Postgraduate Diploma
Exploratory Data Analysis

tech
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technological
university

Postgraduate Diploma
Exploratory Data Analysis

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

Website: **www.techtitute.com/pk/information-technology/postgraduate-diploma/postgraduate-diploma-exploratory-data-analysis**

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01
Introduction

Companies generate a large amount of data, which increases year after year, which raises the difficulty to analyze and visualize it correctly. The solution to this problem is to have different techniques and software tools to analyze and interpret the information efficiently. For this reason, this program has been designed to help computer engineers learn and take advantage of how to develop critical thinking that will allow them to determine the most appropriate programs to manage their work.

Analyze the most appropriate techniques for each data set and examine the results obtained"

The Postgraduate Diploma has been designed to provide computer engineers with all the knowledge they need to analyze company data. This is essential for the profile of any professional working in this field, since the volume of information increases every year, making analysis and interpretation more difficult.

Therefore, it is necessary to be trained in specialized knowledge to adequately manage data, focusing at all times on typology and life cycle and practical approaches using the available resources. In data science, knowledge of statistics is indispensable, hence the importance placed on the module that covers it.

At the end of the program, computer engineers will develop a critical attitude toward the strategies applied, being able to discern in each case the most appropriate solution and explain in a reasoned way the results obtained in the different metrics.

All of the above is complemented by a 100% online program, which can be studied at our students' convenience, wherever and whenever it suits them. All you need is a device with Internet access to take your career one step further. A modality in accord with the current times and all the guarantees to position engineers in a highly demanded field.

This **Postgraduate Diploma in Exploratory Data Analysis** contains the most comprehensive and up-to-date academic program in the university landscape. The most important features of the program include:

- Practical cases studies are presented by experts in Engineering in data analysis
- The graphic, schematic, and eminently practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice
- Practical exercises where the self-assessment 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

Generate hypotheses to solve practical cases and validate them using metrics in a critical and reasoned manner"

"

Analyze the different software tools for graphic and exploratory data analysis with a 100% online program"

Produce relevant and effective information to aid in decision-making while developing critical thinking skills.

Develop skills to solve practical cases using data science techniques.

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

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 training programmed to train 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 student will be assisted by an innovative, interactive video system created by renowned and experienced experts.

02
Objectives

To enable computer engineers to develop in their work environments, a series of general and specific objectives have been devised to guide and support their learning during this Postgraduate Diploma. This will reinforce their professional knowledge and development regarding the fundamental aspects involved in selecting the different graphing and exploratory data analysis software tools.

Develop the theoretical basis for selecting the most appropriate graphical representations to implement data science techniques"

General Objectives

- Analyze the benefits of applying data analytic techniques in every company department
- Develop the basis for understanding the needs and applications of each department
- Generate specialized knowledge to select the right tool
- Propose techniques and objectives in order to be as productive as possible according to the department

