Postgraduate Certificate
Machine Learning and Data Mining

tech global university

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Machine Learning and Data Mining

» Modality: **online**
» Duration: **6 weeks**
» Certificate: **TECH Global University**
» Credits: **6 ECTS**
» Schedule: **at your own pace**
» Exams: **online**

Website: **www.techtitute.com/us/information-technology/postgraduate-certificate/machine-learning-data-mining**

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01
Introduction

Specialize in IT with this intensive program taught by experts with extensive experience in the field. You will develop your skills and knowledge, in a practical and 100% online way, with the best didactic resources. A unique opportunity to give your career the boost it needs.

"

This Postgraduate Certificate will allow you to up to date your knowledge in Machine Learning and Data Mining a practical way, 100% online, without renouncing to the maximum educational rigor"

This program is aimed at those interested in attaining a higher level of knowledge of Medieval and Mining Software Date:. The main objective is for students to specialize their knowledge in simulated work environments and conditions in a rigorous and realistic manner so they can later apply it in the real world.

This program will prepare scientifically and technologically, as well as to develop the professional practice of software engineering, with a transversal and versatile approach adapted to the new technologies and innovations in this field. Students will gain extensive knowledge in Introduction to Software Engineering from professionals in the field.

The students will be able to take the opportunity and study this program in a 100% online format, without neglecting their obligations. Up to date your knowledge and study a Postgraduate Certificate in Machine Learning and Data Mining to continue growing personally and professionally.

This **Postgraduate Certificate in Machine Learning and Data Mining** contains the most complete and up to date academic program on the market. The most important features of the program include:

- Development of 100 simulated scenarios presented by experts in Machine Learning
- Its graphic, schematic and practical contents, with which they are conceived, gather scientific and practical information on Software and Mining
- News on the latest developments in Software and Mining
- It contains practical exercises where the self-assessment process can be carried out to improve learning
- Interactive learning system based on the case method and its application to real practice
- All of this will be complemented by 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

Learn the latests techniques and strategies with this program and achieve the sucess as an IT Engineer"

This program will enhance your skills and update your knowledge of contemporary Date: history"

Make the most of the latest educational technology to update on Software Date: without leaving home.

Learn about the latest techniques in Introduction to Software Engineering from experts in the field.

It includes in its teaching staff professionals belonging to the field of education, who bring to this training their work experience, in addition to recognized specialists belonging to reference societies and prestigious universities.

Thanks to its multimedia content developed with the latest educational technology, they will allow the professional a situated and contextual learning, that is to say, a simulated environment that will provide an immersive learning programmed to prepare in real situations.

The program design is based on Problem-Based Learning, through which teachers must try to solve the different professional practice situations that arise throughout the course. For this purpose, the professionals will be assisted by an innovative interactive video system created by renowned and experienced experts in Machine Learning and Data Mining and extensive teaching experience.

02
Objectives

The objective of this program is to provide IT professionals with the knowledge and skills necessary to carry out their activity using the most advanced protocols and techniques of the moment. Through a work approach that is totally adaptable to the student, this Postgraduate Certificate will progressively lead the students to acquire the competencies will propel them to a Upper professional level.

"

Achieve the level of knowledge you desire and master the fundamental concepts in Date: Machine Learning and with this high-level education program"

General Objectives

- Prepare scientifically and technologically, as well as to develop the professional practice of IT engineering, with a transversal and versatile approach adapted to the new technologies and innovations in this field

- Obtain wide knowledge in the field of IT engineering, structure of computers and in Machine Learning and Data Mining, including the mathematical, statistical and physical basis which is essential in engineering

Achieve professional success as a computer engineer with this intensive program, developed by professionals with extensive experience in the sector"

Specific Objectives

- Introduce knowledge discovery processes and basic concepts of machine learning
- Learn data exploration and pre-processing methods, as well as different algorithms based on decision trees
- Understand the operation of Bayesian methods and regression and continuous response methods
- Understand the different classification rules and the evaluation of classifiers. Understand the different classification rules and the evaluation of classifiers by learning how to use confusion matrices and numerical evaluation, the Kappa statistic and the ROC curve
- Acquire essential knowledge related to text mining and natural language processing (NLP) and clustering
- Expand your knowledge of neural networks, from simple neural networks to recursive neural networks

03

Structure and Content

The structure of the contents has been designed by a team of IT engineering professionals, aware of the relevance of current preparation in order to delve into this area of knowledge , in order to humanistically enrich the students and raise the level of knowledge in Machine Learning and Data Mining through the latest educational technologies available.

"

This Certificate Machine Learning and Data Mining contains the most complete and up to date academic program of learning the market"

Module 1. Machine Learning and Data Mining

1.1. Introduction to Knowledge Discovery Processes and Basic Concepts of Autmatic Learning
    1.1.1. Key Concepts of Knowledge Discovery Processes
    1.1.2. Historical Perspective of Knowledge Discovery Processes
    1.1.3. Stages of the Knowledge Discovery Processes
    1.1.4. Techniques Used in Knowledge Discovery Processes
    1.1.5. Characteristics of Good Machine Learning Models
    1.1.6. Types of MACHINE LEARNING
    1.1.7. Basic Learning Concepts
    1.1.8. Basic Concepts of Unsupervised Learning

