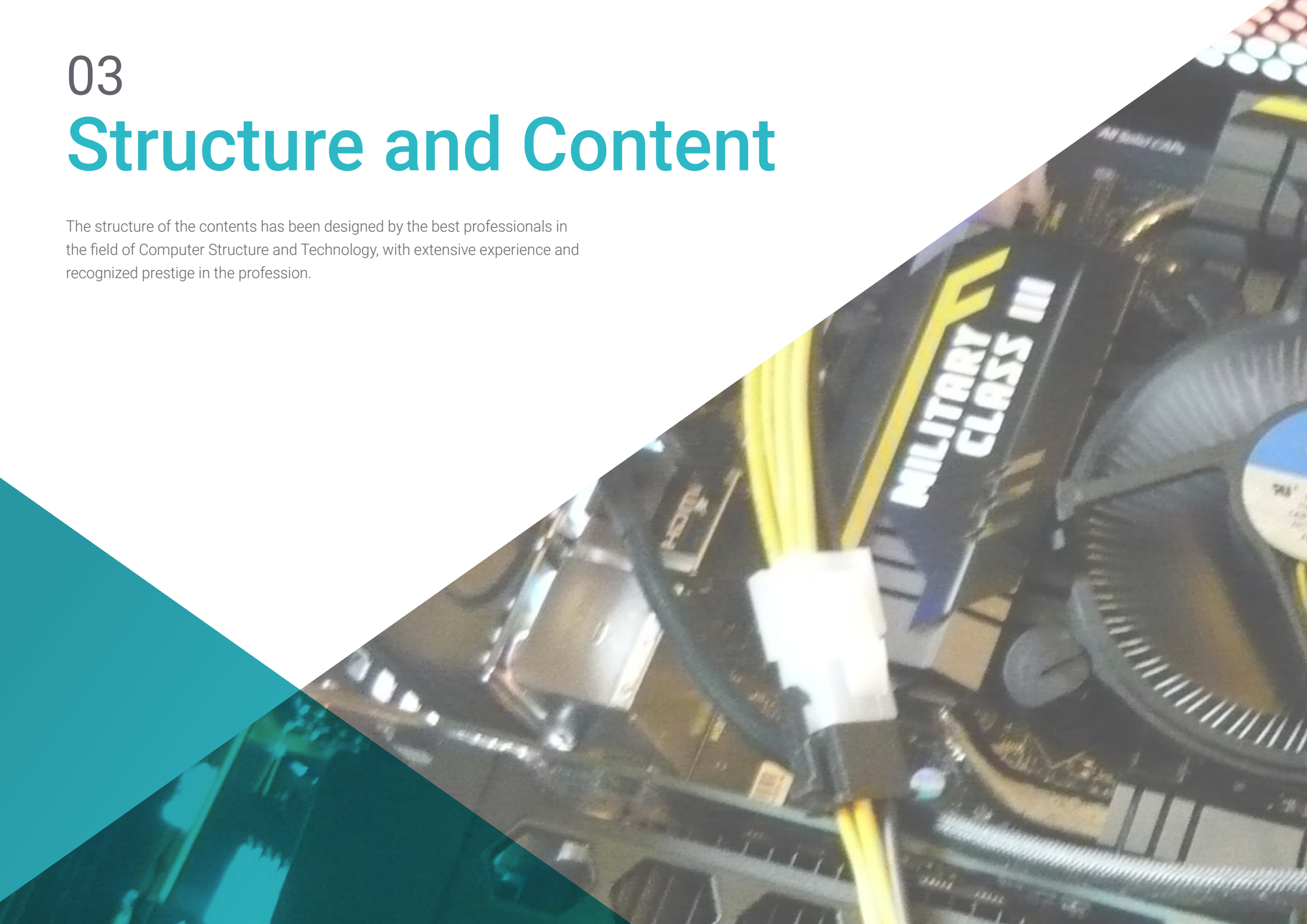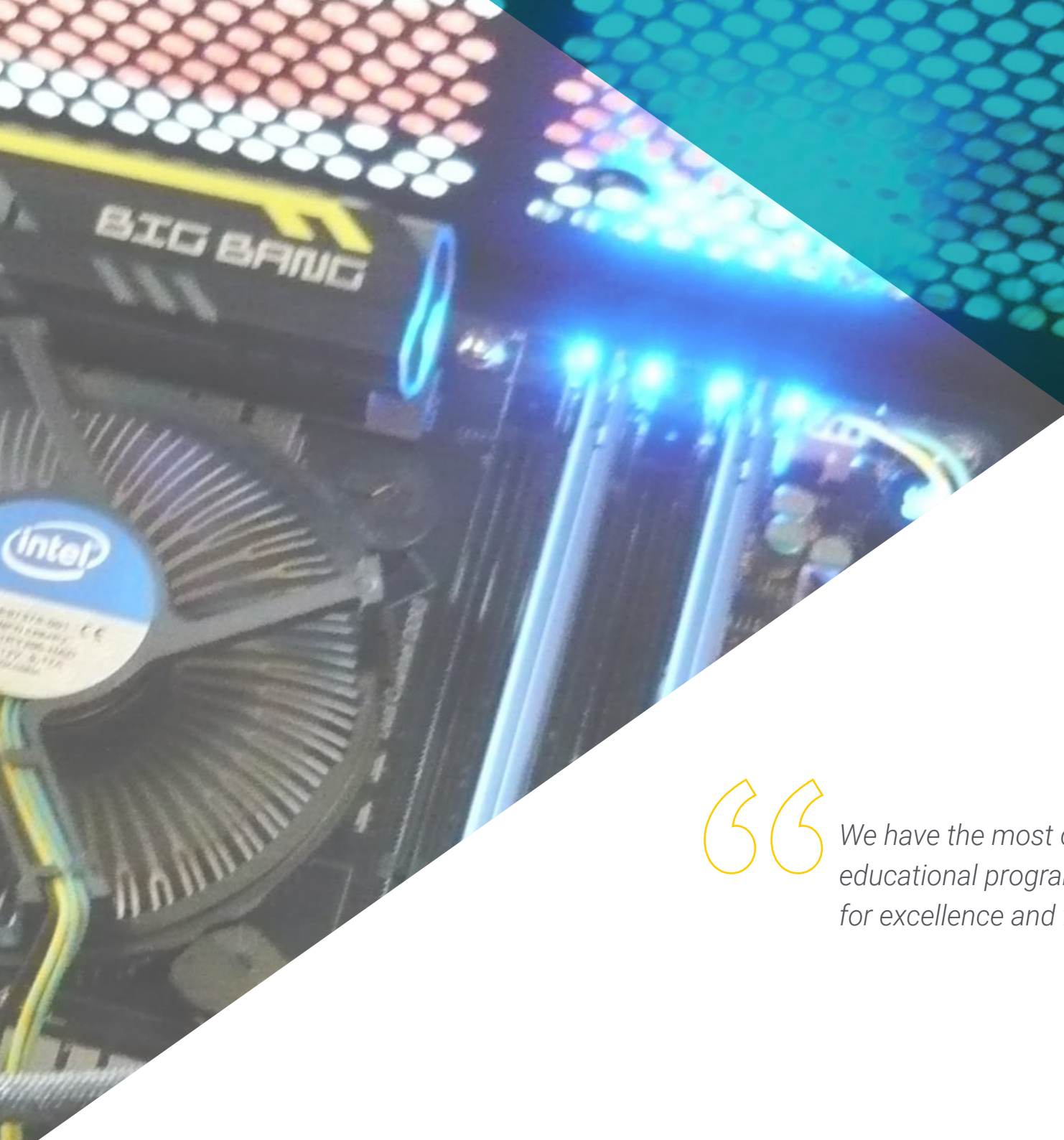
