Postgraduate Diploma
Python Development

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Postgraduate Diploma
Python Development

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

Website: www.techtitute.com/us/information-technology/postgraduate-diploma/postgraduate-diploma-python-development

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01

Introduction

Python stands out as an outstanding choice in the field of programming, thanks to all the benefits it brings. First of all, its clear and easily readable syntax simplifies the coding task, speeding up the development process and decreasing the probability of errors. In addition, Python has a wide variety of libraries and Frameworks that simplify everyday tasks, allowing developers to concentrate on the logic of their applications instead of wasting time on technical details. Python also covers everything from web development to data analysis and machine learning. TECH has thus conceived a 100% online program, designed to instruct experts in the latest innovations in Python Development.

This Python Development program will provide you with a powerful tool to address a wide range of challenges in the programming world"

Software development in Python has gained great recognition and popularity in the programming industry, due to several features that make it attractive to developers and companies. In this context, Python is known for its clear and readable syntax, which makes it easy to write and maintain code. In addition, it offers a wide range of libraries and frameworks, which simplify common tasks and speed up the development process. Its versatility is key, since it is used from web development to data analysis and machine learning.

This is how this Postgraduate Diploma in Python Development was born, an academic program that offers a complete set of modules designed to provide computer scientists with a thorough understanding of the language and to develop advanced programming skills. First, you will cover the creation and execution of Python programs, the configuration of the development environment and the use of integrated development tools (IDEs).

It will also focus on advanced data and type handling, covering topics such as identifiers, keywords, integral types, Boolean and floating-point types. In addition, it will highlight advanced *strings*formatting, Unicode and UTF-8 encodings, analyzing in detail the manipulation of collections such as tuples, lists and dictionaries, as well as collection iteration and copying techniques.

Finally, Object Oriented Programming (OOP) in Python will be covered, covering the creation and use of classes and objects, inheritance, polymorphism, encapsulation and abstraction. It will also include advanced topics such as abstract classes, custom exceptions, aggregation, composition and exception handling.

In this way, TECH offers professionals a fully adaptable, online program. In fact, with this approach, graduates will experience extended freedom to manage their online moments, making it possible to reconcile their daily personal and work responsibilities. All this through the revolutionary *Relearning*methodology, consisting of the continuous reiteration of key concepts, to optimize the assimilation of the contents.

This **Postgraduate Diploma in Python Development** contains the most complete and up-to-date program on the market. The most important features include:

- The development of practical cases presented by experts in Python Development
- The graphic, schematic and practical contents of the book provide theoretical and practical 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

Python has proven to be effective in creating robust and scalable applications, making it the preferred choice for those looking to develop high quality Software. Enroll now!"

You will equip yourself with the skills necessary to develop robust and efficient Software in an Object Oriented Environment, through the revolutionary Relearning methodology"

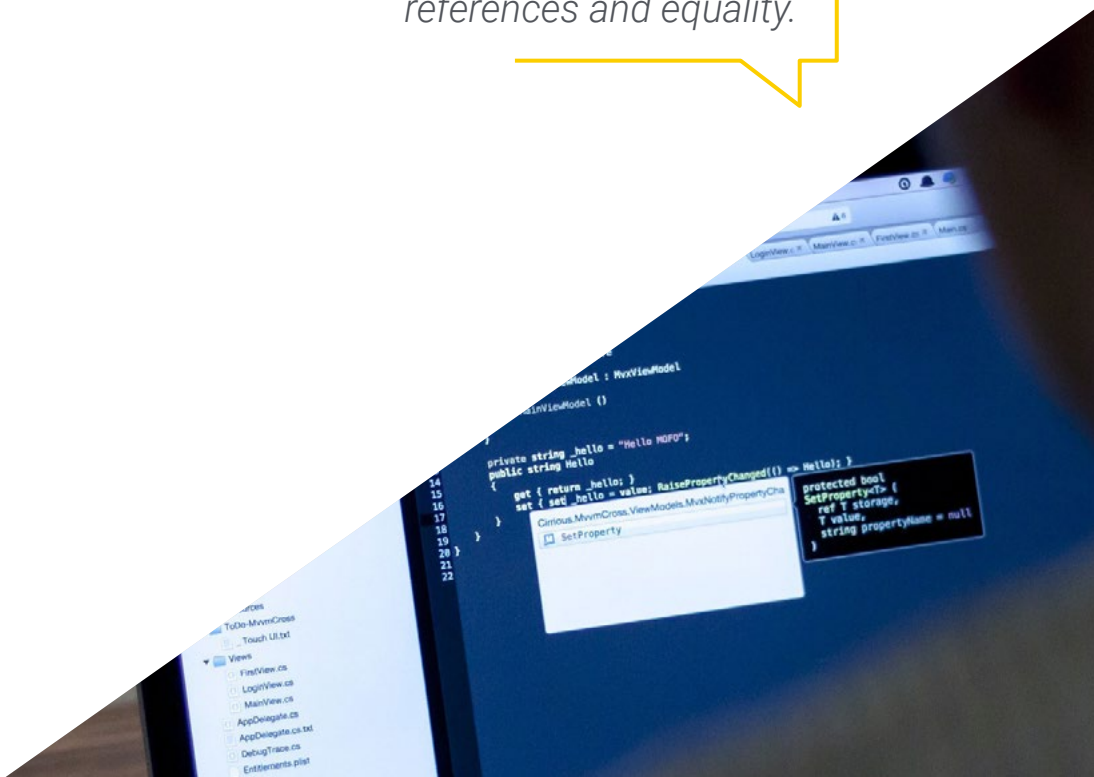
You will acquire skills in advanced control structures, such as conditionals, loops and recursive functions, all thanks to this 100% online Postgraduate Diploma.

