Postgraduate Diploma

Applications of Artificial Intelligence, IoT, and Medical Devices in Telemedicine

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Postgraduate Diploma
Applications of Artificial Intelligence, IoT, and Medical Devices in Telemedicine

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

Website: **www.techtitute.com/pk/nursing/postgraduate-diploma/postgraduate-diploma-applications-artificial-intelligence-iot-medical-devices-telemedicine**

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01
Introduction

The evolution of medicine involves recent attention to artificial intelligence, the Internet of Things (IoT) and new medical devices. Among their advances, more precise diagnoses, the monitoring of chronic patients or the creation of effective vaccines more quickly, stand out. All of this has a direct impact on the well-being of humanity. Given their numerous benefits, medicine without these technological tools is inconceivable from today to the future. Therefore, the professionals of the future must be able to keep pace with the new incorporations and master their application. TECH Technological University offers a program that delves into the intervention of AI in telemedicine, medical, surgical and mechanical devices and entrepreneurship in e-Health. All this, through a 100% online modality, so that graduates in Nursing adopt the knowledge required in today's healthcare labor market.

Enter a program with which you will learn about the innovative market in e-Health and the application of new technologies in telemedicine"

Advances in e-Health have created possibilities for personalized and automated health care, and telemedicine has been very useful in this regard, opening the way to telemedicine care which, unlike conventional care, is universal. In this case, medical artificial intelligence makes it possible to monitor patients remotely or thanks to diagnostic imaging. The great advantages offered by these scientific advances have a direct impact on the health of society, which is why they have come to the forefront of business innovation to optimize clinical service.

To educate the professionals of today and tomorrow who will be involved in healthcare practice, TECH Technological University has developed a complete and rigorous program with the specific knowledge to create tools that project the usefulness of artificial intelligence in this field. As they study, the students will explore in depth monitoring with AI, artificial intelligence algorithms for image processing, language processing and processing, Natural Language Processing (NLP) in telemedicine and nano-robots, among many other issues.

Additionally, the specialists will be guided by an expert team in AI and telemedicine to instruct them through theoretical knowledge, but also to share with them their experiences in the real field of action. Also, the 100% online modality applied by TECH Technological University, creates new online learning formulas, which provide facilities to the students. Likewise, this Postgraduate Diploma, is taught through audiovisual content that will be available to students wherever and whenever they need it.

This **Postgraduate Diploma in Applications of Artificial Intelligence, IoT, and Medical Devices in Telemedicine** contains the most complete and up-to-date scientific program on the market. The most important features include:

- The development of practical cases presented by experts in artificial intelligence and medical devices in telemedicine
- The graphic, schematic, and practical contents with which they are created, provide practical information on the disciplines that are essential for professional practice
- The practical exercises where the self-evaluation process can be carried out 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

Enroll in a program that will not only teach you to understand the operation of healthcare devices, but will also give you a focus on the technological perspective that telemedicine requires"

Analyze the great advantages that await the technology in its real application in patients through remote monitoring.

Become a much more competitive professional by mastering remote patient monitoring by mastering IoT in patient monitoring and care.

"
Thanks to the knowledge that TECH Technological University will teach you, you will master the applications of Graphics Processing Unit (GPU) acceleration in medicine"

The program's teaching staff includes professionals from the sector who contribute their work experience to this educational program, as well as renowned specialists from leading societies and prestigious universities.

Its multimedia content, developed with the latest educational technology, will allow the professional a situated and contextual learning, that is, a simulated environment that will provide an immersive training programmed to train in real situations.

The design of this program focuses on Problem-Based Learning, in which the professional will have to try to solve the different professional practice situations that will arise throughout the academic course. For this purpose, the student will be assisted by an innovative interactive video system created by renowned experts.

02
Objectives

This Postgraduate Diploma in Applications of Artificial Intelligence, IoT and Medical Devices in Telemedicine has as its main objective to expand and update the knowledge of graduates in Nursing so that these specialists can apply new techniques in their clinical work. Additionally, TECH Technological University develops the program through the collaboration of experienced teachers in e-Health and dynamic contents that make the study an enriching experience. Thanks to this program, students will delve into new solutions in computer applications and telehealth. In this way, they will finish the study with the appropriate tools to be part of the healthcare advance towards the e-Health market.