We have the most complete and up-to-date educational program on the market. We strive for excellence and for you to achieve it too"
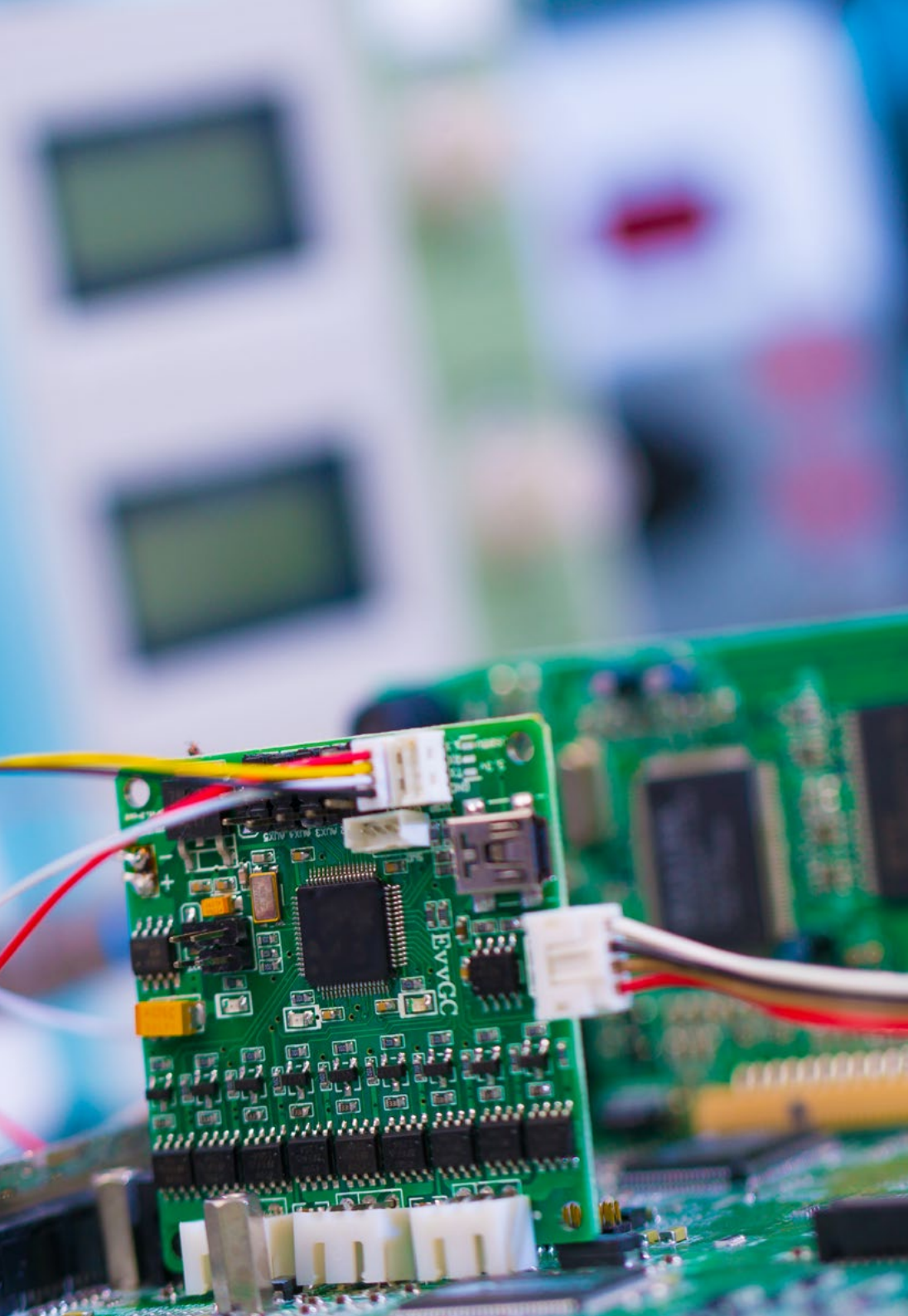
Module 1. Computer Technology