You will delve into the fundamentals of data, exploring primitive types, type conversion and object reference management, including advanced concepts such as memory references and equality.

The program's teaching staff includes professionals from the field who contribute their work experience to this educational 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 education programmed to learn 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 students will be assisted by an innovative interactive video system created by renowned and experienced experts.



02

Objectives

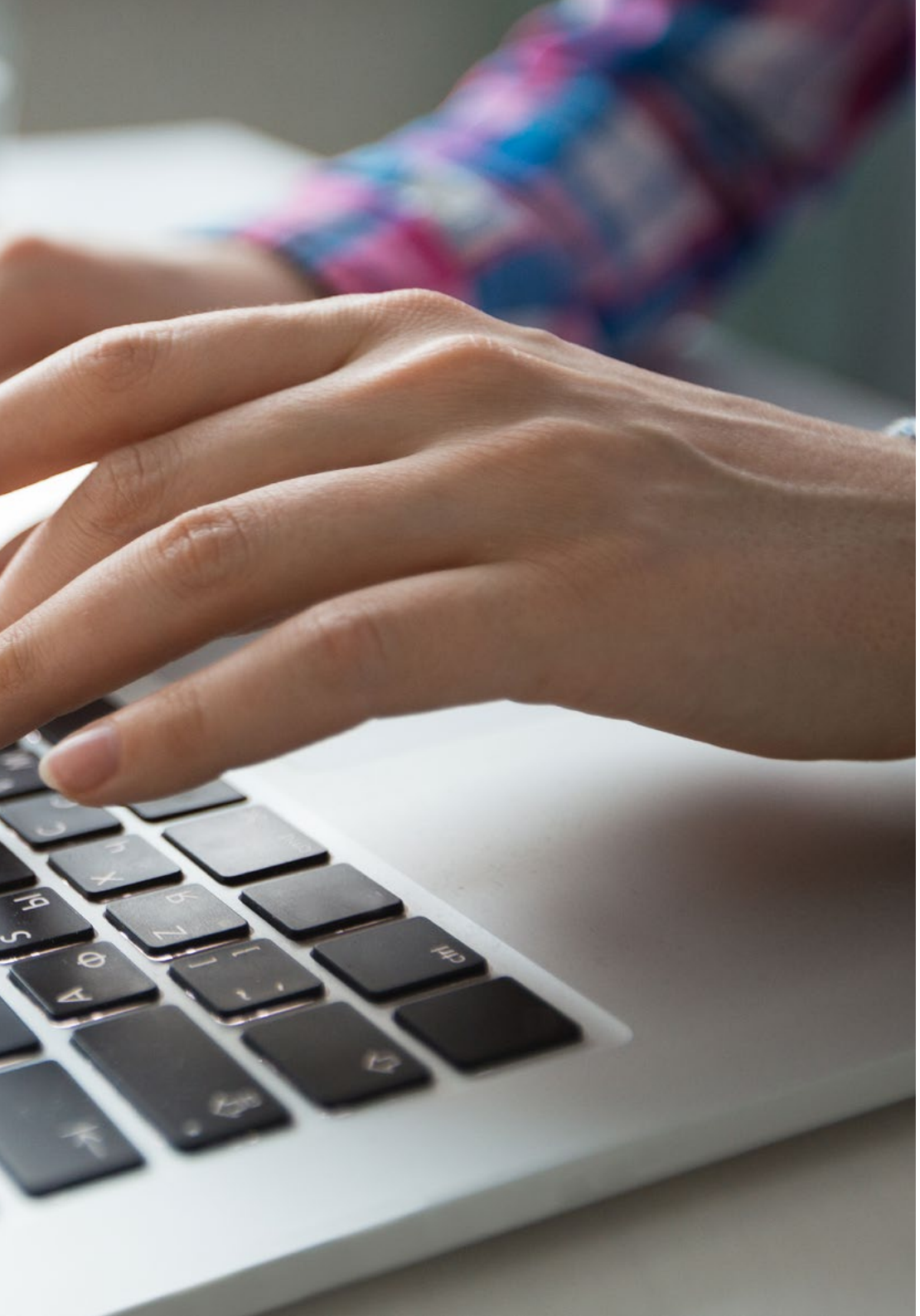
The main objective of this university program is to turn graduates into highly competent and versatile developers, capable of standing out at the forefront of the software world. In this way, computer scientists will acquire an expert command in the creation and execution of Python programs, the configuration of efficient development environments and advanced data management. In addition, a deep understanding of Object-Oriented Programming (OOP) and the ability to design effective and secure object-oriented software will be fostered.