A program designed to analyze the Cloud technologies available to develop e-Health and IoT products in the healthcare field"

General Objectives

- Develop key concepts of medicine that will serve as a vehicle for the understanding of clinical medicine
- Determine the major diseases affecting the human body classified by apparatus or systems, structuring each module into a clear outline of pathophysiology, diagnosis, and treatment
- Determine how to obtain metrics and tools for healthcare management
- Understand the basics of basic and translational scientific methodology
- Examine the ethical and best practice principles governing the different types of research in health sciences
- Identify and generate the means of funding, assessing and disseminating scientific research
- Identify the real clinical applications of the various techniques
- Develop the key concepts of computational science and theory
- Determine the applications of computation and its implication in bioinformatics
- Provide the necessary resources to practically apply all the concepts in the modules
- Develop the fundamental concepts of databases
- Determine the importance of medical databases
- Delve into the most important techniques in research

- Identify the opportunities offered by the IoT in the field of eHealth
- Provide specialized knowledge of the technologies and methodologies used in the design, development and assessment of telemedicine systems
- Determine the different types and applications of telemedicine
- Delve into the most common ethical aspects and regulatory frameworks of telemedicine
- Analyze the use of medical devices
- Develop the key concepts of entrepreneurship and innovation in eHealth
- Determine what a business model is and the types that exist
- Collect eHealth success stories and mistakes to avoid
- Apply the knowledge acquired to an original business idea

Specific Objectives

Module 1. Applications of Artificial Intelligence and the Internet of Things (IoT) in Telemedicine

- Propose communication protocols in different scenarios in the healthcare field
- Analyze communication in the IoT as well as its use in eHealth areas
- Substantiate the complexity of artificial intelligence models in its use in healthcare
- Identify the optimization brought by parallelization in GPU-accelerated applications and its use in healthcare
- Present all the Cloud technologies available to develop e-Health and IoT products, both in computing and communication.

Module 2. Telemedicine and Medical, Surgical and Biomechanical Devices

- Analyze the evolution of telemedicine
- Assess the benefits and limitations of telemedicine
- Examine the different types, use and clinical benefits of telemedicine
- Assess the most common ethical aspects and regulatory frameworks for the use of telemedicine.
- Establish the use of medical devices in healthcare in general and in telemedicine specifically
- Determine the use of the Internet and the medical resources it provides
- Delve into the main trends and future challenges in telemedicine

Module 3. Business Innovation and Entrepreneurship in eHealth

- Analyze the eHealth market in a systematic and structured way
- Learn the key concepts of innovative ecosystems
- Create businesses using the Lean Startup methodology
- Analyze the market and competitors
- Find a solid value proposition in the marketplace
- Identify opportunities and minimize rates of error
- Handle the practical tools for environment analysis and practical tools to quickly test and validate your idea.

TECH's Technological University's objective is to provide you with knowledge that will position you at the top of the e-Health market thanks to the Lean Startup methodology"

03
Course Management

TECH Technological University has called on a team of experts versed in the area of AI to teach this subject to the students. This is a professional group experienced in R+D+i, in virtual centers and who are researchers in the biomedical area. This makes the Postgraduate Diploma a program that has all the guarantees and has been designed for those graduates in Nursing who wish to be instructed, being guided by a team fully integrated in the professional paradigm of health technology. It is, therefore, a unique and enriching opportunity for the nurses of the future.

Lean on expert professionals in the field of AI and project your career into the future of telemedicine"

Management

Ms. Sirera Pérez, Ángela

- Nuclear Researcher and Radiophysicist, University Clinic of Navarra, Pamplona, Spain
- Prototyped Parts Designer at Technaid, using 3D printing and CAD Inventor design software
- Biomechanics Professor for the Master's Degree in Information and Communication Technologies (ICT) for Engineering Biomedical Engineering, TECH Technological University
- Degree in Biomedical Engineering from the University of Navarra

Professors

Ms. Muñoz Gutiérrez, Rebeca

- Data Scientist, Returns Department, INDITEX e-Commerce
- Graduate in Health Engineering, specializing in Biomedical Engineering, University of Malaga and University of Seville
- Master's Degree in Intelligent Avionics, Clue Technologies, in collaboration with the University of Málaga
- NVIDIA: Fundamentals of Accelerated Computing with CUDA C/C++
- NVIDIA: Accelerating CUDA C++ Applications with Multiple GPUs