" *Analyze the most appropriate techniques for each data set and examine the results obtained"*
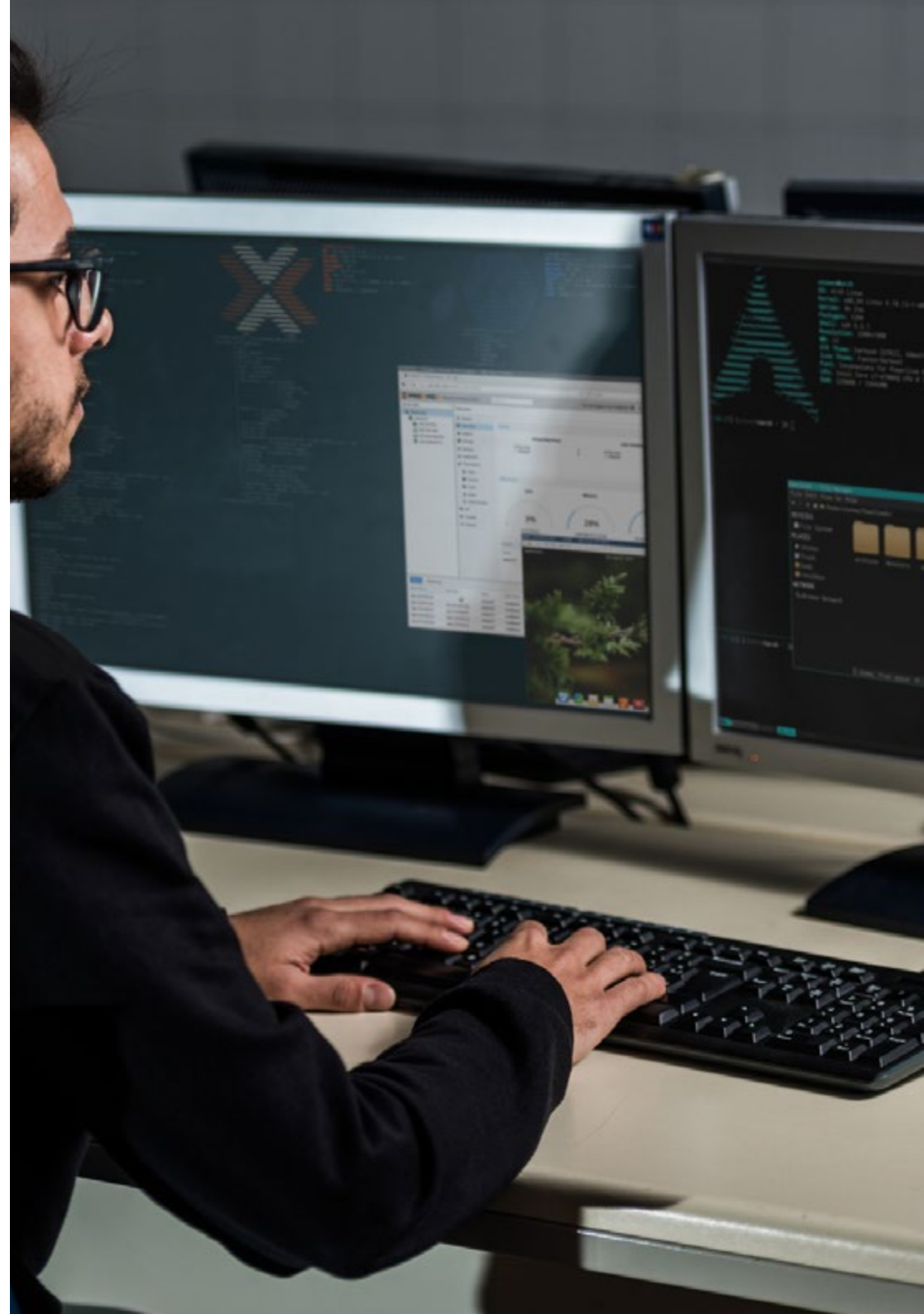
Specific Objectives

Module 1. Data Management, Data Manipulation and Information Management for Data Science

- Perform data analyses
- Unify diverse data: Achieving consistency of information
- Produce relevant, effective information to aid decision-making
- Determine the best practices for data management according to typology and use
- Establish data access and reuse policies
- Ensure security and availability: information availability, integrity and confidentiality
- Examine data management tools using programming languages

Module 2. Graphical Representation of Data Analysis

- Generate specialized knowledge in data analysis and representation
- Examine the different types of grouped data
- Establish the most-used graphic representations in different fields
- Determine the design principles in data visualization
- Introduce graphic narrative as a tool
- Analyze the different software tools for graphing and exploratory data analysis

Module 3. Data Science Tools

- Develop the skills to convert data into information from which knowledge can be extracted
- Determine the main features of a dataset, its structure, components and the implications of its distribution in the modeling
- Support decision-making by performing comprehensive data analysis in advance
- Develop skills to solve practical cases using data science techniques
- Establish the most appropriate general tools and methods for modeling each Dataset based on the preprocessing performed
- Evaluate the results in an analytical way, understanding the impact of the chosen strategy on the various metrics
- Demonstrate critical analysis of the results obtained after applying preprocessing or modeling methods