You will delve into the fundamentals of the Python language, cultivating advanced skills in Programming and Software development, with the guidance of the most innovative multimedia resources"

General Objectives

- Develop practical programming skills
- Provide a comprehensive understanding of Python
- Enable advanced data and type handling in Python
- Equip yourself with advanced skills in program flow control
- Apply the principles of Object Oriented Programming (OOP) in Python
- Handle Object Oriented Software design and implementation

With a solid pedagogical approach and challenging hands-on projects, this program is designed to catapult you to success. Bet on TECH!"



Specific Objectives

Module 1. Python Programming

- Enable the configuration and effective use of the Python development environment
- Understand advanced programming concepts
- Get qualified in advanced data handling in Python

Module 2. Advanced Data and Flow Control with Python

- Master the conventions and practices for handling identifiers and keywords
- Apply complex data structures and their operations
- Handle advanced use of Python functions

Module 3. Object Oriented Programming (OOP) in Python

- Master the creation and use of classes and objects in Python
- Apply Inheritance and Polymorphism in Python
- Implement advanced Object Oriented Programming (OOP) concepts such as abstract classes and custom exceptions

03

Course Management

The faculty is comprised of passionate professionals and industry experts committed to providing graduates with an exceptional educational experience. Each instructor not only has a deep knowledge of Python and software development, but also an outstanding track record in real projects. In this way, these instructors will encourage active participation, problem solving and innovation, creating a dynamic learning environment that will inspire students to reach their full potential.

Learn from the best! You will acquire cutting-edge skills that will catapult you to success in the exciting field of Software Development with Python"

Management

Mr. Matos Rodríguez, Dionis

- *Data Engineer* at Wide Agency Sadexo
- *Data Consultant* at Tokiota
- *Data Engineer* at Devoteam
- *BI Developer* at Ibermática
- *Applications Engineer* at Johnson Controls
- *Database Developer* at Suncapital España
- *Senior Web Developer* at Deadlock Solutions
- *QA Analyst* at Metaconxept
- Professional Master's Degree in *Big Data & Analytics* by the EAE Business School
- Professional Master's Degree in Systems Analysis and Design
- Bachelor's Degree in Computer Engineering from APEC University

Professors

Mr. Villar Valor, Javier

- Director and Founding Partner of Impulsa2
- Chief Operations Officer (COO) at Summa Insurance Brokers
- Director of Transformation and Operational Excellence at Johnson Controls
- Professional Masters Degree in Professional Coaching
- Executive MBA from Emlyon Business School, France
- Professional Master's Degree in Quality Management from EOI, Spain
- Computer Engineering from the University Action Pro-Education and Culture (UNAPEC)

Mr. Gil Contreras, Armando

- Lead Big Data Scientist at Jhonson Controls
- Data Scientist-Big Data at Opensistemas S.A
- Fund Auditor at Creatividad y Tecnología S.A. (CYTSA)
- Public Sector Auditor at PricewaterhouseCoopers Auditores
- Professional Master's Degree in Data Science at University Center of Technology and Art
- Professional Máster Degree MBA in International Relations and Business from the Center for Financial Studies (CEF)
- Bachelor's Degree in Economics from the Technological Institute of Santo Domingo

Ms. Gil Contreras, Milagros

- Content Creator at MPCTech LLC
- Project Manager
- Freelance IT Writer
- MBA from the Complutense University of Madrid
- Degree/Graduate in Business Administration from the Technological Institute of Santo Domingo

Ms. Delgado Feliz, Benedit

- Administrative Assistant and Electronic Surveillance Operator for the National Drug Control Directorate (DNCD)
- Customer Service at Cáceres y Equipos
- Claims and Customer Service at Express Parcel Services (EPS)
- Microsoft Office Specialist at the National School of Informatics (Escuela Nacional de Informática)
- Social Communicator from the Catholic University of Santo Domingo

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

04

Structure and Content

The content of the Postgraduate Diploma has been crafted to give students a deep and complete immersion into the world of Python programming. From essential fundamentals to advanced skills, each module will be structured to provide solid knowledge and practical skills that are in high demand in the software development industry. This will cover everything from creating and running Python programs, setting up development environments and advanced data management, to Object Oriented Programming (OOP) and efficient Software design.