Dr. Somolinos Simón, Francisco Javier

- Biomedical Engineering Researcher at the Bioengineering and Telemedicine Group of the
- Polytechnic University of Madrid
- R&D&I Consultant at Evalue Innovación S.L., San Sebastián de los Reyes, Madrid
- Degree in Biomedical Engineering, Polytechnic University of Madrid
- Doctorate in Biomedical Engineering, Polytechnic University of Madrid
- Master's Degree in Management and Development of Biomedical Technologies from Carlos III University of Madrid

Ms. Crespo Ruiz, Carmen

- Director of Strategy and Privacy at Freedom&Flow SL. A company devoted to innovation in health and corporate wellness

- Co-founder of Healthy Pills SL. First virtual training center for pathologies

- Lecturer in the Master's Degree in Innovation and Project Management, at the Alfonso X El Sabio University

- Law Degree, UNED (National University for Distance Education)

- Degree in Journalism, University Pontificia of Salamanca

- Master's Degree in Intelligence Analysis (Cátedra Carlos III & Univ. Rey Juan Carlos, with the endorsement
  of the National Intelligence Center - CNI)

Structure and Content

The content of this Postgraduate Diploma in Applications of Artificial Intelligence, IoT and Medical Devices in Telemedicine has been reviewed by experts who guarantee the quality and rigor of the syllabus in question. The great demand that exists in professions that work directly with AI in the healthcare field also includes nurses who work in this field. The main objective of the program is to guide students in the extensive knowledge of the latest e-Health techniques, developing, in turn, a broad and specialized knowledge about the importance of technological intervention in health. TECH Technological University applies the Relearning methodology, which exempts the student from cumbersome hours of study, so that they become an expert in a simple and gradual way. In this way, the 100% online study adapts to your availability, both personally and professionally.

Learn more about the "Digital Europe" program to understand how e-Health platforms develop at the European level"

Module 1. Applications of Artificial Intelligence and the Internet of Things (IoT) in Telemedicine