1.2. Data Exploration and Pre-processing
    1.2.1. Data Processing
    1.2.2. Data Processing in the Data Analysis Flow
    1.2.3. Types of Data
    1.2.4. Data Transformations
    1.2.5. Visualization and Exploration of Continuous Variables
    1.2.6. Visualization and Exploration of Categorical Variables
    1.2.7. Correlation Measures
    1.2.8. Most Common Graphic Representations
    1.2.9. Introduction to Multivariate Analysis and Dimensionality Reduction

1.3. Decision Trees
    1.3.1. ID3 Algorithm
    1.3.2. C4.5 Algorithm
    1.3.3. Overtraining and Pruning
    1.3.4. Analysis of Results

1.4. Evaluation of Classifiers
    1.4.1. Confusion Matrixes
    1.4.2. Numerical Evaluation Matrixes
    1.4.3. Kappa Statistic
    1.4.4. ROC Curves

1.5. Classification Rules
    1.5.1. Rule Evaluation Measures
    1.5.2. Introduction to Graphic Representation
    1.5.3. Sequential Overlay Algorithm

1.6. Neural Networks
    1.6.1. Basic Concepts
    1.6.2. Simple Neural Networks
    1.6.3. Backpropagation Algorithm
    1.6.4. Introduction to Recurrent Neural Networks

1.7. Bayesian Methods
    1.7.1. Basic Probability Concepts
    1.7.2. Bayes' Theorem
    1.7.3. Naive Bayes
    1.7.4. Introduction to Bayesian Networks

1.8. Regression and Continuous Response Models
    1.8.1. Simple Linear Regression
    1.8.2. Multiple Linear Regression
    1.8.3. Logistic Regression
    1.8.4. Regression Trees
    1.8.5. INTRODUCTION TO SUPPORT Vector Machines (SVM)
    1.8.6. Goodness-of-Fit Measures

1.9. Clustering
    1.9.1. Basic Concepts
    1.9.2. Hierarchical Clustering
    1.9.3. Probabilistic Methods
    1.9.4. EM Algorithm
    1.9.5. B-Cubed Method
    1.9.6. Implicit Methods

1.10. Text Mining and N THE process (NLP)
    1.10.1. Basic Concepts
    1.10.2. Corpus Creation
    1.10.3. Descriptive Analysis
    1.10.4. Introduction to Feelings Analysis

04
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"*

HARVARD BUSINESS SCHOOL
Batten Way

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.

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)

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.

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 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.

Certificate

The Postgraduate Certificate in Machine Learning and Data Mining guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Global University.

Include in your training a Course in Date: Machine Learning and Mining: a highly qualified added value for any professional in this area"

This program will allow you to obtain your **Postgraduate Certificate in Machine Learning and Data Mining** endorsed by **TECH Global University**, the world's largest online university.

TECH Global University is an official European University publicly recognized by the Government of Andorra (*official bulletin*). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.
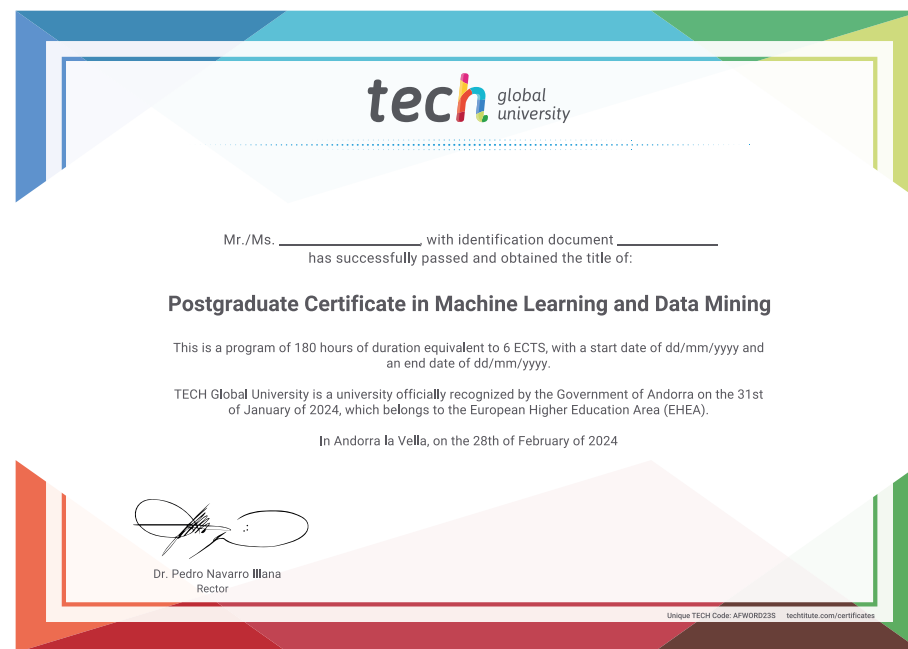
This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Certificate in Machine Learning and Data Mining**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**

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Mr./Ms. _____ with identification document _____
has successfully passed and obtained the title of:

Postgraduate Certificate in Machine Learning and Data Mining

This is a program of 180 hours of duration equivalent to 6 ECTS, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH Global University is a university officially recognized by the Government of Andorra on the 31st of January of 2024, which belongs to the European Higher Education Area (EHEA).

In Andorra la Vella, on the 28th of February of 2024

Dr. Pedro Navarro Illana
Rector

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 Global University will make the necessary arrangements to obtain it, at an additional cost.

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