A unique opportunity that you will only find at TECH! Immerse yourself in the creation and efficient execution of Python programs, the configuration of development environments and advanced data management"

Module 1. Python Programming

1.1. Creation and Execution of Python Programs
- 1.1.1. Configuration of the Development Environment
- 1.1.2. Execution of Python *Scripts*
- 1.1.3. Integrated Development Tools (IDEs)

1.2. Data in Python
- 1.2.1. Primitive Types (*int, float, str*)
- 1.2.2. Conversion and *Casting* of Data Types in Python
- 1.2.3. Immutability and Data Storage in Python

1.3. References to Objects in Python
- 1.3.1. References in Memory
- 1.3.2. Identity vs. Equality
- 1.3.3. Reference Management and Garbage Collection

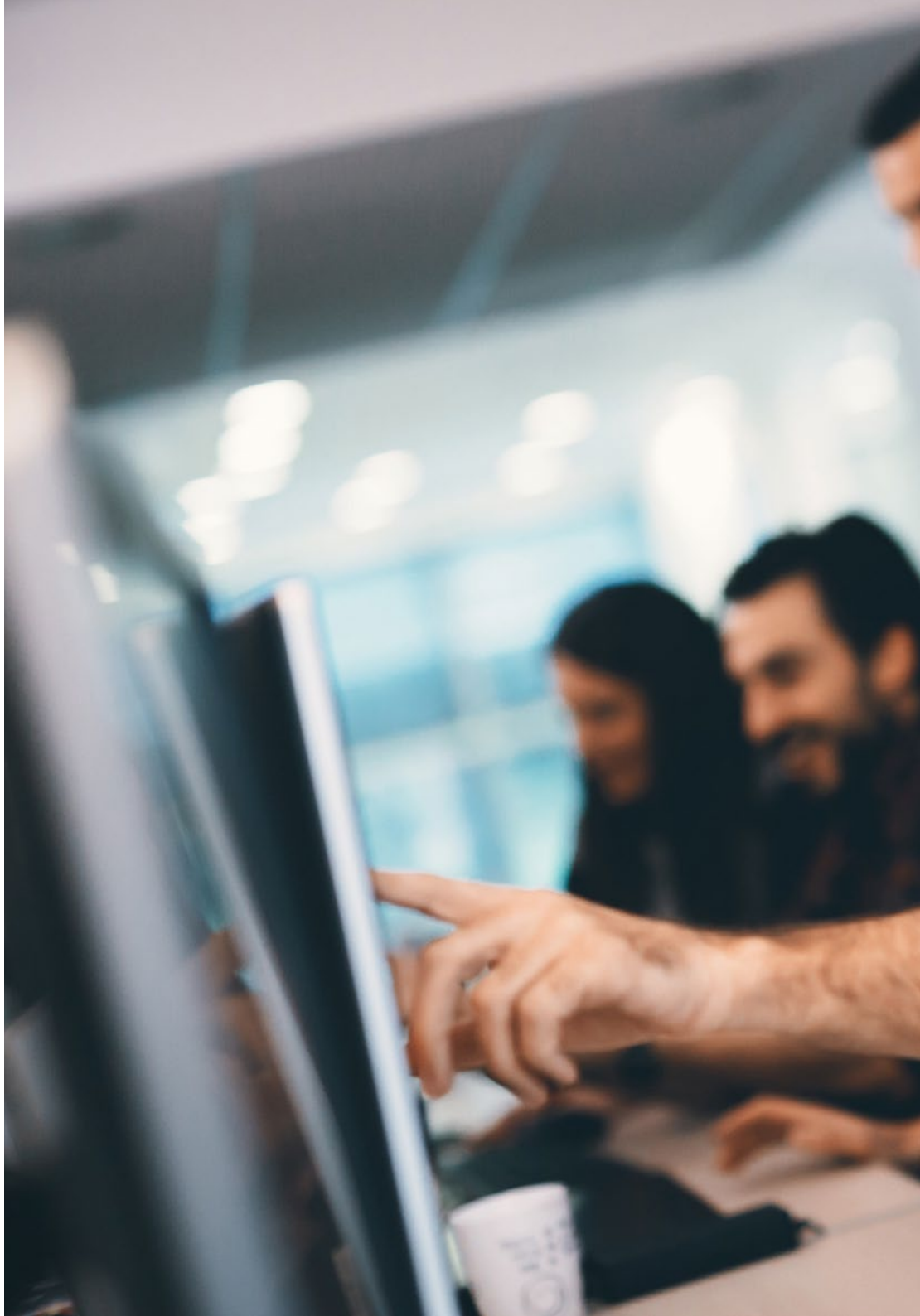
1.4. Collection Data in Python
- 1.4.1. Common Lists and Operations
- 1.4.2. Tuples and their Immutability
- 1.4.3. Dictionaries and Data Access

1.5. Logical Operations in Python
- 1.5.1. Boolean Operators
- 1.5.2. Conditional Expressions
- 1.5.3. *Short-Circuit Evaluation*