1.1.   *E*-Health Platforms.   Personalizing Healthcare Services

    1.1.1.   E-Health Platform

    1.1.2.   Resources for E-Health Platforms

    1.1.3.   Digital Europe Program. Digital Europe-4-Health and Horizon Europe

1.2.   Artificial Intelligence in the Healthcare Field I: New Solutions in Computer Applications

    1.2.1.   Remote Analysis of Results

    1.2.2.   Chatbox

    1.2.3.   Prevention and Real-Time Monitoring

    1.2.4.   Preventive and Personalized Medicine in Oncology

1.3.   Artificial Intelligence in Healthcare II:

    1.3.1.   Monitoring Patients with Reduced Mobility

    1.3.2.   Cardiac Monitoring, Diabetes, Asthma

    1.3.3.   Health and Wellness Apps

        1.3.3.1. Heart Rate Monitors

        1.3.3.2. Blood Pressure Bracelets

    1.3.4.   Ethical Use of AI in the Medical Field. Data Protection

1.4.   Artificial Intelligence Algorithms for Image Processing

    1.4.1.   Artificial Intelligence Algorithms for Image Handling

    1.4.2.   Image Diagnosis and Monitoring in Telemedicine

        1.4.2.1. Melanoma Diagnosis

    1.4.3.   Limitations and Challenges in Image Processing in Telemedicine

1.5.   Application Acceleration using Graphics Processing Units (GPU) in Medicine

    1.5.1.   Program Parallelization

    1.5.2.   GPU Operations

    1.5.3.   Application Acceleration using GPU in Medicine

1.6.   Natural Language Processing (NLP) in Telemedicine

    1.6.1.   Text Processing in the Medical Field. Methodology

    1.6.2.   Natural Language Processing in Therapy and Medical Records

    1.6.3.   Limitations and Challenges in Natural Language Processing in Telemedicine

1.7.   The Internet of Things (IoT) in Telemedicine. Applications

    1.7.1.   Monitoring Vital Signs. *Wearables*

        1.7.1.1. Blood Pressure, Temperature, and Heart Rate

    1.7.2.   The IoT and *Cloud* Technology

        1.7.2.1. Data Transmission to the Cloud

    1.7.3.   Self-Service Terminals

1.8.   IoT in Patient Monitoring and Care

    1.8.1.   IoT Applications for Emergency Detection

    1.8.2.   The Internet of Things in Patient Rehabilitation

    1.8.3.   Artificial Intelligence Support in Victim Recognition and Rescue

1.9.   Nanorobots. Typology

    1.9.1.   Nanotechnology

    1.9.2.   Types of Nanorobots

        1.9.2.1. Assemblers. Applications

        1.9.2.2. Self-Replicating. Applications

1.10.   Artificial Intelligence in COVID-19 Control

    1.10.1.   COVID-19 and Telemedicine

    1.10.2.   Management and Communication of Breakthroughs and Outbreaks

    1.10.3.   Outbreak Prediction in Artificial Intelligence

Module 2. Telemedicine and Medical, Surgical and Biomechanical Devices

2.1.   Telemedicine and Telehealth
    2.1.1.   Telemedicine as a Telehealth Service
    2.1.2.   Telemedicine
        2.1.2.1. Telemedicine Objectives
        2.1.2.2. Benefits and Limitations of Telemedicine
    2.1.3.   Digital Health. Technologies
2.2.   Telemedicine Systems
    2.2.1.   Components in Telemedicine Systems
        2.2.1.1. Personal
        2.2.1.2. Technology
    2.2.2.   Information and Communication Technologies (ICT) in the Health Sector
        2.2.2.1. t-Health
        2.2.2.2. mHealth
        2.2.2.3. u-Health
        2.2.2.4. p-Health
    2.2.3.   Telemedicine Systems Assessment
2.3.   Technology Infrastructure in Telemedicine
    2.3.1.   Public Switched Telephone Network (PSTN)
    2.3.2.   Satellite Networks
    2.3.3.   Integrated Services Digital Network (ISDN)
    2.3.4.   Wireless Technology
        2.3.4.1. WAP. Wireless Application Protocol
        2.3.4.2. Bluetooth
    2.3.5.   Microwave Connections
    2.3.6.   ATM Asynchronous Transfer Mode

2.4.   Types of Telemedicine. Uses in Healthcare
    2.4.1.   Remote Patient Monitoring
    2.4.2.   Storage and Shipping Technologies
    2.4.3.   Interactive Telemedicine
2.5.   Telemedicine: General Applications
    2.5.1.   Telecare
    2.5.2.   Telemonitoring
    2.5.3.   Telediagnostics
    2.5.4.   Teleeducation
    2.5.5.   Telemanagement
2.6.   Telemedicine: Clinical Applications
    2.6.1.   Teleradiology
    2.6.2.   Teledermatology
    2.6.3.   Teleoncology
    2.6.4.   Telepsychiatry
    2.6.5.   Telehome-care
2.7.   Smart Technologies and Care
    2.7.1.   Integrating Smart Homes
    2.7.2.   Digital Health to Improve Treatment
    2.7.3.   Telehealth Clothing Technology. "Smart Clothes"
2.8.   Ethical and Legal Aspects of Telemedicine
    2.8.1.   Ethical Foundations
    2.8.2.   Common Regulatory Frameworks
    2.8.4.   ISO Standards
2.9.   Telemedicine and Diagnostic, Surgical and Biomechanical Devices
    2.9.1.   Diagnostic Devices
    2.9.2.   Surgical Devices
    2.9.2.   Biomechanic Devices

Module 3. Business Innovation and Entrepreneurship in eHealth

A program designed for specialists like you, who wish to apply OSINT tools to optimize their professional service"

05
Methodology

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

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

At TECH Nursing School we use the Case Method

In a given situation, what should a professional do? Throughout the program, students will face multiple simulated clinical cases, based on real patients, in which they will have to do research, establish hypotheses, and ultimately resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method. Nurses learn better, faster, and more sustainably over time.

With TECH, nurses can experience a learning methodology that is shaking the foundations of traditional universities around the world.

According to Dr. Gérvas, the clinical case is the annotated presentation of a patient, or group of patients, which becomes a "case", an example or model that illustrates some peculiar clinical component, either because of its teaching power or because of its uniqueness or rarity. It is essential that the case is based on current professional life, in an attempt to recreate the real conditions in professional nursing practice.

Did you know that this method was developed in 1912, at Harvard, for law students? The case method consisted of presenting students with real-life, complex situations for them to make decisions and justify their decisions on how to solve them. In 1924, Harvard adopted it as a standard teaching method"

The effectiveness of the method is justified by four fundamental achievements:

1. Nurses who follow this method not only grasp concepts, but also develop their mental capacity, by evaluating real situations and applying their knowledge.

2. The learning process has a clear focus on practical skills that allow the nursing professional to better integrate knowledge acquisition into the hospital setting or primary care.