1.1. General Information and a Brief History of Computers

    1.1.1. Organization and Architecture

    1.1.2. Brief History of Computers

1.2. Computer Arithmetic

    1.2.1. The Arithmetic-Logic Unit

    1.2.2. Numbering Systems

    1.2.3. Integer Representation

    1.2.4. Arithmetic with Integers

    1.2.5. Floating Point Representation

    1.2.6. Floating Point Arithmetic

1.3. Classic Concepts of Logic Design

    1.3.1. Boolean Algebra

    1.3.2. Logic Gates

    1.3.3. Logical Simplification

    1.3.4. Combinational Circuits

    1.3.5. Sequential Circuits

    1.3.6. Concept of Sequential Machine

    1.3.7. Memory Element

    1.3.8. Types of Memory Elements

    1.3.9. Synthesis of Sequential Circuits

    1.3.10. Synthesis of Sequential Circuits with PLA

1.4. Basic Computer Organization and Operation

    1.4.1. Introduction

    1.4.2. Components of a Computer

    1.4.3. Operation of a Computer

    1.4.4. Interconnection Structures

    1.4.5. Interconnection with Buses

    1.4.6. PCI Bus

1.5. Internal Memory

    1.5.1. Introduction to Memory Systems in Computers

    1.5.2. Semiconductor Main Memory

    1.5.3. Correction of Errors

    1.5.4. Advanced DRAM Memory Organization

1.6. Input/Output

    1.6.1. External Devices

    1.6.2. Input/Output Modules

    1.6.3. Scheduled Input/Output

    1.6.4. Input/Output via Interrupts

    1.6.5. Direct Memory Access

    1.6.6. Input/Output Channels and Processors

1.7. from Machine Instructions: Features and Functions

    1.7.1. Characteristics of Machine Instructions

    1.7.2. Types of Operands

    1.7.3. Types of Transactions

    1.7.4. Assembly Language

    1.7.5. Address

    1.7.6. Formats of Instructions

1.8. Processor Structure and Operation

    1.8.1. Processor Organization

    1.8.2. Record Organization

    1.8.3. Training Cycle

    1.8.4. Instruction Segmentation

1.9. Cache and External Memory

    1.9.1. Basic Principles of Cache Memories

    1.9.2. Cache Design Elements

    1.9.3. Magnetic Disks

    1.9.4. RAID

    1.9.5. Optical Memory

    1.9.6. Magnetic Tape

2.10. Interconnection Networks and Multiprocessors

      2.10.1. Topology and Types of Interconnection Networks

      2.10.2. Switching in Interconnection Networks

      2.10.3. Flow Control in Interconnection Networks

      2.10.4. Routing in Interconnection Networks

      2.10.5. Memory System Coherence on Multiprocessors

      2.10.6. Multiprocessor Memory Consistency

      2.10.7. Multiprocessor Synchronization

This program will allow you to advance in your career comfortably"

Methodology

This program offers students a different way of learning. Our methodology follows a cyclical learning process: *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 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."*

You will have access to a learning system based on repetition, with natural and progressive teaching throughout the entire syllabus.

A learning method that is different and innovative

This TECH program is an intensive educational program, created from scratch, which presents the most demanding challenges and decisions in this field, both nationally and internationally. This methodology promotes personal and professional growth, representing a significant step towards success. The case method, a technique that lays the foundation for this content, ensures that the most current economic, social and professional reality is taken into account.

"

Our program prepares you to face new challenges in uncertain environments and achieve success in your career"

The case method has been the most widely used learning system among the world's leading Information Technology schools for as long as they have existed. 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 course, students 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.

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

Relearning Methodology

TECH effectively balances the Case Study methodology with a 100% online learning system based on repetition, which combines 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 prepare 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.