1.6. Arithmetic Operators in Python
- 1.6.1. Arithmetic Operations in Python
- 1.6.2. Division Operators
- 1.6.3. Precedence and Associativity

1.7. Input/output in Python
- 1.7.1. Reading Data from Standard Input
- 1.7.2. Writing Data to Standard Output
- 1.7.3. File Handling

1.8. Creating and Calling Python Functions
- 1.8.1. Function Syntax
- 1.8.2. Parameters and Arguments
- 1.8.3. Return Values and Anonymous Functions



1.9. Using *Strings* in Python
  1.9.1. Manipulating and Formatting *Strings*
  1.9.2. Common *Strings* Methods
  1.9.3. Interpolation and *F-strings*
1.10. Error and Exception Handling in Python
  1.10.1. Common Types of Exceptions
  1.10.2. *Try-except* Blocks
  1.10.3. Creating Custom Exceptions

Module 2. Advanced Data and Flow Control with Python

2.1. Identifiers and Keywords in Python
  2.1.1. Variable Naming Rules
  2.1.2. Python Reserved Words
  2.1.3. Naming Conventions
2.2. Integral and Boolean Types in Python
  2.2.1. Integral Types
  2.2.2. Boolean Specific Operations
  2.2.3. Conversions and Representations
2.3. Floating-point Types and Complex Numbers in Python
  2.3.1. Accuracy and Representation
  2.3.2. Floating Point Operations
  2.3.3. Use of Complex Numbers in Calculations
2.4. *String* Formatting and Encodings in Python
  2.4.1. Advanced Formatting Methods
  2.4.2. *Unicode* and UTF-8 Encodings
  2.4.3. Working with Special Characters
2.5. Collections: Tuples, Lists and Dictionaries in Python
  2.5.1. Comparing and Contrasting Types
  2.5.2. Type-specific Methods
  2.5.3. Efficiency and Selection of Suitable Type
2.6. *Sets and Frozen Sets* in Python
  2.6.1. Creation and Operations in *Sets*
  2.6.2. *Frozen Sets*
  2.6.3. Practical Applications and Performance

2.7. Iterating and Copying Collections in Python
- 2.7.1. *For* Loops and List Comprehensions
- 2.7.2. Shallow vs. Deep
- 2.7.3. Iterators and Generators

2.8. Using *Lambda* Functions in Python
- 2.8.1. Syntax and Creation of *Lambda* Functions
- 2.8.2. Applications in Filters and Maps
- 2.8.3. Limitations and Best Practices

2.9. Control Structures: Conditionals and Loops in Python
- 2.9.1. *If-else and Elif* Structures
- 2.9.2. *While and For* Loops
- 2.9.3. Flow Control with *Break*, *Continue* and *Else*

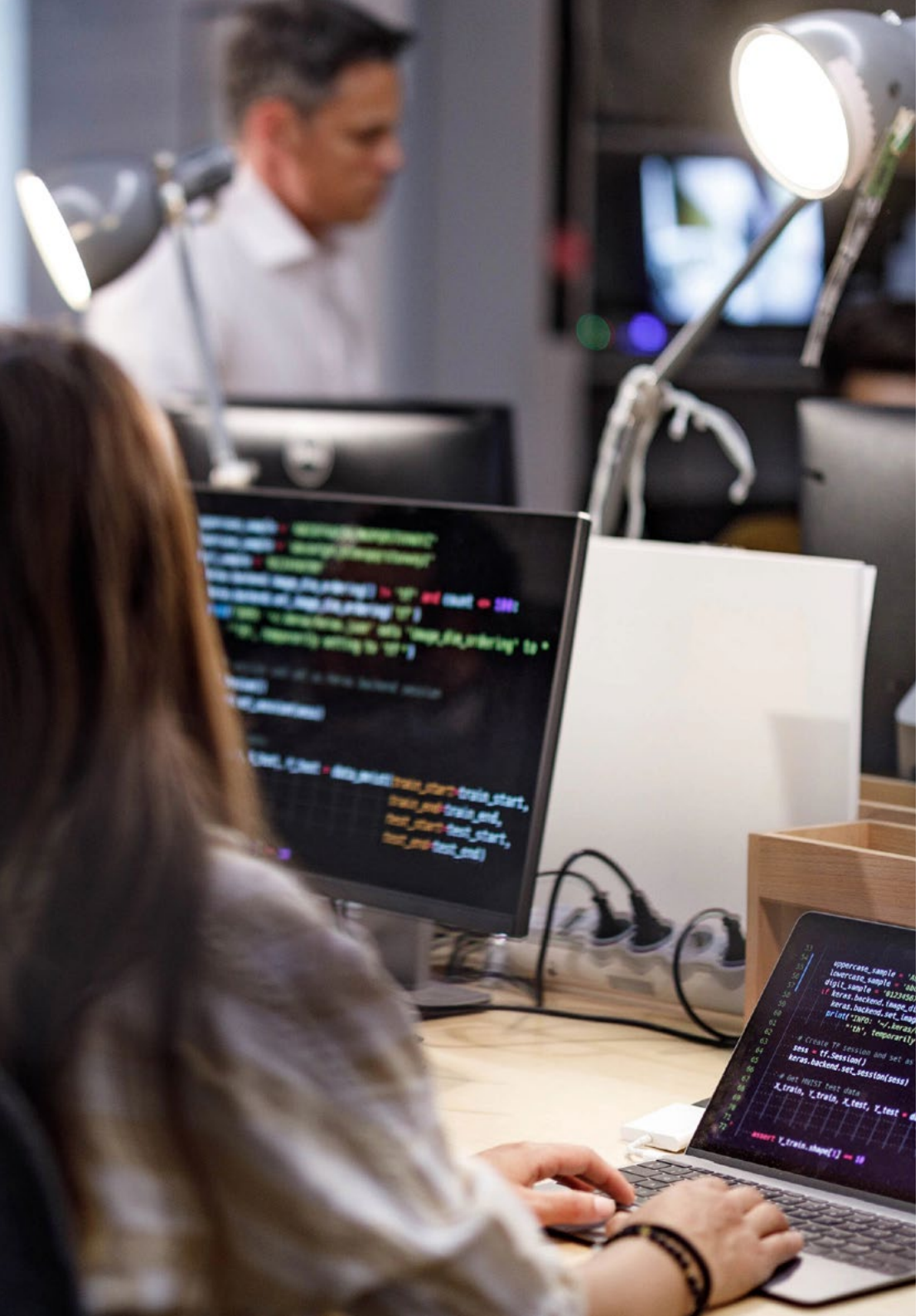
2.10. Advanced Functions and Methods in Python
- 2.10.1. Recursive functions
- 2.10.2. Higher Order Functions
- 2.10.3. Function Decorators