03
Course Management

The knowledge presented in this program is supported by the collective work of an excellent teaching staff, all of whom have undergone extensive academic and professional training. As a result, students interested in this field have an updated program taught in a dynamic way, by means of practical cases, thus facilitating the understanding of the concepts presented.
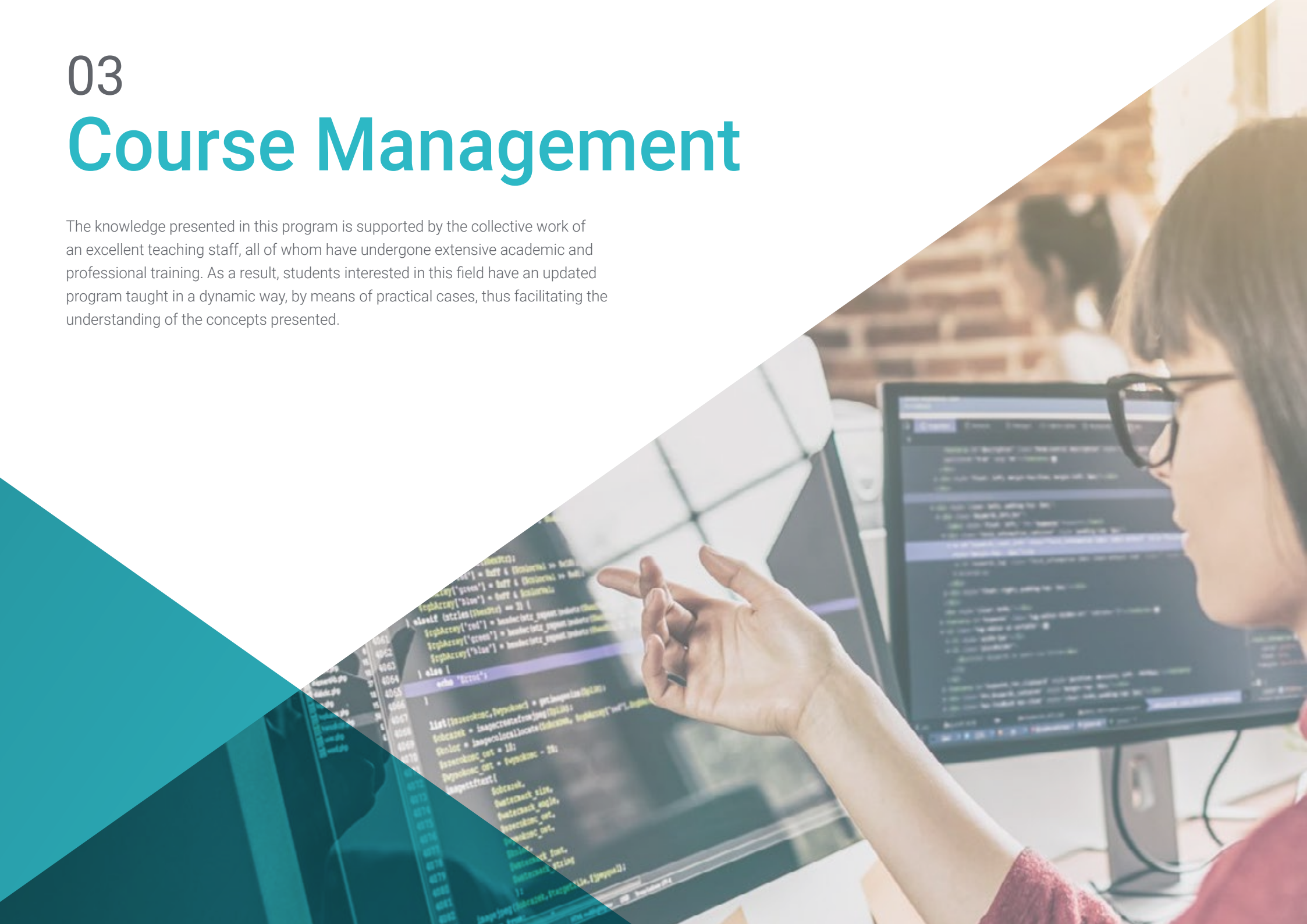
"
Count on professionals trained in exploratory data analysis and enhance your professional profile at an international level"

Management

Dr. Peralta Martín-Palomino, Arturo

- CEO and CTO at Prometeus Global Solutions
- CTO at Korporate Technologies
- CTO in AI Shephers GmbH
- Doctorate in Psychology from the University of CastillaLa
- PhD in Economics, Business and Finance from the Camilo José Cela University. Outstanding Award in her PhD
- PhD in Psychology, University of Castilla La Mancha
- Master's Degree in Advanced Information Technologies from the University of Castilla la Mancha
- Master MBA+E (Master's Degree in Business Administration and Organisational Engineering) from the University of Castilla la Mancha
- Associate lecturer, teaching undergraduate and master's degrees in Computer Engineering at the University of Castilla la Mancha
- Professor of the Master in Big Data and Data Science at the International University of Valencia
- Lecturer of the Master's Degree in Industry 4.0 and the Master's Degree in Industrial Design and Product Development
- Member of the SMILe Research Group of the University of Castilla la Mancha.