3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.

4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.

Relearning Methodology

At TECH we enhance the case method with the best 100% online teaching methodology available: Relearning.

This university is the first in the world to combine case studies with a 100% online learning system based on repetition combining a minimum of 8 different elements in each lesson, which is a real revolution compared to the simple study and analysis of cases.

The nurse will learn through real cases and by solving complex situations in simulated learning environments. These simulations are developed using state-of-the-art software to facilitate immersive learning.

01 learning from evidence

02 relearning from evidence

03 testing

04 learning from an expert

05 neurocognitive context dependent learning

06 Von-Restorff effect

07 case based learning through storytelling

08 competencies testing (retesting)

At the forefront of world teaching, the Relearning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best online university (Columbia University).

With this methodology we have trained more than 175,000 nurses with unprecedented success in all specialities regardless of practical workload. Our pedagogical methodology is developed in a highly competitive environment, with a university student body with a strong socioeconomic profile and an average age of 43.5 years old.

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

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.

The overall score obtained by TECH's learning system is 8.01, according to the highest international standards.

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 really 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.

Nursing Techniques and Procedures on Video

We introduce you to the latest techniques, to the latest educational advances, to the forefront of current medical techniques. All of this in direct contact with students and explained in detail so as to aid their assimilation and understanding. And best of all, you can watch them as many times as you want.

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".

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.

20%

15%

15%

3%

20%

17%

7%

3%

Expert-Led Case Studies and Case Analysis

Effective learning ought to be contextual. Therefore, TECH presents real cases in which the expert will guide students, focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.

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.

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.

Quick Action Guides

TECH offers the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical, and effective way to help students progress in their learning.

06
Certificate

The Postgraduate Certificate in Applications of Artificial Intelligence, IoT and Medical Devices in Telemedicine 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 university qualification without having to travel or fill out laborious paperwork"
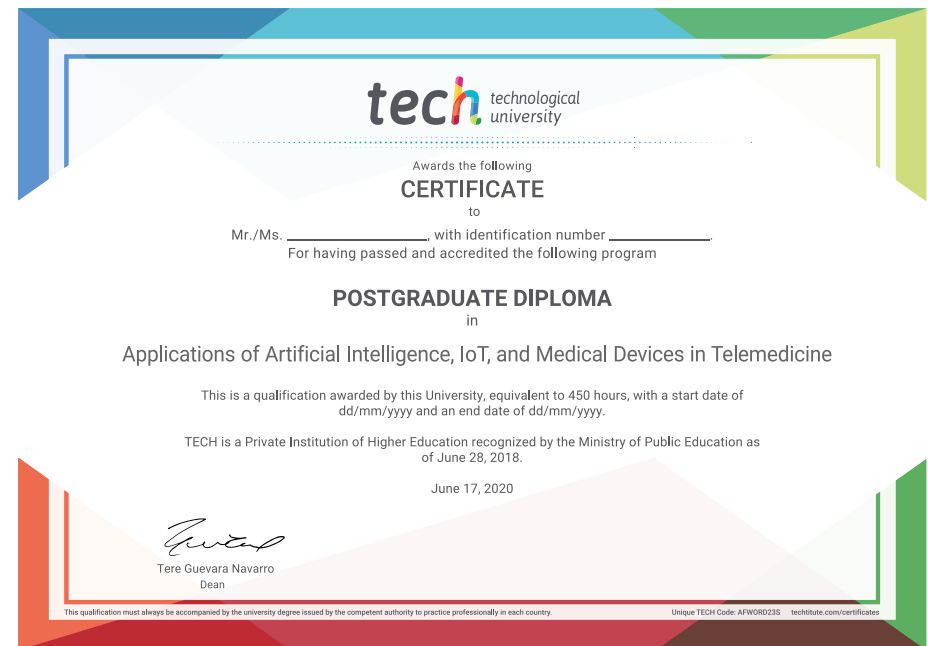
This **Postgraduate Diploma in Applications of Artificial Intelligence, IoT, and Medical Devices in Telemedicine** contains the most complete and up-to-date scientific program on the market.

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

The certificate 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 Applications of Artificial Intelligence, IoT, and Medical Devices in Telemedicine**

Official No. of Hours: **450 h.**

tech technological university

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

POSTGRADUATE DIPLOMA
in

Applications of Artificial Intelligence, IoT, and Medical Devices in Telemedicine

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

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

*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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