Module 3. Object Oriented Programming (OOP) in Python

3.1. Object Oriented Programming (OOP) in Python
- 3.1.1. Classes and Objects
- 3.1.2. Encapsulation and Abstraction
- 3.1.3. Object Oriented Programming (OOP) in Python

3.2. Creation of Classes and Objects in Python
- 3.2.1. Classes in Python OOP
- 3.2.2. Instantiation and Initialization Methods
- 3.2.3. Attributes and Methods

3.3. Attributes and Methods in Python
- 3.3.1. Instance Attributes vs. Class
- 3.3.2. Instance, Class and Static Methods
- 3.3.3. Encapsulation and Information Hiding



3.4. Inheritance and Polymorphism in Python
  3.4.1. Single and Multiple Inheritance
  3.4.2. Overwriting and Method Extensions
  3.4.3. Polymorphism and *Duck Typing*
3.5. Properties and Attribute Access in Python
  3.5.1. *Getters and Setters*
  3.5.2. *@Property* Decorator
  3.5.3. Access Control and Validation
3.6. Custom Classes and Collections in Python
  3.6.1. Creating Collection Types
  3.6.2. Special Methods (__len__, __getitem_,)
  3.6.3. Custom Iterators
3.7. Aggregation and Composition in Python Classes
  3.7.1. Relationships Between Classes
  3.7.2. Aggregation vs. Composition
  3.7.3. Object Lifecycle Management
3.8. Use of Decorators in Python Classes
  3.8.1. Use of Decorators in Python Classes
  3.8.2. Class Decorators
  3.8.3. Applications and Use Cases
3.9. Abstract Classes and Methods in Python
  3.9.1. Abstract Classes
  3.9.2. Abstract Methods and Implementation
  3.9.3. Use of ABC (*Abstract Base Class*)
3.10. Python OOP Exceptions and Error Handling
  3.10.1. Custom Exceptions in Classes
  3.10.2. Exception Handling in Methods
  3.10.3. Best Practices in Exceptions and OOP

05

Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning.**

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.

Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"

Case Study to contextualize all content

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

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

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

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 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.