01 learning from evidence

02 relearning from evidence

08 competencies testing (retesting)

03 testing

07 case based learning through storytelling

04 learning from an expert

06 Von-Restorff effect

05 neurocognitive context dependent learning

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 prepared 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 education, 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 adapted in 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.

Practicing Skills and Abilities

They will carry out activities to develop specific competencies and skills in each thematic field. 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.

30%

10%

8%

20%

25%

4%

3%
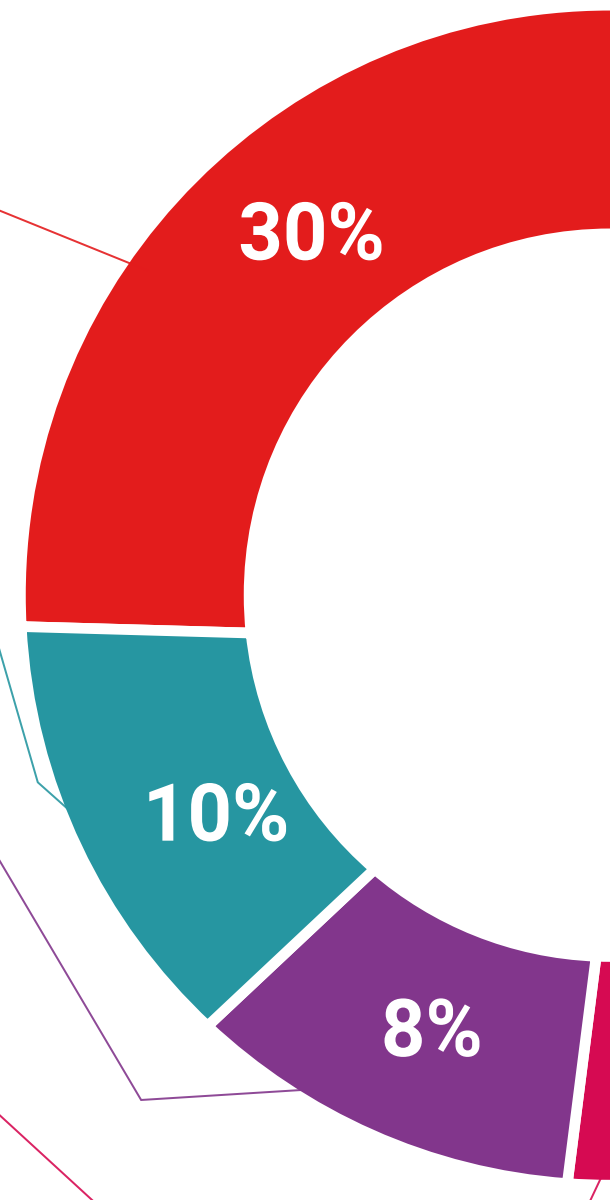
Case Studies

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 assess and re-assess students' knowledge throughout the program, through assessment and self-assessment activities and exercises, so that they can see how they are achieving their goals.

05

Certificate

The Postgraduate Certificate in Computer Structure and Technology guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Technological University.

"*Successfully complete this program and receive your Postgraduate Certificate without having to travel or fill out laborious paperwork*"

This **Postgraduate Certificate in Computer Structure and Technology** contains the most complete and up-to-date program on the market.

After the student has passed the assessments, they will receive their corresponding **Postgraduate Certificate** issued by **TECH Technological University** via tracked delivery*.

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

Program: **Postgraduate Certificate in Computer Structure and Technology**

Official No. of Hours: **300 h.**

tech technological university

Awards the following

CERTIFICATE
to

Mr./Ms. _____, with identification number _____.
For having passed and accredited the following program

POSTGRADUATE CERTIFICATE
in

Computer Structure and Technology

This is a qualification awarded by this University, equivalent to 150 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

Unique TECH Code: AFWORD23S   techtitute.com/certificates

*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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