Professors

Ms. Fernández Meléndez, Galina

- Data Analyst in ADN Mobile Solution
- ETL processes, data mining, data analysis and visualization, establishment of KPI's, Dashboard design and implementation, management control R development, SQL management, among others
- Pattern determination, predictive modeling, machine learning Bachelor's Degree in Business Administration Bicentenaria de Aragua-Caracas University
- Diploma in Planning and Public Finance Venezuelan School of Planning, School of Finance
- Professional Master's Degree in Data Analysis and Business Intelligence. University of Oviedo
- MBA in Business Administration and Management (Escuela De Negocios Europea De Barcelona)
- Master in Big Data and Business Intelligence (Escuela de Negocios Europea de Barcelona)

Ms. Pedrajas Parabás, Elena

- Business Analyst in Management Solutions in Madrid
- Collaborator with the Department of Numerical Analysis at the University of Cordoba Professional Experience
- Researcher in the Department of Computer Science and Numerical Analysis at the University of Cordoba
- Researcher at the Singular Center for Research in Intelligent Technologies in Santiago de Compostela
- Degree in Computer Engineering Master's Degree in Data Science and Computer Engineering Teaching Experience

Ms. Martínez Cerrato, Yésica

- Electronic Security Product Technician at Securitas Security Spain
- Business Intelligence Analyst at Ricopia Technologies (Alcalá de Henares) Degree in Electronic Communications Engineering at the Polytechnic School, University of Alcalá
- Responsible for training new recruits on commercial management software (CRM, ERP, INTRANET), product and procedures in Ricopia Technologies (Alcalá de Henares)
- Responsible for training new scholarship holders incorporated to the Computer Classrooms at the University of Alcalá
- Project Manager in the area of Key Accounts Integration at Correos and Telégrafos (Madrid)
- Computer Technician-Responsible for computer classrooms OTEC, University of Alcalá (Alcalá de Henares)
- Computer instructor at ASALUMA Association, Alcalá de Henares
- Training scholarship as a Computer Technician at OTEC, University of Alcalá, Alcalá de Henares

04
Structure and Content

Understanding the enormous mass of company information generated on a daily basis requires professionals trained in the different software tools for graphing and exploratory data analysis. Therefore, this Postgraduate Diploma will guide student's learning in this and other related points, which will allow them to awaken their critical thinking to make decisions according to the situations in their work environments.

Transform data into information, adding value and enabling the generation of new knowledge"

Module 1. Data and Information Management and Manipulation in Data Science

1.1. Statistics: Variables, Indexes and Ratios
    1.1.1. Statistics
    1.1.2. Statistical Dimensions
    1.1.3. Variables, Indexes and Ratios
1.2. Type of Data
    1.2.1. Qualitative
    1.2.2. Quantitative
    1.2.3. Characterization and Categories
1.3. Data Knowledge from the Measurements
    1.3.1. Centralization Measurements
    1.3.2. Measures of Dispersion
    1.3.3. Correlation
1.4. Data Knowledge from the Graphs
    1.4.1. Visualization According to Type of Data
    1.4.2. Interpretation of Graphic Information
    1.4.3. Customization of graphics with R
1.5. Probability
    1.5.1. Probability
    1.5.2. Function of Probability
    1.5.3. Distributions
1.6. Data Collection
    1.6.1. Methodology of Data Collection
    1.6.2. Data Collection Tools
    1.6.3. Data Collection Channels
1.7. Data Cleaning
    1.7.1. Phases of Data Cleansing
    1.7.2. Data Quality
    1.7.3. Data Manipulation (with R)

1.8. Data Analysis, Interpretation and Evaluation of Results
    1.8.1. Statistical Measures
    1.8.2. Relationship Indices
    1.8.3. Data Mining
1.9. Data Warehouse
    1.9.1. Components
    1.9.2. Design
1.10. Data Availability
    1.10.1. Access
    1.10.2. Uses
    1.10.3. Security

Module 2. Graphical Representation of Data Analysis

2.1. Exploratory Analysis
    2.1.1. Representation for Information Analysis
    2.1.2. The Value of Graphical Representation
    2.1.3. New Paradigms of Graphical Representation
2.2. Optimization for Data Science
    2.2.1. Color Range and Design
    2.2.2. Gestalt in Graphic Representation
    2.2.3. Errors to Avoid and Advice
2.3. Basic Data Sources
    2.3.1. For Quality Representation
    2.3.2. For Quantity Representation
    2.3.3. For Time Representation
2.4. Complex Data Sources
    2.4.1. Files, Lists and Databases
    2.4.2. Open Data
    2.4.3. Continuous Data Generation

Module 3. Data Science Tools

Generate hypotheses to solve practical cases and validate them using metrics in a critical and reasoned manner"

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.

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.

06

Certificate

The Postgraduate Diploma in Exploratory Data Analysis 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 Exploratory Data Analysis** contains the most comprehensive and up-to-date 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 Exploratory Data Analysis**

Official Number 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

Exploratory Data Analysis

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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