Relearning Methodology

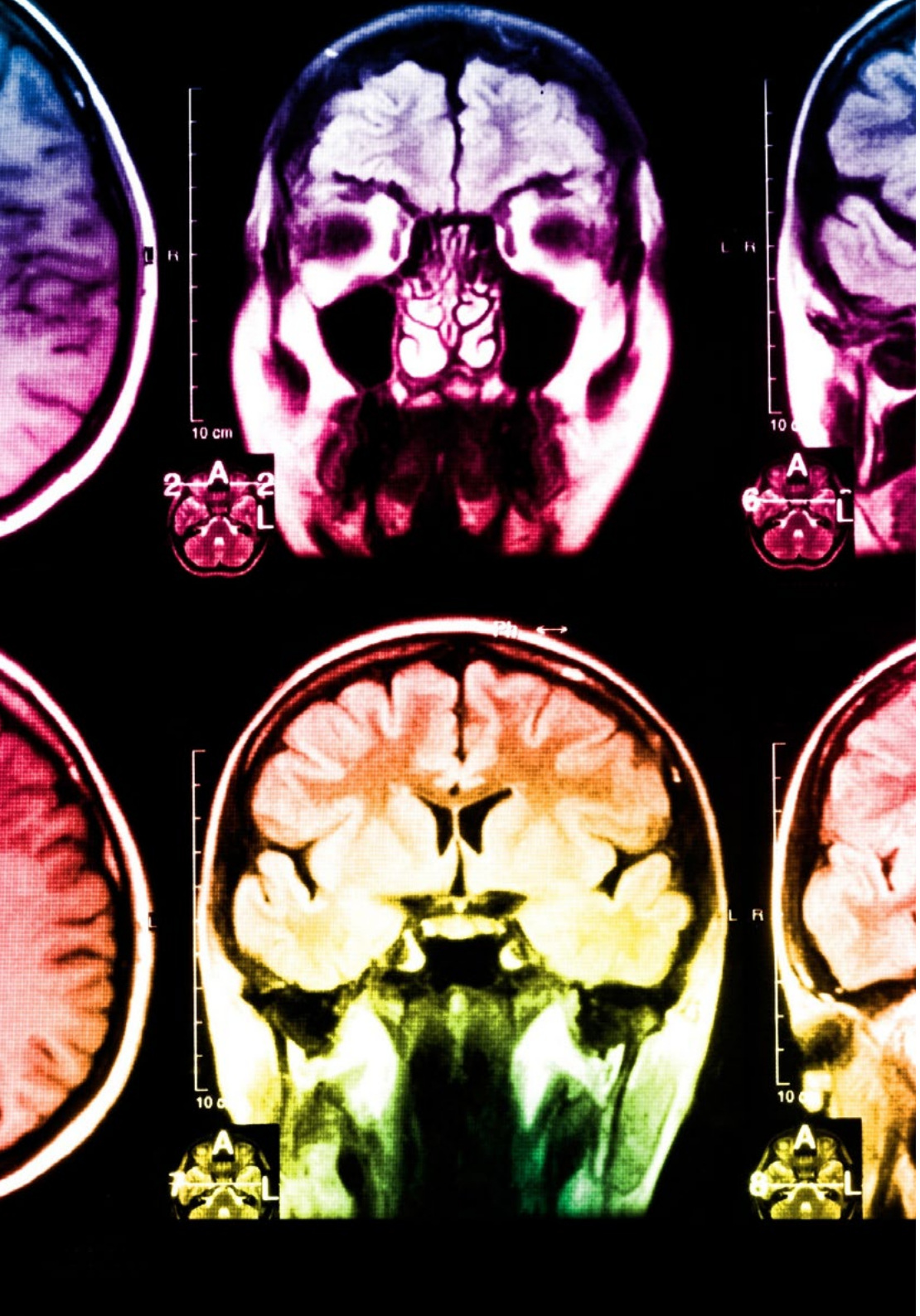
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines different teaching elements in each lesson.

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 train the executives of the future. This method, at the forefront of international teaching, is called Relearning.

Our university is the only one in the world authorized to employ this successful method. In 2019, we managed to improve our students' overall satisfaction levels (teaching quality, quality of materials, course structure, objectives...) based on the best online university indicators.



In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically. This methodology has trained more than 650,000 university graduates with unprecedented success in fields as diverse as biochemistry, genetics, surgery, international law, management skills, sports science, philosophy, law, engineering, journalism, history, and financial markets and instruments. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

Relearning will allow you to learn with less effort and better performance, involving you more in your training, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation for success.

From the latest scientific evidence in the field of neuroscience, not only do we know how to organize information, ideas, images and memories, but we know that the place and context where we have learned something is fundamental for us to be able to remember it and store it in the hippocampus, to retain it in our long-term memory.

In this way, and in what is called neurocognitive context-dependent e-learning, the different elements in our program are connected to the context where the individual carries out their professional activity.

This program offers the best educational material, prepared with professionals in mind:

Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.

Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

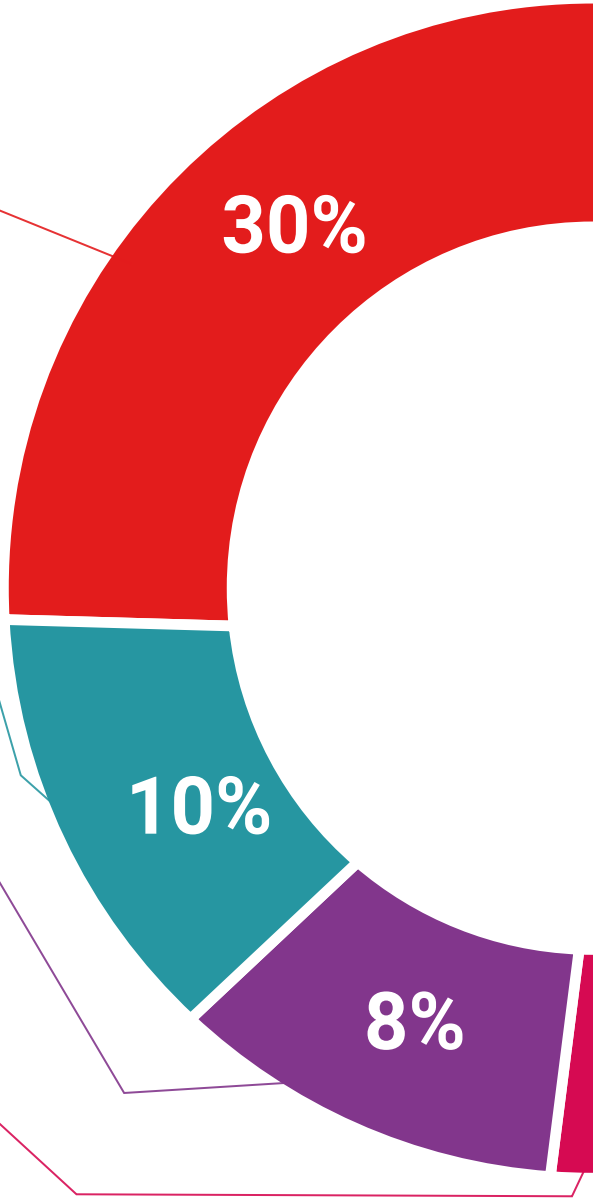
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

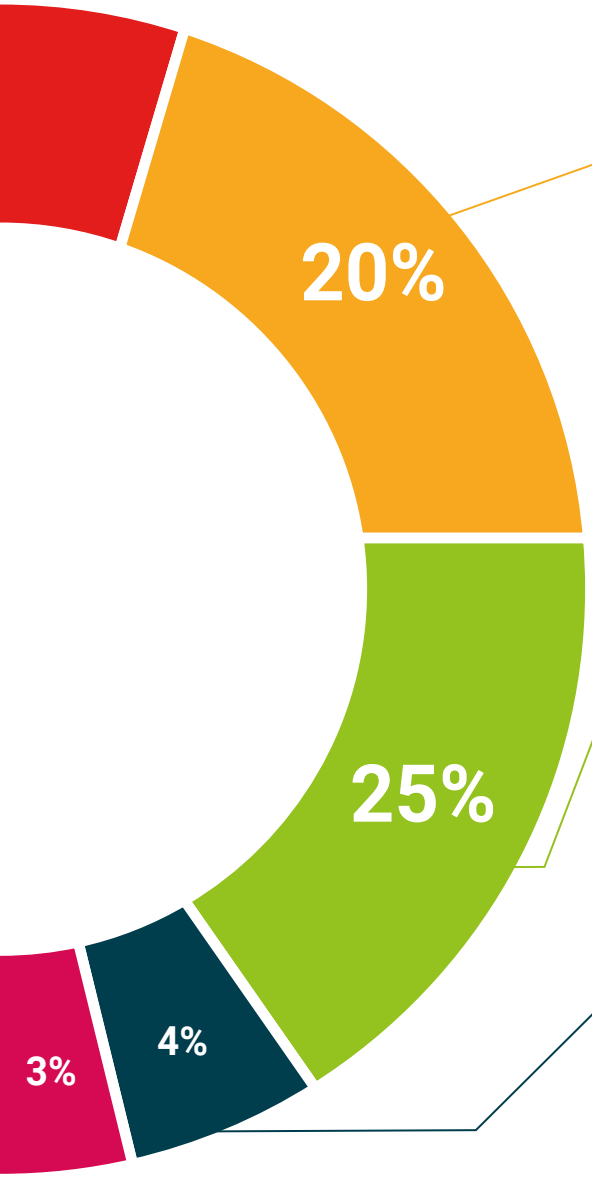
Practising Skills and Abilities

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

Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.





Case Studies

Students will complete a selection of the best case studies chosen specifically for this program. Cases that are presented, analyzed, and supervised by the best specialists in the world.

Interactive Summaries

The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".

Testing & Retesting

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

06

Certificate

The Postgraduate Diploma in in Python Development guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate 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 **Postgraduate Diploma in Python Development** contains the most complete and up-to-date educational program on the market.

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

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

Title: **Postgraduate Diploma in Python Development**

Official Nº of Hours: **450 h.**

tech technological university

Awards the following

DIPLOMA

to

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

For having passed and accredited the following program

POSTGRADUATE DIPLOMA

in

Python Development

This is a qualification awarded by this University, equivalent to 450 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 diploma issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.

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